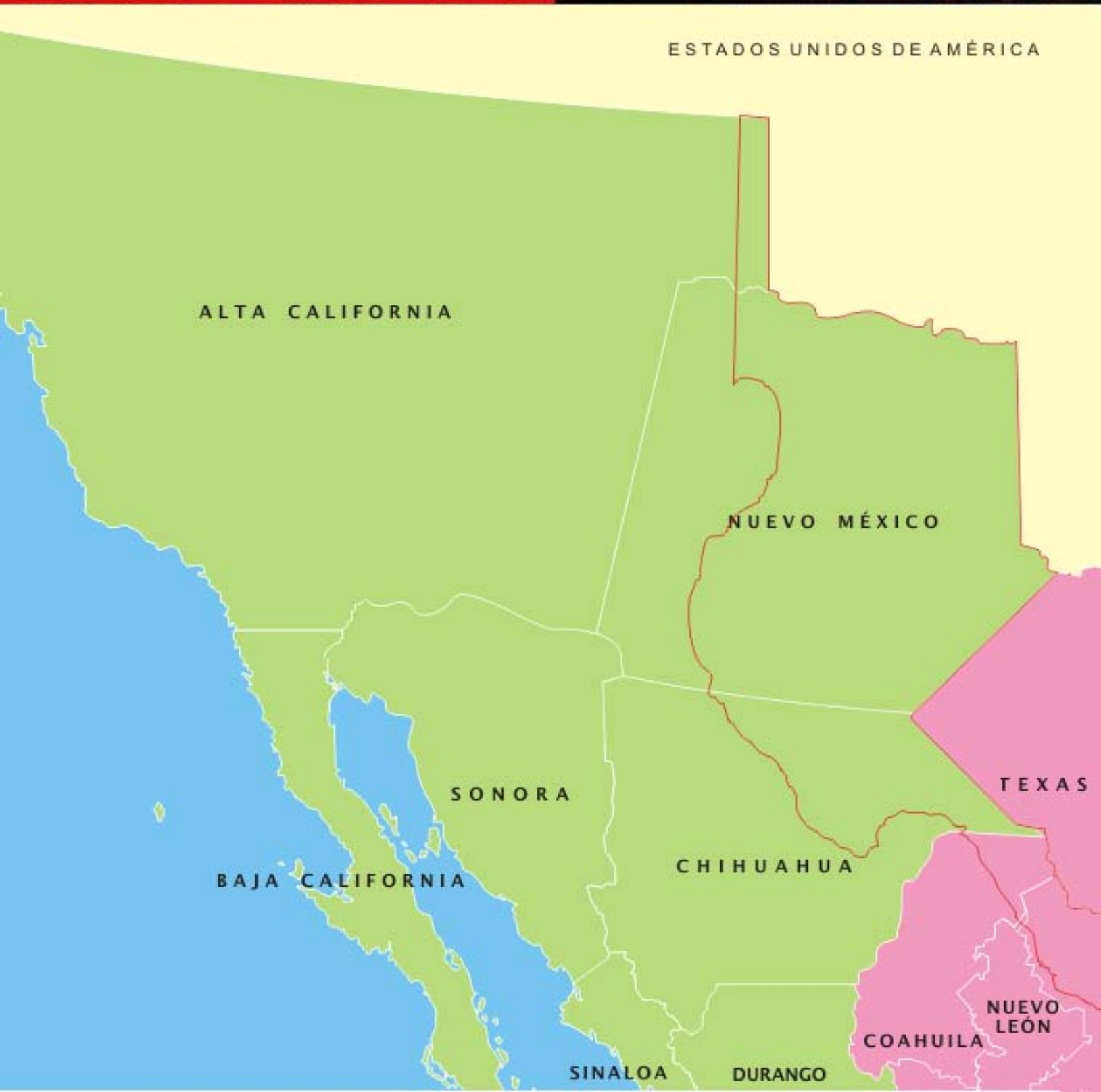
Mexican Army Sourcebook



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CHAPTER 1
MILITARY ESTABLISHMENT

Constitutional and Legal Basis

The constitution of 1917 established the guiding principles for the armed forces and placed restrictions on their activities. Article 89 places the military under the control of the president of the republic, who, as commander in chief, is responsible for seeing that the armed forces fulfill their obligation to guarantee "internal order and external defense." The restriction on peacetime interference by military authorities in civilian affairs or other activities not "directly connected with the military discipline," set forth by Article 129, has often been abused, however, usually on the order of the president. The final constitutional provision for establishing government control of the armed forces, Article 132, places all military facilities and properties under federal jurisdiction.

A series of laws enacted in 1926 further shaped the armed forces. The most important of these, the Organic Law, gave them a threefold mission: "to defend the integrity and independence of the nation, to maintain the constitution, and to preserve internal order." The basic law subsequently has been modified to keep pace with political, economic, and social changes in the Mexican state.

Three additional laws enacted in 1926 also sought to regularize military practices. The Law of Promotions and Compensation established a pay scale for each rank and competitive examinations for promotion. The Law of Military Discipline further defined the obligations of the armed forces to society, requiring that each soldier, "in fulfillment of his duties, sacrifice all personal interests to the sovereignty of the nation, to loyalty toward its institutions, and to the honor of the National Army." The Law of Pensions and Retirements set a mandatory retirement age and provided pensions for military retirees and allowances for military dependents. Although all of these laws have been modified to meet the needs of changing times, they remain the institutional foundation of the Mexican military.

The Mexican military forces are composed of the Mexican Army (which includes the Mexican Air Force as a subordinate entity) and the Mexican Navy (including marines).

Organization of National Defense

The organization of the Mexican armed forces at the cabinet level is distinct from that of many other Latin American nations. Instead of a single ministry consolidating the command of the army, navy, and air force, two government ministries are directly responsible for national defense: the Secretariat of National Defense and the Secretariat of the Navy. The head of each of these secretariats is a military officer who holds cabinet rank and has regular, direct access to the president of the republic, who is the supreme commander of the armed forces.

After President Carlos Salinas de Gortari took power in 1988, five cabinet-level councils were created within the offices of the president to oversee principal policy areas. One of these is the National Security Council, which includes representatives of the secretariats of government, foreign relations, national defense, and the navy, as well as the attorney general's office. Narcotics control is one of the topics dealt with in the council.

The secretary of national defense (General Enrique Cervantes Aguirre as of 1998) is selected by the president from the ranks of active army general officers. The secretary normally serves for six years, the same term as the president's. Similarly, the secretary of the navy (Admiral José Ramón Lorenzo Franco in 1998) is chosen from the ranks of active admirals. Operating through the General Staff, the secretary of national defense commands army and air force units, the army zonal commands, and logistics and

administrative directorates. Under the secretary of the navy are the chief of naval operations, the chief of naval staff, and the naval zones that control operational forces.

Mexican War Minister General Guillermo Galván

The army is by far the largest service branch. Of some 275,000 active armed forces personnel in 1998, 230,000 were in the army, 8,000 in the air force, and 37,000 in the navy. The army total at any one time included about 160,000 conscripts. No conscripts were assigned to the air force or navy. A "reserve" force of 300,000 is claimed, although this number is a manpower pool rather than an existing trained force.

The size of the armed forces is modest considering Mexico's size and importance. Mexico has the smallest number of military personnel per capita of any country of Latin America. According to the United States Arms Control and Disarmament Agency (ACDA), Latin America as a whole had 3.5 soldiers per 1,000 population in 1991. The corresponding figure for Mexico was 1.9 soldiers per 1,000 population. In spite of the steady increase in the armed forces--they have roughly doubled in size since the mid-1970s--the number of soldiers per capita has remained remarkably steady because of the parallel increase in population.

Leadership

Officially, as there is no Minister of Defense, the Mexican military's two components are not under command of a single, unified forces commander at any level below the President, who has a military role under the national constitution: Supreme Commander of the Armed Forces (*Comandante Supremo De Las Fuerzas Armadas*). According to the Constitution of Mexico, the President is the Army's only five-star general. (This is comparable to most other countries with a presidential system of government, such as the United States.) Instead, a Minister, who is a serving officer — an Army four-star general or a Navy admiral — heads each component. Each minister serves in a dual capacity: as a full cabinet member reporting to the President, and as the operational commander of his branch, but because of politics and rank, the navy is subordinate to the army.

Moreover, the Air Force commander and his staff are embedded to Army headquarters; an Air Force officer never has risen to the hierarchy's most trusted, senior positions. This subordination has allowed the Army to identify its organization as the "Secretariat of National Defense" (*Secretaría de la Defensa Nacional* — SEDENA), resultantly, (to the Navy's annoyance) the current army chief, General Guillermo Galván, Galván (and his predecessors) holds the nominal title of "Minister of Defense".

The Army and the Navy are regionally organized, with central, national headquarters in Mexico City and subordinate, regional headquarters. Historically, this has proven to be effective, as the military's main deployments have been domestic. Troops are stationed throughout the country to serve as continuing presence of authority and to allow for immediate critical response. Dispersion by regional military zones has facilitated local recruitment of non-commissioned officers (army sergeants, navy petty officers) and enlisted men and women, allowing them to be stationed near family during their military service, an important cultural consideration. On the other hand, mobility is expected of commissioned officers, moving from assignment to assignment and to the military center, in Mexico City, giving them much experience, and, historically, preventing any senior officer from remaining too long in one place and developing a personal power base through local allegiances, and so becoming too powerful as a warlord.

Limitations upon the military

Article 129 of the 1917 Political Constitution of the Mexican United States establishes that: No military authority may, in time of peace, perform any functions other than those that are directly connected with military affairs, but the Army's temporary replacement of civil police forces, in specific cases, before the creation of the Federal Preventative Police has been much debated in the Congress and in the mass communications media; (cf. U.S. Posse Comitatus Act)

Like-wise, per Article 16: No member of the army shall, in time of peace, be quartered in private dwellings without the consent of the owner, nor may he impose any obligation whatsoever. In time of war the military may demand lodging, equipment, provisions, and other assistance, in the manner laid down in the respective martial law; (cf. Third Amendment to the United States Constitution)

Public knowledge of the military's activities

As the President of Mexico is Commander in Chief of the armed forces, the chain of command and military discipline are subordinated to him. The military obey him and maintain low public profiles in politico-military debate; they serve, they do not rule.

Estado Mayor Presidencial

There is a specific element of the Mexican Army, which takes care of the President, a special group known as the *Estado Mayor Presidencial* (in command of the Guardias Presidenciales, equivalent to the American Secret Service). Every member of this division is an expert marksman and has tough training for the protection of the President.

Estado Mayor Presidencial officers detain a member of the Constitutionalist Party in Mexico City, 1999.

The Mexican Army (Spanish: *General Guillermo Galván Méxicano*) is the land branch and largest of the Mexican Military services; it also is known as the National Defense Army. It is famous for having been the first army to adopt and use an automatic rifle (The Mondragón rifle) in 1899, and the first to issue automatic weapons as standard issue weapons, in 1908. In 1998 the Mexican Army had an active duty force of 230,000.

Organization

The Army is under authority of the National Defense Secretariat or SEDENA. It has three components: a national headquarters, territorial commands, and independent units. The Minister of Defense commands the Army via a centralized command system and many general officers. The Army uses a modified continental staff system in its headquarters. The Mexican Air Force is a branch of the Mexican Army.

MEXICAN WAR OF INDEPENDENCE

The Army of Miguel Hidalgo y Costilla was followed by his loyal companions among them Mariano Abasolo and a small army equipped with swords, spears, slingshots and sticks was the first militant group that initiated the independence movement in the early morning of September 16 1810. Captain General Ignacio Allende, was the military brain of the insurgents in the first phase of the War of Independence, which had several victories over the Spanish Royal Army. Their troops were about 5,000 strong and was later joined by squadrons of the Queen's Regiment where its members in turn contributed infantry battalions and cavalry squadrons to the insurrection cause.

The Spaniards saw that it was important to defend the fortified plaza in Guanajuato named Alhondiga Granaditas which kept the flow of water, weapons, food and ammunition. The insurgents entered the town of Guanajuato, and laid siege on the Alhondiga de Granaditas. In the attack, the insurgents suffered heavy casualties, until there came Juan Jose de los Reyes: "the Pípila", who fitted a slab on his back for protection and with a torch in hand set fire to the door of the Alhondiga. With this stunt the insurgents managed to bring down the door and entered the building. Hidalgo latter arrived at Valladolid (now Morelia, Michoacan) without encountering resistance. The Insurgent Army was over 600,000 poorly armed men with arrows and sticks, tillage tools and few guns they had taken from the stocks in which they had passed.

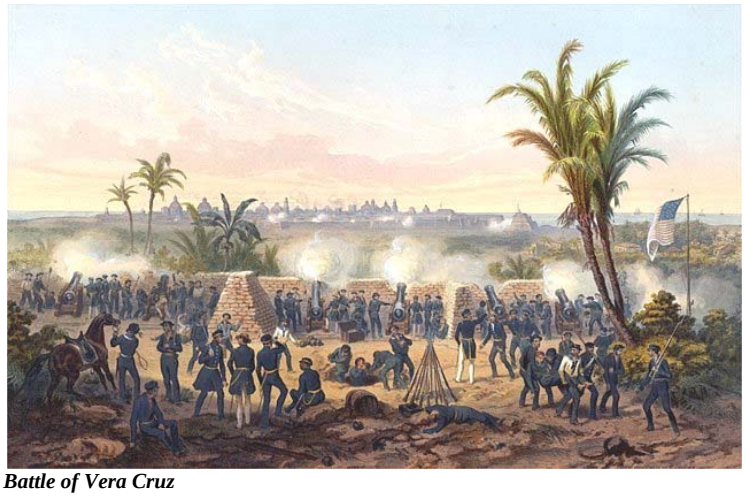
In Aculco, State of Mexico, the forces under the command of the Royalist Felix Maria Calleja, Count of Calderon and Don Manuel de Flon, with 200 infantrymen, 500 cavalry troops and 12 cannons defeated the insurgents, who lost many elements and the artillery they had obtained at Monte de las Cruces. On November 29, 1810 Hidalgo makes his entrance to Guadalajara, the capital of Nueva Galicia (current State of Jalisco) where organizes the government and especially the Insurgent Army. There is where he formally promulgates the abolition of slavery.

In a place called Puente de Calderón near the city of Guadalajara Jalisco insurgents held a hard-fought battle with the royalists. During the fierce fighting a car full of ammunition in the side of the insurgents exploded which, among other causes, led to their defeat hence all their artillery was lost as well as equipment and the lives of many men.

In the town of Acatita de Baján near Monclova a former royalist named Ignacio Elizondo betrayed the insurgents and seized the priest Miguel Hidalgo y Costilla, Ignacio Allende, Juan Aldama, José Mariano Jiménez and the rest of the entourage. They were brought to the city of Chihuahua, where they were tried by a military court and executed by firing squad on July 30, 1811.

Hidalgo's death resulted in a political vacuum on the insurgent side until 1812. The royalist military commander, General Felix Calleja, continued to pursue rebel troops. Insurgent fighting evolved into guerrilla warfare and eventually the next major insurgent leader, Jose Maria Morelos y Pavon, who had led rebel movements with Hidalgo, became head of the insurgents.

1ST MEXICAN AMERICAN WAR



Battle of Vera Cruz

The Mexican–American War was an armed conflict between the United States and Mexico from 1846 to 1848 in the wake of the 1845 U.S. annexation of Texas. Mexico claimed ownership of Texas as a breakaway province and refused to recognize the secession and subsequent military victory by Texas in 1836.

The United States supported Texas when it claimed all land north of the Rio Grande, and this provoked a dispute with Mexico. In June 1845, James K. Polk sent General Zachary Taylor to Texas, and by October, 3,500 Americans were on the Nueces River, prepared to defend Texas from a Mexican invasion. Polk wanted to protect the border and coveted the continent clear to the Pacific Ocean. Polk had instructed the Pacific naval squadron to seize the California ports in case Mexico declared war. At the same time he wrote to Thomas Larkin, the American consul in Monterey, that a peaceful takeover of California would be welcomed.

In the winter of 1845-46, the federally commissioned explorer John C. Fremont and a group of armed men appeared in California. The Mexican authorities became alarmed and ordered him to leave. Fremont returned to California and assisted the Bear Flag Revolt in Sonoma, where a number of American settlers stated that they were playing "the Texas game" and declared California's independence from Mexico.

Polk ordered General Taylor and his forces south to the Rio Grande, entering the territory that Mexicans claimed as their own. Mexico claimed the Nueces River — about 150 miles (240 km) north of the Rio Grande — as its border with Texas; the United States claimed it was the Rio Grande, citing the 1836 Treaties of Velasco. Mexico, however, had never ratified these treaties, which were signed by Santa Anna while he was a prisoner in Texas. Taylor ignored Mexican demands to withdraw to the Nueces. He constructed a makeshift fort (later known as Fort Brown/Fort Texas) on the banks of the Rio Grande opposite the city of Matamoros, Tamaulipas. Mexican forces under General Mariano Arista prepared for war.

In Polk's message to Congress on May 11, 1846 he stated that "Mexico has passed the boundary of the United States, has invaded our territory and shed American blood upon American soil." A joint session of Congress approved the declaration of war, with southern Democrats in strong support. Sixty-seven Whigs voted against the war on a key slavery amendment, but on the final passage only 14 Whigs voted no, including Rep. John Quincy Adams. Congress declared war on Mexico on May 13, 1846 after only having a few hours to debate. Although President Paredes's issuance of a manifesto on May 23 is sometimes considered the declaration of war, Mexico officially declared war by Congress on July 7.

After the declaration of war, U.S. forces invaded Mexican territory on two main fronts. The U.S. war department sent a cavalry force under Stephen W. Kearny to invade western Mexico from Fort Leavenworth, reinforced by a Pacific fleet under John D. Sloat. This was done primarily because of concerns that Britain might also attempt to occupy the area. Two more forces, one under John E. Wool and the other under Taylor, were ordered to occupy Mexico as far south as the city of Monterrey.

Niños Héroes (Child Heroes) monument dedicated to six teenage military cadets who died defending Mexico at Mexico City's Chapultepec Castle from invading U.S. forces in the 13 September 1847 Battle of Chapultepec.

On June 15, 1846, some thirty settlers, mostly American citizens, staged a revolt and seized the small Mexican garrison in Sonoma. They raised the "Bear Flag" of the California Republic over Sonoma. The republic was in existence scarcely more than a week before the U.S. Army, led by Frémont, took over on June 23. The

California state flag today is based on this original Bear Flag and still contains the words, "California Republic."

Scott entering Mexico City

Commodore John Drake Sloat, upon hearing of imminent war and the revolt in Sonoma, ordered his naval and marine forces to occupy Yerba Buena (present-day San Francisco) on July 7 and raise the flag of the United States; this was accomplished on July 9. On July 15, Sloat transferred his command to Commodore Robert F. Stockton, a much more aggressive leader, who put Frémont's forces under his orders. On July 19, Frémont's "California Battalion" swelled to about 160 additional men from newly-arrived settlers near Sacramento, and he entered Monterey in a joint operation with some of Stockton's sailors and marines. The word had been received: war was official. The U.S. forces easily took over the north of California; within days they controlled San Francisco, Sonoma, and Sutter's Fort in Sacramento.

Led by Taylor, 2,300 U.S. troops crossed the Rio Grande (Rio Bravo) after some initial difficulties in obtaining river transport. His soldiers occupied the city of Matamoros, then Camargo (where the soldiery suffered the first of many problems with disease) and then proceeded south and besieged the city of Monterrey. The hard-fought Battle of Monterrey resulted in serious losses on both sides.

Eventually, these actions drove and trapped Ampudia's men into the city's central plaza, where howitzer shelling forced Ampudia to negotiate. Taylor agreed to allow the Mexican Army to evacuate and to an eight-week armistice in return for the surrender of the city. Under pressure from Washington, Taylor broke the armistice and occupied the city of Saltillo, southwest of Monterrey. Santa Anna blamed the loss of Monterrey and Saltillo on Ampudia and demoted him to command a small artillery battalion.

On February 22, 1847, Santa Anna personally marched north to fight Taylor with 20,000 men. Taylor, with 4,600 men, had entrenched at a mountain pass called Buena Vista. Santa Anna suffered desertions on the way north and arrived with 15,000 men in a tired state. He demanded and was refused surrender of the U.S. army; he attacked the next morning. Santa Anna flanked the U.S. positions by sending his cavalry and some of his infantry up the steep terrain that made up one side of the pass, while a division of infantry attacked frontally along the road leading to Buena Vista. Furious fighting ensued, during which some U.S. troops were routed, but were saved by artillery fire against a Mexican advance at close range by Captain Braxton Bragg, and a charge by the mounted Mississippi Riflemen under Jefferson Davis. Having suffered discouraging losses and having word of upheaval in Mexico City, Santa Anna withdrew that night, leaving Taylor in control of Northern Mexico. Polk distrusted Taylor, whom he felt had shown incompetence in the Battle of Monterrey by agreeing to the armistice, and may have considered him a political rival for the White House. Taylor later used the Battle of Buena Vista as the centerpiece of his successful 1848 presidential campaign.

Rather than reinforce Taylor's army for a continued advance, President Polk sent a second army under General Winfield Scott, which was transported to the port of Veracruz by sea, to begin an invasion of the Mexican heartland. Scott performed the first major amphibious landing in the history of the United States in preparation for the Siege of Veracruz. A group of 12,000 volunteer and regular soldiers successfully offloaded supplies, weapons and horses near the walled city. Included in the invading force were Robert E. Lee, George Meade, Ulysses S. Grant, and Thomas "Stonewall" Jackson. The city was defended by Mexican General Juan Morales with 3,400 men. Mortars and naval guns under Commodore Matthew C. Perry were used to reduce the city walls and harass defenders. The city replied as best it could with its own artillery. The effect of the extended barrage destroyed the will of the Mexican side to fight against a numerically superior force, and they surrendered the city after 12 days under siege. U.S. troops suffered 80 casualties, while the Mexican side had around 180 killed and wounded, about half of whom were civilian. During the siege, the U.S. side began to fall victim to yellow fever.

Battle of Chapultepec

Scott then marched westward toward Mexico City with 8,500 healthy troops, while Santa Anna set up a defensive position in a canyon around the main road at the halfway mark to Mexico City, near the hamlet of Cerro Gordo. Santa Anna had entrenched with

12,000 troops and artillery that were trained on the road, along which he expected Scott to appear. However, Scott had sent 2,600 mounted dragoons ahead, and the Mexican artillery prematurely fired on them and revealed their positions. Instead of taking the main road, Scott's troops trekked through the rough terrain to the north, setting up his artillery on the high ground and quietly flanking the Mexicans. Although by then aware of the positions of U.S. troops, Santa Anna and his troops were unprepared for the onslaught that followed. The Mexican army was routed. The U.S. army suffered 400 casualties, while the Mexicans suffered over 1,000 casualties and 3,000 were taken prisoner. In August 1847, Captain Kirby Smith, of Scott's 3rd Infantry, reflected on the resistance of the Mexican army:

"What a stupid people they are! They can do nothing and their continued defeats should convince them of it. They have lost six great battles; we have captured six hundred and eight cannon, nearly one hundred thousand stands of arms, made twenty thousand prisoners, have the greatest portion of their country and are fast advancing on their Capital which must be ours,—yet they refuse to treat [ie negotiate terms]! "

Outnumbered militarily and with many of its large cities occupied, Mexico could not defend itself and was also faced with internal divisions. It had little choice but to make peace on any terms. The Treaty of Guadalupe Hidalgo, signed on February 2, 1848 by American diplomat Nicholas Trist and Mexican plenipotentiary representatives Luis G. Cuevas, Bernardo Couto and Miguel Atristain, ended the war and gave the U.S. undisputed control of Texas, established the U.S.-Mexican border of the Rio Grande River, and ceded to the United States the present-day states of California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. In return, Mexico received US $18,250,000 ($459,127,885 today)—less than half the amount the U.S. had attempted to offer Mexico for the land before the opening of hostilities—and the U.S. agreed to assume $3.25 million ($81,762,500 today) in debts that the Mexican government owed to U.S. citizens.

Prior to ratifying the treaty, the U.S. Senate made two modifications, changing the language of Article IX (which guaranteed Mexicans living in the purchased territories the right to become U.S. citizens), and striking out Article X (which conceded the legitimacy of land grants made by the Mexican government). On May 26, 1848, when the two countries exchanged ratifications of the treaty of Guadalupe Hidalgo, they further agreed to a three-article protocol (known as the Protocol of Querétaro) to explain the amendments. The first article claimed that the original Article IX of the treaty, although replaced by Article III of the Treaty of Louisiana, would still confer the rights delineated in Article IX. The second article confirmed the legitimacy of land grants pursuant to Mexican law. The protocol was signed in the city of Querétaro by A. H. Sevier, Nathan Clifford and Luis de la Rosa.

Mexico lost more than 500,000 square miles (about 1,300,000 km²) of land, 55% of its national territory. This figure rises to over two thirds of its territory if Texas is included. The annexed territories contained about 1,000 Mexican families in Alta California and 7,000 in Nuevo México. A few relocated further south in Mexico; the great majority remained in the United States. Descendants of these Mexican families have risen to prominence in American life, such as United States Secretary of the Interior Ken Salazar, and his brother, U.S. Rep. John Salazar, both from Colorado.

In Mexico City's Chapultepec Park, the Monument to the Heroic Cadets commemorates the heroic sacrifice of six teenaged military cadets who fought to their deaths rather than surrender to American troops during the Battle of Chapultepec Castle on September 18, 1847. The monument is an important patriotic site in Mexico. On March 5, 1947, nearly one hundred years after the battle, U.S. President Harry S. Truman placed a wreath at the monument and stood for a moment of silence.

2ND MEXICAN AMERICAN WAR

A DN-V Mk I APC of the 216° Regimiento de Infantería Blindado, pauses in Yuma, AZ in September of 1998.

In 1996 U.S. forces were deployed to Europe to assist German units in Poland. From 1995-1997 the U.S. deployed 80% of its domestic guard and reserve units to Europe, Asia and the Middle East. The result was a sapping of manpower from border units and an increased reliance on local civilian militias to patrol the U.S.-Mexican border. The reliance on poorly trained and poorly disciplined local militias led to a number of tragic border incidents.

The Salinas government strongly opposed the use of Militia volunteers as border guards and lodged an official protest with the U.S. government. The friction between the U.S. and Mexico over the border patrol issue came to a head on December 12th, 1996 when Mexican police found a burned bus filled with the charred remains of over 30 Mexican migrant workers in the Sonora Desert. During the investigation of the incident it became apparent that the Mexican deaths were due to actions undertaken by a Militia group operating

out of Cowlic, Arizona. Mexican authorities demanded that the member of the militia be either prosecuted in the U.S. or extradited to Mexico for trial.

Advanced elements of the 17° Regimiento de Infantería Blindado overlook Los Angeles from the Hollywood hills.

The U.S. government expressed regret over the incident but claimed that there was insufficient evidence to generate an indictment against any individual involved in the militia border patrol. As a result the U.S. could not justify the extradition of any member of the militia group. At the same time the U.S. suggested that Mexico make a stronger effort to curtail illegal border crossings so that similar incidents would be avoided.

In Mexico City the U.S. refusal to extradite militia members led to massive demonstrations and public calls for an oil embargo against the U.S. to hinder its ability to continue combat operations in Europe. The U.S. responded with the "Sloan Act" prohibiting by law all remittances to Mexico and recalling of over $80 Billion in debts underwritten by the United States.

Infantrymen of the 14° Regimiento de Infantería Blindado patrol a wooded area near the city of Corpus Christi.

In January, 1997 Mexico moved the majority of its mobile force Brigades to the Military Regions bordering the U.S. in an attempt to limit illegal border crossings by Mexican nationals. Mexico also refused to comply with the U.S. demand for debt repayment citing the debt contract terms as prohibiting any unreasonable modification of the contract. The U.S. responds by flooding the international markets with Mexican securities causing a run on the Peso. Due to the sale of Mexican treasuries and a ban on Mexican imports to the U.S., by March inflation in Mexico tops 1000% per month.

With the relocation of Mexican military units to the U.S. border, illegal immigration to the U.S. slows to a trickle. A de facto demilitarized zone 20 miles wide forms on the U.S.-Mexican border in an attempt to prevent contact between U.S. Militia and elements of the Mexican Army. The need for a DMZ becomes apparent as contact between the two groups invariably leads to more and more skirmishes.

In November of 1997 oil producing facilities in the U.S. are subject to nuclear attack by Russia in order to disable the U.S. ability to support foreign military operations. The U.S. responds in kind striking Russian strategic targets and the oil producing facilities in Venezuela supplying oil to Cuba. The U.S. demands that Mexico resume oil sales to the U.S. and Canada in support of the War in Europe. The tone of the U.S. demands for Mexican oil production become harsher as the second wave of nuclear strikes occur in December of 1997.

An AMX-13 of the 23° Regimiento de Caballería Blindados

By the beginning of 1998 there is a general feeling that the Ban of Mexican oil sales to the U.S. placed Mexico in the Russian camp and that Mexico's *de facto* alliance with the Russian Federation would justify U.S. military operations in Mexico. In January the U.S. government delivers Mexico with an ultimatum that they supply the U.S. with oil, or face a declaration of war.

In response to a possible seizure of Mexican oilfields by the U.S. military, on January 28th, Russia launches a nuclear attack on PEMEX facilities throughout Mexico. The January attack destroys 93% of Mexico's oil refining capability and leads to nationwide rioting.

A Voluntarios with the Mexican 2nd Army attacks U.S. Armor with an improvised anti-tank incendiary device. Note the non-standard FN-FAL rifle, most likely supplied by Argentina.

While the Russians are directly responsible for the attack, the Mexican government blames the U.S. for leading to the Russian nuclear attack. Student protestors storm the U.S. embassy in Mexico city and take 28 diplomats hostage. Mexican special forces units manage to retake the embassy but the US ambassador and 6 other diplomats are killed in the process. As a result of the attack the U.S. breaks off diplomatic relations with Mexico on February 5th, closes the border to all traffic and recalls all regional consuls from Mexico.

In March U.S. Militia units move into the demilitarized zone between the U.S. and Mexico and step up attacks on Mexican border police. The Militia incursions come to a head on late April when a Militia group crosses the border and terrorizes the Mexican town of Ojos Calientes. Elements of the 3rd Mexican Mechanized Brigade enter the demilitarized border zone to recapture Ojos Calientes and find that the Militia has fled back across the border. The Brigade's *Los Guardiàn* Regiment pursues the Militia unit across the U.S. border against orders and wipes them out in Cloverdale, New Mexico.

In response to the border incursion, the U.S. condemns Mexico and begins organizing and arming local militia groups along military lines. In May of 1998 the New Mexico, Arizona and Texas Militias are brought into federal service and supplemented with various regular army units. Militia units receive heavy equipment from local National Guard armories. While most modern weapons had been transported to Europe, remaining stockpiles of Vietnam era hardware was available for distribution.

In response to the U.S. military buildup along the border, Mexico declares war on the United States at 12:01am on June 1st, 1998. At 1:00am Mexican armored units crossed the U.S. border west of El Paso, TX and east of Douglas, AZ while elements of the 1st Mechanized Brigade and *Tijuana* Infantry Regiment moved to capture San Diego.

The invasion forces constituted three major field commands designated the 2nd, 3rd, and 4th Armies corresponding with Military Regions II, IX and IV respectively. The 1st Army was formed from the territorial brigades of Military Region I and controlled forces in the interior from Mexico City.

Under the invasion command structure the 2nd Army controlled all forces west of the Sierra Madre Occidental and moved into southern California and Arizona. The right flank of the army consisted of the Nogales Brigade, which drove north up Interstate 19. The brigade was initially backed up by the Hermosillo Brigade, but this was soon shifted west along (Mexico) Highway 2 to reinforce the main body of the army.

Troops of the Los Guardiàn Regiment relax under a shade tree during their advance on Taos, New Mexico, October, 1998.

The 2nd Army's main effort was directed at Southern California. The army was spearheaded by the 2nd Armored Cavalry Brigade and the 1st Mechanized Brigade. Immediate support was provided by the Ensenada and Mexicali Brigades, soon joined by the Hermosillo

and La paz Brigades. Months later the army was also reinforced by the 3rd Mechanized Brigade, elements of the Culiacan and Tepic Brigades, four regiments of reservist infantry, and somewhat more than twenty independent companies of *Voluntarios* (irregulars). In 1999, the Colima Brigade also joined the 2nd Army as well.

Armor of the 9° Regimiento de Caballería Blindados rolls out of the Colorado Desert on its way to Riverside, California.

The 3rd Army initially consisted of the 3rd Armored Cavalry Brigade, 21st Armored Brigade and 4th Mechanized Brigade. The armor backed up the 4th Brigade in its drive through EI Paso, but this thrust was soon stalled by troops at Fort Bliss. The right flank column of the army, consisting of the Chihuahua Brigade, crossed the Rio Grande at Presidio and drove north up Highway 67 toward Odessa. Largely unopposed, the brigade made good time and was soon entirely motorized using requisitioned civilian motor vehicles. Faced with stubborn resistance at Fort Bliss, the 3rd Army executed a wide double envelopment.

A U.S. M1A1 tank destroyed by Mexican armor following the U.S. 5th Army's ill fated 1999 offensive.

The Chihuahua Brigade remained west of the Pecos and drove north to Artesia, New Mexico, then turned west to close in on Las Cruces, New Mexico. At the same time, 3rd Army's main body detached the 3rd Armored Cavalry and 21st Armored to move north along the west bank of the Rio Grande toward Las Cruces. When advanced elements of these two forces met, defending U.S. troops at Fort Bliss began retreating north. Mobile elements of the Mexican 3rd Army were severely mauled by the breakout of the Fort Bliss School Brigade, but the infantry of the 21st Armored Brigade had by now been reinforced by the motorized cavalry regiments of the Durango and Torreon Brigades (with the infantry regiments of those brigades following on foot). The 3rd Army was therefore able to feed additional mobile units forward and avoid a crisis.

Further east, the 4th Army invaded southern Texas on a broad front. The 14th Armored Cavalry Brigade backed by the San Luis Potosi Brigade, crossed the Rio Grande at Laredo and drove north along Interstate 35 toward San Antonio. Its left flank was protected by the Monclova Brigade, which crossed at Eagle Pass and operated toward San Antonio along highways 57 and 90. The right flank drive of the army (the so-called "Coastal Column") consisted of the 3rd Brigade (Mechanized), the Matamoros Brigade, and the Ciudad Victoria Brigade. The column crossed the Rio Grande at Brownsville and drove up the coast toward Corpus Christi. Communications were maintained between the two main columns by the Saltillo Brigade, which crossed the Rio Grande at Roma and Pharr.

Troops from the Brigada de Fusileros Paracaidistas take up a position in the Dallas suburbs.

In 1999 To meet the US 5th Army drive into Texas, the following units were shifted north and assigned to the 4th Army: the 4th Mechanized Brigade, Hidalgo del Parral Brigade, and 6th Saltillo Brigade.

CHAPTER 2
THE MEXICAN ARMY

Troops of the 38° Regimiento de Saltillo celebrate their victory of elements of the U.S. 5th Army, September 1999.

ARMY

The principal units of the Mexican army are ten brigades and a number of independent regiments and infantry battalions. The brigades are the only real maneuver elements in the army. With their support units, they are believed to account for 40 percent of the country's ground forces. The army in 1998 had ten brigades: one armored, three armored cavalry, four mechanized infantry, one airborne, and the Presidential Guard Brigade. The armored cavalry brigades were formed after 1990 as part of a reorganization made possible by an increase in overall strength of about 100,000 troops and a substantial increase in Mexico's domestic arms industry.

Distinct from the brigade formations are independent regiments and battalions assigned to zonal garrisons. These independent units consist of one armored cavalry regiment, nineteen motorized cavalry regiments, one mechanized infantry regiment, seven artillery regiments, and three artillery and eight infantry battalions. Infantry battalions, each composed of approximately 300 troops, generally are deployed in each zone. Certain zones also are assigned an additional motorized cavalry regiment or one of the seven artillery regiments. Smaller detachments often are detailed to patrol more inaccessible areas of the countryside, helping to maintain order and resolve disputes.

The cavalry historically has been the most prestigious branch of the army; in 1920, there were more cavalry squadrons than infantry companies. By the early 1980s, all mounted cavalry had been transformed into motorized units--except for one squadron retained for ceremonial purposes. The engineers, air defense, and combat support and service units was organized into separate regimental, battalion, and company units, which are distributed among military zone installations.

Mexico in 1996 was divided into twelve military regions with thirty-nine military zones. Zone boundaries usually correspond with those of the country's thirty-one states, with the headquarters of the military zone located in the state capital. Some states, including Veracruz, Guerrero, and Chiapas, which have been the scene of disturbances by peasant and Indian groups, have more than one military zone apiece. The Federal District, where Mexico City is located, is the seat of the First Military Zone and also serves as headquarters of the First Military Region.

Mexican armored infantry establish an operations center in the Angeles National Forest.

Military zone commanders are appointed by the president, usually on the recommendation of the secretary of national defense. The senior zone commander in a given area also acts as the commander of the military region in which the zone falls. Zone commanders hold jurisdiction over all units operating in their territory, including the Rural Defense. They occasionally have served the federal authorities as a political counterweight to the power wielded by state governors. Zone commanders provide the secretary of national defense with valuable intelligence regarding social and political

conditions in rural areas, and traditionally have acted in close coordination with the Secretariat of National Defense on resource planning and deployment matters.

MODERNIZATION PROGRAM

A Mexican TAB-30 without ERA but with side skirts.

Under a modernization program initiated in the late 1980s, the Mexican government intended to substantially upgrade its mechanized capabilities. In 1988 SEDENA purchased 300 AMX-30 main battle tanks from the French government which had been held in reserve since the late 1970's. Part of the agreement involved the local upgrading of the tanks to B2 standard with replacement diesel power packs by SNECMA and new GIAT 105mm guns. With the backing of the Mexican government, a joint venture (*Tecnologías de la Defensa Nacional* - "TDN") was formed by Grupo Bocar and Grupo KUO to remanufacture French AMX-30s to AMX-30B2 standard, the refurbished tanks known as the *Tanque Medio de Batalla-30* or TAB-30


Mexican Armored infantry crewing a refurbished AMX-VCI Toucan equipped with a 20mm GIAT auto cannon.

Along with tanks, SEDENA purchased France's remaining inventory of AMX-13 series armored vehicles including the AMX-13 light tanks, AMX-VCI armored personnel carriers and Mk F3 self propelled howitzers. Throughout the 80's and 90's *Diesel Nacional* produced various versions of the "DN" series armored wheeled vehicle for the Mexican Army. *Diesel Nacional* was appointed the task of remanufacturing the French vehicles, many of which had not been operated in more than 20 years.

In addition to domestic production, the Mexican army purchased a significant amount of new equipment, in many cases replacing equipment that dated from the World War II period. The army's inventory of missile systems was expanded and updated. Both the Milan and Eryx anti tank guided missile systems were acquired from France. In the air defense role Mexico purchased over 1,000 Mistral man portable surface to air missile systems from MBDA missile systems.

Since the 1950's Mexico had been a major operator of the World War II vintage M7 self propelled 105mm howitzer. In 1990 Mexico purchased Israel's stock of M7s. In addition to the M7 purchase, Mexico acquired over 200 Mk F3 155mm self propelled guns along with support vehicles from France and Belgium.


A modernized M-51 "Guerrero" of the 34° Regimiento de Caballería Blindados

RECRUITMENT AND CONSCRIPTION

Only volunteers serve in active units of the Mexican armed forces. Most recruits are of a poor or indigent background; for them, induction into the military is often seen as a source of employment and as a means of upward social mobility. Soldiers' pay is slightly higher than established minimum wages, and recruits can hold second jobs. Vocational and literacy training for armed forces personnel improves their chances of employment when their term of enlistment is completed.

The basic requisites for induction into the armed forces are Mexican citizenship by birth, completion of primary schooling, and absence of a criminal record. Initial recruits are between the ages of eighteen and twenty-one. Enlistment is conducted at military zone headquarters and other military installations. Accordingly, most of

the recruits tend to originate in the Federal District and central states, where bases are clustered. Vacancies in local units are often filled by youths completing their national military service.

Mexican conscripts undergo basic training.

Recruits enlisting for their first three-year term of service receive basic training at the local unit to which they are assigned, which usually is not far from the individual's home. During the first term of enlistment, the emphasis is on developing basic military skills using an on-the-job training approach. There is a high retention rate for first-term recruits, who often elect to enlist for another three years. Recruits usually complete subsequent terms of service away from their districts. Persons completing this second term of service can hope to attain the rank of sergeant. An increasing number of enlisted personnel serve until they are eligible for retirement, which comes after twenty years. The small noncommissioned officer (NCO) corps is concerned primarily with indoctrinating and molding new recruits and serving in specialist functions. With a high ratio of commissioned officers to NCOs, commissioned officers tend to exercise most leadership responsibilities in troop units.

Applicants aspiring to become commissioned officers apply for admission to one of the three service academies. The oldest and most prestigious is the army's Heroic Military College. To be eligible for entrance, an applicant must be a male Mexican citizen by birth, unmarried, and between the ages of sixteen and twenty-one. Most candidates are sixteen to eighteen years of age. Besides paying a processing fee, candidates are required to pass a series of aptitude, psychological, and physical examinations. Screening is rigorous; only top performers are accepted, although those not selected are permitted to retake the examinations the following year. Each year a few senior NCOs who have shown leadership qualities are selected to attend a special one-year course at the Heroic Military College preparatory to commissioning.

The need to travel to Mexico City for the examinations and the required processing fee discourage many potential candidates from applying for admission. Applicants from distant areas must meet their own travel and lodging costs. Along with the fact that the standards of education are relatively higher in the Federal District, these factors tend to ensure that a high percentage of academy entrants are residents of the capital area.

Most officers are drawn from lower-middle-class and middle-class families. Fewer than 5 percent are believed to be from the upper class. Approximately 20 percent of cadets come from military families, and many others have some military affiliation through relatives. Young officers also tend to marry women from military families. In view of the importance of personal relationships within the military, such ties often are relevant factors in the advancement of an officer's career. Because they often come from a lower social stratum than civilians holding positions of comparable importance, military professionals do not have the same prestige as the officer class in some other Latin American countries.

The practice of women following soldiers on campaigns and sometimes fighting in battles is well established in Mexican history and legend. Until the 1920s, Mexican armies did not provide regular commissary services, and soldiers in effect employed women, known as *soldaderas* , to buy or forage for food and other supplies and to cook their meals. During the Revolution, women sometimes were directly involved in the fighting. By the 1930s, however, the *soldadera* system had been banished from the military as a source of immorality and vice.

In sharp contrast with the traditional role of women in the Mexican army, this contemporary soldadera receives her commission.

Women are permitted to enlist in the modern Mexican military and can enjoy careers in the armed forces, although they are subject to numerous restrictions. The Organic Law states that women have the same rights and duties as men in the armed forces, but in practice women are not permitted to fill combat positions, nor are they eligible for admission to the service academies. Women who enlist receive the same basic training as men, including courses on the handling and knowledge of weapons, followed by training in their assigned specialties. Women serve almost exclusively in the areas of

administration, medical care, communications, and physical education. The highest rank a woman has achieved is that of major general, by a senior military surgeon.

Obligatory military service for males was introduced in 1941 in response to Mexico's possible entry into World War II. During January in the year of their eighteenth birthday, all Mexican men are required to register with the local municipal government for military service. Out of approximately 1.1 million who register each year, some 320,000 are selected by lottery to begin training during January of the following year. The military obligation is for twelve months, which in practice means no more than one morning a week of calisthenics and drilling (although some draftees are now required to fulfill a three-month period of full-time training).

On completing military service, conscripts remain in reserve status until the age of forty. Completion of the service requirement is noted on a Military Identity Card that bears the individual's photograph and must be revalidated every two years. The identity card is required when applying for a passport, driver's license, or employment. This requirement provides the Mexican government with a useful means of keeping track of its adult male population.

Education and Training

The Heroico Colegio Militar de México outside Mexico City.

One of the key factors in the development of the professional armed forces in Mexico is the military education system. It is designed to underscore the importance of discipline, conformity to law, and obedience to higher authority. The objective is to instill in officers deference to civilian institutions and to discourage any notion of military interference with the functioning of the state. Instruction on political, social, and economic topics is relatively sketchy in school curricula, presumably to avoid heightening the officers' political consciousness. This limited education does not apply, however, to the most senior level, the National Defense College (*Colegio de Defensa Nacional*).

The military's three service academies form the first tier of the professional education system. The army's Heroic Military College, located in a southern suburb of Mexico City, dates back to the 1830s and is the most prestigious of the three. Air force cadets attend the Heroic Military College for two years, followed by two years at the Air College in Guadalajara. The Heroic Naval Military School for naval cadets is in Veracruz.
In 1991 there were 245 openings at the Heroic Military College for entering cadets although the excellent modern facilities completed in 1976 can accommodate many more. Entrants range from fifteen to nineteen years old, although most are in the sixteen-to-eighteen age-group. The training is physically demanding and rigorous. Students are deliberately left with little free time. Cadets who complete the four years of training are considered to have achieved the equivalent of a preparatory school education.

Graduates of the four-year army curriculum attain the equivalent rank of second lieutenant and usually become platoon or section commanders, spending three years with tactical units. Young officers then may be designated to attend any of the applied schools for advanced training in infantry, artillery, engineering, support services, or cavalry. Graduates of the Air College who select a flight or ground support orientation in their course work receive the rank of second lieutenant as pilots, general specialists, or specialists in maintenance and supply. Cadets completing studies at the Heroic Naval Military School are commissioned as ensigns prior to service with the naval surface fleet or in naval aviation or the marine infantry. The navy also maintains an aviation school at the Benito Juárez International Airport in Mexico City.

If favorably rated, an army officer may be promoted to first lieutenant after two years and remains at that rank for a minimum of three years. The officer can resign his commission after five years or, after passing a competitive examination and being favorably evaluated, may be placed on a promotion list for second captain in order of his test score. Similar requirements must be met for advancement through the rank of lieutenant colonel. The minimum service time is eight years to reach first captain, eleven years to reach major, and fourteen years to reach lieutenant colonel. The rate of promotion is fairly predictable. The Senate, which must approve promotions to the rank of colonel and above, generally resists advancing officers who have not served a normal time in grade.

First and second captains who can meet admission standards may be admitted to the Superior War College or, in the case of naval officers, the Center of Superior Naval Studies. The Superior War College offers a three-year program for army officers and a two-year program for the air force. The equivalent naval course is three years. Course work emphasizes preparation for command and staff positions, including the study of administration, strategy and tactics, war gaming, and logistics, as well as more general subjects, such as military history, international law, and foreign languages. On completion of the course, officers are considered to have military training roughly comparable to that of the United States Army Command and General Staff College at Fort Leavenworth, Kansas.

Conditions for acceptance to the Superior War College are strict, as is the course work. Only about half of the entrants complete the full three years, and only 7 percent of the officer corps are graduates of

the college. Those completing the course successfully receive the degree of Licenciate in Military Administration and the title of General Staff Graduate, which is used with one's military rank and commands some prestige. Graduates also receive a stipend of between 10 and 25 percent of their salary during the remainder of their active duty.

Induction ceremony at the Heroico Colegio Militar de México outside Mexico City.

The National Defense College, created in 1981, is considered the culmination of professional military education. Entrance is offered to a select group of senior army colonels and generals and their counterparts in the air force and navy. The one-year program includes advanced training in national security policy formulation, resource management, international relations, and economics. Each officer is required to write a thesis involving field research on a topic involving national security, politics, or social problems. The majority of the professors at the college are civilians. Although graduation from the college does not bring immediate promotion, most of the generals reaching the highest positions in the military hierarchy are alumni of the college.

A number of other service institutions, separate from the officer training schools and the superior schools, fall under the general categories of applications schools, specialization schools, and schools offering basic NCO training and NCO technical courses. These institutions include the Military School of Medicine, the Military School of Dentistry, a group of schools of nursing and other medical specialties, military schools of engineering and communications, the Military Application School of Infantry and Artillery, the Military Application School of Cavalry, and a one-year school of instruction in leadership for second and first sergeants.

Mexican officers also attend military schools in other countries of Latin America, as well as in France, Britain, Italy, and Germany. Although Mexico sends proportionately fewer officers to military schools in the United States than some Latin American countries, it uses United States training materials, and United States military doctrine is influential.

Uniforms, Ranks, and Insignia

Mexico originally adopted its system of officer ranks from the Spanish military. With some modifications, it has been retained in the modern armed forces. The highest rank within the Secretariat of National Defense is the rough equivalent of a general in the United States Army. The only officers with the rank of general are current army officers and former secretaries of national defense. Generals are identified by insignia composed of four silver stars and a gold eagle worn on their epaulets . The next highest rank, open to both army and air force personnel, is the equivalent of lieutenant general. Although there is no difference between the Spanish name for this rank and that held by secretaries of national defense, the officers are separately identified by three stars and an eagle. The rank equivalents of major general and brigadier general are distinguished, in addition to the emblem of the gold eagle on their epaulets, by two silver stars and one silver star, respectively.

Secretario de la Defensa Nacional	*General de División*	*General de Brigada*	*General Brigadier*
Secretary of National Defense	Divisional General	Brigade General	Brigadier General

General Rank Insignia

Officers holding the rank of colonel command certain brigades and cavalry regiments, serve as chiefs of staff for military zones, or manage staff directorates. Colonels are identified by three gold stars arranged in a triangle on their epaulets. The equivalents of lieutenant colonels, a select few of whom may command a battalion or cavalry squadron but most of whom serve as instructors or administrative aides, wear two gold stars. Majors sometimes serve as second-in-

command of battalions or squadrons, but usually are assigned to personnel management and training. They are identified by a single gold star.

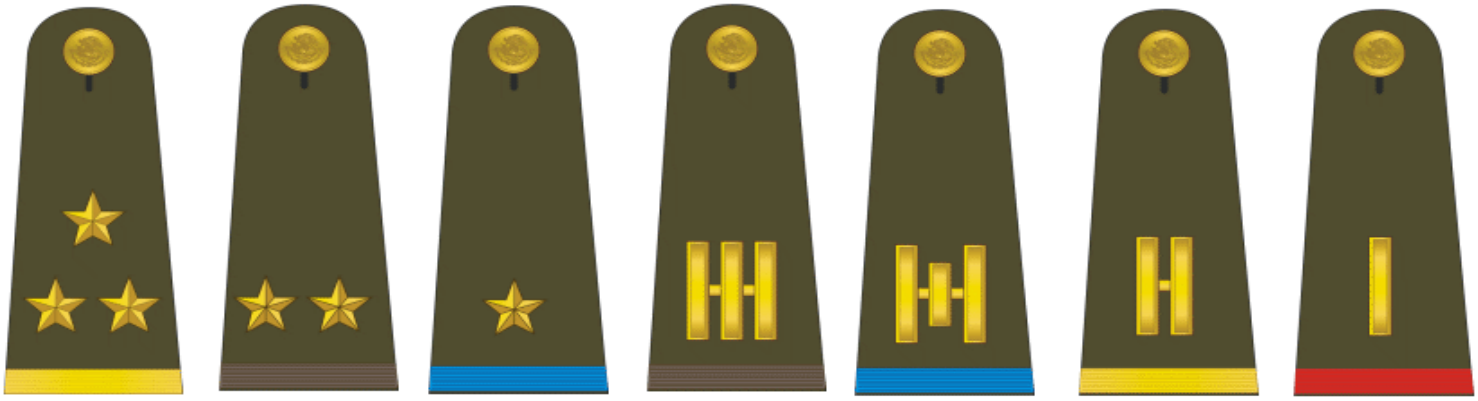
Other commissioned ranks include first captain and second captain, both comparable to the United States rank of captain. First captains wear three gold bars on the epaulet; second captains have two-and-one-half gold bars. Captains command companies, squadrons, and batteries. Below these ranks are first lieutenants, with two gold bars, and second lieutenants, identified by a single gold bar.

The rank insignia of commissioned naval officers consist of gold stripes above the sleeve cuff, the uppermost stripe incorporating a braided loop. The rough equivalents of the United States Navy's ranks of admiral, vice admiral, and rear admiral wear insignia consisting of a wide gold stripe plus narrow and looped stripes. The equivalents of admiral and vice admiral are consolidated. The sleeve insignia of other officer ranks are similar to those of the corresponding ranks of the United States Navy, except that the upper stripe is looped. Officers of marine infantry units are distinguished by red piping on their insignia of rank.

The rank titles and rank insignia for enlisted personnel in the army and air force are the same. The highest rank, sergeant 1st class (or master sergeant), is recognized by green epaulets with three horizontal red bars. The next two lowest ranks, sergeant and private 1st class (or corporal specialist), are distinguished by two and one horizontal red bars, respectively. The *soldado de primera* , corresponding to the United States rank of private in the army and airman in the air force, has two short vertical red bars. The lowest rank for each service, basic private or airman basic (*soldado*), wears a plain green epaulet.

The rank insignia of enlisted naval personnel are indicated by white stripes above the sleeve cuff. Enlisted personnel in the navy have only three ranks, chief petty officer, petty officer, and seaman. A chief petty officer has three white stripes and a petty officer two. A seaman has a single V-shaped stripe.

The army officer corps has a blue dress uniform and a dark field-green service uniform. A khaki uniform is used for hot weather. The uniforms worn by naval personnel, including marines, are standard dark blue or white. The dress uniforms of army enlisted personnel are dark field-green; their branch of service is designated by a colored bar displayed on the epaulet. Infantry personnel wear a scarlet red bar; cavalry, hussar blue; artillery, crimson; armored, gray; and engineers, cobalt blue. The air force uniform was modified somewhat from that of the army in the early 1980s. Air force personnel are identified by purple bars. Members of the elite airborne brigade are distinguished by their camouflage fatigues and purple berets. Dress uniforms for enlisted army personnel include the use of helmets as headgear. Members of the officer corps wear caps with elaborate visor decorations and rank designations.



Coronel	*Teniente Coronel*	*Mayor*	*Capitán Primero*	*Capitán Segundo*	*Teniente*	*Subteniente*
Coronel	Lieutenant Colonel	Major	First Captain	Second Captain	Lieutenant	Sub-Lieutenant

Officer Rank Insignia

Size and Scope

Per a defense ministry report by General Guillermo Galván, the army has 281,356 active duty soldiers, about 0.16 per cent of the population . Its 1989 budget was 2.7 per cent of the Gross Internal Product (GNP).

Mexico's available military manpower is 20,000,000 (males age 18-49, 2005 est.), with 19,058,337 males fit for military service, and 1,063,233 males annually reaching military service age. Since 2000, women have been allowed to volunteer for military service. Currently, Mexico's armed forces number some 620,400, including the reserves. Mexico's military is in two branches, the National Defense Secretariat (Army and Air Force) and the Navy Secretariat (Navy, Naval Air Force, Marines).

Traditional Mission

The Mexican Army works around three preparedness missions, or plans:

Preparation of the military forces to repel external aggressions. No military armed force can leave Mexican territory without a declaration of war, and approval of the Congress. The last time this was invoked was in 1942, to send an expeditionary force to the Philippines, after war was declared against Germany and Japan, following the sinking of two Mexican ships by U-boats. In 1990 President Carlos Salinas de Gortari asked the permission of the Congress to send troops to the Gulf War, but it was refused, since there was no declaration of war against Iraq.

Mexican troops assisting with disaster relief (note yellow DN3 armbands)

Preparation of the military forces to protect the internal security of the country. This would include police actions against guerrilla forces, counter-drug operations, and, originally, political control. Up to 1970, the Mexican Army had been used as a repressive force to maintain the virtual dictatorship of the single-party PRI government. The most controversial use of the military had been called "The dirty war" in the 1960s, which included the 1968 Tlatelolco massacre of students and unsuspecting bystanders. After 1980 these types of operations had nearly completely ceased (see EZLN).

The Army should always be ready to help the civil population in case of disaster. This includes preventive measures. For example, between August and November, military forces are sent to Mexican coastal areas to aid the public in the event of hurricanes or floods. For the Mexican people, the DN3 plan is the most important peacetime operation of the Army. The Army provides food, shelter, medicine, and medical services to the people that need them. This also includes reconstruction of roads and communication services. Because calling the implementation DN3 plan is an acceptance of severe problems, the DN3 plan was not invoked in the 1985 Mexico City earthquake that left large areas of Mexico City in ruins, since the authorities did not want to recognize there was an emergency in the capital, while the army was called to the city, it was just a peacekeeping force. This later became a severe questioning on the government.

Conscription

Each year, the SEDENA (Secretary of National Defense) requires every eighteen-year-old man and every man who will be that age within twelve (12) months of the draft date of a designated *Clase de Servicio Militar Nacional* (National Military Service Class) to report to his municipality's designated military recruitment center. There, he will register to the conscription program with his birth certificate and standard-size, head-and-shoulders portrait photographs in order to be issued a *precartilla* (pre-military identity card) with a serial number, photograph, right thumb fingerprint, weapons licence number, and personal data (address, current schooling level, etc.) that finally, after the draft lottery and a year of service, earns him full conscript status and a *Cartilla de Servicio Militar Nacional* (Military National Service Identity Card), informally, *cartilla* (military I.D. card) attesting to his having fulfilled his civic obligation in duty to the nation. The SEDENA's lottery determines who will be exempted from or drafted for military duty — either with the army or with the navy.

Formerly, the military service lottery required the presence of every man of a National Military Service Class; he stood at attention, awaiting either conscription or exemption; each man's name was called aloud and a child drew a colored ball from a bag — the color determined the man's conscription to or exemption from military service. Today, military service status selection is computerized, but the results are announced as before: White ball (Army service), Black ball (exemption), and Blue ball (Navy-Marines service). Currently, a seal is stamped to the "*precartilla*" identifying the bearer's military draft lottery status.

Conscript Soldiers

Mexican conscripts undergo a life fire training exercise in the Sonoran Desert.

Legally, every Mexican man is obligated to a year of *servicio militar nacional* — SMN (national military service — NMS), until recently, only a few hours of drill on weekends, not true military training. Most conscripts will have received only one marksmanship session at a rifle range by the time they have completed their NMS obligation. The 1986 National Military Service class was the last

class oriented to social service purposes. The NMS was restructured, and conscripts now receive true military training and education. The 1987 class was the first to receive proper marksmanship training. The men of an NMS class who remain after their obligation, are recruited volunteers who have chosen to be career soldiers

Professional "Caballeros" manning the machinegun position of a DN armored car

The *Cartilla*

The drafted men attend and participate in week-end military training comprising basic military training with weapons and combat tactics, yet it emphasizes education, history, physical fitness, and military discipline for one complete year. Afterward, the *precartilla* (pre-military identity card) is returned to the conscript with an added page certifying his status as having fulfilled his national military service and identifies the military branch, the unit, rank, etc. The document then acquires full status as the *Cartilla del Servicio Militar Nacional* (Military National Service Identity Card), informally *Cartilla*; this status is recorded to the National Defense Secretariat files.

This document (Military National Service Identity Card) is an important form of Mexican national identification, and its existence was formerly always requested by private and public employers, however, this identity document has ceased being required for obtaining a passport for international travel.

Officers

Officer candidates for the three services are trained in military colleges; Mexico City for the Army, Guadalajara, Jalisco, for the Air Force, and Veracruz, Veracruz, for the Navy. Generally, officer candidates are from society's lower and middle classes, therefore a military commission is a means of upward social mobility for the poor, yet society respects military officers.

The military colleges are not universities, yet provide significant technical training applicable to civil employment after military service. They emphasize military ethics (honour, duty, country), history, discipline, physical fitness, and the perpetuation of the military as a societal institution. The armed forces provide university-level education through the War College (*Colegio de Guerra*) in Mexico City, to which officers must attend and earn a *Diplomado del Estado Mayor* (DEM) degree to qualify for promotion to general officer or admiral rank.

Professional Soldiers

Mexican citizens who have chosen to be career soldiers, are signed for an initial three year contract, which, at the end of it, are encouraged to sign for another two year contract. If they choose to do so, this second term would become final, unless they apply mandatory exams and tests to become corporals, or apply in order to study in any of the available Military Specialist Technical Schools or for sergeant in the E.M.C.A. (*Escuela Militar de Clases de las Armas*).

CHAPTER 3
ORDER OF BATTLE

The following is a description of the organization of Mexican Army units at the time of the June 2nd, 1996 U.S. border incursion and reflects a general militarization of Mexican political and social structures between the PRI 1990 and 1995. In my alternate timeline the National Action Party (*Partido Acción Nacional*, PAN) defeated the Institutional Revolutionary Party (*Partido Revolucionario Institucional*, PRI) in the 1989 elections. Carlos Salinas disputed the election results and, with the support of the Army, declared himself as the newly elected president of Mexico despite strong objects from the United States.

My alternate timeline also assumes a chilling in Mexico-U.S. relations due to the rejection of NAFTA and the harsh treatment of Mexican citizens attempting to cross into the U.S.

The Mexican Army Forces Command in Mexico City, Distrito Federal exercises command and control over all combat units. It is commanded by a Lieutenant General. These units include two Armored Brigades, two mechanized infantry brigades, the Parachute Brigade and the Presidential Guard Brigade. Depending on their size and role, Brigades can be commanded either by a Brigadier General or a Colonel.

I Military Region, México, D.F.
- Presidential Guard Brigade
- 6th Mechanized Brigade
- 11th Parachute Brigade

II Military Region, Mexicali
- 2nd Armored Cavalry Brigade
- 1st Mechanized Brigade
- 2nd Tijuana Brigade
- 3rd La Paz Brigade
- 40th Guerrero Negro Brigade
- 45th Nogales Brigade
- 4th Hermosillo Brigade

III Military Region, Mazatlan
- 10th Durango Brigade
- 9th Culiacan Brigade

IV Military Region, Monterrey
- 14th Armored Cavalry Brigade
- 3rd Mechanized Brigade
- 12th San Luis Potosi Brigade
- 7th Escobedo Brigade
- 8th Reynosa Brigade

V Military Region, Guadalajara
- 11th Guadalupe Brigade
- 13th Tepic Brigade
- 14th Aguascalientes Brigade
- 15th La Mojonera Brigade
- 20th Colima Brigade
- 41st Puerto Vallarta Brigade

VI Military Region, Veracruz
- 19th Tuxpan Brigade
- 23rd Panotla Brigade
- 24th Tehuacán Brigade
- 25th Puebla Brigade
- 26th El Lencero Brigade

VII Military Region, Tuxtla Gutiérrez
- 30th Villahermosa Brigade
- 31st Rancho Nuevo Brigade
- 36th Tapachula Brigade
- 38th Tenosique Brigade
- 39th Ocosingo Brigade

VIII Military Region, Ixcotel
- 28th Ixcotel Brigade
- 29th Minatitlan Brigade
- 44th Miahuatlan Brigade

IX Military Region, Cumbres de Llano Largo
- 27th Ticui Brigade
- 35th Chilpancingo Brigade

X Military Region, Mérida
- 32nd Valladolid Brigade
- 33rd Campeche Brigade
- 34th Chetumal Brigade

XI Military Region, Torreón
- 3rd Armored Cavalry Brigade
- 21st Armored Brigade
- 4th Mechanized Brigade
- 42nd Hidalgo del Parral Brigade
- 5th Chihuahua Brigade
- 6th Saltillo Brigade

XII Military Region, Irapuato
- 16th Sarabia Brigade
- 17th Queretaro Brigade
- 21st Morelia Brigade
- 43rd Apatzingan Brigade

ORGANIZATION

Regular Brigades	Component Regiments														
	Arm. Cav.			Arm. Inf.						Artillery				
	TAB-30	M-51 Super Sherman	M-50 Sherman	AMX	DN-V Toro	DN-IV Caballo	M3	Motorized Infantry	Parachute	AMX SP	M7 Priest SP	M3 75mm SP	Field Artillery	Heavy Artillery
Presidential Guard Brigade	-	-	-	1	-	-	-	1	1	-	-	-	1	-
6th Mechanized Brigade	1	-	-	3	-	-	-	-	-	1	-	-	-	-
11th Parachute Brigade	-	-	-	-	-	-	-	1	4	-	-	-	1	-
2nd Armored Cavalry Brigade	1	-	1	1	1	-	-	-	-	-	1	-	-	-
1st Mechanized Brigade	1	-	-	2	1	-	-	-	-	1	-	-	-	-
14th Armored Cavalry Brigade	1	1	-	1	1	-	-	-	-	-	1	-	-	-
3rd Mechanized Brigade	1	-	-	2	1	-	-	-	-	1	-	-	-	-
21st Armored Brigade	2	1	1	-	-	-	-	-	-	1	-	-	-	-
3rd Armored Cavalry Brigade	1	-	1	1	1	-	-	-	-	1	-	-	-	-
4th Mechanized Brigade	1	-	-	1	2	-	-	-	-	-	-	-	-	1

Territorial Brigades	Component Regiments														
	Arm. Cav.			Arm. Inf.						Artillery				
	TAB-30	M-51 Super Sherman	M-50 Sherman	AMX	DN-V Toro	DN-IV Caballo	M3	Motorized Infantry	Parachute	AMX SP	M7 Priest SP	M3 75mm SP	Field Artillery	Heavy Artillery
9th Culiacan Brigade	-	-	-	-	-	-	1	1	-	-	-	-	1	-
8th Reynosa Brigade	-	-	-	-	-	-	1	1	-	-	-	-	1	-
7th Escobedo Brigade	-	-	-	-	-	1	-	1	-	-	1	-	-	-
6th Saltillo Brigade	-	-	1	-	-	-	1	-	-	-	1	-	-	-
5th Chihuahua Brigade	-	-	1	-	-	-	1	-	-	-	1	-	-	-
4th Hermosillo Brigade	-	-	-	-	-	-	1	1	-	-	-	-	1	-
45th Nogales Brigade	-	1	-	-	-	-	1	-	-	-	1	-	-	-
44th Miahuatlan Brigade	-	-	-	-	-	-	1	1	-	-	-	-	1	-
43rd Apatzingan Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
42nd Hidalgo del Parral Brigade	-	-	1	-	-	-	1	-	-	-	1	-	-	-
41st Puerto Vallarta Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
40th Guerrero Negro Brigade	-	1	-	-	-	-	1	-	-	-	1	-	-	-
3rd La Paz Brigade	-	-	1	-	-	-	-	1	-	-	1	-	-	-
39th Ocosingo Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
38th Tenosique Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
36th Tapachula Brigade	-	-	-	-	-	-	-	2	-	-	-	1	-	-
35th Chilpancingo Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
34th Chetumal Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
33rd Campeche Brigade	-	-	-	-	-	-	1	1	-	-	-	-	1	-
32nd Valladolid Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
	-	-	-											

Territorial Brigades	Component Regiments													
	Arm. Cav.			Arm. Inf.						Artillery				
	TAB-30	M-51 Super Sherman	M-50 Sherman	AMX	DN-V Toro	DN-IV Caballo	M3	Motorized Infantry	Parachute	AMX SP	M7 Priest SP	M3 75mm SP	Field Artillery	Heavy Artillery
31st Rancho Nuevo Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
30th Villahermosa Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
2nd Tijuana Brigade	-	1	-	-	-	1	-	-	-	-	1	-	-	-
29th Minatitlan Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
28th Ixcotel Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
27th Ticui Brigade	-	-	-	-	-	-	-	2	-	-	-	1	-	-
26th El Lencero Brigade	-	-	-	-	-	-	-	2	-	-	-	-	-	1
25th Puebla Brigade	-	-	-	-	-	1	-	1	-	-	-	1	-	-
24th Tehuacán Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
23rd Panotla Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
21st Morelia Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
20th Colima Brigade	-	-	-	-	-	-	-	2	-	-	-	-	-	1
19th Tuxpan Brigade	-	-	-	-	-	-	-	2	-	-	-	-	-	1
10th Durango Brigade	-	-	-	-	-	-	1	1	-	-	-	1	-	-
11th Guadalupe Brigade	-	-	-	-	-	1	-	1	-	-	-	1	-	-
12th San Luis Potosi Brigade	-	-	1	-	-	1	-	-	-	-	1	-	-	-
13th Tepic Brigade	-	-	-	-	-	-	-	3	-	-	-	-	-	-
14th Aguascalientes Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-
15th La Mojonera Brigade	-	-	-	-	-	1	-	1	-	-	-	1	-	-
16th Sarabia Brigade	-	-	-	-	-	1	-	1	-	-	-	1	-	-
17th Queretaro Brigade	-	-	-	-	-	-	-	2	-	-	-	-	1	-

REGIMIENTO DE CABALLERÍA BLINDADOS (TAB-30)
(Armored Cavalry Regiment)

- Headquarters Troop:
  - 5 Pick-ups
  - 5 AMX-PC
  - 5 AMX-13
  - o Recon Platoon:
    - 5 Lynx-90s
  - o Antitank Platoon:
    - 5 DN-ATM
  - o Air Defense Platoon:
    - 5 AMX-DCA
- Armored Troop:
  - 15 TAB-30MBTs
- 2 Cavalry Troops, each with:
  - 5 TAB-30MBTs
  - 10 AMX-13s

REGIMIENTO DE CABALLERÍA BLINDADOS (M51 Sherman)
(Armored Cavalry Regiment)

- Headquarters Troop:
  - 5 Pick-ups
  - 5 DN-6 ACPs
  - 5 DN-4
  - o Recon Platoon:
    - 5 DN-3
  - o Antitank Platoon:
    - 5 DN-ATM
  - o Air Defense Platoon:
    - 5 AMX-DCA
- Armored Troop:
  - 15 M51 MBTs
- 2 Cavalry Troops, each with:
  - 5 M50/90 MBTs
  - 10 AMX-13s

REGIMIENTO DE CABALLERÍA BLINDADOS (M50 Sherman)
(Armored Cavalry Regiment)

- Headquarters Troop:
  - VW T181
  - 5 DN-6 ACP
  - 5 DN-4
  - o Recon Platoon:
    - 5 DN-3
  - o Antitank Platoon:
    - 5 DN-ATM
  - o Air Defense Platoon:
    - 5 M-16 MGMC
- Armored Troop:
  - 15 M50 MBTs
- Cavalry Troop, with:
  - 5 M-50/90 MBTs
  - 10 DN-4

- Cavalry Troop, with:
  - 5 M-50 MBTs
  - 10 DN-4

REGIMIENTO DE INFANTERÍA BLINDADO (AMX)
(Armored Infantry Regiment)
- Headquarters and Headquarters Company:
  - 5 AMX-PC
  - 5 Pick-ups
  - o Scout Platoon:
    - 5 AMX-13
  - o Mortar Platoon:
    - 5 AMX-PM
  - o Antitank Platoon:
    - 5 DN-ATM
  - o Air Defense Platoon:
    - 5 AMX-DCA
- Armored Infantry Company with:
  - 10 AMX VCI Toucan
  - 5 DN-Mistral
- 2 Armored Infantry Companies, each with:
  - 10 AMX-VCI APCs
  - 5 Mistral SAM

REGIMIENTO DE INFANTERÍA BLINDADO (DN-V)
(Armored Infantry Regiment)
- Headquarters and Headquarters Company:
  - 5 DN-6 ACP
  - 5 VW T181
  - o Scout Platoon:
    - 5 Lynx-90s
  - o Mortar Platoon:
    - 5 DN-MC
  - o Antitank Platoon:
    - 5 DN-ATM
  - o Air Defense Platoon:
    - 5 M-16 MGMC
- 3 Armored Infantry Companies, each with:
  - 15 DN-V
  - 5 Mistral SAM

REGIMIENTO DE INFANTERÍA BLINDADO (DN-IV)
(Armored Infantry Regiment)
- Headquarters and Headquarters Company:
  - 5 DN-6 ACP
  - 5 VW T181
  - o Scout Platoon:
    - 5 DN-4
  - o Mortar Platoon:
    - 5 DN-MC
  - o Antitank Platoon:
    - 5 DN-AT
  - o Air Defense Platoon:
    - 5 M-16 MGMC
- 3 Armored Infantry Companies, each with:
  - 15 DN-5

REGIMIENTO DE INFANTERÍA BLINDADO (M3)
(Armored Infantry Regiment)
- Headquarters and Headquarters Company:
  - 5 M-2A1
  - 5 Pick-ups
  - o Scout Platoon:
    - 5 DN-3
  - o Support Platoon:
    - 5 M3 GMC
  - o Antitank Platoon:
    - 5 DN-AT
  - o Air Defense Platoon:
    - 5 M-16 MGMC
- 3 Armored Infantry Companies, each with:
  - 10 M3A1 APCs

REGIMIENTO DE INFANTERÍA MOTORIZADA
(Motorized Infantry Regiment)
- Headquarters and Headquarters Company:
  - 5 Pick-ups
  - 5 M35A1 2½ Ton Trucks
  - o Scout Platoon:
    - 5 DN-3
  - o Mortar Platoon:
    - 5 DN-MC
  - o Antitank Platoon:
    - 5 DN-AT
  - o Air Defense Platoon:
    - 5 M-16 MGMC
- Heavy Company:
  - 10 M3A1 APCs
  - 5 M20 LAW
  - 5 Mistral SAM
- 2 Rifle Companies:
  - 5 M35 2½ Ton Trucks
  - 5 M20 LAW

REGIMIENTO DE PARACAÍDA
(Parachute Regiment)
- Headquarters and Headquarters Company:
  - o Scout Platoon:
    - 5 VW T181
  - o Antitank Platoon:
    - 5 Milan ATGM
  - o Air Defense Platoon:
    - 5 Mistral
- Para Support Battery with:
  - 10 M1A1 75mm Howitzers
  - 10 81mm Mortars
- 2 Para Infantry Companies, each with:
  - 2 Eryx launchers
  - 2 81mm mortars
  - 2 Mistral SAM

REGIMIENTO DE ARTILLERÍA MOTORIZADA (AMX)
(Self Propelled Artillery Regiment)
- Headquarters and Headquarters Battery:
  - 5 AMX-PC
  - 5 AMX-VCA
- 4 SP Batteries, each with:
  - 5 AMX Mk 3F 155mm SPG
  - 5 AMX-VCA

REGIMIENTO DE ARTILLERÍA MOTORIZADA (M7)
(Self Propelled Artillery Regiment)
- Headquarters and Headquarters Battery:
  - 5 Pick-ups
  - 5 DN-6 ACP
  - 5 DN-1
- 4 SP Batteries, each with:
  - 10 M7 105mm SPG
  - 5 DN-1

REGIMIENTO DE ARTILLERÍA MOTORIZADA (M3)
(Self Propelled Artillery Regiment)
- Headquarters and Headquarters Battery:
  - 5 Pick-ups
  - 5 M2A1 ACP
  - 5 M35 2½ Ton Trucks
- 4 SP Batteries, each with:
  - 10 M3 GMC 75mm SPG
  - 5 M3A1 Half-tracks

REGIMIENTO DE ARTILLERÍA
(Artillery Regiment)
- Headquarters and Headquarters Battery:

- 5 M2A1 ACP
- 5 M35A1 2½ Ton Trucks

- 4 Field Batteries, each with:
  - 10 105mm Towed Howitzers
  - 10 M35A1 2½ Ton Trucks

REGIMIENTO DE ARTILLERÍA PESADA
(Heavy Artillery Regiment)

- Headquarters and Headquarters Battery:
  - 5 DN-6 ACP
  - 5 M35A1 2½ Ton Trucks
- 4 Batteries, each with:
  - 5 M1918M1 155mm Towed Guns
  - 10 M35 2½ Ton Trucks

Mexican Army Disposition (July, 2000):

Due to the civil war in Mexico, the various Mexican forces have splintered. This section provides players and referees with an overview of the current position and approximate strength of the Mexican Army forces as of July 1, 2000. The Unit histories give a brief description of the major units of the Mexican Armed Forces. Referees are encouraged to exercise considerable freedom in manipulating this data to suit the needs of their campaign. All strengths given for manpower have been rounded to the nearest five hundred. Tank strength is for main battle tanks only, and the numbers reflect the current best estimate of operable numbers

Nationalist Armed Forces (ENM)

1st Army
(Mexico City)
- Presidential Guard Brigade: 1,200 men
- Brigada Cuernavaca: 1,300 men
- Brigada Chilpancingo de los Bravos: 1,500 men, 2 Tanks
- Brigada Oaxaca: 1,400 men, 4 Tanks
- Brigada Guadalajara: 1200 men
- Regimento Infanteria Activo Jalisco: 200 men
- Regimento Caballeria Activo Salamanca: 100 men
- Regimento Infanteria Activo Zamora: 100 men

3rd Army (Southern Chihuahua)
- 3rd Brigada De Caballería Blindados : 300 men, 2 Tanks
- Brigada Durango: 400 men, 3 Tanks1st
- 1st Brigada De Infantería Blindado : 1,100 men, 8Tanks

4th Army
(Texas)
- 2nd Brigada De Caballería Blindados : 500 men,14 Tanks (Austin)
- 4th Brigada De Infantería Blindados : 300men, 3Tanks
- Brigada Saltillo: 200 men (Beeville)
- Brigada Tampico: 600 men (McAllen-Harlingen)
- Agrupacion Jimenez: 300 men, 3 Tanks (Near Laredo) (formed from detachments of the Saltillo and Tampico brigades)
- Brigada Queretaro: 800 men (Waco)

Yucatan Army
(Yucatan)
- Brigada Ciudad Chetumal: 500 men, 2 Tanks
- Agrupacion Garcia: 200 men (local conscripts)

Sonoran Army
(Sonora and Southern Arizona)
- Brigada Colima: 1100 men, 4 Tanks
- Brigada Mexicali: 600 men, 4 Tanks
- Brigada Culiacan: 800 men
- Regimento Infanteria Activo Los Mochis: 200 men
- Regimento Infanteria Activo Guaymas: 100 men

Chiapas Command
(Chiapas)
- Brigada Villahermosa: 600 men, 1 Tanks
- Agrupacion Montoya: 100 men (local conscripts)
- Agrupacion del Sur: 200 men (local conscripts)

Armed forces of the FRMP
Southern Texas
- Bandera Simon Bolivar: 200 (formed from elements of various Nationalist defectors and local guerrillas; no fixed location)
- Bandera Benito Juarez: 50 (formed from elements of various Nationalist defectors and local guerrillas; Gonzales area)
- Central Mexico Bandera Bernardo O'Higgins: 500 (formed from elements of various Nationalist defectors and local guerrillas)

Armed Forces of the Constitutionalist Party (EMC)

Northern Army Group (Southern Texas)
- 14th Brigada De Caballería Blindados : 300 men, 3 Tanks (Carrizo Springs)
- Brigada Monclova: 300 men (Cerralvo)
- Brigada San Luis Potosi: 600 men (Rio Grande City-Falfurrias-Raymondville)
- Brigada Veracruz: 800 (Crystal City-Pearasall-Uvalde)

Central Army Group
(Central Mexico)
- Brigada Ciudad de Mexico: 1,200 men

- Brigada Tulancingo: 1,400 men
- Regimento Infanteria Activo jalisco: 300 men
- Agrupacion de Caballeria: 500 men, 4 Tanks

California Army Group
(Southern California and Baja California)
- 1st Brigada De Infantería Blindado : 1,100 men, 6 Tanks
- 21st Brigada Blindados : 500 men, 12 Tanks
- Brigada La Paz: 600 men, 3 Tanks
- Brigada Nogales: 600 men, 1 Tanks
- Brigada Hermosillo: 700 men, 4 Tanks
- Regimento Infanteria Activo Tijuana: 200 men

Army of the Pecos
(South New Mexico, West Texas, North Chihuahua)
- Brigada Chihuahua: 800 men, 2 Tanks
- 2nd Regimento Infanteria Torreon: 300 men
- Regimento Infanteria Activo Hidalgo del Parral: 100 men

Southern Army Command
(Yucatan)
- Brigada Tapachula: 600 men
- Regimento Infanteria Activo Campeche: 200 men

Alliance armed forces (ANAMEL)
Southern Texas
- Tercio Vanguardia: 400 men, 2 Tanks (near Laredo; formerly Brigada Monterrey of the Nationalist Army)
- Tercio Liberdad: 50 (Corpus Christi) (formed from defectors from the Nationalist Brigada Saltillo)
- Tercio Cuauhtemoc: 700 men, 4 Tanks (formerly Brigada Gutierrez of the Nationalist Army)
- Tercio Torreon: 600 men, 1 Tank (formerly Brigada Torreon of the Nationalist Army)

Marauder Groups:
- Bandera Matamoros: 300 men (Brownsville) (nominally Nationalist)
- Bandera Rodriguez: 200 men (Kingsville) (formerly Nationalist Brigada Victoria)
- Brigada Aguascaliente: 1,200 men, 2 Tanks (now broken up into numerous small banderas)
- Bandera Zapata: 800 men, 1 Tank (remnants of the former Nationalist Brigada Puebla)
- Bandera Morelia: 500 men (formerly Nationalist Brigada Morelia, now nominally Alliance)
- Brigada Tepic: 1000 men, 1 Tank (now broken up into numerous small banderas)
- Brigada Ensenada: 800 men (now broken up into numerous small banderas)
- Brigada Ciudad Juarez: 600 men (now broken up into numerous small banderas)
- Brigada Merida: 300 men (now broken up into numerous small banderas)

CHAPTER 4
SMALL ARMS

Heckler & Koch P7 Pistol

Pistol					*-Recoil-*		
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	SS	*Brst*	*Rng*
P-7M13	SA	1	Nil	1	3	Nil	10

Weapon:	P-7M13
Ammo:	9x19mm
Weight:	0.79 kg
Magazine:	13
Price:	$239

The P7 is a German 9mm semi-automatic pistol designed by Helmut Weldle and produced by Heckler & Koch GmbH (H&K) of Oberndorf am Neckar. It was revealed to the public for the first time in 1976 as the PSP (Polizei Selbstlade Pistole—"police self-loading pistol").

H&K's P-7 series started with an experimental design called the PSP. The PSP quickly proved to be an excellent weapon in trials by the West German police, and was in fact sold as the PSP from 1975 until 1984; with some minor ergonomic changes. The PSP became the P-7M8 in 1985. (The PSP and P-7M8 are identical for game purposes.) The P-7M8 was bought in large numbers by the West German police in the late 1970s and was made their standard service handgun in 1980. The next large-scale customer was the Hellenic (Greek) Air Force, and sales of the P-7M8 and its variants then took off; many sales were made to civilians, and a very few to military forces, but far more were made to police forces worldwide.

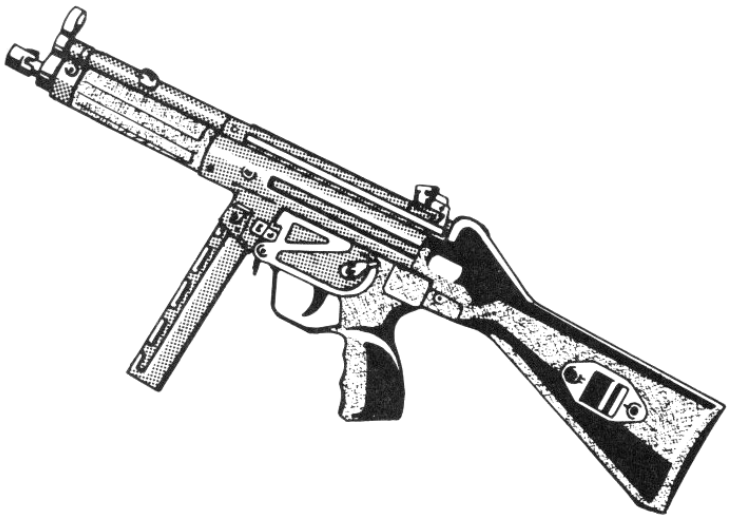
The P-7M8 has a "squeeze-cocking" mechanism that is perhaps its "signature feature." The squeeze-cocking mechanism allows the P-7 to be drawn, cocked, and fired with one motion, yet prevents it from firing if dropped or bumped. Squeeze-cocking starts with a variant of a double-action mechanism. The front of the grip has a sort of lever that the shooter pulls back by squeezing his fist. This requires about 20 pounds of force, but since the shooter is using his whole hand to actuate the squeeze-cocking mechanism, it's not as difficult as it sounds. Once the mechanism is actuated, only a tiny amount of force is required to keep the squeeze-cocking mechanism actuated (which also allows the squeeze-cocker to act as a grip safety). When the squeeze-cocker is released, the hammer automatically decocks. The squeeze-cocking mechanism, by itself, makes the P-7 series very safe weapons. The extractor doubles as a chamber-loaded indicator. Though the P-7 has no conventional decocker, it is also possible to decock the P-7 by keeping the squeeze-cocker depressed, pulling back the slide a fraction of an inch, and returning it forward; the hammer will decock as the slide moves forward. There are otherwise no manual safeties on the P-7. The downside of squeeze-cocking is added complexity, manufacturing costs, and a rather wide grip that hampers shooters with small hands. The magazine well of the P-7 is well-angled (more so than the grip angle itself); this is necessary to fit the squeeze cocker into the grip, but has the incidental effect of making the P-7 slightly quicker to reload. Like many European pistols (until the last 20 years or so), the P-7M8 uses a heel-mounted magazine release. The P-7M8 uses a barrel 4.1 inches long; sights are fixed and of the 3-dot type.

The variant produced locally for the Mexican Army is the increased-capacity P-7M13; it's identical to the P-7M8 except for its ability to use a double-stack magazine, the enlargement of the lower frame necessary to accommodate that double-stack magazine, and a magazine release relocated to a place behind the trigger guard and made ambidextrous. The P-7M13 was introduced in 1984 as H&K's entry into the US military's competition for its new service pistol; though it lost that competition, the P-7M13 was well received by police forces worldwide and was adopted as the standard sidearm for the Mexican Army in 1985 replacing the M1911 .45 pistol. This variant of the P-7M13 was built specifically for the Mexican military and local production; the Mexicans insisted on having a manual safety, and promised a 30,000-pistol order if H&K would include one for them and build the weapons in Mexico. H&K obliged, placing the manual safety as a sliding switch on the right side of the frame above the trigger, and Mexico produced on license over 40,000 of the resulting P-7M13 variant.

Heckler & Koch MP5 Submacinegun

The MP5 (short for Maschinenpistole 5 or "machine pistol model 5") is a 9mm submachine gun of German design, developed in the 1960s by a team of engineers from the West German small arms manufacturer Heckler & Koch GmbH (H&K) of Oberndorf am Neckar. The company, encouraged by the success of the G3 automatic rifle, developed a family of small arms consisting of four types of firearms (all based on a common G3 design layout and

operating principle), where the first type was chambered in 7.62x51mm NATO, the second—using the 7.62x39mm M43 round, third—the intermediate 5.56x45mm NATO caliber and the fourth type—chambering the 9x19mm Parabellum pistol cartridge. The MP5 was created within the fourth group of firearms and was initially known as the HK54.



Mexican production version of the MP5A4 SMG

Work on the MP5 began in 1964 and scarcely two years later it was adopted by the German Federal Police, border guard and army special forces. It is currently used by the armed forces and law enforcement units of over 40 different countries. The submachine guns are manufactured under license in several nations including: Greece (formerly at EBO - Hellenic Arms Industry, currently at EAS - Hellenic Defense Systems), Iran (Defense Industries Organization), Mexico (SEDENA), Pakistan (Pakistan Ordnance Factories), Sudan (Military Industry Corporation), Turkey (MKEK), and the United Kingdom (initially at Royal Ordnance, later diverted to Heckler & Koch Great Britain). The MP5 remains one of the most widely deployed of all current submachine guns and has been developed into a family with numerous variants.

The primary version of the MP5 submachine gun family is the MP5A2, which is a lightweight, air-cooled, selective fire delayed blowback operated weapon with a roller-locked bolt. The weapon fires from a closed bolt (bolt forward) position and the bolt rigidly engages the barrel extension – a cylindrical component welded to the receiver that the barrel is pinned into. The locking mechanism is of the same design as that used in the G3 rifle.

The two-part bolt consists of a bolt head with rollers and a bolt carrier. The heavier bolt carrier lies up against the bolt head when the weapon is ready to fire and inclined planes on the front locking piece lie between the rollers and force them out into recesses in the barrel extension. When fired, expanding propellant gases produced from the burning powder in the cartridge exert rearward pressure on the bolt head transferred through the base of the cartridge case. A portion of these forces is transmitted through the locking rollers projecting from the bolt head, which are cammed inward against the inclined flanks of the locking recesses in the barrel extension and to the angled shoulders of the locking piece. The selected angles of the recesses and the incline on the locking piece produce a velocity ratio of about 4:1 between the bolt carrier and the bolt head.

Submachinegun						*-Recoil-*	
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	SS	*Brst*	*Rng*
MP-5A4	2/3/5	2	Nil	4	1	1/2/3	24
MP-5A5	3/5	2		3/4	1	1/2/3	25

Weapon:	MP-5A4	MP-5A5
Ammo:	9x19mm	9x19mm
Weight:	2.54 kg	2.88 kg
Magazine:	10, 15, 30	10, 15, 30
Price:	$378	$398

This results in a calculated delay, allowing the projectile to exit the barrel and gas pressure to drop to a safe level before the bolt is unlocked and the chamber opened. The delay results from the amount of time it takes for enough recoil energy to be transferred through to the bolt carrier in a sufficient quantity for it to be driven to the rear against the force of inertia of the bolt carrier and the forward pressure exerted against the bolt by the recoil spring. As the rollers are forced inward they displace the locking piece and propel the bolt carrier to the rear. The bolt carrier's rearward velocity is four times that of the bolt head since the bolt remains locked for a short period of time after the initial recoil impulse. After the bolt carrier has traveled rearward 4 mm, the locking piece is withdrawn fully from the bolt head and the locking rollers are compressed into the bolt head (which moves only 1 mm). Only once the locking rollers are fully cammed into the bolt head can the entire bolt group begin its rearward movement in the receiver, breaking the seal in the chamber and repeating the feeding cycle.

Since the 9x19mm Parabellum cartridge is relatively low powered, the bolt does not have an anti-bounce device like the G3, but instead the bolt carrier contains tungsten granules that prevent the bolt group from bouncing back after impacting the barrel extension. The weapon has a fluted chamber that enhances extraction reliability by bleeding gases backwards into the shallow flutes running along the length of the chamber to prevent the cartridge case from expanding and sticking to the chamber walls (since the bolt is opened under relatively high barrel pressure). The MP5 employs a push-type extraction, instead of the more conventional pull-type extraction. The cartridge case is pushed from the chamber of the weapon by residual gas pressure. A spring extractor is installed inside the bolt head and holds the case securely until it strikes the ejector arm and is thrown out of the ejection port to the right of the receiver. The lever-type ejector is located inside the trigger housing (activated by the movement of the recoiling bolt).

The non-reciprocating cocking handle is located above the handguard and protrudes from the cocking handle tube (often

mistaken for a gas cylinder) at approx. a 45° angle. This rigid control is attached to a tubular piece within the cocking lever housing called the cocking lever support, which in turn, makes contact with the forward extension of the bolt group. It is not however connected to the bolt carrier and therefore cannot be used as a forward assist to fully seat the bolt group. The cocking handle is held in a forward position by a spring detent located in the front end of the cocking lever support which engages in the cocking lever housing. The lever is locked back by pulling it fully to the rear and rotating it slightly clockwise where it can be hooked into an indent in the cocking lever tube. The cocking lever is generally operated with the non-firing hand, allowing the shooting hand to remain on the pistol grip.

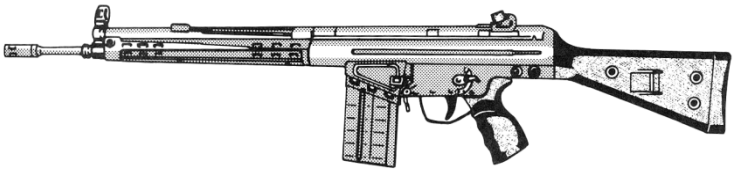
The MP5 has a hammer firing mechanism. The trigger group is housed inside an interchangeable polymer trigger module (with an integrated pistol grip) and equipped with a 3-position fire mode selector that is also the manual safety toggle (selector lever in the “S” or Sicher position in white – weapon safe, “E” or Einzelfeuer in red – single fire, “F”, Feuerstoß also marked in red – continuous fire). The SEF symbols appear on both sides of the plastic trigger group. The selector lever is actuated with the thumb of the shooting hand and is located only on the left side of the of the original SEF trigger group or on both sides of the ambidextrous trigger groups. The safety/selector is rotated into the various firing settings or safety position by depressing the tail end of the lever. Tactile clicks (stops) are present at each position to provide a positive stop and prevent inadvertent rotation. The "safe" setting disables the trigger by blocking the hammer release with a solid section of the safety axle located inside the trigger housing.

The first MP5 models used a double-column straight box magazine, but since 1977, slightly curved, steel magazines are used with a 15-round capacity (weighing 0.12 kg) or a 30-round capacity (0.17 kg empty).

The sighting arrangement on the MP5 takes advantage of the natural ability of the eye and brain to easily align concentric circles (circles all having a common center). The mechanically adjustable iron sights (closed type) consist of a rotating rear diopter drum and a front post installed in a hooded ring. The rear sight is adjustable for both windage and elevation with the use of a special tool; the drum provides four different apertures of varying width used for firing at 25, 50, 75 and 100 m. However, adjusting the rear drum does not change the elevation or bullet strike of the rounds since the MP5 uses pistol cartridges, which share a similar point of impact between 25 and 100 m when zeroed at 25 m. The receiver housing has notches that permit the attachment of a standard H&K quick-detachable scope mount (also used with the G3, HK33 and G3SG/1) that can be used to mount daytime optical sights (telescopic 4x24), night sights or a halogen flashlight. It can also be used with reflex sights and laser pointers. The mount features two spring-actuated bolts, positioned along the base of the mount, which exert pressure on the receiver to hold the mount in the same position at all times assuring zero retention. All versions of the quick-detachable scope mount provide a sighting tunnel through the mount so that the shooter can continue to use the fixed iron sights with the scope mount attached to the top of the receiver.

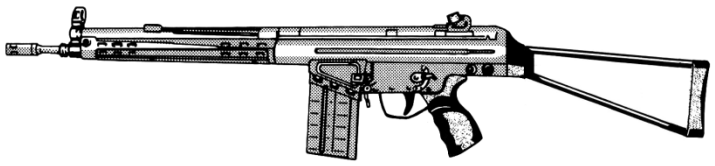
The fixed, free floating, cold hammer-forged barrel has 6 right-hand grooves with a 1 in 250 mm (1:10 in) rifling twist rate and is pressed and pinned into the receiver. Three lugs are provided at the muzzle that are used to work with certain muzzle devices made by Heckler & Koch, including: a slotted flash suppressor, blank firing attachment (marked with a red painted band denoting use with blank ammunition only), an adaptor for launching rifle grenades (for use with rifle-style grenades with an inside diameter of 22 mm using a special grenade launching cartridge) and a cup-type attachment used to launch tear gas grenades.

Heckler & Koch G3 Battle Rifle



The G3 is a 7.62mm battle rifle developed in the 1950s by the German armament manufacturer Heckler & Koch GmbH (H&K) in collaboration with the Spanish state-owned design and development agency CETME (Centro de Estudios Técnicos de Materiales Especiales).

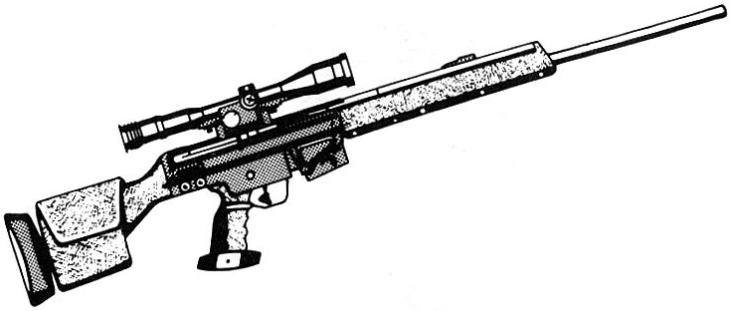
The origin of this rifle can be traced back to the final years of World War II when Mauser engineers at the Light Weapon Development Group (Abteilung 37) at Oberndorf am Neckar designed the MKb Gerät 06 (Maschinenkarabiner Gerät 06 or "machine carbine instrument 06") prototype assault rifle chambered for the intermediate 7.92x33mm Kurz cartridge, first with the Gerät 06 model using a roller-locked short recoil mechanism originally adapted from the MG 42 machine gun but with a fixed barrel and conventional gas-actuated piston rod. It was realized that with careful attention to the mechanical ratios, the gas system could be omitted. The resultant weapon, the Gerät 06H (the "H" suffix is an abbreviation for halbverriegelt or "half-locked") was assigned the designation StG 45(M) (Sturmgewehr 45(M)) but was not produced in any significant numbers and the war ended before the first production rifles were completed.



Mexican produced G3KA4 Battle Rifle

The German technicians involved in developing the StG 45(M) continued their research in France at CEAM (Centre d'Etudes et d'Armement de Mulhouse). The StG 45(M) mechanism was

modified by Ludwig Vorgrimler and Theodor Löffler at the Mulhouse facility between 1946 and 1949. Three versions were made, chambered in .30 Carbine, 7.92x33mm Kurz as well as the 7.65x35mm cartridge developed by Cartoucherie de Valence and adopted in 1948. A 7.5x38mm cartridge using a partial aluminium bullet was abandoned in 1947. Löffler's design, designated the Carabine Mitrailleuse Modèle 1950, was retained for trials among 12 different prototypes designed by CEAM, MAC, and MAS. Engaged in the Indochina War and being the second NATO contributor, France canceled the adoption of these new weapons for financial reasons.



PSG/1 Sniper Rifle

Battle / Sniper Rifle					-Recoil-		
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	SS	*Brst*	*Rng*
G-3	5	4	2-3-Nil	7	3	8	52
(Bipod)	5	4	2-3-Nil	7	2	4	67
G-3A4	3/5	4	2-3-Nil	6/7	3	5/8	54
G-3KA4	3/5	4	2-3-Nil	5/6	3	5/8	32
PSG/1	5	4	2-3-Nil	7	3	8	55

Weapon:	G-3	G-3A4	G-3KA4	PSG/1
Ammo:	7.62x51mm	7.62x51mm	7.62x51mm	7.62x51mm
Weight:	4.79 kg	4.7 kg	4.4 kg	4.75 kg
Magazine:	20	20	20	20
Price:	$1428	$1423**	$1370**	$1653

In 1950, Vorgrimler moved to Spain where he created the LV-50 rifle chambered in the intermediate 7.92x33mm Kurz cartridge and later, the proprietary 7.92x40mm CETME M53 round. At this point, the rifle was renamed the Modelo 2. The Modelo 2 attracted a lot of attention from the West German Border Guards (Bundesgrenzschutz), which sought a new service rifle. Not willing to accept a cartridge outside of the NATO specification, the Germans asked CETME to develop a 7.62 mm version of the rifle. The resulting CETME rifle Model A was chambered for the 7.62x51mm CETME cartridge which has identical chamber dimensions but a reduced-power load compared to the 7.62x51mm NATO round. Further development of the rifle with input from HK produced the CETME Model B which received several modifications including the ability to fire from a closed bolt in both semi-automatic and automatic firing modes, a new perforated sheet-metal handguard (the folding bipod had been the foregrip in previous models), improved ergonomics and a slightly longer barrel with a rifle grenade launcher guide. In 1958, this rifle was introduced into service with the Spanish Army as the Modelo 58, firing the 7.62x51mm CETME round.

Initial production G3 rifles differed substantially from more recent models; early rifles featured closed-type mechanical flip iron sights (with two settings), a lightweight folding bipod, stamped steel handguard, wooden buttstock (in fixed stock models) and a telescopic metal stock (in folding stock models). The weapon was modernized during its service life (among other minor modifications it received new sights, a different flash hider, a plastic foregrip and stock), resulting in the current production variants, the G3A3 (with a fixed synthetic stock) and the G3A4 (telescoping metal stock). The rifle proved successful in the export market, being adopted by the armed forces of over 40 countries. The G3 continues to be produced under license in Mexico by SEDENA.

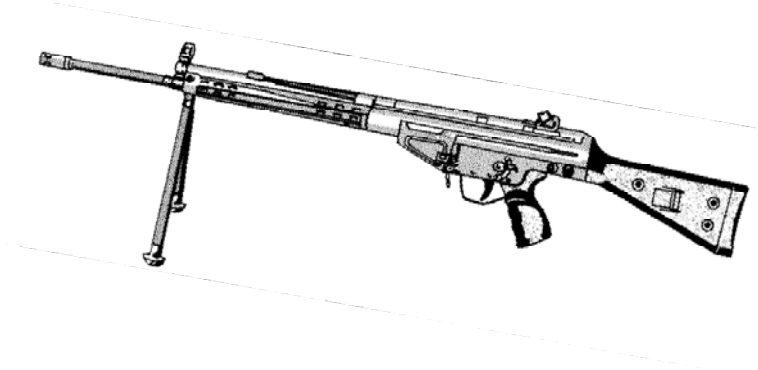
MG21 and MG23 General Purpose Machienguns

The HK21 is a German 7.62 mm general purpose machine gun, developed in 1961 by small arms manufacturer Heckler & Koch and based on the 7.62 mm G3 automatic rifle. It fires the 7.62x51mm NATO rifle cartridge. The weapon is in use with the armed forces of several Asian, African and Latin American countries. The HK21 is license-manufactured by SEDENA as the MG21.

Mexican MG21 (above) and German HK21E (below)

The MG21 is a selective fire roller-delayed blowback-operated firearm with a semi-rigid locking mechanism designed to retard the rearward movement of the bolt. This delay was achieved by artificially increasing the inertia of the bolt by using an angular, interposed transmission system, installed symmetrically to the bore axis, with two cylindrical rollers acting as transmission elements against a movable locking piece which drives the heavy bolt carrier. The two-piece bolt assembly consists of a bolt head, which contains the aforementioned rollers, and a supporting locking piece and bolt carrier. During the "unlocking" sequence, the bolt head receives the

recoil impulse from the ignited cartridge and exerts rearward pressure against the rollers, seated in recesses in the barrel extension. The rollers are driven inward against angled ramps of the barrel extension and interact with the wedge-shaped locking piece, projecting it backwards. Thus a 4:1 transmission ratio is maintained (as long as the rollers move on the inclined surfaces of the barrel extension and locking piece) of the bolt carrier and locking piece relative to the bolt head; the bolt carrier travels backwards four times faster than the bolt head, ensuring a safe drop of pressure within the barrel prior to extraction. Since extraction is carried-out under relatively high pressure, the barrel's chamber received a series of flutes designed to help free the bloated cartridge casing from the chamber walls.



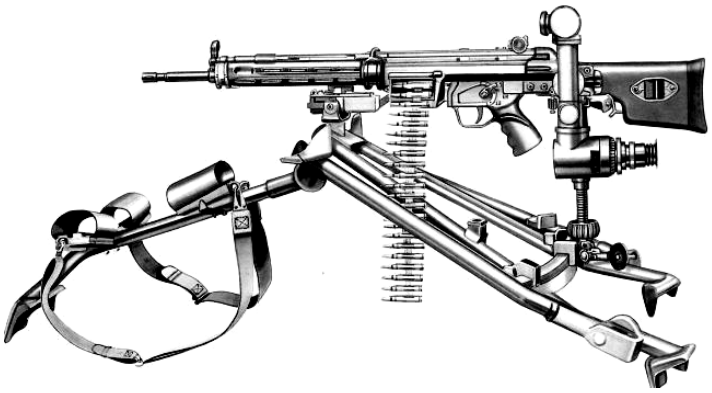
Mexican MG23 light machinegun in 5.56mm

Machinegun					-*Recoil*-		
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	SS	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	2	4/6	72
(Bipod)	3/5	4	2-3-Nil	8	1	2/3	93
(Tripod)	3/5	4	2-3-Nil	8	1	1/1	143
MG23	3/5	3	1-Nil	7	2	2/4	46
(Bipod)	3/5	3	1-Nil	7	1	1/2	60
(Tripod)	3/5	3	1-Nil	7	1	1/1	92

Weapon:	MG21	MG23
Ammo:	7.62x51mm	5.56x45mm
Weight:	8.8 kg	6.84 kg
Magazine:	50 Belt, 100 Belt, 200 Belt, 250 Belt	100 Belt, 200 Belt
Price:	$3210	$1801

The bolt features a spring-powered extractor and an anti-bounce device that prevents the bolt head from glancing off the barrel extension upon forward return of the locking assembly. The lever-type ejector system is contained in the trigger group housing and is actuated with every shot by the recoiling bolt. The weapon has a hammer striker and is fired from the closed bolt position. The trigger group, which is integrated with the pistol grip and hinged from the receiver, is equipped with a fire control selector switch (selector lever in the "E" or "1" position – semi-automatic fire, "F" or "20" – continuous fire mode) that doubles as a manual safety (rotating the lever into the "S" or "0" setting disables the trigger, weapon is considered "safe").

The machine gun feeds from the left-hand side through a variety of disintegrating ammunition belt types: the American M13 linked belt, the German DM6 counterpart to the M13 or the segmented German DM1 belt. The ratcheting wheel feed unit was designed as an easily removable module that is inserted into the bottom portion of the feed block (installed in place of the standard magazine well), below the barrel axis. As a result of this configuration (the bolt passes over the belt), the ammunition belt is aligned upside down compared to most other belt-fed weapons (that is, the links face downward). The feed mechanism is actuated by the reciprocating movement of the bolt; a curved cam slot on the bottom of the bolt engages an actuator in the feed mechanism, rotating the double sprockets and positioning a new round in the feed path. Simple conversion from belt to magazine feed is possible by installing an adapter in the feed block which enables the use of H&K's proprietary 20-round box magazine (from the G3 rifle) or a 50-round drum magazine. The MG21 uses a modified G3 receiver that has been extended to the front sight base and is equipped with a detachable bipod (mounted either in front of the feed mechanism or at the muzzle) and tripod and vehicle mounting points. The MG21 has close to a 48% parts interchangeability with the G3.



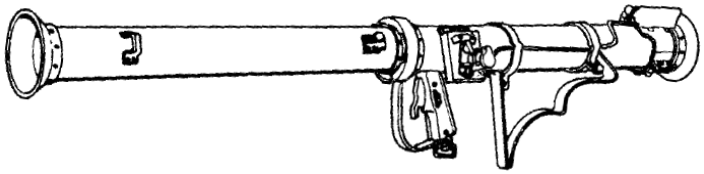
MG21 on a tripod mount for sustained fire

The MG21 has a heavy, quick-change barrel fitted with a slotted flash suppressor and adjustable iron sights with a hooded foresight and an aperture rear sight adjustable from 100 through 1200 m in 100 m increments. By simply swapping out several components such as the barrel, bolt and feed unit, the weapon can be quickly converted to the intermediate 7.62x39mm and 5.56x45mm calibers.

The HK23E light machine gun (belt-fed, 5.56x45mm NATO) is intended as a Squad Automatic Weapon. The "E" simply stands for "Export" model. The HK23E is license-manufactured by SEDENA for the Mexican Armed Forces as the MG23.

CHAPTER 5
INFANTRY SUPPORT WEAPONS

M20A1 89mm (3.5”) Rocket Launcher



LAW

Weapon	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
M-20A1	CHM81 HEAT	115	C9 B30	82C	Nill
RId: 2	FIM Smoke/CHEM	55	C2 (B10)	Nil	Nill
	Hydroar HEAT	85	C8 B30	64C	Nil
	M-29 HEDP	45	C8 B30	17C	Nil

Weapon	M-20A1
Caliber	89mm
Weight	5.5 kg
Length	1.55 meters
Price	$775

The M-20 is one of a series ("M9 series" variants) of anti-armor and anti-bunker, man-portable rocket launchers that became famous during World War II. Technically named as the M20 Anti-tank Rocket Launcher, it was also called "stovepipe" and used to deliver high explosives into machine gun nests and hardened bunkers in all World War II theaters. It was one of the primary infantry anti-tank weapons used by the United States Armed Forces, and was based on the principle of the high explosive anti-tank (HEAT) shell. It impressed the German command as well, so much so they created a larger copy of it. It was nicknamed "bazooka" from a vague resemblance to the musical instrument of the same name invented and used by Bob Burns. The M-20 is an improved version of the M1A1, M9, and M9A1 rocket launchers which saw widespread use throughout World War II.

The development of the original bazooka involved the development of two specific lines of technology: the rocket-powered (recoilless) weapon, and the shaped-charge warhead.

The development of the explosive shaped charge dates back to the work of American physicist Charles Edward Munroe, who did the first practical work on the subject in 1880. This work was augmented in the 1930s by Henry Mohaupt, a Swiss immigrant who worked on shaped-charge explosives design for the War Department (the predecessor of the Department of Defense).

Mohaupt developed a shaped-charge hand grenade for anti-tank use that was effective at defeating up to 60 mm (2.4 in) of vehicle armor, and was thus by far the best such weapon in the world at the time. The grenade was standardized as the M10. However, the M10 grenade weighed 3.5 lb (1.6 kg), was difficult to throw by hand, and too heavy to be launched as a rifle grenade. The only practical way to use the weapon was for an infantryman to place it directly on the tank, an unlikely means of delivery in most combat situations. A smaller, less powerful version of the M10, the M9, was then developed, which could be fired from a rifle. This resulted in the creation of a series of rifle grenade launchers, the M1 (Springfield M-1903), M2 (Enfield M-1917), and the M7 and M8 for the M1 rifle. However, a truly capable anti-tank weapon had yet to be found, and following the lead of other countries at the time, the U.S. Army prepared to evaluate competing designs for a large and powerful anti-tank rifle.

In 1940, U.S. Army Lieutenant Edward G. Uhl, under the command of Colonel Leslie A. Skinner, suggested utilizing the M10 shaped-charge grenade as a warhead attached to a booster rocket, to be fired by an experimental rocket launcher he had recently developed. Development of the M1 prototype took place in Corcoran Hall at The George Washington University in Washington, D.C. with the help of Clarence Hickman who had worked for Goddard. The M1 consisted of a sheet metal tube with a simple wooden stock, hand grips, and sights (replaced by metal in production models), into which the 60.07 mm-diameter (officially designated "M6, 2.36-inch" to avoid confusion with rounds for the 60 mm mortar) rocket grenades were inserted at the rear with trailing electrical leads. The cast steel warhead contained 1.6 lb. of Pentolite high explosive. A two-cell dry battery in the wood shoulder rest provided a charge to ignite the rocket when the trigger was pulled; the wires sticking out the back of the round having been connected to two contacts by the assisting loader.

Although the weapon had some reliability and accuracy problems, Ordnance officials were greatly pleased with the penetrative effect of the new M1, which blew the turret off a tank during field trials. The weapon's M6 rocket warhead was capable of penetrating roughly 4 inches (100 mm) of armor plate. As a result, the War Department cancelled all plans for anti-tank rifles and in 1942 adopted the M1 rocket launcher and its M6 rocket as standard. The M1 rocket launcher was the first type to see combat use.

Secretly introduced via the Russian front and in November 1942 during Operation Torch, early production versions of the M1 launcher and M6 rocket were hastily supplied to some of the U.S. invasion forces during the landings in North Africa. On the night before the landings, Gen. Dwight D. Eisenhower was shocked to

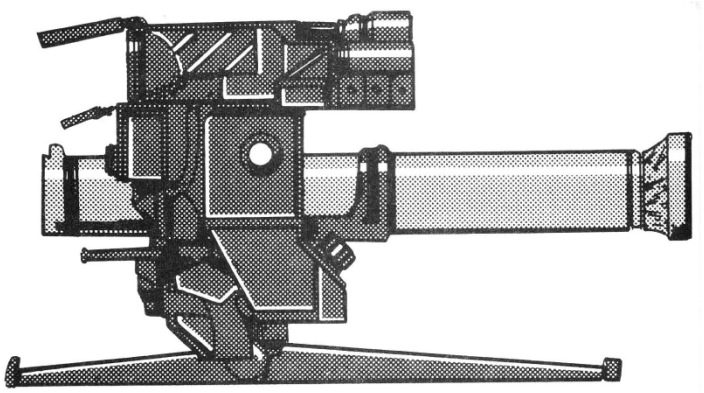
discover from a subordinate that none of his troops had received any instruction in the use of the bazooka.
Initially supplied with the highly unreliable M6 rocket and without training, the M1 did not play a significant armed role in combat in the North African fighting, but did provide an German intelligence coup when some were captured by the Germans in early encounters with inexperienced U.S. troops. A U.S. general visiting the Tunisian front in 1943 after the close of combat operations could not find any soldiers who could report that the weapon had actually stopped an enemy tank. Further issue of the bazooka was suspended in May 1943.

Despite the introduction of the M9 bazooka with its more powerful rocket—the M6A3—in late 1943, reports of the weapon's effectiveness against enemy armor decreased alarmingly in the latter stages of World War II, as new German tanks with thicker and better-designed cast armor plate were introduced. This development forced bazooka operators to target less well-protected areas of the vehicle, such as the tracks, drive sprockets, bogey wheels, or rear engine compartment. In a letter dated May 20, 1944, Gen. George S. Patton stated to a colleague that "the purpose of the bazooka is not to hunt tanks offensively, but to be used as a last resort in keeping tanks from overrunning infantry. To insure this, the range should be held to around 30 yards."

The success of the more powerful German Panzerschreck caused the bazooka to be completely redesigned at the close of World War II. A larger, 3.5 in (88.9 mm) model was adopted, the M20 "Super Bazooka", identical in size and power to the World War II German Panzerschreck. The M20 weighed 14.3 pounds (6.5 kg) and fired a hollow shaped-charge 9 lb (4 kg) M28A2 HEAT rocket when used in the anti-tank role. It was also operated by a two-man team and had a claimed rate of fire of six shots per minute. As with its predecessor, the M20 could also fire rockets with either practice (M29A2) or WP smoke (T127E3/M30) warheads. Having learned from prior experience of the sensitivity of the bazooka and its ammunition to moisture and harsh environments, the ammunition for the new weapon was packaged in moisture-resistant packaging, and the M20's field manual contained extensive instructions on launcher lubrication and maintenance, as well as storage of rocket ammunition. When prepared for shipment from the arsenal, the weapon was protected by antifungal coatings over all electrical contacts, in addition to a cosmoline coating in the hand-operated magneto that ignited the rocket. Upon issue, these coatings were removed with solvent to ready the M20 for actual firing.

MILAN Anti Tank Guided Missile

MILAN (French: Missile d´infanterie léger antichar; English: Anti-Tank Light Infantry Missile, "milan" is French and German for "kite bird") is a European anti-tank guided missile. Design of the MILAN started in 1962. It was ready for trials in 1971, and was accepted for service in 1972. It is a wire guided SACLOS (Semi-Automatic Command to Line-Of-Sight) missile, which means the sight of the launch unit has to be aimed at the target to guide the missile. The MILAN can be equipped with a MIRA thermal sight, to give it night-firing ability.



ATGM

Weapon	*Round*	*Diff*	*Damage*	*Pen*	*Min*	*Max*
Milan ATGM	Milan I	AVG	C12 B12	97C	25	2000
	Milan II	AVG	C15 B40	121C	25	2000
	Milan II-T	AVG	C16 B40	122C (TA)	25	2000

Weapon:	Milan
Weights:	35.5 Kg
Missile Caliber:	115mm
Guidance:	SACLOS
Missile Speed:	1050
Launcher Price:	$3800 (-/S)
Reload:	1

The Milan is a portable medium-range, anti-tank weapon manufactured by Euromissile, based in Fontenay-aux-Roses in France. Euromissile is a consortium originally set up by Aerospatiale-Matra of France and DaimlerChrysler Aerospace of Germany, now a subsidiary of the EADS company.

The system was developed for the French and German Armies and over 360,000 missiles and 10,000 launch units have been produced since 1972. MILAN is in service in 41 countries.

The firing post consists of a sighting system and a guidance assembly mounted on a tripod. The infrared localiser measures the angular deviation between the missile and the line of sight to the target. The transmission of guidance data by wire.

The firing post can be equipped with an optional MIRA thermal sight, produced by Thales (formerly Thomson-CSF) Optronique. MIRA has a detection range of 4,000m and field of view of 6° x 3°. The mounting bracket is quickly set up without tools or modification to the MILAN firing post. No correlation between the thermal sight and the firing post is necessary.

In typical deployment, one squad of two MILAN firing posts can be assigned at company level and three or four squads form a platoon

used at regiment or battalion level. The launch crew consists of two: the gunner who carries the firing post and the loader or assistant gunner who carries two missiles.

The launch crew consists of two: the gunner who carries the firing post and the loader who carries two missiles."The gunner places the sight mark on the base of the target and presses the firing button. The missile is launched from the launch container and the launch tube is ejected to the rear of the launcher. The launcher can then be reloaded.

Immediately after launch the fins on the missile open to provide a stabilising roll to the missile. After the missile is clear of the gunner, the sustainer rocket ignites.

The gunner tracks the target simply by maintaining the position of the sight reticle centred on the target during missile flight.
During flight the missile is automatically slaved at about 0.5m above the line-of-sight to avoid obstacles. The explosion of the charge occurs at the moment of impact with the target, even at high angles of incidence up to 80º. The rate of fire is up to three rounds a minute.

Various mounting installations enable MILAN to be used from any vehicle either placed with the tripod on the roof or secured by using a quick-release clamp. Twin turrets have been developed for tracked vehicles allowing the missiles to be fired under armor.

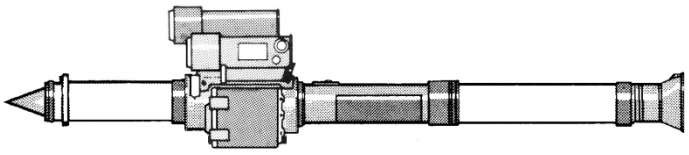
Prior to the War Mexico purchased a large number of Milan launches for use on lightly armored vehicles in the tank killer role. In addition to purchasing about 1000 Milan II missiles, Mexico has produced the Milan I missile under license from EADS.

Mistral Air Defense Missile

This French-built antiaircraft missile is fired from a pedestal mount or a vehicle mount. It is the standard medium man-portable SAM of France and several European countries. The pedestal mount is used to provide a more stable firing platform, but it is a bit heavy and as a result even the MANPADS Mistral is normally carried by a light vehicle even if it is not actually mounted on that vehicle. The launcher includes an IFF device. The Mistral can also be used as an AAM. The Mistral has been employed by Mexico since 1992 after acquiring over a thousand to provide air defense at the company level..

Mistral is a very short-range air defense missile system that can be used from various platforms – vehicles, surface ships and helicopters, as well as in a portable configuration. Development of the SATCP (sol-air à très courte portée), the French portable missile later to become the Mistral, began in 1974.

Matra was selected as the prime contractor to develop the Mistral in 1980. Matra became Matra BAE Dynamics, which is now MBDA. MBDA is the company formed by the merging of missile and missile systems activities of Matra BAE Dynamics, Aerospatiale Matra (EADS) and Alenia Marconi Systems.



SAM

Weapon	*Round*	*Min*	*Max*	*Damage*	*Pen*	*Speed*
Mistral	FRAG-HE	300	6000	C11 B50	7C	4250

RId: 3

Weapon:	Mistral
Weight:	43 kg (total)
Accuracy:	Average
Guidance:	IR
Sensing:	Side Aspect
Price:	$6,280

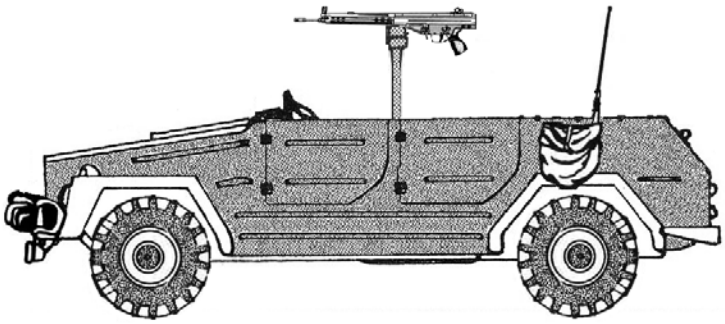
The fully autonomous 'fire and forget' Mistral missile is equipped with a two-stage solid propellant rocket motor designed and developed by Snecma Propulsion Solide based in Paris, using EURENCO (formerly SNPE) propellant charges.

The missile is armed with a 3kg high-explosive warhead loaded with tungsten ball projectiles. The warheads, supplied by Manufacture de Machines du Haut Rhin SA, based in Mulhouse, France, are equipped with a contact fuse, a laser proximity fuse and a time delay self-destruct device.

CHAPTER 6
VEHICLES

UNARMORED CARGO VEHICLES

Volkswagen Type 181 “Safari”



VW Type 181 Safari with MG21

This is basically an updated version of the World War 2 Kubelwagen. Like many VW vehicles of the period, the 181 has a trunk in the front of the car and the engine under the floor at the back. The body is sheet steel and the top folds down. The rear seats may also be folded down to increase the cargo space. There is post behind the front seats for a weapon.

The Volkswagen Type 181 "Kurierwagen", popularly known in Mexico as the Safari, was a small military vehicle produced by Volkswagen from 1969 into the 1990s, although civilian sales stopped in 1980. It was based in part on Volkswagen's Beetle Type I, and was a continuation and improvement over the Kübelwagen, which had been used by the German military during World War II. The name literally means "bucket wagon".

During the 1960s, several European governments began cooperating on development of a vehicle known as the Europa Jeep, a lightweight, amphibious four-wheel drive vehicle that could be mass produced for use by various national military and government groups. Development of the vehicle proved time consuming, however, and the German government was in need of a limited number of light, inexpensive, durable transport vehicles that could fulfill their basic needs while the Europa Jeep was being developed and put into production.

Although Volkswagen had been approached during the 1950s about building such a vehicle, and had subsequently passed on the proposition, the then-current management of the company saw the project as having some amount of potential as a consumer vehicle; Mexican customers were asking for something that could handle rural roads better than the Beetle, which was a large seller in Mexico at the time, and the popularity of VW-based dune buggies within the U.S. made executives think that a durable, fun, off-road-capable vehicle would become attractive to many buyers. VW could keep cost to a minimum and thus maximize profitability by using existing parts.

Vehicle:	VW 181 Safari
Price:	$3000 (S/C)
Range Finder:	None
RF modifier:	+0
Armament:	None
Stabilization:	None
Ammo:	As Cargo
Fuel Type:	G, A
Load:	450 kg
Veh Wt:	1.35 tons
Crew:	2+2
Mnt:	1
Night Vision:	Headlights
Radiological:	Open
Movement Data	
Travel Mov:	232/92
Combat Mov:	58/23
Fuel Cap:	40
Fuel Cons:	32
Combat Statistics	
Config:	Stnd
Susp:	W(2)
ERA Facings:	None
Hull, Front:	1 (UA)
Hull, Side:	1 (UA)
Hull, Rear:	1 (UA)

Machinegun					-*Recoil*-		
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	SS	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	2	4/6	72
(Bipod)	3/5	4	2-3-Nil	8	1	2/3	93
(Tripod)	3/5	4	2-3-Nil	8	1	1/1	143

Like the World War II era Type 82 Kübelwagen, the Type 181 used mechanical parts and a rear-engine platform derived from that of the Type I Beetle. The floorpans came from the Karmann Ghia, which itself was based on the Type I, and reduction gearing from the Volkswagen Transporter Bus was used through 1973 when platform upgrades eliminated that setup in favor of revised parts.

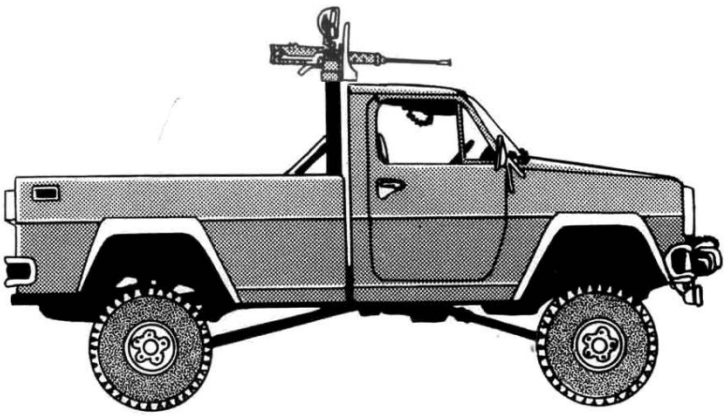
Civilian sales began in Europe and Mexico during 1971, and in the U.S. in 1972, but the model was dropped from the American lineup for 1975 as it failed to meet stricter new safety standards. Notably the Type 181 was reclassified as a passenger vehicle, and thus

subject to stricter safety standards, not as a light truck. The Windshield Intrusion Rule of the 1975 DOT standard called for a greater distance between the front seat occupants and the front window glass. This change was mandated after lighter cars made in reaction to the first fuel crisis caused front hoods to cleave passengers in two in moderate speed impacts.

The Europa Jeep was a NATO dream, to have a vehicle where by each European NATO makers all combined to build a light duty patrol vehicle. The Volkswagen 181 was only supposed to fill in, until the time that the Europa Jeep was ready. From 1968 until 1979, over 50 thousand Type 181 were delivered to the NATO forces. By 1979 the Europa Jeep project had fallen apart completely and was abandoned, and the German government began supplementing their consumption of 181's with the new front-engined Type 183 Iltis, which featured four-wheel-drive based on the mechanical system from a VW Golf.

Despite the German government's switch to the Type 183, European and Mexican sales of the civilian 181 continued through 1980, and the Mexican Army continued to purchase military-spec units through 19994, finding their reliability and low purchase and maintenance costs attractive.

Chevrolet K series 5/4 ton Pickup Truck



Mexican "K" series pickup with field expedient mounting of a .50 caliber machinegun

The Mexican Army makes use of a large number of 4x4 civilian light trucks. In general these trucks have been "militarized" to correspond with U.S. Army Commercial Utility Cargo Vehicle (or "CUCVs"). The Mexican Army uses these vehicles as 4x4 alternatives to the localy produced Volkswagen Safari. For the most part Mexican Army tactical trucks are Chevrolet K series pickups with several military modifications. While the US Amy phased out CUCVs by 1992 due to their inability to survive the hardships that the purpose built vehicles could endure, the Mexican Army employed them throughout the war.

Mexican K series field truck

Vehicle:	K-2500 Pickup	K-2500 Blazer	K-2500 Suburban
Price:	$4100 (V/V)	$4100 (V/V)	$4600 (V/V)
Range Finder:	None	None	None
RF modifier:	+0	+0	+0
Armament:	None	None	None
Stabilization:	None	None	None
Ammo:	As Cargo	As Cargo	As Cargo
Fuel Type:	D, A	D, A	D, A
Load:	1.32 tons	544 kg	1.79 tons
Veh Wt:	2.68 tons	2.36 tons	2.54 tons
Crew:	2+8	2+3	2+8
Mnt:	2	2	2
Night Vision:	Headlights	Headlights	Headlights
Radiological:	Open	Open	Open
Movement Data			
Travel Mov:	244/98	308/124	230/92
Combat Mov:	61/25	77/31	58/23
Fuel Cap:	130	130	130
Fuel Cons:	50	50	49
Combat Statistics			
Config:	Stnd	Stnd	Stnd
Susp:	W(2)	W(2)	W(2)
ERA Facings:	None	None	None
Hull, Front:	1 (UA)	1 (UA)	1 (UA)
Hull, Side:	1 (UA)	1 (UA)	1 (UA)
Hull, Rear:	1 (UA)	1 (UA)	1 (UA)

The GM pickups purchased by the Mexican Army were produced in the 1987-89 time period (mostly 1988) and were powered by 6.2L Detroit Diesel V8 engine. The GM trucks were assembled mostly from the heaviest duty bits and pieces from the light commercial truck lines. The Mexican Army employed GM pickups of three basic body styles, a pickup, a utility and an Large utility.

The trucks were all rated as 1-1/4 ton (commonly called a "five-quarter"), even though some of them had payloads in excess of that. The K-2500 Pickup was the basic 5/4 cargo truck, the K-2500 Blazer 3/4 ton utility rig, which was a stripped Blazer uprated to 5/4-ton capacity.

All the Mexican Army K-series are powered by GM's 6.2L J-series Detroit Diesel V8 engine non-emissions diesel. These were rated at 135 hp (101 kW) and 240 lb·ft (325 N·m), which was 5 hp (3.7 kW) more than the emissions gasoline engine of the time. They were all equipped with the TH-400 automatic.

The K-2500 Blazer used a standard 10-bolt front axle, but had a 10-bolt in back with an Eaton Locker ("Gov-Lok") and 3.08:1 gears. The trucks all used open Dana 60 front axles, with the M1028 and M1031 series rigs having a Trac-Lok limited slip. In the rear, the M1008s used the beefy GM 10.5-inch (270 mm) "14-bolt" rear axle with No-Spin lockers (the commercial trade name for the Detroit Locker).

GM Mexico produced some 10,000 pickups from 1980 to 1984 for the Mexican Armed Forces.

Dodge Ram Pickup Truck

Mexican Army Ram produced at Chrysler's Mexico City plant in 1995

These trucks were made to compete with the Chevy C/K and Ford F-series. It was initially sold only with a standard cab, in three variations: the Ram 1500, the Ram 2500, and the Ram 3500, which allow larger and larger payloads; the Ram 3500 also has dual rear tires. They also came in short and long-bed versions, with the short-bed version having a 1.98-meter bed and long-bed versions having a 2.44-meter bed. Late in the 1994 model year, a Club Cab version arrived, with ST or Laramie SLT trim levels. The Club Cab's rear bench seat could be folded up for more rear cargo room. Another version was the low-end Ram 1500 Work Special, designed primarily for company and construction use, and devoid of almost all creature comforts. There were also trim levels above the Base, the LT, ST, and Laramie SLT, with ever-increasing levels of plushness. The 1994 Ram had a standard driver's side airbag; rear-wheel antilock brakes were also standard. 4-wheel antilock brakes were optional on the 1500 and 2500, and they operated in both 2WD and 4WD modes. A bench seat was standard, but a bench seat with a 40/20/40 split fold was optional, and the middle became a work table with this seat. The base engine was a 175-horsepower V-6; this equipped Ram 1500s. A 220-horsepower V-8 went into 4x4 versions and Ram 2500s, and was optional in Ram 1500s. A 230-horsepower V-8 was standard in Ram 3500s, and optional in all other Ram versions. A turbodiesel I-6 was optional for all models; this engine developed 175 horsepower with manual transmission, or 160 horsepower with automatic transmission. Another option for all models was a 300-horsepower V-10 engine.

1995 brought few changes, but 1996 brought a Camper Suspension package for the Ram 3500 which gave it a stronger suspension and more towing capacity. The turbodiesel gained power; it was now 215 horsepower with manual transmission, or 180 horsepower with automatic. Unfortunately, the V-6 dropped to 170 horsepower.

Vehicle:	2500 LWB Pickup	2500 LWB Club Cab	3500 LWB Pickup
Price:	$9000 (C/C)	$10000 (C/C)	$11000 (C/C)
Range Finder:	None	None	None
RF modifier:	+0	+0	+0
Armament:	None	None	None
Stabilization:	None	None	None
Ammo:	As Cargo	As Cargo	As Cargo
Fuel Type:	D, A	D, A	D, A
Load:	1.09 tons	761 kg	1.15 tons
Veh Wt:	2.13 tons	2.37 tons	2.15 tons
Crew:	1+2	1+5	1+2
Mnt:	1	1	1
Night Vision:	Headlights	Headlights	Headlights
Radiological:	Open	Open	Open
Movement Data			
Travel Mov:	458/115	474/119	588/146
Combat Mov:	105/25	110/28	135/34
Fuel Cap:	133	98	133
Fuel Cons:	47	53	64
Combat Statistics			
Config:	Stnd	Stnd	Stnd
Susp:	W(2)	W(2)	W(3)
ERA Facings:	None	None	None
Hull, Front:	1 (UA)	1 (UA)	1 (UA)
Hull, Side:	1 (UA)	1 (UA)	1 (UA)
Hull, Rear:	1 (UA)	1 (UA)	1 (UA)

1997 brought minor trim and cosmetic features inside and out, as well as gain of 5 horsepower for the 230-horsepower V-8. The Club Cab gained tinted glass and an optional sliding rear window panel. 1998 introduced the Quad Cab, which was basically a Club Cab with rear doors; in addition, a passenger-side airbag was installed, one which could be deactivated if necessary. 1999 gave the Ram an easier to operate headlight switch, power front windows, and a new Sport package which gave the Ram new headlights, a new bumper and grille, and new trim. For the 2000 model year, an Off-Road

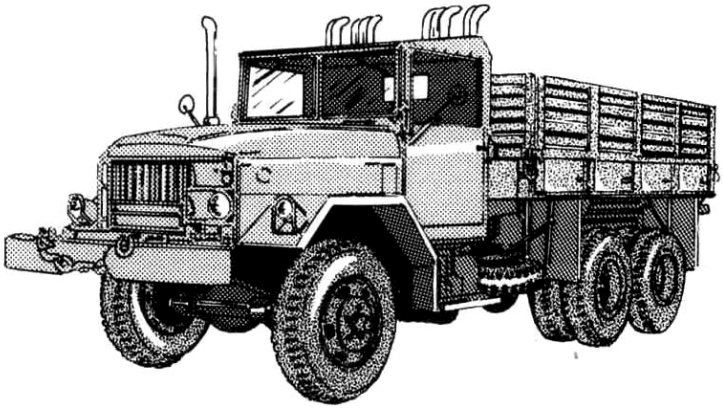
package was available; this increased the ground clearance and gave the Ram a more stable suspension and better shock absorbers, but was available only on 4WD versions. It also included alloy wheels, a limited-slip differential, tow hooks, and skid plates. A new high-end trim level, the SLT Plus, was available for Quad Cabs; this version had remote keyless entry, heated leather seats, a CD player, audio controls on the steering wheel, and a security alarm. New standard features for all models included a tachometer and a light under the hood. 2001 brought no significant changes, in preparation for a new version in 2002.

The standard Mexican Army utility vehicle of the War

As has been said, the Ram was made to compete with similar Chevrolet and Ford trucks, but did not do as well as those trucks due to their lesser crash ratings. The Ram is big, but the cargo and tow ratings are only average, and the engines are fuel hungry, with the exception of the diesel engine models. The Ram is available with a powerful V-10 engine, but this engine sucks a great amount of fuel. The Ram's ride can get a bit bouncy over bumps when the cargo bed is empty, and the roar of the wind around the body can be deafening at high speeds, though handling is firm. The cab is very roomy, and the front seats can even be reclined, something you can't do in most pickups. There are various compartments and pockets to hold things needed during driving. The dashboard is well laid out, and the controls easy to reach during driving. There is even a slide-out holder large enough to hold two 16-ounce cups, but this gets in the way of the radio controls when slid out. Towing capacity is 1.63 tons with the V-6 engine, 2.13 tons with the 5.2L V-8, 2.34 tons with the 5.9L V-8, 3.12 tons with the turbodiesel I-6, and 3.19 tons with the V-10 engine.

The Ram was made up until the 1997 model year, but beyond 1996, they were built primarily for military, police, and government concerns. Most of those Rams were 2500s or 3500s with 4WD (especially those built for the military), and stripped of creature comforts and otherwise modified for official use.

SEDENA ordered large numbers of Ram trucks to replace worn out GM K series vehicles from the early 1980's. The Ram was produced at the Chrysler facility in Mexico City at the Lago Alberto plant. Between 1995 and 1998 the facility manufactured 10,000 trucks for the Mexican Armed Forces. By the time of the U.S. Invasion the Ram was the most common utility vehicle used by the Mexican Mobile Brigades.



M35 / M44 2-1/2 ton cargo truck

Vehicle:	M-35	M-35A1
Price:	$8400 (R/C)	$8400 (C/C)
Range Finder:	None	None
RF modifier:	+0	+0
Armament:	None	None
Stabilization:	None	None
Ammo:	As Cargo	As Cargo
Fuel Type:	G, A	D, G, AvG, A
Load:	2.72 tons	2.72 tons
Veh Wt:	5.9 tons	5.9 tons
Crew:	3+10	3+10
Mnt:	3	3
Night Vision:	Headlights	Headlights
Radiological:	Open	Open
Movement Data		
Travel Mov:	156/62	156/62
Combat Mov:	39/16	39/16
Fuel Cap:	189	189
Fuel Cons:	106	53
Combat Statistics		
Config:	Stnd	Stnd
Susp:	W(3)	W(3)
ERA Facings:	None	None
Hull, Front:	1 (UA)	1 (UA)
Hull, Side:	1 (UA)	1 (UA)
Hull, Rear:	1 (UA)	1 (UA)

This is the standard 2½-ton truck described in the Twilight: 2000 Version 2.2 rules. The statistics given in those rules are not exactly

correct, and alternate statistics are given below. The vehicle is of conventional design, with the engine at the front, cab behind that, and rear cargo area. The standard vehicle has an all-metal construction, and a cargo area with a tarpaulin cover, drop tailgate, and removable wooden fence-type sides. The M-35 has numerous variants, including a tanker, dump truck, long wheelbase version, wrecker, hard cargo body (for use as a workshop, ambulance, or radio vehicle), and a tractor-trailer that can tow 7.71 tons. Some of these vehicles are fitted with a ring mount over the commander's seat for a weapon. The M-35 series is in use by the US and many countries who have received US aid or are allied with the US. In addition, some were sold to China, and some were captured by Vietnam after the US left that country.

The M-35A3 is an M-35A2 upgraded by Extended Service Program (ESP) for the US and certain US allies' forces. The transmission is replaced with an automatic transmission, the multifuel engine is replaced by a more powerful diesel engine, power steering is added, and other improvements have been added. Most of these vehicles are merely upgraded versions of the M-35 series, instead of new vehicles. These upgrades were begun in 1990 and completed in 1996.

During World War II, dependable motorized transport, the Jeep, the "deuce and a half" truck, and the armored personnel carrier -- fully tracked, half-tracked, or pneumatic tire vehicles -- increased infantry mobility twentyfold and enabled it to keep pace with the rapid armor advance.

Production of the GMC Truck, 2-1/2-ton, 6 x 6, Cargo, CCKW "Jimmy" or "Deuce and a half," began in 1941 by General Motors Corporation and ended in 1945, with 562,750 manufactured. This GMC truck was the most commonly used tactical vehicle in World War II. The GMCs were originally fitted with a sheet metal type cab. This was replaced after July 1943 by a tarpaulin or canvas cab, not only for the economic use of steel, but saving volume when transported by boat.

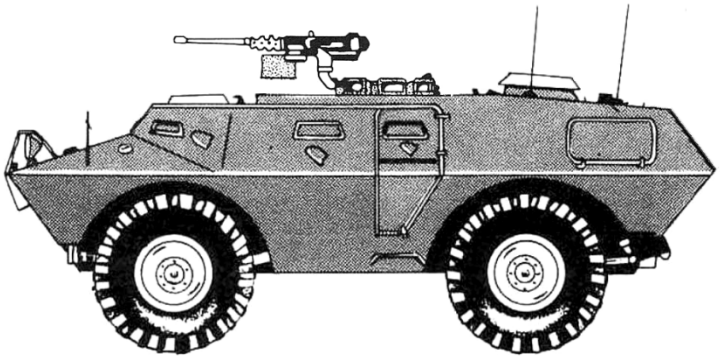
The rear area was fitted with wooden side racks which folded down for carrying personnel. The bed could also hold reservoirs for 750 gallons of water and fuel, provide shelter for radio communication or field medical procedures, transport elements of a Treadway bridge for engineers, or bombs for the Army Air Corps. This version of the GMC CCKW was withdrawn from service in the US Army in 1956.

The M35 series of trucks was one of the most long-lived systems deployed by the Army. They were first fielded in the 1950's and continued to serve with various modifications into the late '90s in two dozen configurations. This model is an M35A2 2-1/2 ton cargo truck which could carry 5000 pounds cross country or 10,000 over roads. It is all wheel drive and equipped with a 210 hp, Continental LD-465, in-line 6 cylinder, multifuel diesel. Multifuel meant that the engine could be set up to run on almost any type of diesel fuel, jet fuel or heating oil.

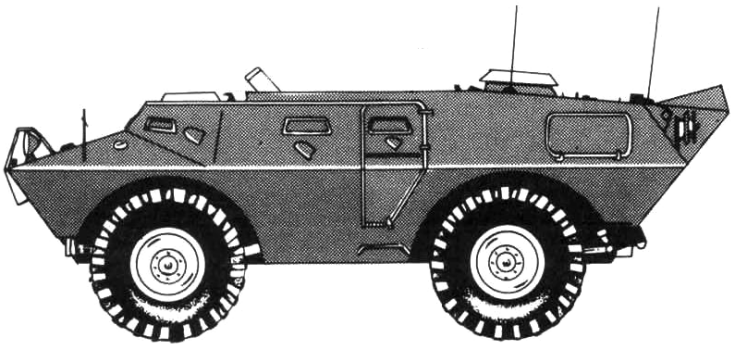
A large number of M-35 and M-35A1 series trucks have been supplied to the Mexican Armed forces. At the time of the 1998 invasion the U.S. trucks continued to make up the bulk of Mexican logistical support.

WHEELED COMBAT VEHICLES

DN-II Armored Car



DN-II Armored Car with .50 Caliber Machinegun



DN-II Mortar Carrier

The DN-II armored car is a Cadillac Gage design produced under license by *Dirección General de Industria Militar* for the Mexican Army. In 1964 SEDENA entered into an agreement for local production of the V-100 armored car to augment Mexico's fleet of WWII vintage M8 armored cars. Production commenced at the DINA-SA *Fray Bernardino de Sahagún* factory in October of 1965.

The vehicle is equipped with four-wheel drive and uses axles similar to the ones used in the M34 series of trucks. The engine is a gasoline-powered 360 cubic inch Chrysler V8, same as in the early gas models of the M113 armored personnel carriers. Its 5-speed manual transmission allows it to traverse relatively rough terrain. The M706 has a road speed of 62 mph (100 km/h), and can travel across water at 3 mph (4.8 km/h). The armor consists of high hardness alloy steel called Cadaloy, which protects against projectiles up to 7.62 x 51 mm. partly because of its armor; the DN-II has an unloaded mass of over 9 tons. As a result, a common problem with the vehicle is rear axle failure caused by the extreme weight.

The DN-II was only produced as an open-top model with a central parapet. A enclosed raised superstructure "pod" was later developed for converting the DN-II into either a command vehicle or for internal security work. By the 1998 invasion most DN-II vehicles had converted to mortar carriers equipped with the 81mm mortar.

Vehicle:	DN-II	DN-MC
Price:	$27500 (R/C)	$45000 (R/S)
Range Finder:	None	None
RF modifier:	+0	+0
Armament:	M2HB (C)	81mm mortar, MG21
Stabilization:	None	None
Ammo:	2000x.50	49x81, 4800x7.62
Fuel Type:	G, A	G, A
Load:	500 kg	200 kg
Veh Wt:	9.5 tons	8.2 tons
Crew:	2+8	4
Mnt:	3	4
Night Vision:	Headlights	Headlights
Radiological:	Open	Open
Movement Data		
Travel Mov:	220/132	220/132
Combat Mov:	45/25/5	45/25/5
Fuel Cap:	303	303
Fuel Cons:	96	96
Combat Statistics		
Config:	Stnd	Stnd
Susp:	W(3)	W(3)
ERA	None	None
Facings:		
Hull, Front:	4	4
Hull, Side:	3	3
Hull, Rear:	2	2

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Mortar

Weapon	*Round*	*Min Rng*	*Damage*	*Pen*	*IFR*
M-29 81mm	HE	100	C13 B35	5C	6640
RId: 1	ILLUM	100	(B805)	Nil	6640
	WP	100	C2 B15	Nil	6640

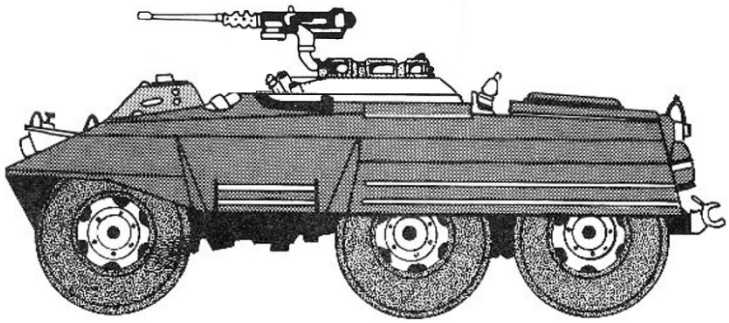
DN-3 Reconnaissance vehicle

The DN-3 Armored Car is a 6 wheeled armored reconnaissance vehicle based on the U.S. M8 armored car but developed and manufactured by Mexican company DINA-SA and in use by the Mexican and other armies.

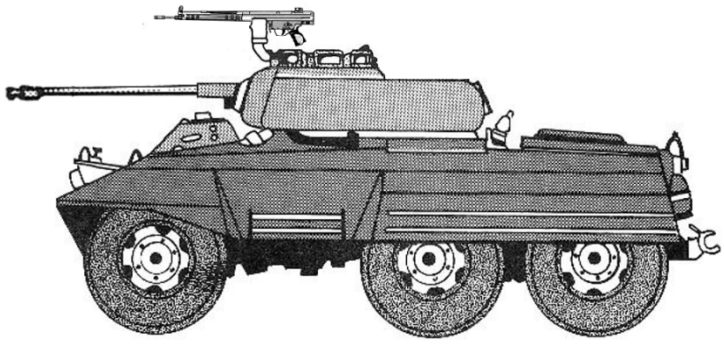
By the late 60's Mexico was looking for a domestically designed replacement for their ageing fleet of M8 Greyhound armored cars which dated back to the Mexican Expeditionary Force that fought in Italy during World War II. The DN-3 vehicle was developed at the

end of 1960s. It went into commercial production in 1970. It was initially intended for use in reconnaissance and patrolling but other variants were also developed, some fitted with anti-tank or anti-aircraft guided missiles. It was purchased by the Mexican armored forces but was also exported to a number of African and Latin American countries.

A DN-3 Mk II of Agrupacion Jimenez, disabled by U.S. Partisans near Laredo, TX in the Summer of 2000



DN-3 Reconnaissance Vehicle with .50 Caliber Machinegun



DN-3 Mk II with Turret mounted20mm Auto Cannon

Vehicle:	DN-3 Mk. I	DN-3 Mk. II	DN-AT	DN-ATM
Price:	$17500 (R/C)	$55000 (R/S)	$40000 (R/S)	$60000 (R/S)
Range Finder:	None	None	None	None
RF modifier:	+0	+0	+0	+0
Armament:	M-2HB (C)	20mm AC, MG21	M-2HB, 104mm RR	HK-21E, Milan ATGM
Stabilization:	None	Basic	None	None
Ammo:	1260x.50	700x20, 2000x7.62	2400x7.62, 18x104	2400x7.62, 8xMilan
Fuel Type:	D, A	D, A	D, A	D, A
Load:	300 kg	300 kg	300 kg	300 kg
Veh Wt:	6.58 tons	7.89 tons	5.88 tons	5.88 tons
Crew:	2+4	3	3	3
Mnt:	2	3	2	2
Night Vision:	IR Searchlight	Passive IR	IR Searchlight	Passive IR
Radiological:	Enclosed	Enclosed	Enclosed	Enclosed
Movement Data				
Travel Mov:	156/62	156/62	166/66	166/66
Combat Mov:	39/16/4	39/16/4	42/17/4	42/17/4
Fuel Cap:	135	135	135	135
Fuel Cons:	44	44	44	44
Combat Statistics				
Config:	Stnd	Trtd	Trtd	Trtd
Susp:	W(3)	W(3)	W(3)	W(3)
ERA Facings:	None	None	None	None
Hull, Front:	3	3	3	3
Hull, Side:	2	2	2	2
Hull, Rear:	2	2	2	2
Turret, Front:		2	2	2
Turret, Side:		2	2	2
Turret, Rear:		2	2	2

Large Caliber Gun

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
76T2 20mm AC	APDS	630	4	6/5/4/3	Nil
Rof: 10	API	630	4	3/3/3/2	Nil
	HEI	470	C1 B5	-4C	Nil

Machineguns

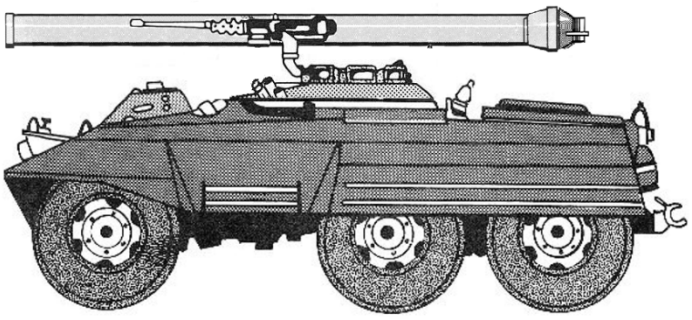
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil-* SS	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Recoiless Gun

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
M-40A2	106mm HEAT	320	C15 B20	96C	2240
RId: 7					

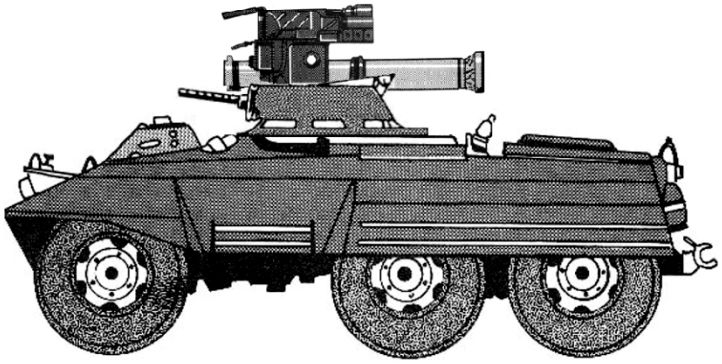
ATGM

Weapon	*Round*	*Diff*	*Damage*	*Pen*	*Min*	*Max*
Milan	Milan	AVG	C12 B12	97C	25	2000
RId: 3	Milan-II	AVG	C16 B40	121C	25	2000
	Milan II-T	AVG	C16 B40	122C	25	2000



DN-AT with 106mm Recoilless Gun

The DN-3 light wheeled armored reconnaissance vehicle was developed by Mexican company "DINA-S.A.". The vehicle is intended for reconnaissance and patrolling. Furthermore it was intended to use as a self-propelled chassis base, fitted with anti-tank or anti-aircraft guided missile complexes. DN-3 was produced by DINA SA from 1970-1978. It is used by the Mexican armed forces and was widely exported to a number of African and Latin-American countries.



DN-ATM with .50 Caliber turret mounted machinegun and Milan ATGM launcher

The driving compartment is placed at the front, combat compartment - at the middle, and engine compartment is placed at the rear part of the hull. Vehicle crew consists from driver, commander, and signaler-observer.

The DN-3 has a full closed armored hull, made from multi-layer welded armor, also used with other DN series wheeled armored vehicles. Such armor is made from two layers of steel: external layer is rigid, while internal layer is less rigid, but tougher. Mexican research showed that such armor design increases vehicles armored defense. Such defense additionally protects crew from vehicles armor shells, appearing after direct hit of anti-tank gun, guided missile, or grenade launcher.

The driving compartment is fitted with three periscope observation devices. Driver gets to his compartment threw a hatch in the roof. Rotating commander's turret is placed behind the driving compartment in the right side from vehicles central axis. Commander's turret is also fitted with three periscope observation devices. 12.7-mm machine gun is mounted on the turret roof. Machine gun can be fired remotely from the inside of the turret. Signaler's-observers seat is placed left from the commander's turret. Signaler has its separate hatch. In addition the DN-3 has an armored hatch door placed in the middle of the left deck.

Unlike the DN-2, the DN-3 is fitted with 8-cylinder Cummings 140 h.p. diesel engine, developed by Cummings and built by Cummings-Mexico SA. The engine is backed by a "Clark" mechanical transmission.

The DN-3 chassis is equipped with a 6 x 6 drive system with the forward wheels steering the vehicle. All wheels are independently suspended, based on springs and hydraulic absorbers. Vehicle is fitted with a wider dimension tires with developed protector pattern and centralized air pressure system. On the road DN-3 reaches maximum speed of 100 km/h. It manages 0.4 m vertical step, 0.5 m wide trench. The vehicle is also fully amphibious being driven in the water by dual propellers.

The DN-3 is equipped with radio set, infrared searchlight, and fire suppression system as standard. An enclosed NBC system was developed as an option but never entered production.

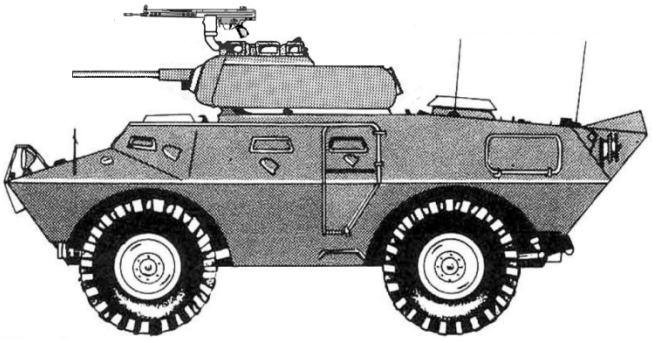
A Mexican DN-3 Mk I Recon Car (unit unknown)

The DN-3 was originally equipped with a cupola mounted .50 caliber machinegun. In 1970 the Mk II version was introduced with a one man manually traversed turret mounting a .50 caliber machinegun. Beginning in 1974 the DN-3 *Asesino de tanque* (Tank Killer) or DN-AT entered production. The DN-AT retained the cupola and .50 caliber machinegun of the Mk I but added a 106-mm recoilless gun mounted above the deck hatch with a 270º manual traverse.

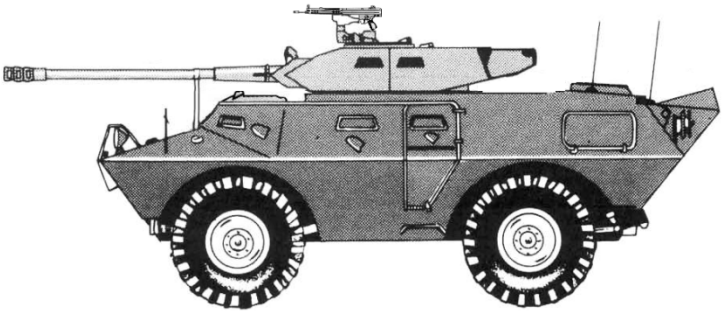
With the acquisition of the Milan Anti Tank Guided Missile system from France in 1985, SEDENA decided that the DN-3 be modified to serve as the primary carrier of the new weapon system. In 1987 the first DN-ATM was converted from a DN-AT by removing the recoilless gun and mounting the Milan ATGM on a redesigned turret. The new turret was a larger two place armored turret with a

360º power traverse, and a .50 caliber machinegun with a maximum elevation of 85º for use in the anti-aircraft role.

DN-4 *"Caballo"* Reconnaissance Vehicle



DN-4 Mk I with 37mm Gun



DN-4 Mk II with 90mm Gun

The DN-4 (4 x 4) Caballo (Horse) was designed by DINA SA to meet the requirements of the Mexican Army. Design work began in July 1977 after the company had completed production of the DN-III (4x4) armored car, with the first prototype being completed in November of that year. Following trials with prototype vehicles, a preproduction order for 10 vehicles was placed by the Mexican Army, which named the vehicle the CRR (Carro de Reconhecimento Sobre Rodas). These were delivered between 1978 and 1979.

Production of the DN-4 began at a new plant at San José Villa Guerrero Mexico in 1978 with the first production vehicles being delivered the same year. The production vehicles were slightly longer and wider than the prototypes and had a different wheelbase. First production vehicles delivered to the Mexican Army were fitted with a turret armed with 37 mm guns removed from old American-supplied M8 armored cars, but first production vehicles for export were fitted with a French CN90F3 (now Hispano-Suiza) 90 mm gun turret.

DN-4 "Caballo" armored reconnaissance vehicle was developed by Mexican company "DINA" alongside with DN-V armored personnel carrier. Both vehicles have a number of common parts and devices. DN-4 serial production began in 1974 and since 1975 vehicle was supplied to Mexican Armed Forces and exported to a number of countries. It is used by Bolivian, Columbian, Chile, Qatar armed forces. Some African, Near East, and Asian countries show interest to obtain such vehicle for their armed forces. Vehicles success in world weapon market is determined by its high simple and reliable design, ability to use "Caballo" for reconnaissance, or support infantry, and fight against enemy main battle tanks.

Vehicle:	DN-IV MK I	DN-IV MK II/IV	DN-IV MK III/V
Price:	$60,000 (-/R)	$110000 (-/S)	$140000 (-/S)
Range Finder:	None	Optical	Laser
RF modifier:	+0	+1	+3
Armament:	37mm Gun, MG21, M-2HB	90mm Gun, MG21	90mm Gun, MG21
Stabilization:	None	None	Basic
Ammo:	80x37, 1500x7.62, 400x.50	15x90, 3200x7.62	12x90, 3200x7.62
Fuel Type:	D, A	D, A	D, A
Load:	950 kg	600 kg	600 kg
Veh Wt:	10.18 tons	10.15 tons	10.47 tons
Crew:	3+8	4+2	3+4
Mnt:	4	4	4
Night Vision:	IR Searchlight	IR Searchlight	Passive IR
Radiological:	Enclosed	Enclosed	Enclosed
Movement Data			
Travel Mov:	218/131	217/130	211/127
Combat Mov:	45/25/5	45/25/5	45/25/5
Fuel Cap:	303	303	303
Fuel Cons:	98	96	98
Combat Statistics			
Config:	Trtd	Trtd	Trtd
Susp:	W(3)	W(3)	W(3)
ERA Facings:	None	None	None
Hull, Front:	5	5	5
Hull, Side:	3	3	3
Hull, Rear:	3	3	3
Turret, Front:	2	3	3
Turret, Side:	2	3	3
Turret, Rear:	2	3	3

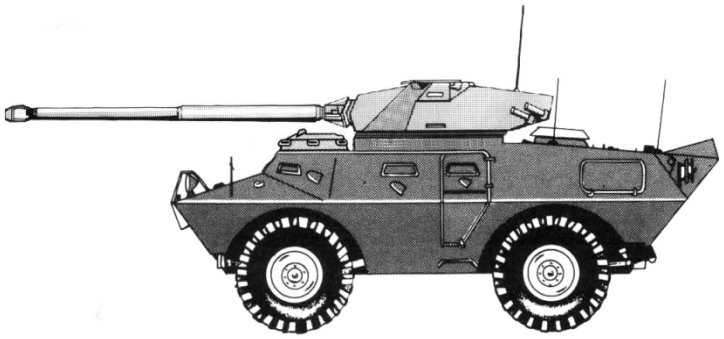
Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil-* SS	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Large Caliber Guns

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
37mm M-6	AP	390	8	6/5/4/3	Nil
RId: 1	APERS	145	30x60D	1-Nil	Nil
	HE	290	C2 B10	-6C	Nil
90mm CN90F3	APFSDS	400	20	97/84/71/46	Nil
RId: 2 (1)	HE	300	C12 B25	7C	Nil
	HEAT	300	C8 B15	65C	Nil

The "Caballo" is built using main battle tank arrangement scheme. Engine compartment is placed in the rear part of the hull, combat compartment - in the middle, and driving compartment is placed in the front. Vehicle crew consists from driver, commander, and gunner.



DN-4 Mk III with 90mm Gun in French Turret

The hull and the turret are made from welded multi-layer armor, developed by "DINA". Such armor is made from two layers of steel: external layer is rigid, while internal layer is less rigid, but tougher. Mexican research showed that such armor design increases vehicles armored defense. Such defense additionally protects crew from vehicles armor shells, appearing after direct hit of anti-tank gun, guided missile, or grenade launcher. Frontal armor plates are made from 16 mm armor and defend vehicle from large caliber machine guns. Other hull parts defend vehicle against firearms bullets, artillery projectiles and small caliber mines shells.

The reconnaissance vehicle's main armament is placed in a two seat armored rotating turret, above the fighting compartment. The original DN-4 Mk I vehicle, used by the Mexican armed forces, is fitted with the same 37-mm gun fitted to the M8 armored car. The export Mk II was up gunned with a turret mounting the French 90mm CN90F3 gun used in the French AML-90Armored Reconnaissance vehicle. The latest version of the DN-4, the Mk III also uses the French CN90F3 gun but uses the oscillating turret and revolving cylinder autoloader from the AMX-13 light tank allowing a smaller crew and increased rate of fire. The main gun is provided with a 360 º powered traverse with elevation of -8º to +15º. The original 90mm gun is not stabilized while the EC-90 gun is stabilized in elevation only.

Both 90mm guns fire APFSDS, HE, and HEAT rounds. Vehicle's combat load consists from 18 projectiles, 12 of them are placed in the turret, while the others are in the hull. Secondary armament consists from coaxial 7.62-mm machine gun, mounted in the turret, 12.7-mm anti aircraft machine gun and smoke grenade launchers, placed from the both sides of the turret.

Vehicle commander and gunner both can execute fire from the main gun. Commander's seat is placed left from the main gun and gunners - right. They both use combined day and night periscope sight. Vehicle commander additionally is equipped with day and night panoramic sight.

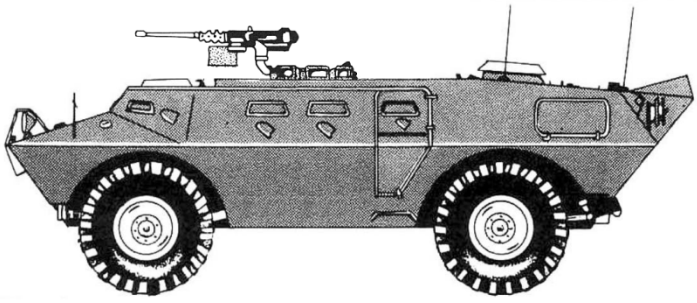
Gunner has one periscope observation device, while commander use three similar observation devices, built-in in his turret. "Caballo" is fitted with laser rangefinder, placed on the main gun. "DINA" company is recently developing a stabilized in both planes fire control system, which will allow execute sighted fire on the move.

The DN-4 "Caballo" Mk I, II, and III are powered by a 6V-53N V-type 212 h.p. 8-cylinder engine, developed by Cummings-Mexico SA. The Mk IV and Mk V are respectively the Mk III and Mk IV re engined with a OM352A 290 h.p. diesel engine and passive infrared night vision equipment. All versions of the DN-4 are fitted with the same MT-643 automatic hydro mechanic transmission, developed by USA Company "Allison" and produced by General Motors-Mexico SA.

A DN-4 Mk II of Brigada Mexicali provides fire support with its 90mm gun near Mesa, AZ in the Fall of 1998.

The DN-4 chassis is equipped with a 4 x 4 drive system with the forward wheels steering the vehicle. All wheels are independently suspended, based on springs and hydraulic absorbers. Wheels are fitted with centralized air pressure system allows to increase significantly overall vehicle cross-country performance. "Caballo" manages 0.6 m vertical step, 1 m wide trench and 1 m depth water obstacle. The vehicle is also fully amphibious being driven in the water by dual propellers.

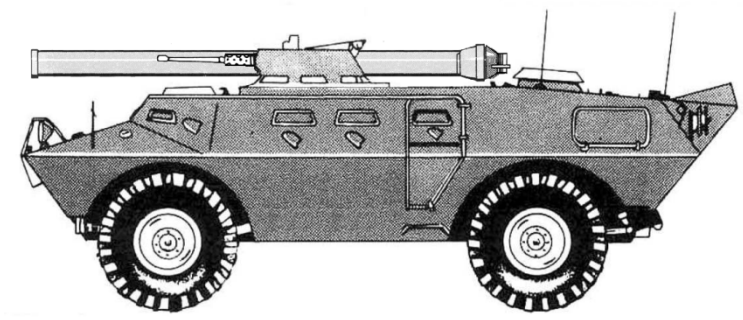
DN-5 *"Toro"* Armored Personnel Carrier



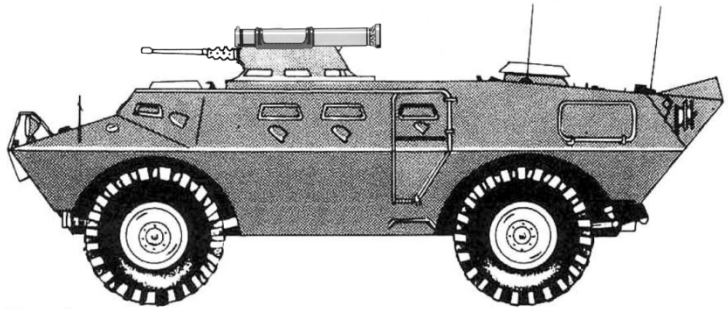
DN-5 Mk I with .50 caliber machinegun

Development of the DN-5 Toro (Bull) armored personnel carrier began in 1976. First prototype was built the same year. Production of the DN-5 Toro commenced in 1978. Initially produced for the Mexican armed forces, soon the DN-5 Toro was exported to Bolivia, Chile, Columbia, Cyprus, Ecuador, Gabon, Iraq, Libya,

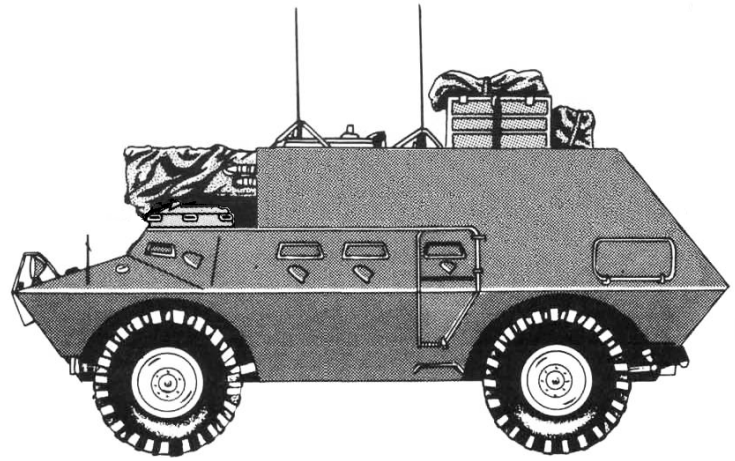
Morocco, Uruguay and Venezuela. Approximately 1000 vehicles of this type were completed when production ceased in 1990. This armored personnel carrier uses an unusual twin-layer armor. The external layer is made of hard steel, while the internal armor features increased viscosity. A front-mounted engine also increases passive protection for the occupants. Front of the hull provides protection against armor-piercing bullets, while all-round protection is against small arms bullets, mine splinters and artillery fragments.



DN-5 Mk II



DN-5 Mk III



DN-6

The DN-5 Toro is fitted with an automatic fire suppression system; however NBC protection system was optional.

The DN-5 armored personnel carrier has a crew of one and can carry 5-8 fully equipped troops. Troops enter and leave the vehicle through side or rear doors, or roof hatches. There are a number of firing ports provided.

Vehicle:	DN-5 Mk. I	DN-5 Mk. II	DN-5 Mk III	DN-6
Price:	$40000 (S/C)	$85000 (R/S)	$125000 (-/R)	$25000 (R/S)
Range Finder:	None	Optical	Optical	None
RF modifier:	+0	+1	+1	+0
Armament:	M-2HB (C)	M-2HB, MG21, M-40A2 Rcls.	M-2HB, MG21, Milan ATGM	MG21 (C)
Stabilization:	Basic	Basic	Basic	None
Ammo:	4000x.50	2850x.50, 4750x7.62, 8x106	2850x.50, 4750x7.62, 8xMilan I	5000x7.62
Fuel Type:	D, A	D, A	D, A	D, A
Load:	1.2 tons	1 ton	1 ton	1.1 tons
Veh Wt:	7.3 tons	7.6 tons	7.6 tons	7 tons
Crew:	3+8	3+8	3+8	3+5
Mnt:	2	4	4	5
Night Vision:	Headlights	Passive IR	Passive IR	Passive IR
Radiological:	Enclosed	Enclosed	Enclosed	Enclosed
Movement Data				
Travel Mov:	300/144	231/139	231/139	217/130
Combat Mov:	50/30/5	45/30/5	45/30/5	45/30/5
Fuel Cap:	300	300	300	300
Fuel Cons:	76	77	77	76
Combat Statistics				
Config:	Stnd	Trtd	Trtd	CiH
Susp:	W(3)	W(3)	W(3)	W(3)
ERA Facings:	None	None	None	None
Hull, Front:	3	3	3	10
Hull, Side:	2	2	2	4
Hull, Rear:	2	2	2	3
Turret, Front:		2	2	2
Turret, Side:		2	2	2
Turret, Rear:		2	2	2

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Recoiless Gun

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
M-40A2	106mm HEAT	320	C15 B20	96C	2240
RId: 7					

ATGM

Weapon	*Round*	*Diff*	*Damage*	*Pen*	*Min*	*Max*
Milan	Milan	AVG	C12 B12	97C	25	2000
RId: 3	Milan-II	AVG	C16 B40	121C	25	2000
	Milan II-T	AVG	C16 B40	122C	25	2000

The Mk I APC's main armament consists of a single pintell mounted .50 caliber machinegun at the commander's position. By 1998 nearly all Mk I vehicles had been upgraded to the Mk II standard.

The Mk II armament is placed in a single seat armored manually traversed turret above the fighting compartment. The turret contains a .50 caliber heavy machine gun and a 7.62mm machine gun. Both weapons may be elevated from -8º to +85º for use against low flying aircraft. In addition to machineguns, the Mk II is equipped with a M-40A2 106mm recoilless rifle for use in the anti-armor role. 8 106mm HEAT shells are carried internally but the commander must expose himself to reload the weapon.

A DN-5 Mk II of the Brigada Nogales; San Ramon, CA Spring 1999

The Mk III uses the same turret as the Mk II but replaces the 106mm recoilless rifle with a pair of Milan Anti Tank Guided Missile launchers. The majority of DN-5s were equipped with the Milan I missile with a basic HEAT warhead. The main advantages of the Milan were its ability to engage targets at 2000 meters and its improved 1st shot hit probability. A limited number of Milan II and Milan II-T missiles were distributed to front line units early in the war, but these stocks were rapidly depleted.

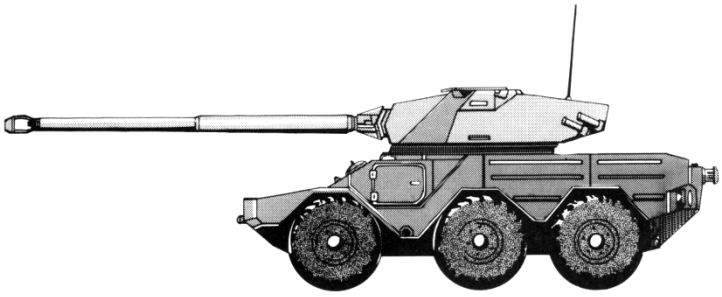
The DN-6 armored command post is based on the DN-5 armored personnel carrier. From the front to just behind the driver's position and engine compartment, it is identical to the DN-5, but the passenger compartment was raised by 64.14cm to increase the inside ceiling height to 189.9cm.

A roof hatch was provided with vision blocks and a MG21 machinegun. The single fuel tank of the APC was replaced by two 150L fuel tanks which were placed on either side of the passenger compartment. The fuel tanks also served as the supports for two folding tables. Map boards, radios, and a five-man bench seat could be installed in the passenger compartment. To the right of the driver, on the front of the raised passenger compartment, was an auxiliary gasoline generator which provided electrical power for the command equipment. The generator could be dismounted, and a 50' (15m) cable was provided for this purpose. A tent may be attached to the rear of the DN-6 to provide more space in which to work. This tent was rolled on top of the rear roof when not in use, and could be used to connect two DN-6s. The tent provided an additional 120ft² (11m²) of space.

This is a typical example of a DN-5 Mk. III from the later phase of the invasion. The unit is believed to be Tercio Vanguardia operating in the Laredo area. Note that both Milan tubes have been removed, probably due to battle damage.

All versions of the DN-5 used a Cummings OM-32A 190 h.p. diesel engine and MT-643 automatic hydro mechanic transmission, developed in the USA by Allison transmission and produced by General Motors-Mexico SA.

Panhard ERC-90 *Lynx* Armored Car



Panhard Lynx-90 Armored Reconnaissance Vehicle

The ERC (Engin de Reconnaissance Canon) range of armored cars was developed by Panhard as a private venture from 1975 and was aimed specifically at the export market.

The range was first shown in 1977 at the Satory Exhibition of Military Equipment and entered production the following year at Panhard's new factory at Marolles. First production vehicles were completed in 1979.

The ERC range of armored cars share many automotive components with the Panhard VCR range of armored personnel carriers also shown for the first time in 1977. Full details of these are given in the Armored personnel carriers (wheeled) section.

The Panhard VCR (6 x 6) was originally developed to meet the specific operational requirements of Iraq as the platform for the Euromissile UTM-800 HOT anti-tank turret. Using automotive components from the VCR (6 x 6) the ERC armored car was created but with a different wheelbase on account of the turret basket of the new Giat Industries TS90 turret.

Lynx-90s of the 11° Regimiento de Caballería Blindados enter San Diego

ERC 90 F1 Lynx (ERC-1 Lynx)
This is fitted with a Lynx 90 turret designed and manufactured by Hispano-Suiza and armed with a 90 mm F1 gun, a 7.62 mm coaxial machine gun and two smoke grenade dischargers on either side of the turret at the rear. The gun fires HEAT, HE, smoke and canister rounds.

The commander is seated on the left of the turret with the gunner on the right. The commander is provided with a cupola with a single-piece hatch cover that opens to the rear and eight periscopes for all-round observation. The gunner is provided with a single-piece hatch cover that opens to the rear. Vision equipment consists of a combined day and night passive periscope Model TJN 2.90 (SOPELEM), TCV 107 laser range-finder (CILAS/SOPELEM) and 12 periscopes (nine Type L794B and three Type L794D). A total of 21 rounds of 90 mm ammunition is carried in the turret and, if required, a 7.62 mm machine gun can be fitted for anti-aircraft defense.

Vehicle:	ERC-90 F1 Lynx
Price:	$170000 (S/C)
Range Finder:	Laser
RF modifier:	+3
Armament:	90mm Gun, MG21, MG21
Stabilization:	Fair
Ammo:	505x20, 2000x7.62
Fuel Type:	D, A
Load:	300 kg
Veh Wt:	7.45 tons
Crew:	3
Mnt:	3
Night Vision:	Passive IR, II
Radiological:	Sheilded

Movement Data

Travel Mov:	116/46
Combat Mov:	29/12/3
Fuel Cap:	242
Fuel Cons:	34

Combat Statistics

Config:	Trtd
Susp:	W(3)
ERA Facings:	None
Hull, Front:	8
Hull, Side:	6
Hull, Rear:	4
Turret, Front:	6
Turret, Side:	7
Turret, Rear:	6

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143

Large Caliber Guns

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
90mm CN90F3	APFSDS	400	20	97/84/71/46	Nil
RId: 2	HE	300	C12 B25	7C	Nil
	HEAT	300	C8 B15	65C	Nil

TRACKED ARMORED VEHICLES

M2/M3 Half Tracks

The Carrier, Personnel Half-track M3 was an armored vehicle used by the United States and its allies during World War II and the Cold War.

Vehicle:	M2A1 Half-Track (Cmd)	M3A1 Half-Track	M-3 GMC	M-16 MGMC (ADA)
Price:	$35000 (R/S)	$52000 (R/S)	$170000 (R/R)	$70000 (R/R)
Range Finder:	None	None	Optical	Optical
RF modifier:	+0	+0	+1	+1
Armament:	M2HB (C), MG21 (P)	M2HB (C), MG21 (P)	75mm gun, MG21 (x3), M-2HB (C)	4x M2HB
Stabilization:	None	None	None	None
Ammo:	700x.50, 7750x7.62	700x.50, 7750x7.62	59x75, 900x7.62, 300x.50	5000x .50
Fuel Type:	G,A	G, A	G, A	G, A
Load:	3.0 tons	1 ton	1.5 tons	2.3 tons
Veh Wt:	8.9 tons	9.3 tons	10.8 tons	10 tons
Crew:	5	2+11	5	5
Mnt:	5	4	4	5
Night Vision:	Headlights	Headlights	Headlights	Headlights
Radiological:	Open	Open	Open	Open
Movement Data				
Travel Mov:	130/70	106/74	104/52	130/70
Combat Mov:	30/15	30/10	26/11	30/15
Fuel Cap:	230	230	277	230
Fuel Cons:	180	43	74	180
Combat Statistics				
Config:	Stnd	Stnd	CiH	Turret
Susp:	T1	T2	T2	T1
ERA Facings:	None	None	None	None
Hull, Front:	3	2	2	3
Hull, Side:	2	2	2	2
Hull, Rear:	2	2	2	2
Turret, Front:			3	2
Turret, Side:			2	1
Turret, Rear:			None	None

Machineguns

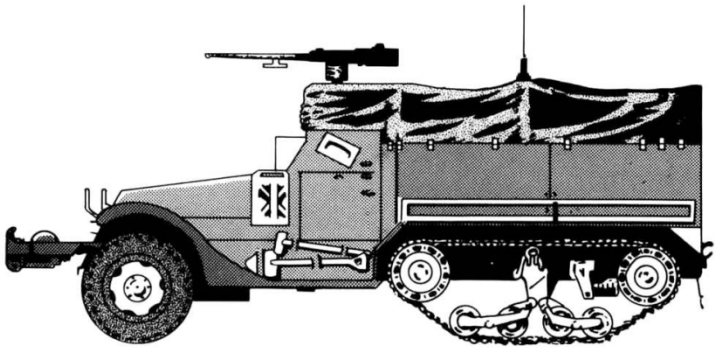
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Large Caliber Gun

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
75mm Howitzer	APDS	340	17	33/29/25/16	Nil
RId: 2	APERS	125	25x50D	1-Nil	Nil
	HE	250	C8 B20	4C	9000
	HEAT	250	C6 B15	53C	Nil
	WP	250	C2 B15	Nil	9000

Between the world wars, the US Army sought to improve the tactical mobility of its forces. With the goal of finding a high-mobility infantry vehicle, the Ordnance Department had evaluated the half-track design by testing French Citroën-Kégresse vehicles. The White Motor Company produced a prototype half track using their own chassis and the body of the M3 Scout Car.

The design, using as many commercial components as possible to improve reliability and speed production, was standardized in 1940 and built by the Autocar Company, Diamond T Motor Company, and the White Company.



M3 Halftrack with .50 Caliber Machinegun

The M3 was the larger counterpart to the M2 Half Track Car. The M2 was originally intended to function as an artillery tractor. The M3 had a longer body than the M2 with a single access door in the rear and seating for a 13-man rifle squad. Ten seats were arranged down either side of the vehicle, with three in the cab. Racks under the seats were used for ammunition and rations; additional racks behind the seat backs held the squad's rifles and other stowage. A small rack for mines was added on the outside of the hull just above the tracks. In combat, most units found it necessary to stow additional food, rucksacks and other crew stowage on the outside of the vehicle. Luggage racks were often added in the field, and very late vehicles had rear-mounted racks for this crew stowage.

The M3 Halftrack served as the primary APC for most Mexican Territorial brigades throughout the War. Here is a M3A1 of the 2nd Regimento Infanteria Torreon, somewhere in West Texas, 1999.

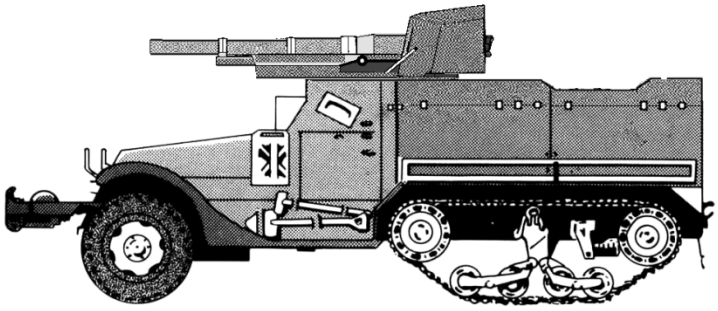
Early vehicles had a pintle mount just behind the front seats mounting a .50 caliber (12.7 mm) M2 Browning machine gun. The

later M3A1 adopted a raised, armored 'pulpit mount' for the .50 caliber, and .30 caliber (7.62 mm) machine guns could be used from mounts along the sides of the passenger compartment. Many M3s were later modified to the M3A1 standard. The body was armored all around with an adjustable armored shutter for the engine's radiator and a bullet proof windscreen.

Mexican halftracks of the 4° Regimiento De Infantería Blindados entering San Jose, CA in late 1998, the high water mark of the invasion of California.

Total production of the M3 ran to nearly 41,000 vehicles. To supply the Allied nations International Harvester produced several thousand of a very similar vehicle, the M5 half track for Lend-Lease.

The 75 mm Gun Motor Carriage M3 was a United States tank destroyer and self-propelled artillery piece of the Second World War.



M3 GMC with 75mm Gun

The German victory over France in 1940 using armored divisions profoundly impressed the United States Army. Realizing that defense against tanks was essential, an urgent requirement was issued for the development of tank destroyers for the U.S. Army. In June 1941, an M3 Halftrack was mated with an 75 mm gun M1897A4 , which was an American version of the famous "French 75" of World War I fame. This experimental vehicle was known as the T12, and proved to work remarkably well given the speed with which it was developed. Standardized in October 1941 as the 75 mm GMC M3, over 2,200 75 mm GMC M3's were produced until April 1943. However, a large number of them were converted back to standard halftracks before issue to troop units, resulting in only 842 seeing field service. The GMC M3A1 was a variant that used a different gun mount. The 75 mm GMC M3 was reclassified first as limited standard and then as obsolete in 1944.

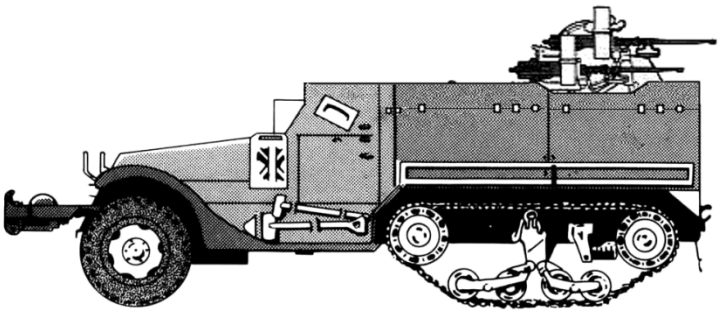
The 75 mm GMC M3 was an M3 Halftrack with an M1897A4 75 mm gun mounted in the rear of the halftrack. The gun had an indirect fire range of 9,200 yards (8,400 meters),and fired the AP M72 (Armor Piercing) shell that could penetrate 3.2 inches of armor at 500 yards, the APC M61 (Armor Piercing Capped) shell that could penetrate 2.8 inches of armor at 500 yards, and the HE M48 (High Explosive) shell for use against infantry and other non-armored targets. 59 rounds of 75-mm ammunition were carried aboard. The crew were equipped with a rifle and four carbines for self defense.

Confronted with an impending war with Japan, 75 GMC M3's and T12's, termed "Self-Propelled Mount" (SPM) halftracks, were shipped to the Philippine Islands in September 1941 to form the (2nd) Provisional SPM Brigade. These vehicles saw action during the Japanese invasion of the Philippines, and some were later captured by the Japanese and used against U.S. forces in 1944.

Mexican Armored infantry of the Brigada Culiacan move along Highway 160 (the Navajo Trail) to assault Flagstaff from the North.

The GMC M3 was the most widely-deployed tank destroyer in U.S. tank destroyer battalions during the campaign in Tunisia in late 1942 and early 1943, and was prominent during the battles of Sidi Bou Zid, Kasserine Pass, and El Guettar. Although many GMC M3's were lost in these battles, the U.S. Army concluded that improper employment had caused some of these losses. The GMC M3 was again used in the tank destroyer role in the Sicilian Campaign in July 1943. Subsequently, the GMC M3 was phased out of tank destroyer battalions and replaced by the GMC M10, a turreted tank destroyer mounting a modern 3-inch gun. Although then considered obsolete for use against German tanks, the GMC M3 was powerful enough to destroy the light tanks deployed by the

Japanese, and so the GMC M3 continued to be used in the Pacific Theater, primarily with regimental weapons companies of the U.S. Marine Corps, seeing action on Saipan, Peleliu, and Okinawa, among other island battles. Because tanks were not frequently deployed by the Japanese, the GMC M3 was often used as a self-propelled artillery piece or for direct fire support against Japanese fortifications. In 1945, the GMC M3 was replaced in Marine Corps use by the 105 mm HMC M7 self-propelled artillery piece.



M16 MGMC with Quad .50 Caliber Machineguns

Around 170 GMC M3's were provided to the British Army in early 1943. The British deployed them in the headquarters troops of armored car and tank units as self-propelled artillery pieces. These, known as 75 mm SP, Autocar in British nomenclature, were employed in Tunisia and Italy. The 75 mm GMC M3 was also used by the French Army on a limited basis during on the Western Front 1944 - 1945.

The M16 Multiple Gun Motor Carriage is a half tracked anti-aircraft vehicle based on the M3. There is a powered open turret mounting four M2HB machine guns. The M16 proved popular with the U.S. army. In addition to its role as an anti-aircraft vehicle the M16 became popular for use as an infantry fire support vehicle. The fire power of the quad .50's led to the nick name "meat chopper" which described its effect against enememy infantry. The M16 was the only version of the M3 to remain in front line service after the war. It remained in use with US reserve units into the 1960's.

AMX

The AMX VCI (Vehicule de Combat d'Infanterie) was originally developed in the early 1950s to meet the requirements of the French Army. The first prototype was completed in 1955 and the first production vehicles in 1957 at the Atelier de Construction Roanne (ARE). When the ARE (which is now part of Nexter Systems and previously Giat Industries and is currently prime contractor for Leclerc MBT) started production of the AMX-30 MBT, production of the complete AMX-13 tank family, including the AMX VCI, was transferred to the Creusot-Loire facility at Chalon-sur-Saone.

When originally introduced into service with the French Army the vehicle was called the Transport de Troupe Chenillé Model 56 (or TT 12 CH Mle 56 for short). This was later changed to the Véhicule Transport de Personnel (or AMX VTP) and to the Véhicule de Combat d'Infanterie. It was used in large numbers by the French Army but has been replaced by the now Nexter Systems AMX-10P amphibious ICV.

It is believed that total production of the vehicle amounted to approximately 3,400 vehicles.

Vehicle:	AMX VCI	AMX VCI Toucan	AMX PM	AMX- DCA
Price:	$42000 (S/C)	$175000 (-/S)	$112000 (-/S)	$105000 (-/R)
Range Finder:	None	Optical	None	Optical
RF modifier:	+0	+1	+0	+2
Armament:	M2HB (C)	20mm AC, MG21 (C)	120mm M, M-2HB (C)	2x30mm Giat M 781
Stabilization:	Basic	None	None	Fair
Ammo:	2000x.50	700x20, 2000x7.62	60x120, 2000x.50	600x30
Fuel Type:	D, A	D, A	D, A	G, A
Load:	2 tons	1.8 tons	1 ton	300 kg
Veh Wt:	15 tons	15.73 tons	16.1 tons	17.2 tons
Crew:	3+10	3+10	6	3
Mnt:	6	7	6	8
Night Vision:	Passive IR	Passive IR	Passive IR	Radar, Passive IR
Radiological:	Enclosed	Enclosed	Open	Enclosed
Movement Data				
Travel Mov:	125/88	85/59	111/77	88/62
Combat Mov:	25/20	20/15	25/15	22/16
Fuel Cap:	410	410	410	415
Fuel Cons:	74	44	87	139
Combat Statistics				
Config:	Stnd	Trtd	Stnd	Trtd
Susp:	T3	T3	T3	T3
ERA Facings:	None	None	None	None
Hull, Front:	8	8	8	6
Hull, Side:	4	4	4	3
Hull, Rear:	4	4	4	2
Turret, Front:		3		5
Turret, Side:		3		4
Turret, Rear:		3		3

Machineguns							-Recoil-	
Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	SS	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

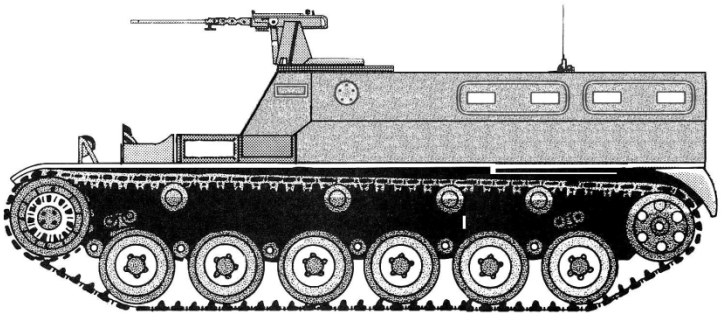
Large Caliber Gun

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
76T2 20mm AC	APDS	630	4	6/5/4/3	Nil
Rof: 10	API	630	4	3/3/3/2	Nil
	HEI	470	C1 B5	-4C	Nil
M781 30mm AC	APHEI	340	C1 B5	3/3/3/2	Nil
Rof: 5	API	340	7	3/3/3/2	Nil
	HEI	250	C2 B10	-3C	Nil

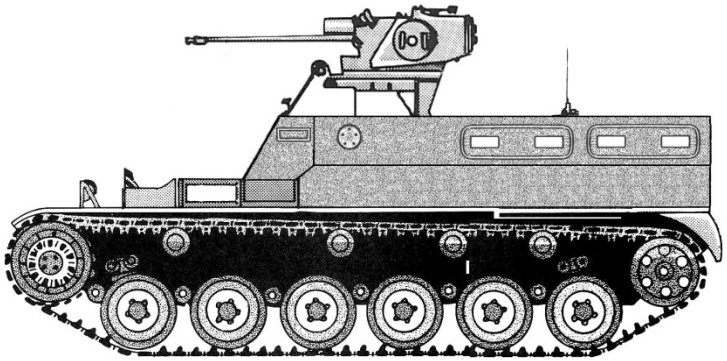
Mortar

Weapon	*Round*	*Min Rng*	*Damage*	*Pen*	*IFR*
TDA MO 120mm	HE	600	C29 B55	11C	4750
Rof: 1	ILLUM	600	(B1765)	Nil	4750
	WP	600	C3 B35	Nil	4750

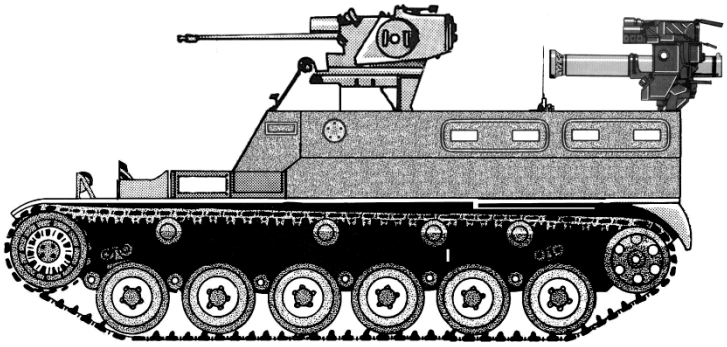
In more recent years production and marketing of the complete range of AMX-13 family of light armored vehicles, including the VCI infantry combat vehicle, was carried out by Mecanique Creusot-Loire. This company is no longer involved in the design, development or production of armored fighting vehicles.



AMX-VCI with .50 Caliber Machinegun



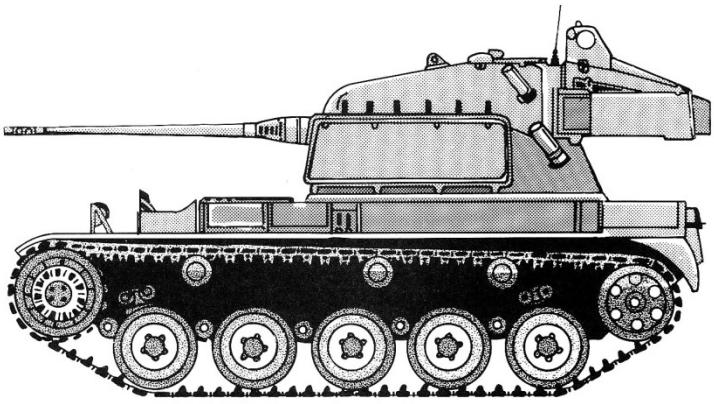
AMX-Toucan (M56) with 20mm Cannon



AMX-Toucan with Milan ATGM launcher on external mount.

From the 1970s many countries started to phase the AMX VCI out of front line service. Mexico has taken delivery of 401 AMX VCI series vehicles from Belgium. These were overhauled prior to delivery to Mexico by the Belgian company SABIEX International.

The chassis of the AMX VCI is similar to that of the AMX-13 light tank. The hull of the AMX VCI is of all-welded steel armor and is divided into three compartments, with the driver and engine compartments at the front and the troop compartment at the rear. The all-welded steel armor provides the occupants with protection from small arms fire and shell splinters. The highest level of protection is over the frontal arc of the AMX VCI.



AMX-DCA Air Defense Artillery Vehicle

The driver is seated at the front of the vehicle on the left with the engine compartment to his right. The driver has a single-piece hatch cover that opens to the left, in front of which are three day periscopes. The centre periscope can be replaced by an infra-red or image intensification periscope for night driving.

The original Sofam petrol engine is mounted facing the rear and can be removed through the roof in 40 minutes. The engine transmits power via the clutch to the gearbox at the front of the hull, to the right of which is the Cleveland-type steering differential.

Mounted on the glacis plate is a splashboard to prevent water rushing up the front of the vehicle when fording and a replacement wheel is normally carried on the glacis plate.

The troop compartment is behind and above the driver with the gunner seated on the left and the vehicle commander to his right. When the VCI was originally introduced into the French Army, the gunner had a single-piece hatch cover with eight day vision devices which swivelled to open, forward of which was a pintle-mounted 7.5 mm machine gun. This was later replaced by a ring-mounted .50 (12.7 mm) M2 HB machine gun or a CAFL 38 one-person turret armed with a 7.5 mm or a 7.62 mm machine gun.

The vehicle commander is seated to the right of the gunner and has a single-piece hatch cover that opens forwards, to the front and right side of which are three day periscopes.

The troop compartment is at the rear: the 10 infantrymen sit back-to-back down the centre of the hull and enter and leave the vehicle by two doors in the hull rear that open outward. Each door has a single firing port. In each side of the troop compartment are two two-piece hatch covers. The lower part of each has two firing ports and folds forwards into the horizontal and the upper part folds upwards through 180° to rest on the troop compartment roof.

The torsion bar suspension either side consists of five single rubber-tired road wheels with the drive sprocket at the front, idler at the

rear and four (in some cases three) track-return rollers that support the inside of the track only. The first and last road wheel stations either side have hydraulic shock-absorbers. The steel tracks have 85 links each side when new, and can be fitted with rubber pads.

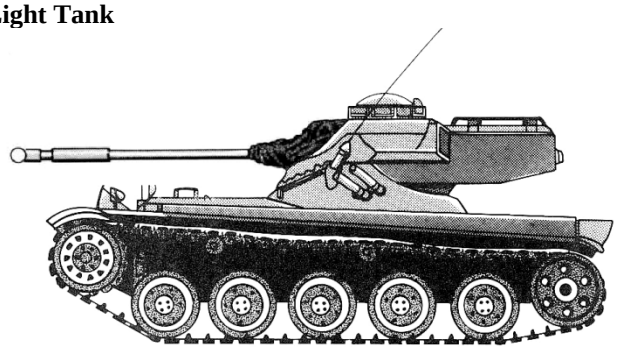
When originally introduced into service the VCI was not fitted with an NBC system but one was subsequently fitted to later production vehicles for the French Army. Infra-red driving lights were standard on most vehicles but they do not have any amphibious capability.

AMX-VCI Toucans bound for the Rio Grande

The AMX-DCA is AMX hull topped with a large turret housing an antiaircraft gun system. They are generally used in a mix with SP antiaircraft missile systems to provide a layered mix of weapons. They are fairly light vehicles with decent armor (especially against civilians and under-equipped partisans) and good maneuverability. There is a driver's hatch on the front deck, and a commander's hatch on the turret deck; the gunner uses the commander's hatch.

In the Twilight War, the AMX-DCAs were used to grisly effect in the Middle East and the Dead Zone against personnel in the open and in soft skinned vehicles, and used to terrorize and kill refugees in the Dead Zone along the Franco-German border, as well as against partisans in Belgium, Luxembourg, and the Netherlands.

AMX-13 Light Tank



Original AMX-13 Light Tank with 75mm Gun

Vehicle:	Mexican AMX-13
Price:	$149000 (-/S)
Range Finder:	Laser
RF modifier:	+2
Armament:	90mm Gun, MG21, MG21
Stabilization:	Fair
Ammo:	32x90, 3600x7.62
Fuel Type:	D, A
Load:	300 kg
Veh Wt:	15 tons
Crew:	3
Mnt:	6
Night Vision:	Passive IR
Radiological:	Enclosed

Movement Data

Travel Mov:	121/85
Combat Mov:	28/20
Fuel Cap:	480
Fuel Cons:	77

Combat Statistics

Config:	Trtd
Susp:	T3
ERA Facings:	
Hull, Front:	6
Hull, Side:	3
Hull, Rear:	2
Turret, Front:	5
Turret, Side:	4
Turret, Rear:	3

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil-* SS	*Brst*	*Rng*
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143

Large Caliber Guns

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
90mm CN90F3	APFSDS	400	20	97/84/71/46	Nil
RId: 1	HE	300	C12 B25	7C	Nil
	HEAT	300	C8 B15	65C	Nil

Design work on the AMX-13 light tank began in 1946 at the Atelier de Construction d'lssy-les-Moulineaux and the first prototype was completed two years later. Production was undertaken at the Atelier de Construction Roanne (ARE) from 1952, with the first production tanks completed the following year.

The basic chassis has been used for a wide range of vehicles including the AMX VCI mechanised infantry combat vehicle, the 105 mm self-propelled howitzer, the 155 mm self-propelled gun Mk F3 and the twin 30 mm DCA self-propelled anti-aircraft gun system. Details of all of these vehicles are given later in the volume with the exception of the 30 mm DCA and 105 mm SPH, which is no longer in service.

Without changing the basic design, many improvements were announced at the 1985 Satory Exhibition of Military Equipment.

These included a new power pack consisting of a diesel engine coupled to a fully automatic transmission and the replacement of the torsion bar suspension by a new hydropneumatic suspension for improved crosscountry mobility.

The armored vehicle division of Mecanique Creusot-Loire is now part of Giat Industries and is responsible for after sales support for all members of the AMX-13 family of light armored vehicles, as well as for the provision of upgrade packages. The AMX-13 is no longer being marketed by Giat Industries.

It is estimated that total production of the AMX-13 family of light tracked vehicles, including the light tank, amounted to 7,700 units, of which around 3,400 were exported. The AMX-13 light tank was phased out of service with the French Army many years ago.

The hull of the AMX-13 is of all-welded steel and divided into three compartments, with the driver and engine compartments at the front and the turret mounted at the rear. The driver is seated at the front of the vehicle on the left side with the engine compartment to his right and the differential in front of him. The driver is provided with a single-piece hatch cover that opens to the left and three periscopes, the centre one of which can be replaced by an image intensification periscope for night driving.

A Pair of AMX-13 Méxicano light tanks led by an M3 half track responding to the advance of the U.S. 5th Army in the Summer of 1999.

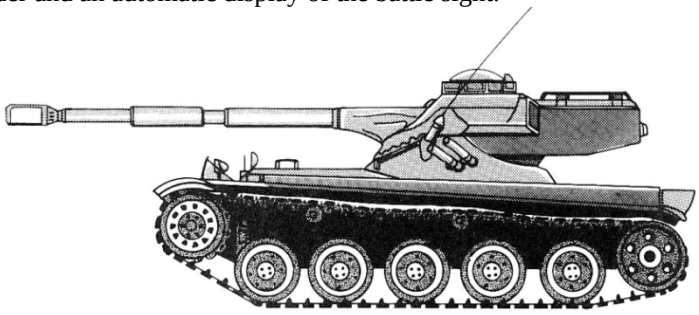
The turret is mounted at the rear of the hull and the type of turret depends on the model of the tank and its armament. All turrets are oscillating. In all models the commander is seated on the left of the turret and the gunner on the right. The commander is provided with eight periscopes and a domed hatch cover that opens to the rear. The gunner has two periscopes and a single-piece hatch cover that opens to the rear.

The torsion bar suspension consists of five rubber-tired road wheels with the drive sprocket at the front and the idler at the rear. Trials have been completed with the torsion bars replaced by hydropneumatic suspension units. There are three (or in some cases two) track-return rollers which support the inside of the track only. The first and last road wheel stations have hydraulic shock-absorbers. The steel tracks have 85 links per side and can be fitted with rubber pads if required.

An AMX-13 of the 14th Brigada De Caballería Blindados outside Midland, TX spring of 2000

The AMX-13 does not have an NBC system, cannot be fitted for deep wading and as built was not fitted with any night fighting equipment, although several armies have fitted their vehicles with such systems: for example, an infrared searchlight to the rear of the gunner's position and an infrared sight for the gunner.

More recently, the AMX-13 has been offered fitted with passive or thermal night firing and night driving equipment, a laser range-finder and an automatic display of the battle sight.

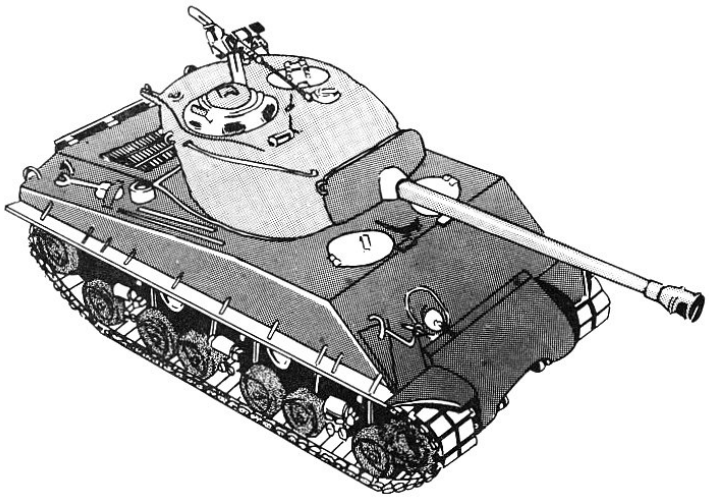


AMX-13 Méxicano with 90mm Gun

In addition to purchasing vehicles from France, Mexico assembled a number of vehicles from components supplied directly from France. It is believed that most of these have had their original SOFAM petrol engines replaced by Cummings V-8 diesels developing 260 hp.

MAIN BATTLE TANKS

Improved Sherman Main Battle Tank



M4A3E8 Sherman main battle tank

The M4 Sherman, formally Medium Tank, M4, was the primary tank used by the United States during World War II. It was also distributed to the Allies via lend lease. Production of the M4 medium tank exceeded 50,000 units and its chassis served as the basis for numerous other armored vehicles such as tank destroyers, tank retrievers, and self-propelled artillery. In the United Kingdom the M4 was given the name Sherman after Union General William Tecumseh Sherman, following the British practice of naming their American-built tanks after famous American Civil War generals. Subsequently the British name found its way into common use in the US. Many nations continued to use the tank in both training and combat roles into the late 20th century.

The US Army Ordnance Department designed the Medium Tank M4 as a replacement for the M3 Lee. The Lee was an up-gunned development of the M2 Medium Tank, which was itself derived from the M2 Light Tank. Developed as a stopgap measure until a new turret mounting a 75 mm gun could be devised, the M3 suffered from a number of design faults, namely a large silhouette and an inflexible sponson mounting for the main gun.

Detailed design characteristics for the M4 were submitted by the Ordnance Department on 31 August 1940, but development of a prototype had to be delayed so final production designs for the M3 could be finished, and the tank put into full-scale production.

On 18 April, 1941 The U.S. Armored Force Board chose the simplest of five designs. Known as the T6, the design combined a modern turret with the Lee's main gun with a modified M3 hull and chassis. The Sherman's reliability would benefit from utilizing many design features first developed in U.S. light tanks during the 1930s, including a vertical volute spring suspension, rubber-bushed tracks, and rear-mounted radial engine with drive sprockets in front. The stated goal was to produce a fast, dependable medium tank that was capable of defeating any other tank currently in use by the Axis nations.

Early Sherman's mounted a 75 mm medium-velocity general-purpose gun. Although Ordnance began work on the Medium Tank T20 as a Sherman replacement, ultimately the Army decided to minimize production disruption by incorporating elements of other tank designs into Sherman production. Later M4A1, M4A2, and M4A3 models received the larger T23 turret, with a high-velocity 76 mm gun M1, which reduced the number of HE and smoke rounds carried for an increase in the number of anti-tank rounds. The British offered their Ordnance QF 17-pounder gun (76.2 mm) anti-tank gun, with its significantly better armor penetration to the Americans, but the U.S. Ordnance Department was working on a 90 mm tank gun and declined. As a stopgap in their own tank development, the British developed their own up-gunned "Firefly" variant, with the 17-pounder. Later, the M4 and M4A3 were factory-produced with a 105 mm howitzer and a new distinctive mantlet in the original turret. The first standard-production 76 mm-gun Sherman was an M4A1, accepted in January 1944, and the first standard-production 105 mm-howitzer Sherman was an M4 accepted in February 1944.

The M4 Sherman's basic chassis further undertook all the sundry roles of a modern, mechanized force, totaling roughly 50,000 Sherman tanks, plus thousands more derivative vehicles under different model numbers, including M32 and M74 "tow truck"-style recovery tanks with winches, booms, and even an 81 mm mortar for smoke screens, M34 (from M32B1) and M35 (from M10A1) artillery prime movers, M7B1, M12, M40, and M43 self-propelled artillery, and up gunned M10 and M36 tank destroyers.

M-50/90 Guerreros of the 24° Regimiento de Caballería Blindados during their initial advance into West Texas. Note the updated 90mm main armerment.

When the Sherman first saw combat in 1942, its 75 mm M3 gun could defeat the armor of the German Pzkw III and Pzkw IV tanks it faced in North Africa at normal combat ranges. However, starting

with the invasion of Sicily in August 1943, it was discovered that the 75 mm M3 gun was ineffective against the front of the Pzkw V and Pzkw VI tanks and the front of more common Jagdpanzer anti-tank vehicles at typical combat ranges. The problem increased dramatically with the fighting in Normandy after June 6, 1944.

A Mexican M50 "Guerrero" advances across the open desert

The 75 mm M3 gun was thereby rendered obsolete, and the European Theatre of Operations quickly demanded deliveries of the Sherman armed with the 76 mm M1 gun, as well as tanks and tank destroyers carrying the 90 mm M3 gun. Although Sherman's armed with 105 mm M4 howitzers provided even more powerful high-explosive armament, they were of limited use in fighting enemy tanks due to the problems of hitting the small targets with a howitzer, and the lack of power traverse which hindered getting the howitzers on target in a timely fashion. Moreover, the M3 Gun was commonly fitted to most Sherman's in Europe right up until the end of the war.

The growing numbers of Panthers on the western front led the US Army to deploy 76 mm-gun Sherman's to Normandy in July 1944. The higher-velocity 76 mm M1 gun gave Sherman's anti-tank firepower at least equal to most of the German vehicles they encountered, particularly the Panzer IV, and StuG. However, with regular AP (Armor Piercing, Shot) ammunition (M79) or APCBC (M62) shells, the 76 mm could only have a chance to knock out a Panther at close range with a shot to its front mantlet, or with a shot to its flank. At long range, the Sherman was badly outmatched by the Panther's 75 mm gun, which could easily penetrate the Sherman's armor. This contributed to the high losses of Sherman tanks experienced by the U.S. Army in the European Theatre of Operations (ETO).

The Sherman's armor was effective against most early war tank guns. The frontal thickness was 91 mm for the gun mantlet, 76 mm for the turret front, and 63 mm for the front of the hull. The Sherman's frontal armor was designed to withstand the lower velocity 50mm Kwk 38 L/42 gun, which was a common German anti-tank gun and the gun on the Panzer III medium tank during the North African Campaign in 1942. However, the Sherman's armor, while good for an early war tank, was inadequate against the German 75mm KwK 40 L/48 used by the later Panzer IV's, the higher velocity 75mm KwK 42 L/70 used by the Panther tank, and the infamous 88mm KwK 36 L/56 used on the Tiger tanks. It was this deficiency in its frontal armor that made the Sherman very vulnerable to most German anti-tank rounds in 1944.

Progressively thicker armor was added to hull front and turret mantlet in various improved models, while field improvisations included placing sandbags, spare track links, concrete, wire mesh, or even wood for increased protection against shaped-charge rounds. General George S. Patton, informed by his technical experts that the standoff produced by sandbags actually increased vulnerability to shaped-charge weapons (a controversial opinion) and that the machines' chassis suffered from the extra weight, forbade the use of sandbags and instead ordered tanks under his command to have the front hull welded with extra armor plates, salvaged from knocked-out American and German tanks. Approximately 36 of these up-armored Sherman's were supplied to each of the armored divisions of the Third Army in the spring of 1945.

M-50 Guerreros of the 28° Regimiento de Caballería Blindados during an assault on Indio, CA.

The Sherman had good speed both on- and off-road. Off-road performance varied. In the desert, the Sherman's rubber tracks performed well. In the confined, hilly terrain of Italy, the Sherman could often cross terrain German tanks could not. However, US crews found that on soft ground, such as mud or snow, the narrow tracks gave poor ground pressure compared to wide-tracked second-generation German tanks such as the Panther. Soviet experiences were similar and tracks were modified to give better grip in the

snow. The US Army issued extended end connectors or 'duckbills' to add width to the standard tracks as a stopgap solution. Duckbills were original factory equipment for the heavy M4A3E2 Jumbo to compensate for the extra armor weight. The M4A3E8 'Easy Eight' Sherman's and other late models with wider-tracked HVSS suspension corrected these problems, but formed only a small proportion of the tanks in service even in 1945.

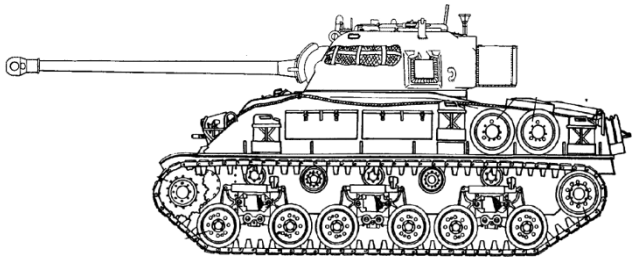
An M-51 (note 105mm gun) of the 74° Regimiento de Caballería Blindados guarding a Mexican Position near Flagstaff, AZ following winter snow flurry

The only other Second World War tank produced in comparable numbers to the Sherman was the Soviet T-34 series, which many critics consider as a contender for best tank of the war. The later 76 mm versions had superior anti-tank power capabilities to the Soviet 85 mm. (Though most Sherman's, even into the late period of the war, were fitted with the inferior 75 mm gun) The T-34's advantages were its low profile, wide tracks which made crossing muddy terrain easier, speed and superior mobility to the Sherman. Both tanks excelled in reliability. Each was a medium design that served as the primary battlefield tank of its respective country in World War II, was upgraded, served into the Cold War, and outfitted allies. During the Korean War, US Sherman's performed well against their T-34-85 adversaries, although a direct comparison is difficult due to the superior training of US crews.

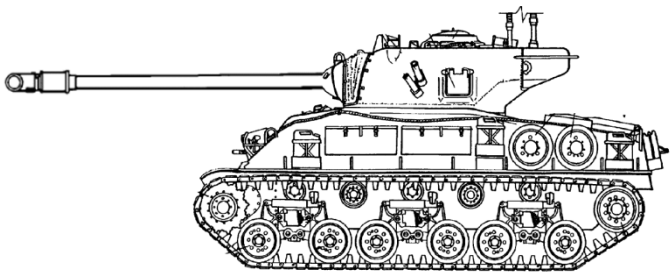
The Sherman M-50 and the Sherman M-51 were modified versions of the M4 Sherman tank that served with the Israel Defense Forces from the mid-1950s to early 1980s. The M-50 was known abroad as the Super Sherman and the M-51 as the Super Sherman or Isherman, however, these names were never used by the Israel Defense Forces.

In 1953, an Israeli delegation visited France to examine the new AMX 13 light tank. The tank was armed with a high-velocity 75 mm gun CN 75-50, a development of the German 7.5 cm KwK 42 L/70 (used in the Panther tank). While the gun was satisfactory, the armor of the French tank was considered too light. Eventually, Israel purchased the AMX 13, however in a parallel development it was decided to graft the powerful French gun onto the available, familiar and better-armored hull of the American M4 Sherman, the standard tank of the IDF armored units in the early 1950s.

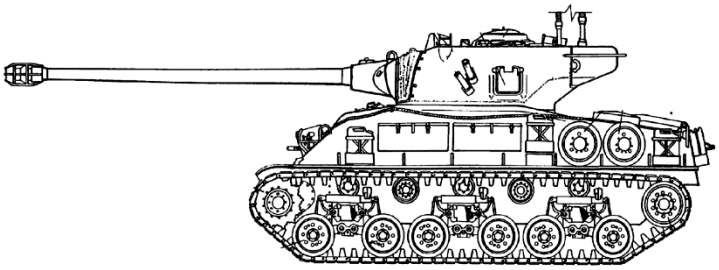
The project started in 1954, and in 1955 a prototype turret was sent from France to Israel. In March 1956 Israeli Ordnance Corps facilities started to convert tanks, using guns received from France. The gun was known in Israel as the M-50 and as a result the up gunned Sherman was designated Sherman M-50. Similar to the Sherman Firefly, it had the original turret of the "old" type (as used by the 75 mm gun M3 armed Sherman's), which was fitted with a large counterweight at the rear end.



M-50 Improved Sherman with 75mm Gun



M-50/90 Improved Sherman with 90mm Gun



M-51 Super Sherman with 105mm Gun

The first 50 units were based on M4A4 hulls, had a Continental R-975 gasoline engine and VVSS suspension. However, the increased weight of the vehicle combined with narrow tracks led to poor off-road mobility. It was also putting too much strain on the engine, resulting in frequent mechanical failures. Consequently, for the rest of the conversions, hulls fitted with HVSS suspension and Cummins V-8 460 hp diesel engine were adopted. These sub variants were sometimes referred to as the M-50 Continental and M-50 Cummins.

Diesel engines were also preferred since diesel fuel is less flammable than gasoline, which factors into battlefield survivability. In total, about 300 M-50's were built by 1964 (though it's possible that this number includes 120 155 mm self-propelled guns on Sherman chassis, also designated M-50).

Vehicle:	M-50 Improved Sherman	M-50/90 Improved Sherman	M-51 Super Sherman
Price:	$135000 (-/S)	$330000 (-/R)	$330000 (-/R)
Range Finder:	None	Optical	Optical
RF modifier:	+0	+1	+1
Armament:	75mm gun, MAG MG (G), M-2HB (C)	90mm Gun, MAG, M-2HB (C)	105mm Gun, MAG, M-2HB (C)
Stabilization:	Basic	Basic	Basic
Ammo:	78x75, 5000x.30, 500x.50	60x90, 4250x7.62, 600x.50	55x105, 4250x7.62, 600x.50
Fuel Type:	D, A	D, A	D, A
Load:	300 kg	300 kg	300 kg
Veh Wt:	34.8 tons	37.2 Tons	39 tons
Crew:	4	4	4
Mnt:	11	22	22
Night Vision:	IR Searchlight	IR Searchlight	IR Searchlight
Radiological:	Enclosed	Enclosed	Enclosed
Movement Data			
Travel Mov:	90/62	106/74	106/74
Combat Mov:	21/14	24/18	24/18
Fuel Cap:	700	700	700
Fuel Cons:	196	196	196
Combat Statistics			
Config:	Trtd	Trtd	Trtd
Susp:	T5	T5	T5
ERA Facings:			
Hull, Front:	27	48	48
Hull, Side:	8	10	10
Hull, Rear:	4	8	8
Turret, Front:	32	38	38
Turret, Side:	11	15	15
Turret, Rear:	6	13	13

Machineguns *-Recoil-*

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	SS	*Brst*	*Rng*
FN-MAG	5/10	4	2-3-Nil	8	50B	1	1/3	122
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Large Caliber Guns

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
75mm HV	AP	430	17	33/29/25/16	Nil
RId: 2	APDS	430	17	57/49/42/27	Nil
	HE	320	C9 B20	4C	Nil
	HVAP	430	17	43/38/32/21	Nil
90mm CN90F3	APFSDS	400	20	97/84/71/46	Nil
RId: 1	HE	300	C12 B25	7C	Nil
	HEAT	300	C8 B15	65C	Nil
105mm CN D1	APDS	410	23	88/77/65/42	Nil
RId: 2	HEAT	310	C13 B20	98C	Nil
	HE	310	C19 B30	9C	Nil

In the 1960s, 180 Sherman tanks received the even more powerful French 105 mm CN 105 F1 gun. The gun was reduced from 56 calibers to 44 and was equipped with a muzzle brake; ammunition was altered to use a smaller cartridge. In Israel the gun was designated M-51 and the tank - the Sherman M-51. M4A1 hulls and "new" turrets (from 76 mm armed Sherman's) were used for the conversion. All tanks were fitted with Cummins diesel engines and HVSS suspension. The tank was displayed to the public for the first time during the Independence Day ceremony in 1965.

An M-51 of the 74° Regimiento de Caballería Blindados during the regiment's attack on Tempe, AZ in 1998.

Abroad the M-50 was known as Super Sherman (the "Continental" variant as Mark I and the "Cummins" variant as Mark II) and the M-51 as either Super Sherman or Isherman (i.e. Israeli Sherman). These designation were never used in Israel. The only tank model designated Super Sherman by the IDF was M4A1 with 76 mm M1 gun and HVSS suspension, which was named Super Sherman M-1.

In 1964, Israel started to divert water from Golan into the Negev Desert for agricultural purposes. The Arab nations were in uproar, and Syria decided to divert water into Jordan. Maj General Israel Tal had trained Israeli tank gunners to shoot beyond 1.5km. On March 6, 1965, an M50 engaged a Syrian recoilless rifle that had killed an Israeli tractor driver. At such long distance, General Tal personally destroyed the recoilless rifle with his M50. A few days later, one M50 and one Centurion Mk III with 105mm gun were waiting for a chance to fire upon the Syrian water diverting project. When Syrian gunners fired on a border patrol, General Tal's M50 tank and a Centurion Mk III fired on eight tractors 2km away, and in two minutes and after 10 shots, destroyed all of the targets. General Tal destroyed five tractors with his M50's 75mm gun, and the Centurion destroyed the remainder.

Both the M-50 and M-51 saw combat in the Six-Day War that left the Golan Heights, the West Bank and the Sinai peninsula in Israeli hands, often fighting Soviet World War II-era armor like the T34/85 (for example at the Battle of Abu-Ageila). Both were also employed in the 1973 Yom Kippur War alongside and against much more modern tanks. The use of such seemingly obsolete tanks was necessary given the desperate nature of the fighting.

In combat against the Arab armies, the M-51 proved itself the equal of newer, heavier Soviet tanks like the IS-3 and the T-54/55. The M-51's 105mm cannon could penetrate these adversaries using HEAT

ammunition. The M-51 served well during its time, and is regarded as an excellent example of how an obsolete tank (the Sherman) can be upgraded beyond the limits of its original capabilities.

M-50 Continentals were retired by 1972. The M-50 Cummins and M-51 were gradually phased out in late 1970s - early 1980s. Some of the M-50s were given to the Lebanese Forces, a Christian militia, and later the Israeli-supported South Lebanon Army during the Lebanese Civil War.

The Sherman in all its guises has a long history with the *Ejército Méxicano* having equipped the first armored cavalry units formed following the Second World War. In 1947 Mexico signed the Rio Treaty of Mutual Defense, through which the Mexican army received new equipment. This included 180 examples each of the Sherman M4 medium tank and M3A1 and M5 light tanks. Mexico's original order for M4A3E8 Sherman tanks was filled by United States under the post war Military Assistance Program (MAP) in 1947. In addition to the M4 the U.S. supplied Mexico with a large number of half-tracked armored personnel carriers and light tanks M3 and M5.

In 1963 Mexico purchased an additional 180 Sherman tanks from the United Kingdom, which had been retired following the end of the War. The British models were of the VC or "Firefly" type equipped with the 76mm British 17 pounder gun. The remaining Mexican M4A3E8 tanks were canablized to provide spares for the newly acquired Sherman VCs. Proeza S.A. de C.V was contracted to repair (and in many cases replace) the "new" tank's 76mm guns due to wear experienced in the Second World War.

All of Mexico's Sherman's had been equipped with radial petrol engines making them inefficient and prone to catch fire. In the late 1950's Israel had developed a modernization program for its Sherman tanks involving an upgrading of the power pack and suspension system. In 1968 Mexico purchased a license from Israel to produce the HVSS suspension system locally with the intention to upgrade its remaining Sherman's to M-50 specification

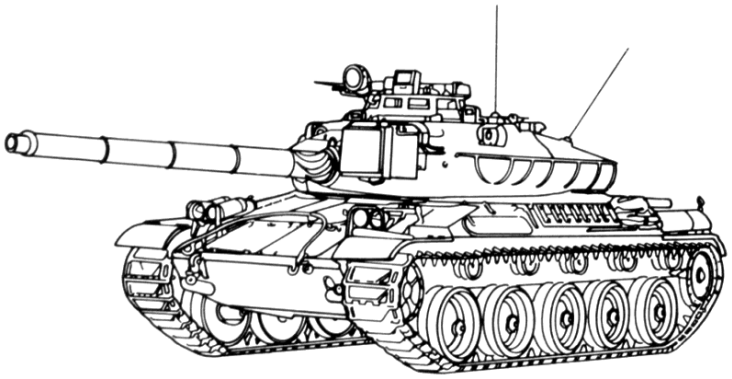
By Fiscal Year 1970 SEDENA had secured funding to upgrade Mexico's aging tank fleet. The contract to upgrade Mexico's 150 Sherman's went to DINA-S.A. The program involved a suspension upgrade and the replacement of the Continental R-975 engine with a 460 hp diesel V-8 produced by Cummings México-S.A. The upgraded tanks were known as M-50 *Guerrero* ("Warrior"). The first batch of 50 Sherman's were upgraded by 1974 but then the program was halted due to budgetary issues.

With the massive influx of oil revenues in the late 70's, SEDENA was able to complete the conversion of the remaining 100 Sherman's to M-50 standard. In addition to completing the original batch of upgrades, in 1979 Mexico acquired an additional 150 Sherman tanks from France. This second batch were to be upgrades to M-50 standard but were also fitted with an infrared searchlight giving them a night-fighting capability.

When Israel began to retire its fleet of M-51 Super Sherman's in the early 1980's, Mexico was eager to acquire the variants armed with the 105mm gun. Between 1981 and 1984 Mexico purchased a total of 125 "Ishermans" from the Israeli Defense Forces.

At the time of the invasion of the United States, Just over 50% of the Mexican armored force consisted of Sherman tank derivatives. The majority of the 76mm armed M-50 tanks were retained by the Territorial Brigades while the 105mm equipped M-51s served primarily with units in the 2nd Army. The M-51s were initially ridiculed by U.S. troops who were somewhat amused to see museum pieces advancing on their positions. By the end of the initial Sonoran campaign, and the loss of substantial quantities of armor, U.S. tank crews had come to respect the *Guerreros* and their cunning commanders.

AMX-30 / TAB-30 Main Battle Tank



French AMX-30B2 Main Battle Tank

Design work was carried out on the AMX-30 at the Atelier de Construction d'lssy-les-Moulineaux, with the first two prototypes being completed in 1960. A further seven prototypes built with the Hispano-Suiza HS 110 12-cylinder multi-fuel engine, which was also fitted to production tanks, were completed early in 1963 and in July of that year the tank was adopted by the French Army as the replacement for its US-supplied M47 tanks. Prior to production two preproduction tanks were built.

Production of the AMX-30 began in 1966 at the Centre de Roanne and the AMX-30 was also built under licence in Spain and Mexico (as the TAB-30). In 1987, Cyprus placed an order with France for the supply of 15 AMX-30 B2 MBTs and a single AMX-30D armored recovery vehicle; these were delivered in 1988. Late in 1989 Cyprus placed an order with Giat for the supply of a further 35 AMX-30 B2 MBTs and another AMX-30D armored recovery vehicle.
AMX-30 series MBTs were used by France, Saudi Arabia and Qatar during operations conducted early in 1991 to retake Kuwait following its invasion by Iraq in 1990.

French production of the AMX-30 series was completed late in 1993 when the last AMX-30 EBGs were completed for the French Army. Late in 1994 the chassis went back in production as the

French Army ordered another batch of 20 GCT 155 mm self-propelled howitzers.

Although the Giat Industries 120 mm armed Leclerc MBT is being introduced into service with the French Army the older AMX-30 B2 is now expected to remain in service until 2010.

For this reason it is being upgraded in a number of key areas including the installation of explosive reactive armor and a new diesel engine. Additional details of these upgrades are given later in this entry.

Newly delivered AMX-30 Tanks awaiting unit assignment in 1993

The hull of the AMX-30 is made of rolled steel plates welded together. It is divided into three compartments: driver's at the front, fighting in the centre and the engine at the rear.

The driver is seated at the front of the vehicle on the left with a single-piece hatch cover opening to the left and three periscopes. The centre periscope, depending on the model of the tank, can be either a day periscope which can be replaced by an image intensification night periscope (Thomson-CSF TH 9478), or a SOPELEM OB-16A periscope. This has a binocular system for infrared light by night and a monocular system for day driving. The infra-red system has a magnification of x1 and a 35° field of view and the day system has a similar magnification and a 24° field of view.

The other three crew members are seated in the turret, with the commander and gunner on the right and the loader, who also operates the radio, on the left. The commander's cupola is a TOP 7 with 10 periscopes for all-round vision and a single-piece hatch cover opening to the rear. Mounted on the forward part of the commander's cupola is a SOPELEM M 270 prism head.

Vehicle:	AMX-30B2	TAB-30
Price:	$560000 (-/-)	$485000 (-/R)
Range Finder:	Laser	Optical
RF modifier:	+3	+2
Armament:	105mm Gun, 20mm AC, AAT-F1 (C)	105mm Gun, 20mm AC, MG21 (C)
Stabilization:	Good	Fair
Ammo:	47x105, 480x20, 2070x7.62	47x105, 1050x20, 2050x7.62
Fuel Type:	D, G, AvG, A	D, A
Load:	400 kg	400 kg
Veh Wt:	37 tons	36.6 tons
Crew:	4	4
Mnt:	16	14
Night Vision:	TI, II	Passive IR, II
Radiological:	Shielded	Shielded
Movement Data		
Travel Mov:	117/90	106/81
Combat Mov:	26/19	23/18
Fuel Cap:	900	970
Fuel Cons:	317	274
Combat Statistics		
Config:	Trtd	Trtd
Susp:	T6	T6
ERA Facings:	TF, TS, HF	TF, TS, HF
Hull, Front:	64 (149)	58 (142)
Hull, Side:	14Sp	24Sp
Hull, Rear:	8	8
Turret, Front:	51 (136)	46 (131)
Turret, Side:	22 (107)	20 (105)
Turret, Rear:	13	13

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
AAT-F1	5/10	4	2-3-Nil	8	50B	1	1/3	122
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143

Large Caliber Guns

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
105mm GIAT	APFSDS	410	23	124/108/92/59	Nil
RId: 2	HEAT	310	C13 B20	98C	Nil
	HEAT M-815	310	C14 B30	135C	Nil
	HE	310	C19 B30	9C	Nil
76T2 20mm AC	APDS	630	4	6/5/4/3	Nil
Rof: 10	API	630	4	3/3/3/2	Nil
	HEI	470	C1 B5	-4C	Nil

This comprises an armored housing and a thick glass behind which is a prism, swiveling in elevation and reflecting the image of the terrain towards the M 267 day sight or the OB-23A infrared telescope (magnification x4, 9° field of view), the object lenses of which fit into its lower part. On the right of the prism is a swiveling arm which supports the 7.62 mm machine gun and its PH-9-A,infrared searchlight, it has a 500 m range when being used in the infrared mode and a 700 m range in the white light mode. The weapon can be elevated from -10 to +45° by a hand wheel in the turret roof. The prism may also be used to aim the coaxial 20 mm

cannon, in which case the head (of the prism) is electrically servo-controlled by the elevation swivel of the 20 mm cannon. The M 270 has a magnification of x10 and allows the tank commander to locate and identify targets and bring the turret to bear onto the target. The tank commander also operates the SOPELEM M 208 range-finder with a magnification of x6 and a range of 600 to 3,500 m.

Mounted on the left side of the turret, coaxial with the main armament, is a SOPELEM PH-8-B searchlight, which has a maximum range of 2,000 m when used in the white light mode and a range of 1,000 m in the infrared mode.

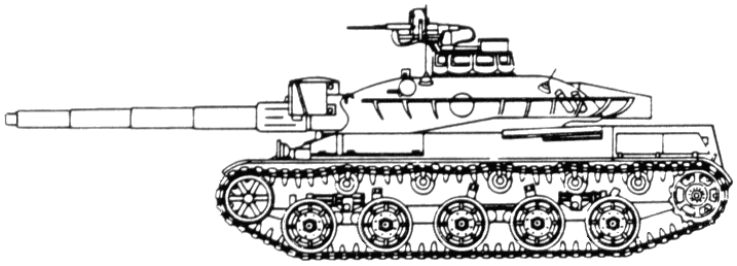
The gunner, who is seated below and in front of the commander, has an M 271 day sight with a magnification of x8, which can be changed for an OB-17A night sight. This is mounted in the roof of the turret and has a luminous reticule, magnification of x5.4 and a 7° field of view. When used with the PH-8-B infrared searchlight it has a range of 800 m. The gunner also has two periscopes.

The loader is seated on the left of the turret and is provided with two periscopes and a single-piece hatch cover that opens to the rear. A small circular hatch on the left side of the turret is used for replenishing ammunition and ejecting spent cartridge cases manually.

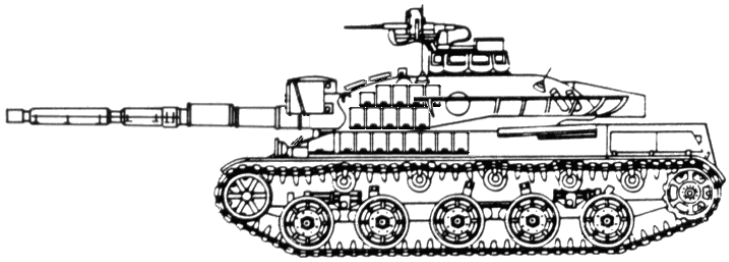
The engine is to the immediate rear of the bulkhead separating the engine compartment from the fighting compartment. The Hispano-Suiza HS 110 engine was manufactured by Renault and operates on oil, petrol or paraffin. The engine is water-cooled and air is drawn in above the chassis in the rear part of the tank and blown down through the radiator by a fan driven by the engine. The speed of the fan is governed by the water temperature.

The complete power pack, comprising the engine, combined gearbox and steering unit, and clutch assembly, can be removed in 45 minutes by a team of three. The power pack can also be run outside the tank before installation.

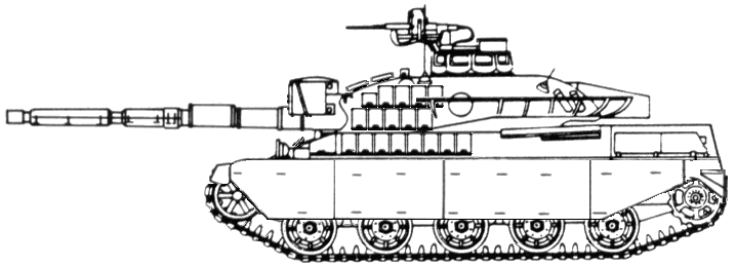
A Mexican TAB-30 of the 27° Regimiento de Caballería Blindados engages US armor of the 5th Army in central Texas, 1999.



French AMX-30B2 main battle tank



Mexican TAB-30 fitted with explosive reactive tiles and fume extractor



Mexican TAB-30 with side skirts

The transmission consists of an automatic clutch, combined gearbox and steering unit, brakes and two final drives. In the basic version the centrifugal-type clutch is activated electrically by the gear shift lever; a non-synchronized reverser enables the same number of gears to be engaged in reverse as forwards. The combined gearbox and steering mechanism contains the mechanically operated gearbox giving five speeds both forward and in reverse and a triple differential steering system.

The brakes are hydraulically operated and are used as both service and parking brakes. Each final drive comprises spur-type right-angle gears and an epicyclic gear train.

The torsion bar suspension consists of five rubber road wheels with the idler at the front and the drive sprocket at the rear. There are five track-return rollers, which support the inside of the track only. The first, second, fourth and fifth road wheels are mounted on bogies and the first and fifth road wheels are provided with hydraulic

shock-absorbers. The centrally guided steel track has removable rubber pads and each track weighs 1,580 kg. When new it has 83 links. The AMX-30 can ford to a maximum depth of 1.3 m without preparation and 2 m with preparation. When deeper rivers are encountered a snorkel is erected over the loader's hatch. Two types of snorkel are available, a wide one for training and a much thinner one for operations, similar in concept to the snorkels fitted to the Russian T-54/T-55 and T-62 MBTs. Before entering the water a ring is inflated around the turret, mantlet and cupola using the electrically driven compressor and, two blanking plates are fitted over the engine compartment louvers; these are carried on the right side of the glacis plate when not in use.

Standard equipment on all AMX-30s includes a battery-operated electric pump for refueling and a lubricating pump using the tank's compressed air circuit. The power receptacle in the driver's compartment can be used for recharging the tank's batteries from another tank and also for supplying the electric pump used for refueling. The tank is also equipped with an NBC system, heater, automatic fire alarm system, radios, crew intercom system and an infantry telephone at the rear.

Main armament of the AMX-30 is a Giat Industries 105 mm smooth bore gun designated the CN-105-F1 with a length of 56 calibers. The gun does not have a muzzle brake or a fume extractor but is fitted with a magnesium alloy thermal sleeve. A compressed air system evacuates any fumes from the barrel. The recoil system consists of two diametrically opposed hydraulic brakes and an oleo-pneumatic recuperator for counter-recoil of the barrel.

The 105 mm gun can fire APFSDS, HEAT, HE, phosphorus smoke or illuminating rounds of a French design. It can also fire standard 105 mm ammunition as used with the L7 series of weapons mounted in the Leopard 1 and M60 series of MBTs. A 105 mm DU round has been developed by Giat Industries. This is now in service with the French Army but has not been released for export.

TAB-30s of the 25° Regimiento de Caballería Blindados cross the Dona Anna desert in route to Las Cruces, NM.

In total 47 rounds of 105 mm ammunition are carried, 19 of which are in the turret (18 in the bustle) and 28 in the hull to the right of the driver.

The TAB-30 battle line presented by the 12° Regimiento de Caballería Blindados at the battle of Waco, April 16 1999.

Mounted to the left of the main armament is a Giat Industries 20 mm Model F2 (Type M693) cannon, which can be elevated with the main armament and also on its own to a maximum of +40° for use against slow-flying aircraft and helicopters. The cannon has a maximum effective range of 1,500 m and can be fired by the gunner or tank commander. The 20 mm cannon can be either dual feed (with HEI rounds with a muzzle velocity of 1,050 m/s and armor-piercing rounds with a muzzle velocity of 1,250 m/s), or single feed firing American M56 type ammunition. In total 480 rounds of ready use ammunition are carried, with a further 550 rounds held in reserve. When originally introduced into service a 12.7 mm M2 machine gun was mounted to the left of the main armament. This was provided with 600 rounds of ammunition.

Mounted to the right of the commander's cupola is a 7.62 mm Model F1 machine gun, which can be aimed and fired from within the cupola. The weapon has an elevation of +45° and a depression of -10°. In total 2,050 rounds of 7.62 mm ammunition are carried, of which 550 are ready for immediate use. The empty cartridge cases are automatically ejected outside the tank. Maximum effective range of the 7.62 mm machine gun is quoted as 700 m.

Under a modernization program initiated in the late 1980s, the Mexican government intended to substantially upgrade its mechanized capabilities. In 1988 SEDENA purchased 300 AMX-30 main battle tanks from the French government, which had been held in reserve since the late 1970's. Part of the agreement involved the local upgrading of the tanks to B2 standard with replacement diesel power packs by SNECMA and new GIAT 105mm guns. With the backing of the Mexican government, a joint venture (Tecnologías de la Defensa Nacional - "TDN") was formed by Grupo Bocar and Grupo KUO to remanufacture French AMX-30s to AMX-30B2 standard, the refurbished tanks known as the Tanque Medio de Batalla-30 or TAB-30.

The tanks acquired by Mexico were "S" tropicalized variants intended for desert use. As delivered the original AMX-30s included the addition of sand shields, an upgraded cooling system,

air conditioning and an engine is down rated to 620 hp. In addition the AMX-30S substituted the Sopelem LRF day/night sight for the laser rangefinder used on the AMX-30B2.

A TAB-30 (note side skirts and fume extractor) identifiable as the 13th tank of the 2° Brigada de Caballería Blindados. Assigned to the Simon Bolivar Regimiento de Caballería Blindados. The image was taken during the initial invasion as is shown by the condition of the vehicle.

The first production TAB-30 entered service with the Mexican Army on January 26th, 1990 and had a number of improvements added to the AMX-30S. The TAB-30 was equipped with a new fire-control system that has a laser rangefinder, weapon stabilization system, and sensors for wind, temperature, and humidity. Due to the closed environment of the TAB-30s air-conditioned fighting compartment, a fume extractor was added to the 105mm GIAT main gun.

For improved power a Cummings-Mexico diesel engine with fully-automatic transmission was installed to increase speed, operating range, and fuel capacity. The commander's and driver's stations were modernized as well, and the vehicle can lay its own smoke screen by injecting diesel fuel into the exhaust system.

After the initial batch of 50 TAB-30 upgrades were completed, in 1992 SEDENA decided to upgrade future tanks by adding a set of spaced armor side skirts. Experience had shown that the primary threat to armor was the shaped charge and spaced armor skirts were intended to provide some defense against light anti-tank weapons.

By 1994 SEDENA had found that the spaced armor was insufficient to defend against the shoulder launched rockets employed by insurgents in the south and the drug cartels of the north. The decision was made to fit an indigenously designed explosive reactive armor package to deal with HEAT based weapons. The system was similar to the Israeli Blazer reactive armor of the 80's and it is believed that Israel provided assistance in the development of the TAB-30 ERA package. In 1996 SEDENA began upgrading its TAB-30 fleet with ERA tiles.

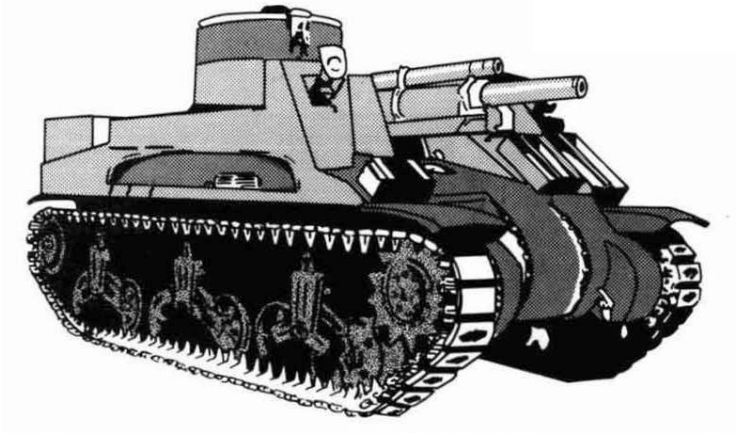
By the time of the U.S. invasion approximately 50% of Mexico's armor consisted of AMX-30 and TAB-30 medium tanks. Of those, 75% had been upgraded to TAB-30 standard while 25% remained AMX-30S variants. During the initial assault in 1998 most of Mexico's stock of ERA tiles were depleted. While tiles continued to be produced throughout the war, logistical problems prevented most replacements from reaching units engaged in combat with U.S. forces.

An AMX-30S which has been converted to an engineering role.

ARTILLERY

M7 “Preist”105mm SP Howitzer

The 105 mm Howitzer Motor Carriage M7 was an American self-propelled artillery vehicle produced during World War II. It was given the official nickname Priest in British service, due to the pulpit-like machine gun ring and following on from the Bishop self propelled gun, the full designation when in British service was 105 mm Self Propelled Gun, Priest. This developed into a tradition of naming self-propelled guns after ecclesiastic titles with the related Sexton and post-war Abbot.



M7 “Priest” Self Propelled 105mm Howitzer

Witnessing the events of the war, US Army observers realized that they would need a self-propelled artillery vehicle with sufficient firepower to support armored operations. Lessons learned with half-tracks (such as the T19) also showed that this vehicle would have to be armored and fully tracked. It was decided to use the M3 Lee chassis as the basis for this new vehicle, which was designated T32.

After reworking the M3 by providing an open-topped superstructure, mounting a 105 mm howitzer and, following trials, adding a machine gun, the T32 was accepted for service as the M7 in February 1942 and production began that April.

While the first M7s were produced for the U.S. Army, supply was soon diverted to support the Lend-Lease program. Ninety M7s were sent to the British 8th Army in North Africa, who were also the first to use it in combat during the Second Battle of El Alamein. The M7 soon proved successful and the British requested 5,500 of them, an order which was never fully completed.

They did find problems with the M7 though, as the primary armament was of US, not British standard. This meant that the M7s had to be supplied separately, causing logistical complications. It was a problem that was only truly resolved in 1944 on arrival of the 25-pounder-armed Sexton. Until that time though, the British continued to use the M7 throughout the North African Campaign, the Italian Campaign and even a few during the early days of the Normandy Invasion. After the Sexton appeared, most British M7s were converted into "Kangaroo" armored personnel carriers.

Vehicle:	M7 Priest
Price:	$198000 (R/S)
Range Finder:	Optical
RF modifier:	+1
Armament:	105mm M2 howitzer, M2HB (C)
Stabilization:	None
Ammo:	69x 105, 300x .50
Fuel Type:	G,A
Load:	300kg
Veh Wt:	23.0 tons
Crew:	7
Mnt:	9
Night Vision:	Headlights
Radiological:	Open

Movement Data

Travel Mov:	85/55
Combat Mov:	20/15
Fuel Cap:	675
Fuel Cons:	570

Combat Statistics

Config:	Stnd
Susp:	T5
ERA Facings:	
Hull, Front:	15
Hull, Side:	8
Hull, Rear:	8

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
M-2HB	5	9	2-3-Nil	11	105B	1	3	397

Howitzers

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
105mm M2	HEAT	150	C6 B12	23C	11100
RId: 1	HE	150	C10 B20	1C	11100
	CHEM	150	C3 B24	Nil	11100
	WP	150	C3 B32	Nil	11100

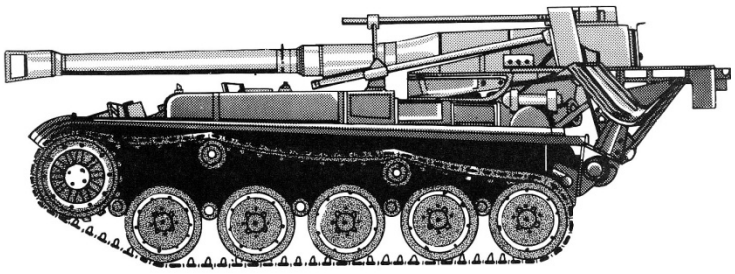
In U.S. service the M7 was a great success. Each U.S. armored division had three battalions of M7s, giving them unparalleled mobile artillery support.

A total of 3,490 M7s were built and they proved to be reliable weapons, continuing to see service in the U.S. and allied armies well past World War II.

The first M7s produced were modified M3 Lee medium tanks. In order to maintain a low silhouette, the howitzer elevation had to be restricted to 35°. In May 1942, after only a month of production, the vehicle was altered to increase its ammunition stowage from 24 to 69 rounds. This was achieved by placing seven rounds on the left wall, five on the right, and storing the remainder under floor plates. The M7 also went through a fairly rapid shift from being based on the M3, to having more commonality with the M4 Sherman. The first major example was an adoption of the M4's three piece housing, single piece casting and suspension. In British service,

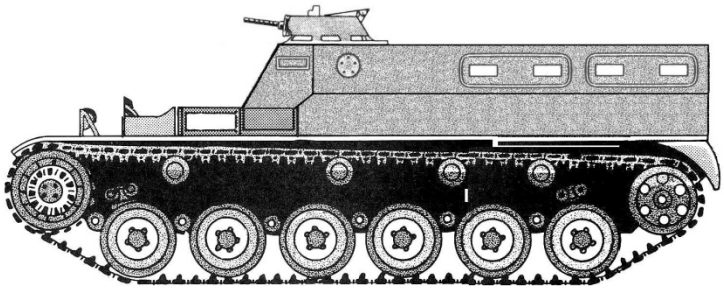
some M7s carried a radio set, which took the place of 24 rounds of ammunition.

AMX Mk F3 Self Propelled 155mm Howitzer



AMX MkF3 155mm Self Propelled Howitzer

The 155 mm self-propelled gun Mk F3, or the Canon de 155 mm Mle F3 Automoteur (Cn-155-F3-Am), was developed in the early 1950s by the French Army to replace their American M41 Gorilla 155mm self-propelled guns. The Mk F3 is the smallest and lightest 155mm motorized gun carriage ever produced, and because of its size and low cost it has found considerable success on the export market. Constructed on a modified AMX-13 light tank chassis, the Mk F3 is novel in incorporating room inside for only two of the eight required crewmen (the others riding in support vehicles). This allows the 155mm gun to be placed on a smaller chassis than that employed by other armies, but exposes the outside crew members to arms fire.



AMX-VCA

In the early 1950s the French Army desired to replace their aging American M41 howitzers with an indigenous design, based on the AMX-13 light tank chassis. The Mk F3 entered production in the early 1960s. Its low cost and light weight made it a very popular weapon system on the export market. It was exported to a number of South American and Middle Eastern countries, and remained in production until the early 1980s, long after the French Army had themselves converted to the fully enclosed GCT 155mm self-propelled artillery system.

The Mk F3 is essentially a modified AMX-13 light tank chassis with the rear idler removed and the hull modified to accept a 155 mm cannon and its recoil, elevating and traversing mechanisms, including two rear spades which reversed into the ground to give added stability when firing. The 155 mm gun was designed by the Atelier de Construction de Tarbes (ATS), and the chassis by the Atelier de Construction Roanne (ARE). Integration of the gun with the chassis and all firing trials were undertaken by the Etablissement d'Etudes et de Fabrications d'Armement de Bourges (EFAB). Because the ARE was tooling up for production of the AMX-30 main battle tank, production of the whole AMX-13 tank family, including the F3 155 mm self-propelled gun, was transferred to Mécanique Creusot-Loire.

Vehicle:	AMX Mk F3 L/30 Gun	AMX Mk F3 L/33 Gun	AMX VCA
Price:	$118000 (-/R)	$134000 (-/S)	$28000 (-/S)
Range Finder:	None	None	Basic
RF modifier:	+0	+0	+1
Armament:	155/L33 howitzer, HK21E (C)	155/L37 howitzer, HK21E (C)	M2HB (C)
Stabilization:	None	None	None
Ammo:	4x155, 1000x7.62	4x155, 1000x7.62	2000x .50
Fuel Type:	D, A	D, A	D, A
Load:	250 kg	250 kg	1.5 tons
Veh Wt:	17.6 tons	17.9 tons	15.3 tons
Crew:	2 (+8)	2 (+8)	8
Mnt:	7	7	6
Night Vision:	Active IR	Active IR	Passive IR
Radiological:	Enclosed	Enclosed	Enclosed
Movement Data			
Travel Mov:	107/75	105/74	120/84
Combat Mov:	25/15	25/15	25/20
Fuel Cap:	450	450	410
Fuel Cons:	92	92	92
Combat Statistics			
Config:	Stnd	Stnd	CiH
Susp:	T3	T3	T3
ERA Facings:			
Hull, Front:	4	4	8
Hull, Side:	2	2	4
Hull, Rear:	2	2	4
Turret, Front:			2
Turret, Side:			2
Turret, Rear:			2

Machineguns

Weapon	*ROF*	*Dam*	*Pen*	*Blk*	*Mag*	*-Recoil- SS*	*Brst*	*Rng*
M-2HB	5	9	2-3-Nil	11	105B	1	3	397
MG21	3/5	4	2-3-Nil	8	50B	1	1/1	143

Howitzers

Type	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
155mm L/33	CHEM	260	C3 (B30)	Nil	20000
RId: 7	HE	260	C48 B50	16C	20000
	HEAT	260	C32 B30	179C	20000
	ILLUM	Nil	(B2945)	Nil	20000
	WP	260	C3 B45	Nil	20000
155mm L/30	CHEM	250	C3 (B30)	Nil	14600
RId: 6	HE	250	C48 B50	16C	20000
	HEAT	250	C32 B30	179C	20000
	ILLUM	Nil	(B2945)	Nil	20000
	WP	250	C3 B45	Nil	20000

The F3 fired the standard 155mm high-explosive projectile, and is also capable of firing the smoke, illumination and rocket-assisted rounds. The effective range is 20,050 m with 43.75 kg HE rounds.

The hull of the Mk F3 is of all-welded steel armor measuring 10 to 20mm, providing the two occupants with protection from small arms fire and shell splinters. The layout is conventional, with the driver's compartment at the front on the left, engine compartment to the right and the 155mm gun above at the rear. A splashboard is mounted at the front of the hull to stop water from rushing up the glacis plate when the vehicle is fording streams. A replacement road wheel is often carried on the glacis plate. The driver has a single-piece hatch that opens to the left, and is provided with three daylight periscopes, the centre one of which is replaceable by an image intensification (or thermal) periscope for night driving. The commander is seated behind the driver and has a two-piece hatch that opens to either side. The commander is also provided with three daylight periscopes.

The torsion bar suspension consists of five single rubber-tired road wheels with the drive sprocket at the front and the fifth road wheel acting as the idler. There are three track-return rollers. The first and last road wheel stations have hydraulic shock-absorbers. The steel tracks can be fitted with rubber pads if required. Stowage containers are provided along each side of the upper part of the hull. Standard equipment includes a loudspeaker and a cable reel with 400 m of cable.

Weaknesses to the Mk F3 design included a lack of nuclear-biological-chemical (NBC) protection for its crew. It also could accommodate only two of the eight crew members needed to operate the weapons system. The remaining six crew members and 25 rounds of ammunition travel in support vehicles, normally AMX-VCIs. If necessary, the additional crew members can travel on the upper deck of the vehicle, but in all cases the crew members must remain outside the vehicle and exposed to arms fire.

Total production of the Mk F3 amounted to over 600 guns. Beginning in 1993, Mécanique Creusot-Loire became Giat Industries, and in 2006 was renamed Nexter. In 1997 France supplied the last 10 155 mm Mk F3 systems to Morocco.
F3 self-propelled howitzer was developed by French "Crezo-Luar" company in 50-ties. First test vehicle was finished in 1962 and serial production began in 1966. Overall number of vehicles produced is 600 howitzers. It is used by French, Argentina, Chile, Cyprus, Ecuador, Morocco, Sudan, Quartar, Venezuela armed forces.

75mm M1A1 Towed Field Gun

The M1A1 Pack Howitzer was the standard howitzer for American forces in World War 2. The Pack design actually traced its roots back to the howitzer development of World War One, standardized in the American Army post-war as the M1.

The M1A1 of the Second World War featured a short barrel, could reach a sustained rate of fire of 3 to 6 rounds per minute with a capable crew, and had a range of roughly 9,610 yards (8,790 meters). The system was purposely engineered to be light, easily transportable and operated by a small crew (which worked well in the favor of light divisions such as airborne units as evident in the M8 variant of the Pack). The high explosive shell of the M1 Pack Howitzer weighed 6.3 kilograms. The weapon system could be used for suppression, assault, defense and limited anti-tank duty. Further developments enabled better cross-country mobility.

Pack howitzers garnered their 'Pack' designations by the idea that pack animals could tow the lightweight system (most common in World War One but not uncommon in World War Two for either side). The system was designed to be easily taken apart in multiple pieces (the M1 carriage could be taken down to a total of six parts while the gun system could be taken down to nine parts) for this very purpose.

The M1A1 first utilized the aforementioned M1 Carriage, which featured wooden spoke wheels. Later versions implemented into the follow-up M8 Carriage utilized rubber treaded tires on metal wheels.

The M1A1 saw action in Arnhem with the British, being dropped by glider in Operation Market Garden. British troops also trained Yugoslavian partisans in the use of the weapon system (seeing some success in the mountain warfare role). The M1A1 saw action in the far east jungles of the Pacific Theater. The ability of the system to be able to be broken down made it most advantageous in mounting amphibious assaults needing artillery support immediately upon landing on the beaches.

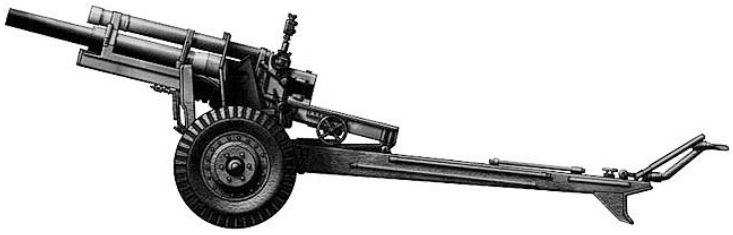
Howitzer

Weapon	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
75mm M1A1	HEAT	195	C5 B10	23C	8800
RId: 7	HE	195	C7 B19	0C	8800
	CHEM	195	C2 B7	Nil	8800
	WP	195	C2 B15	Nil	8800

Gun: 75mm Field Howitzer M1A1
Crew: 4
Set Up: 4 minutes
Weight: 980kg
Gun Shield: 3
Price: $7,500 (R/C)

M1A1 Pack Howitzers were also trialed on halftrack chassis and utilized to great effect in this role as well. Overall, the M1A1 became a classic piece of American artillery design. Portable, potent and very versatile, the system went on to see a great many years of frontline service as the standard light artillery weapon system.

M2A1 105mm Towed Field Gun



M2A1 105mm Howitzer

Howitzer

Weapon	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
105mm M2	HEAT	210	C9 B13	35C	11100
RId: 1	HE	210	C14 B26	5C	11100
	CHEM	210	C3 B14	Nil	11100
	WP	210	C3 B32	Nil	11100
	ILLUM	N/A	B1000	Nil	11100

Gun:	105mm Howitzer M2
Crew:	6
Set Up:	8 minutes
Weight:	2.3 tons
Gun Shield:	3
Price:	$17,500 (S/C)

The 105 mm Howitzer M2A1(M101) was the standard light field howitzer for the United States in World War II, seeing action in both European and Pacific theatres. Entering production in 1941, it quickly entered the war against the Imperial Japanese Army in the Pacific, where it gained a reputation for its accuracy and powerful punch. The M101 fired 105 mm high explosive (HE) semi-fixed ammunition and had a range of 11,200 meters (12,200 yd), making it suitable for supporting infantry.

All of these qualities of the weapon, along with its widespread production, led to its adoption by many countries after the war. Its ammunition type also became the standard for many foreign countries' later models. Minor changes were made after World War II, and the howitzer became known as the M101A1. It continued to see service in the Korean and Vietnam Wars. Though a similar model, the M102 howitzer, shared the same roles in battle, it never fully replaced the M101. Today the 101A1 has been retired by the U.S. military, though it continues to see service with many other countries.

The Canadian Forces continued to use the M2A1 as the C1 Howitzer until 1997 when a modification was made to extend its service life. It is now designated the C3. Those improvements include a longer barrel, a muzzle brake, reinforced trails and the removal of shield flaps. It remains the standard light howitzer of Canadian reserve force units. France and the State of Vietnam used it during the First Indochina War.

A number of M2/M101 howitzers were used by Socialist Federal Republic of Yugoslavia and approximately 50 were inherited by Croatia. Yugoslavia manufactured the M101 as the M56, and 100 of these were inherited by Croatia.

M2 Howitzers are still in service in the Australian Army Reserve, albeit in small numbers. They are gradually being replaced by L118 Light Gun and M198 Howitzers.

155mm M1918A1 Towed Field Gun

Howitzer

Weapon	*Round*	*Rng*	*Damage*	*Pen*	*IFR*
155mm M1918A1	AP	330	34	60 / 52 / 44 / 23	18300
RId: 2	HE	245	C30 B38	12C	18300
	WP	245	C3 B47	Nil	18300
	CHEM	245	C3 B30	Nil	18300

Gun:	155mm Gun M1918M1
Crew:	14
Set Up:	7 minutes
Weight:	10.6 tons
Price:	$60000 (R/R)

The 155mm Long Tom was originally designed by the French during World War I, designated the M1917, M1917A1 or M1918 GPF (Grande Puissance, Filloux). The U.S. modification was the M1 155mm Field Gun, followed by the M1A1 employed by coast defense and corps artillery battalions. In 1940 the gun was redesigned with the pneumatic tire carriage and other improvements, redesignated the M2 155 mm Field Gun. The M2 was the backbone of heavy artillery with thousands serving in both Europe and Pacific Theaters of Operation. It was later redesignated as the M59 155mm Towed Gun.

The M2 "Long Tom" 155mm gun was usually drawn by a tracked M4 or M5 prime mover (see M4 High Speed Tractor), which was also an ammunition carrier. If the tractor was not available, a "Long Tom" could be pulled by any heavy truck. A two wheel limber mounted under the trail ends and connected to the standard military pintle hook. Approx. 30 minutes was required to emplace a "Long Tom" upon arrival at a firing position.

The "Long Tom" weighed 30,600 pounds, had a split trail and eight pneumatic tires on two axles, was moved by a tractor, and was served by a combined crew of 14 or 15 men.

The 155mm "Long Tom" fired the same 95 to 100-pound HE, smoke, and gas projectile ammunition as the 155mm Howitzer, but with greater range and accuracy. Although designed for indirect fire at ranges of 10-14 miles, "Long Toms" have been used for direct aimed fire under extraordinary circumstances, such as reduction of Japanese cave fortifications on Peleliu during WW II.