

A black and white photograph of a Detroit Arsenal factory floor. In the foreground, a Sherman tank is positioned on a set of tracks. The background shows a large industrial building with a complex steel framework and various pieces of machinery. The lighting is bright, creating strong shadows and highlights on the metal surfaces.

# ENOUGH *and* ON TIME

## *The Story of the Detroit Arsenal*

During World War II the Detroit Arsenal lived up to its motto "Enough and On Time" by delivering more than 22,234 tanks, such as the Sherman shown here.



**F**rom the Pacific in 1944, PFC Frank Upton of the U.S. Marine Corps sent this message to his old sergeant, William Hendricks, then on recruiting duty in Detroit:

*“If you should go to the Chrysler tank arsenal, I want you to find the head man and kiss him on the forehead for me. I love tanks and everybody connected with them. When I was hit on Tinian we were on patrol and the Nips had pinned us down in a field of sugar cane. They were in caves in the cliffs and while we could see exactly nothing of them, they were really giving us the business. A machine gun slug went through my hip early and I had visions of being in the field until dark, when one of those Chrysler jobs rolled up. The driver told me what he was going to do and after I had crawled out on harder ground, he drove the tank over me and pulled me through the escape hatch in the belly of the tank. Those treads looked plenty big as they straddled me, but we drove back to the lines slick as a whistle.*

*Tanks are mighty fine things—mighty fine!”*

**Today, the M1A2 Abrams is the U.S. Army's main battle tank. These tanks were photographed at the Detroit Arsenal in Warren, Michigan. Photo Tom Sherry.**









# *As war* engulfed the world

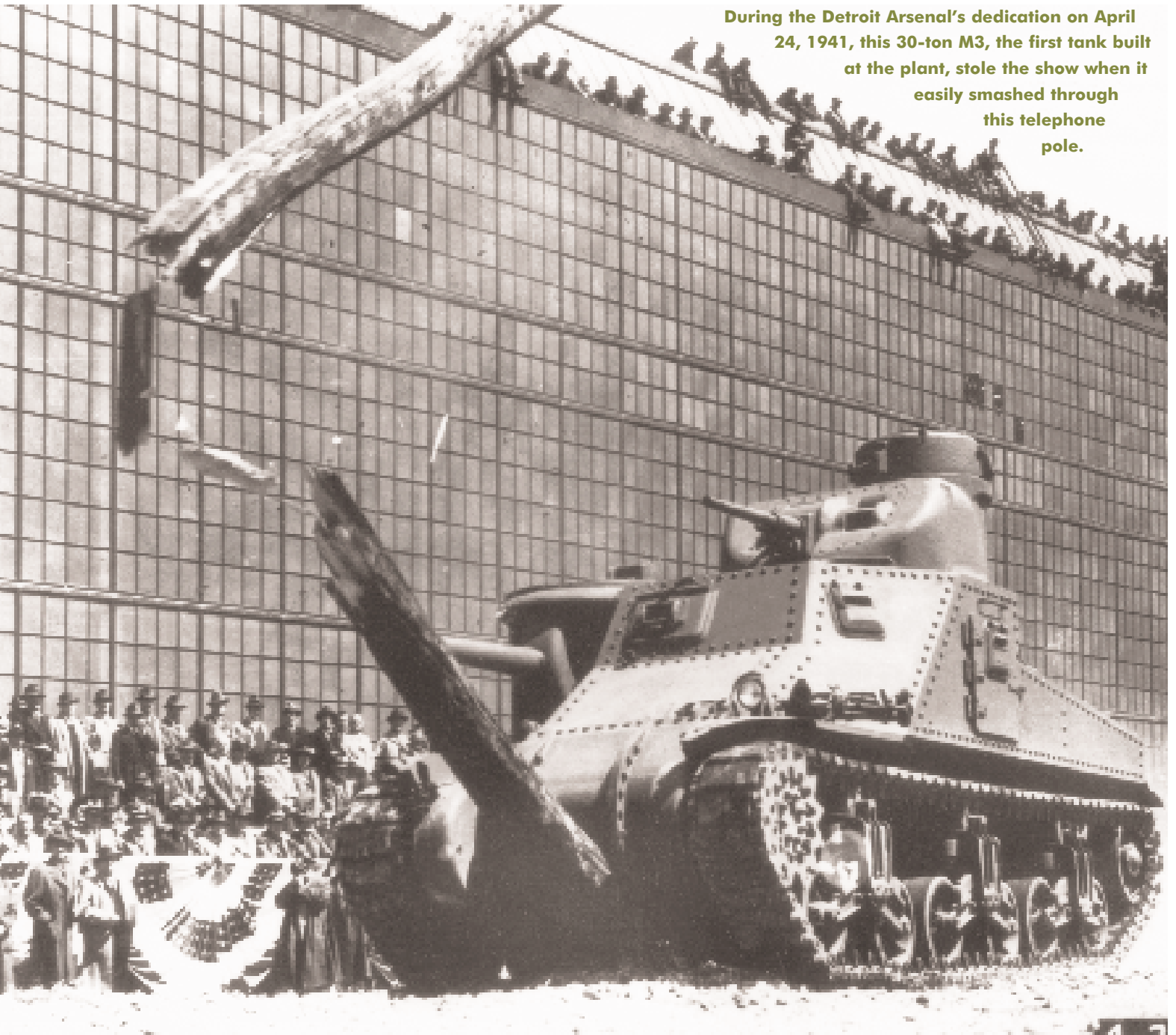
in the early 1940s, the U.S. Army turned to Detroit—first to build tanks and then as the home to coordinate the production of its ground vehicles. Today, tanks are no longer built in Detroit. But over sixty years after the auto industry helped the Army manufacture its first tank, the Tank-automotive and Armaments Command (TACOM) is still located in suburban Detroit and remains responsible for keeping the Army prepared to fight a war. Or as TACOM's Commander, Major General John S. Caldwell Jr., more succinctly declared, "As TACOM goes, so goes the readiness of the Army."

by ANN M. BOS AND RANDY R. TALBOT

# *The weather* was pleasant on April 24, 1941, at the Detroit

Arsenal in Warren Township. Radio broadcast the speeches of such dignitaries as the governor of Michigan and the chief of U.S. Army Ordnance across the country. But the star of the day's festivities was a thirty-ton, steel monster—the first tank delivered from the nation's newest and largest defense plant. The M3 (later nicknamed the General Lee) performed dramatically, firing its guns, smashing through telephone poles and easily turning a specially built house into matchwood. Suddenly, a second M3 emerged from the factory, much to the delight of the two thousand spectators. Later, children and industrialists climbed all over the tanks and posed for pictures. It was a great beginning to a story of how government and business united in a joint cause to modernize the U.S. Army.

**During the Detroit Arsenal's dedication on April 24, 1941, this 30-ton M3, the first tank built at the plant, stole the show when it easily smashed through this telephone pole.**



## A TANK PLANT IS BORN

The U.S. Army built about one thousand tanks during World War I, but none of them saw action in Europe. After the war, American tank development was haphazard. When bright young officers who recognized the tank's potential suggested changes, they were reprimanded. In 1920 Captain Dwight D. Eisenhower was told by superiors that the ideas he and fellow officer George S. Patton had about tanks "were not only wrong but dangerous." During the 1930s when the Army became interested in tanks, it ran into funding problems and only a few new tanks were ordered.

As American policymakers watched German armor race across Europe they realized the importance of mechanized warfare. By the end of July 1940 the Army created a separate armored force, but it only existed on paper. Making it a reality required mass production, and that initiative came from William Knudsen, the industrial production specialist of the National Defense Advisory Commission. On leave from his responsibilities as president of the General Motors Corporation, Knudsen was on the job less than a week when he called K. T. Keller, president of the Chrysler Corporation. According to legend, Knudsen asked Keller if Chrysler could make tanks. Keller responded, "Yes," then asked, "Where can I see one?"

Despite Keller's enthusiasm, the automotive industry could neither be converted to tank production overnight, nor could tanks be built in a few odd corners of existing plants. Since Knudsen believed mass-producing tanks could be facilitated under one roof, he proposed that the Army build what Keller called a "self-contained, permanent tank arsenal." Detroit was the obvious place for such a facility. A separate plant also served Chrysler's interests. Despite having idle manufacturing capacity in its plants, the automaker preferred to save space to make cars in the future, not fill uncertain government contracts. A government-owned tank plant also protected Chrysler from being stuck with a white elephant after a war.

As negotiations continued, Chrysler engineers traveled to the U.S. arsenal at Rock Island, Illinois, to see—for the first time—a tank. They gathered up all the blueprints of the Army's newest tank, the M2A1, and headed back to

**Even before seeing a tank, Chrysler president K. T. Keller said that his company could build them. In August 1940 the Army agreed to construct a tank plant that Chrysler would operate. On April 24, 1941, Keller (right, with Major General Charles Wesson) attended the Detroit Arsenal's dedication ceremony.**



All photos TACOM, unless otherwise noted

Detroit. Working on the eighth floor of the Dodge building on Conant Avenue, the team completed a full-size wooden model of the M2A1 in four and one-half weeks. On August 15, 1940, the Army and Chrysler signed a contract. The government agreed to build and tool a tank plant for \$21 million; Chrysler agreed to operate it, setting the price for each tank at \$33,500. The Detroit Arsenal became the nation's first government-owned, contractor-operated facility.

To design the tank plant, Chrysler hired Albert Kahn, the renowned industrial architect who had worked extensively with the auto industry for several decades. The plant site was one hundred acres of cheap farmland in Warren Township, north of Detroit. At the time the area was so rural that one worker remembered that during plant construction "occasionally we would hear pellets hit our windows, as [hunters] took aim at quail."

Ground preparation began on September 11. Two months later, steel framing began. As winter approached, construction conditions worsened. In early December the firm farmland became "a marshy morass." Kahn remembered, "Steel workers slopped around in boots—many times up to their knees in mud. Then snow came, followed





by icy rains and a sweeping wind.” As construction continued, engineers worked on the layout of the new plant, which required over 1,000 machine tools and 8,500 specialized jigs and fixtures.

Simultaneously, a team from the Ordnance Department and Chrysler developed a pilot tank. Because the M2A1 was deemed obsolete even before production began, engineers turned to a larger tank—the M3. As one Army ordnance officer later noted, “Only a man who has taken part in the design, tooling and production of the new model of automobile or other complicated piece of machinery can adequately understand the unforeseen and unforeseeable difficulties of such a task. . . . And this new product was not just a new automobile adapted from last year’s model; it was a tank, which was an entirely new and strange product for private industry, and even for the Ordnance Department itself.”

In late January 1941, before the plant’s final wall was added, workers began moving in heavy machinery. Kahn’s mammoth structure, hailed as “the largest of its type in the

**For several weeks in early 1941, this steam locomotive heated the Detroit Arsenal until the factory’s power plant was completed.**

world,” measured five city blocks deep and two blocks wide, and contained more than 1.1 million square feet. The building had bold glass curtain walls that “provided a crystal palace design.”

As the plant took shape, the pilot M3 went from blueprints to production. Keller pressed for a date when the tank would be completed. He was told Easter Sunday. On Good Friday, April 11, 1941, the pilot tank was driven a short distance in the shop. The next day, it was taken outside where Keller got a ride. After the Chrysler president had left the plant, the workers took the M3 out for another spin. Either unprepared for the machine’s power or misjudging the distance, the driver brushed a watchman’s box, knocking it over—with the sentry in it! Two weeks later, Chrysler introduced its first tanks to the world.

Tanks quickly rolled off the assembly line. By early December 1941 the arsenal shipped its five hundredth tank. After the Japanese attacked Pearl Harbor, the monthly quotas rose. Soon there was talk of producing one thousand tanks a month. In March 1942 construction began on a second assembly bay (by war’s end there were five assembly lines). One year after the M3 had been introduced, the arsenal delivered its two thousandth tank.

In July 1942 the M4 (Sherman) tank replaced the seriously flawed M3. Remarkably, retooling was accomplished without interrupting production. War Production Board head Donald Nelson called the changeover “the most amazing production job” he had ever seen. The ultimate accolade came on August 10 when the Detroit Arsenal became the first defense plant awarded an armed forces “E” flag for excellence in production. Lieutenant General Levin H. Campbell, the U.S. Army’s head of Ordnance, told arsenal workers, “We have upped the ante on you time and again and you have met every demand.”

## ROOSEVELT VISITS THE DETROIT ARSENAL

As production increased, the Detroit Arsenal became a focal point for prominent visitors from around the world. Generals, politicians, diplomats and ordnance officials came to see what *The Detroit News* hailed as “one of the most remarkable achievements” of the automobile industry. On September 18, 1942, President and First Lady Roosevelt made the arsenal their first stop on a tour of the nation’s war-production facilities.

All morning rumors buzzed throughout the plant as hundreds of soldiers lined the approaching railroad tracks. More soldiers were seen on the plant roof and plainclothes security men milled around the factory entrances. At 1:30 P.M. a private train pulled inside the arsenal. As the president emerged, hundreds of workers crowded around, cheering the chief executive.

Roosevelt’s entourage included Michigan governor Murray Van Waggoner and Chrysler president K. T. Keller. The president’s twelve-car motorcade of dignitaries and secret service agents snaked through the plant at two miles per hour. The cars stopped repeatedly along the assembly lines, where

**President Franklin D. Roosevelt made the Detroit Arsenal his first stop on a tour of the nation’s war production facilities. During his September 18, 1942, visit, Roosevelt toured the plant, then watched tanks run along the arsenal’s test track.**

“Keller’s hands were in motion as he pointed out this and that phase of manufacture.” President Roosevelt was particularly interested in how the eight-ton transmissions were added by overhead crane, and how the turret, 75-mm gun and caterpillar tracks were placed on the tank. Workers strained to catch a glimpse of the president, who was waving and smiling throughout his tour. According to one observer, “It took 20 minutes for the president to ride the length of the plant and those were moments of thunderous cheers and applause [as] the workers stood in long-packed lines, surprised, animated, but orderly.”

The president’s entourage then went outside where tanks were being put through a series of routine tests on a figure-eight concrete track. Roosevelt watched fifty tanks “making a terrific din and throwing up a whirlwind of mud and dust.” *The Detroit News* later reported that as the president watched, Joe Menock, Chrysler’s chief tank driving inspector, stopped one tank and gave its driver special orders. An M4 “rambled through a giant testing hole of mud and water, circled, returned back through the hole and churned up through the mud and concrete blocks—straight at Mr. Roosevelt’s car.” It came to a halt “not many feet” from the president’s car. A





smiling Roosevelt waved to the tank driver, who open the hatch and waved back. One group of observers who weren't smiling were the president's secret service men, who boarded the tank and questioned the driver. As one witness observed, they "did not take kindly to this incident."

After returning to Washington, the president called the Detroit Arsenal "an amazing demonstration of what can be done by the right organization, spirit and planning." He was right. The arsenal was running at peak production, twenty-four hours a day, seven days a week. There were 230 hourly workers at the plant on the day the first tank was finished in April 1941. By late 1942 the arsenal employed almost 5,400 workers. In December 1942 the plant set an all-time monthly production record by delivering 907 Shermans.

## THE TANK-AUTOMOTIVE CENTER IS CREATED

As the American economy converted to war production, the Detroit Arsenal became a final assembly plant as parts from more than seven hundred suppliers arrived in Warren. Managing this flow of parts while maintaining the ever-increasing production schedule was complicated by the

**The first tank mass-produced at the Detroit Arsenal was the M3 (also called the General Lee). To coordinate the Army's many vehicle needs, the Tank-Automotive Center was created in late 1942. Brigadier General Alfred Glancy (above right), a former vice president at General Motors, served as the Center's first commander.**

Army's fluctuating demands. Sudden design changes could stall production flows. "We never once had all of the machine tools and equipment that our schedules called for," Chrysler president Keller recalled after the war. To bring order to the chaos, the Army created the Tank-Automotive Center. Its mission was to determine how many wheeled

and tracked vehicles—and spare parts—the Army needed, and then procure them as quickly and cheaply as possible.

The Tank-Automotive Center got its start in August 1942 when General Campbell traveled to Detroit and met with the newly organized Automotive Council for War Production. There, plans were laid out to establish an institution that would work closely with automakers to maximize vehicle production. Campbell believed the agency should be located near the production facility, so the Tank-Automotive Center was housed in the Union-Guardian Building in downtown Detroit.

Appointed to command the Center was Alfred R. Glancy, a former vice president of General Motors. Glancy was commissioned a brigadier general, but it was his automobile manufacturing skills, especially his success as head of GM's Pontiac Motor Division in the late 1920s, that explains his appointment. In recent years, Glancy had

“The great mobility of the fleet-footed Sherman usually enables it to evade the slow and unwieldy [German] Tiger.”

—General George S. Patton Jr.  
Commander of the Third Army, World War II

The most versatile of all tanks built for World War II, the M4 Sherman constituted sixty-five percent of tank production during the war years. Manufactured by Chrysler at the Detroit Arsenal, each Sherman cost the government \$33,500. Many armor commanders considered the M4 the tank that won the war. As a stop-gap measure at the beginning of the Korean War, the Sherman was refitted with a larger turret and quickly shipped to Korea.



Patton Museum

# World War II

## VEHICLES

MANAGED BY THE DETROIT ARSENAL



During the breakout from the Normandy beachhead between August 20 and September 5, 1944, the “Red Ball Express” was born. Using primarily the two-ton truck, known as the “Deuce,” the Express rushed vital supplies to the front enabling the Army to quickly press into France.

Michigan’s American Bantam Car Corporation and Willys-Overland helped develop and manufacture the Army’s one-quarter-ton truck, better known as the “jeep.” This versatile vehicle’s roles included command post, scout car, ambulance and mount for machine guns. It continued to serve into the 1980s.



General Motors truck division produced the amphibious DUKW, more commonly known as the “duck.” This vehicle was used to transport troops and supplies from landing ships to shore.



worked in the Office of Production Management where he surveyed how the British built tanks. He personified the mixture of automotive know-how and government experience that General Campbell envisioned as necessary to manage the Center. Glancy's subordinates, however, were Ordnance men. His chief deputy was Brigadier General Donald Armstrong, who headed the Chicago Ordnance District, while the center's chief engineer was Brigadier General John K. Christmas, one of the army's premier tank designers before the war. Shortly after the Tank-Automotive Center opened General Glancy declared, "In the Army, as in business, the most important person is the customer."

When first formed, the Tank-Automotive Center had a complement of forty officers and about six hundred civilians. By war's end, the Center, renamed the Office, Chief of Ordnance-Detroit (OCO-D), employed five hundred officers and over four thousand civilians. The Center also suffered growing pains. Communication problems existed between General Glancy

**The Chrysler-designed Sherman tank, such as this one in the Pacific Theater, was considered the workhorse of the Army's armored divisions. Its large engine and lightweight body design gave the Sherman greater mobility over more heavily armored German tanks.**

and his immediate subordinates. There were charges of inefficiency, as well as reorganizations and realignments that one historian termed "bewildering, but necessary." Besides accusations of waste, some questioned the relationships that had developed between industry and the military. There was also a debate about the quality of American tanks. The M3 was inefficient, the Sherman was no match for German armor and the Army's heavy tank, the M26 (Pershing), took too long to develop and saw little action in the war.

Through all this tanks continued to be built. In 1943 the Detroit Arsenal delivered a record 6,612 tanks. But OCO-D

coordinated more than the building of tanks. By the spring of 1945 there was roughly one motor vehicle for every four American soldiers. Those vehicles required hundreds of thousands of parts and OCO-D provided them. During the war, OCO-D operated a warehouse system with 52 million square feet. It also ran one of the biggest publishing operations, producing more than 2 billion pages of manuals in the last year of the war alone. In 1943 Russian leader Joseph Stalin declared, "the most important things in this war are machines." As one historian countered, "then the most important place in the war may have been the Union-Guardian building."

As the war entered 1945, plans called for the Detroit Arsenal to manufacture over 8,800 tanks, many of them the 45-ton Pershing. On the fourth birthday of the delivery of the first M3, General Campbell told Detroit workers, "The assembly lines of Chrysler have been basically instrumental in breaking the battle lines of the Axis." With the Germans losing the war, the Detroit Arsenal quit making Shermans in May 1945. When the Japanese surrendered in mid-August, the Army terminated its contract with Chrysler. The plant, which built 22,234 tanks,





enough to equip more than one hundred divisions, was turned back to the Army's Office of Ordnance on October 29, 1945.

Besides building as many tanks as all German manufacturers did during World War II, the Detroit Arsenal—through the efforts of OCO-D—helped change the U.S. Army. By the end of the war, the Army better appreciated the overwhelming importance of industry. The key to victory, according to General Campbell, was “applying this industrial might to battle.”

## POSTWAR TO COLD WAR

During the postwar demobilization, the Army dismantled OCO-D and transferred its personnel and functions to Warren. The government also suspended tank production at the Detroit Arsenal following the delivery of 882 Pershings. The plant became a government-owned and -operated facility, and its main mission shifted to modifying

**Located in Warren and designed by architect Albert Kahn, the Detroit Arsenal tank plant was completed in 1941. Between 1941 and 1997, workers at the massive 1.1 million-square-foot building manufactured or upgraded over sixty thousand tanks. Shortly after the last tank rolled off the plant's assembly line, the building's ownership was transferred to the city of Warren.**

World War II tanks. A few developmental special-purpose systems were constructed in Warren, but these saw limited production.

The outbreak of the Korean War in 1950 caught the U.S. off guard. World War II vehicles were rushed overseas as American industry mobilized for war production. At

the start of the war, the Detroit Arsenal fitted Sherman tanks with new turrets and sent them to Korea as a stop-gap measure while a new main battle tank was developed.

Applying lessons learned during World War II, the Army created the Ordnance Tank-Automotive Center (OTAC), which had responsibility for the nationwide procurement of all vehicles. Since the Detroit Arsenal did not have enough administrative office space to handle the additional staff members, OTAC moved to the vacant Detrola Building complex on Beard Street in southwest Detroit.

The Chrysler Corporation was reinstated as the operating contractor at the Detroit Arsenal and went right to



work producing the M47, the country's new main battle tank. Within two years, the plant produced 3,443 tanks, as well as components to support other tank programs. In 1955 the government again suspended new tank production at the plant, but Chrysler continued to use the Detroit Arsenal to machine component parts for tanks being manufactured elsewhere.

Unlike in 1945-46, the Army and industry did not sever ties after the Korean War ended. As Cold War concerns grew, so did the Detroit Arsenal's size and capabilities. The arsenal expanded to 340 acres, stretching a full mile wide from Van Dyke Avenue to Mound Road. At the same time, most of the arsenal's main engineering, research and test laboratories were completed.

## TACOM IS BORN

As the Cold War heated up—with North Atlantic Treaty Organization and Warsaw Pact forces planning for a massive armored war on the plains of Europe—OTAC went through several changes in both name and responsibilities. In 1967 OTAC became the Tank Automotive Command (TACOM). By that time, OTAC employees had left the Detrola Building and moved into a new two-story administrative headquarters located at the Detroit Arsenal in Warren.

Along with the name change came added responsibility for the newly created TACOM. Until 1960 many defense organizations handled government contracts for Army

**In November 1960, the Detroit Arsenal tank plant delivered the first of 14,400 M60 Patton tanks. Workers during the 1970s produced variations of the M60 for both the U.S. Army and foreign governments.**

vehicles and equipment. Now all contract work would be managed out of Detroit Arsenal. Additionally, although Army arsenals still were largely responsible for the research and development of weapon systems and vehicles, civilian contractors would produce them. This resulted in a closer relationship between the Army and its contractors. It also

meant that many government-owned arsenals were closed. By 1960, only four plants, including the Detroit Arsenal, were building tanks. This realignment allowed the armed forces to save money on defense spending and allowed Army engineers to focus more energy on planning future systems.

With the escalation of hostilities in Vietnam, the Detroit Arsenal found itself back on a war footing. Although Vietnam was considered an infantry and airmobile war, armored vehicles played an important role. The war's most versatile armored vehicle was the M113 armored personnel carrier (APC). Over 18,000 Army APCs were managed by TACOM. Originally deployed as an infantry troop transport, the APC had its armor and weapons systems upgraded, allowing it to be used in both defensive and assault roles.

Throughout the Vietnam War, the Detroit Arsenal continued to build tanks. Chrysler resumed full tank production when it delivered the first Detroit-built M60 (Patton)



Tom Sherry

“A hell of a good medium tank.”

—General Norman Schwarzkopf  
Commander of allied forces, Operation Desert Storm

Too heavy for use in Vietnam’s wet terrain and criticized for its high profile and limited cross-country mobility, the M60 Patton tank proved reliable during Operation Desert Storm where the First Marine Expeditionary Force fielded 210 M60s to support efforts to take Kuwait City. Carrying a 105mm cannon, the Patton was not only used against Iraqi armor, but also was fitted with mine clearing plows and bulldozer blades to help clear obstacles in the desert.

# Korea/Vietnam

## VEHICLES

MANAGED BY THE DETROIT ARSENAL

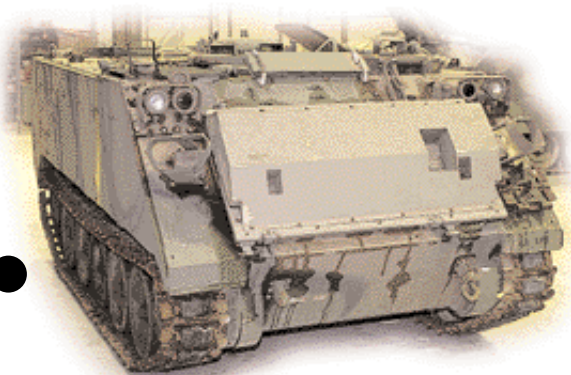


Used successfully in Vietnam, the airmobile M551 Sheridan light tank provided heavy fire for infantry operations. Light enough to operate in Vietnam’s swampy regions, the tank won praise from the foot soldiers as a dependable vehicle. The M551 was also used during Operation Just Cause (Panama) and Operation Desert Storm where it provided support to initial ground troops arriving in the area.

One variation of the M37 three-quarter-ton truck is the M43 ambulance. The body is made with aluminum instead of steel and has an interior controlled spotlight mounted on the cab. The rear compartment is heated and also has a surgical light for patient treatment on the road.



Serving from Vietnam to the present day, the M113 armored personnel carrier (APC) can carry up to ten soldiers. The M113 has also been used as a flame thrower, mortar launcher and an anti-tank missile launcher.



Tom Sherry

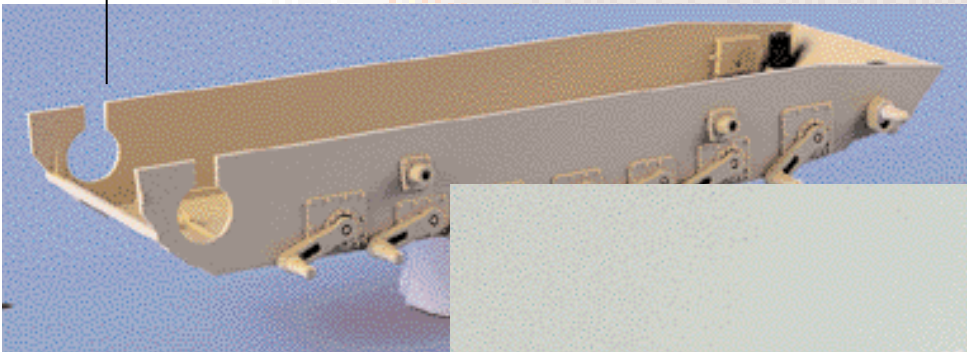


# Building A

**THE U.S. ARMY'S ABRAMS TANK,** weighing 69.54 tons and carrying a massive 120mm smooth bore cannon, is currently the military's main battle tank. Today, the Army does not manufacture new tanks; instead, it refurbishes old tanks at its Lima, Ohio, tank plant. At Lima, M1A1 Abrams tanks are disassembled and state of the art electronics are added while the tank's main components are being upgraded. The tank is then reassembled after the turret and hull come off separate assembly lines. The newly refurbished tank, now termed a M1A2, is repainted, tested and shipped to its awaiting unit.

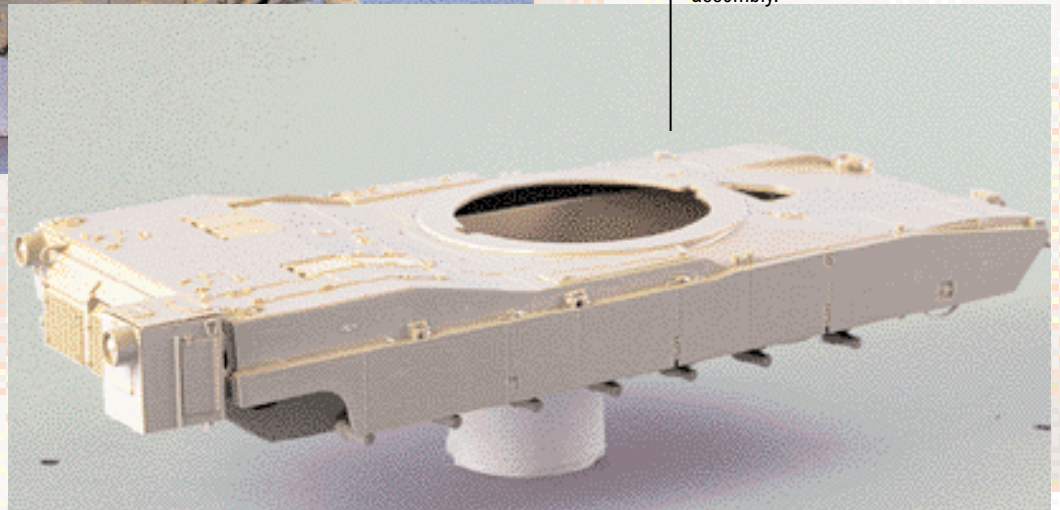
1

Thick steel plate armor is welded together forming the tank's hull. The race ring, a device that fits the turret to the hull allowing it to turn, is then placed on the hull.



2

Fuel cells and the top deck are added to the hull. The hull portion is now ready for final assembly.



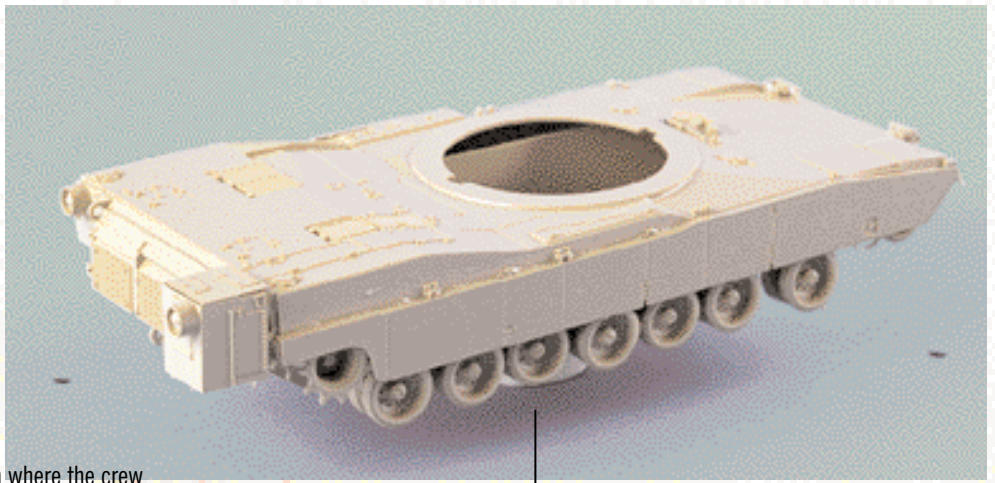
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While the hull is being constructed, work on the turret begins on an adjoining assembly line. First the turret armor is welded and then the ammunition storage bays, located at the rear of the turret, are reinforced to protect the crew from explosion if the tank takes a battle hit.



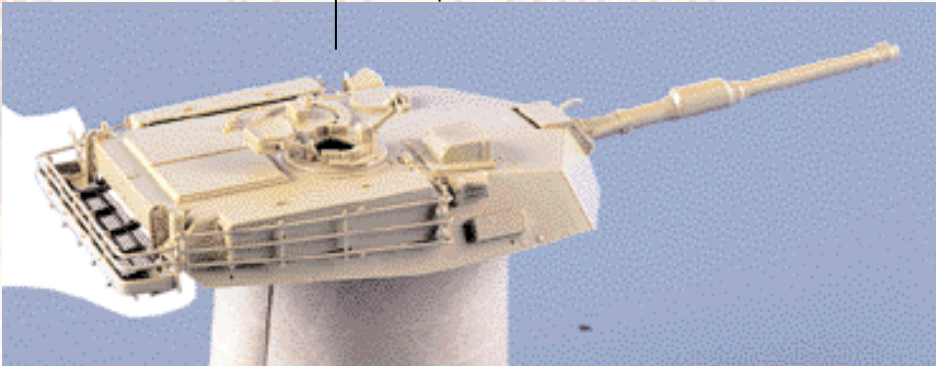
4

The turret platform where the crew will sit is added to the bottom of the turret. Then the assembled cannon and its fire control computers are added and the ammunition racks are placed into their bays. Last, hatches, machine-gun mounts and the global positioning system are put in place on the top of the turret.



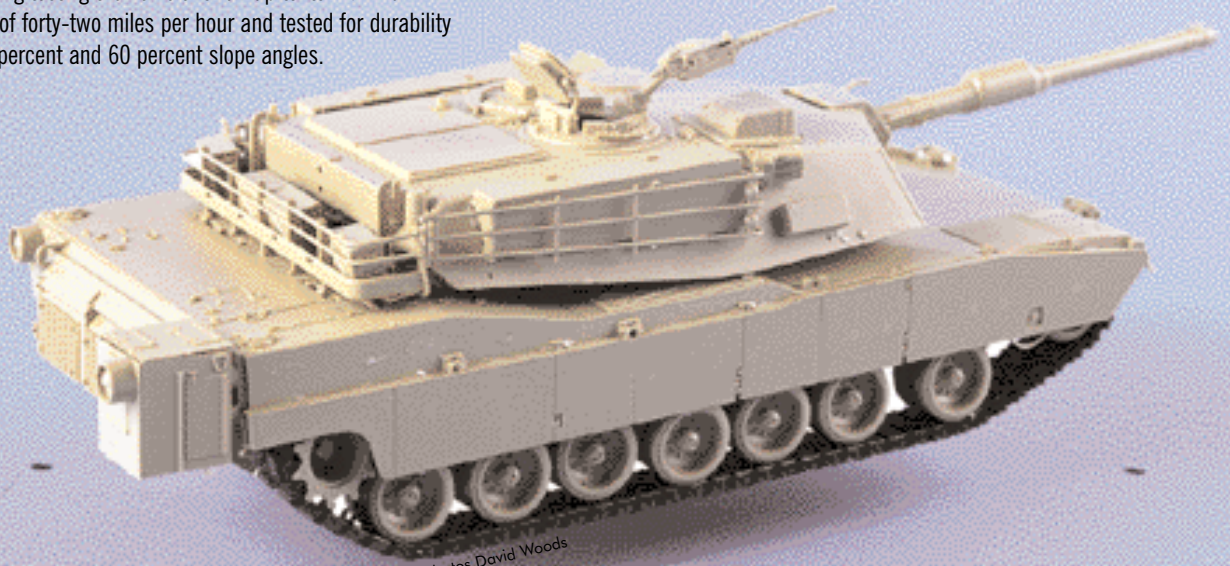
Next, a 1,500 horsepower turbine engine is installed in the back of the hull, the driver's station is completed and the driver's hatch door added. The hull is now ready for tracks and its turret.

5



6

The tank is completed when the turret and hull are joined together. The tank is then repainted and tested for durability. During testing the vehicle is run up to its maximum speed of forty-two miles per hour and tested for durability on 10 percent and 60 percent slope angles.



Photos David Woods

in November 1960. Over the next twenty-five years, Detroit produced over 14,400 Pattons. The M60 was superior to Soviet armor, but the 1967 Yom Kippur War—where the Israelis used American tanks and the Arabs used Soviet tanks—emphasized the need for fast, highly mobile, combined armed forces. First, the United States and the Federal Republic of Germany explored a joint program to build a new main battle tank. These efforts failed, but in 1976 Chrysler received a contract to build what became the world’s best main battle tank.

## GULF WAR AND REALIGNMENT

Nicknamed “Whispering Death” for its stealth and speed (up to forty-two miles per hour), the M1 Abrams system has been described as TACOM’s “crown jewel.” Technologically superior to any tank in the world, the 70-ton Abrams, named after General Creighton Abrams, quickly overpowered the Soviet tanks that the Iraqis fielded in the 100-hour ground war in the Gulf. The Abrams was almost invulnerable to enemy fire, and not one tank was

destroyed by direct enemy fire. The Abrams also killed more enemy tanks than any other allied weapons system. As one Iraqi tank battalion commander related after the war, “When I went into Kuwait I had thirty-nine tanks. After six weeks of bombardment, I had thirty-two left. After twenty minutes in action against the M1s, I had none.” As allied commander General Norman Schwarzkopf noted, the Abrams performed “beyond our wildest expectations.”

Although the Abrams was a critical element to victory in the Gulf War, TACOM also managed all U.S. vehicles. TACOM’s trucks provided vital supply support—everything from water to spare parts. Without the command’s around-the-clock efforts, vehicles, tires, repair parts and technical experts would not have been available to the men and women fighting the war. Needed items were ordered and shipped to the Gulf, often within one day of the request.

The Detroit Arsenal began manufacturing M1s in 1982. The arsenal also produced M60s until 1986. Three years earlier, Chrysler sold its defense division to General Dynamics, ending Chrysler’s

**During Operation Desert Storm, the fast but heavily armored Abrams tank raced across the Iraqi desert and in just three days destroyed most of the Iraqi armor it encountered. During the war, no American M1s were lost to enemy fire. Today, to keep the Abrams superior, older models are being refurbished at the Army’s tank plant in Lima, Ohio.**



General Dynamics Land Systems

more than forty-year association with building tanks. Abrams continued to be manufactured at Detroit until August 1991. For the next six years M1s were retrofitted at the Warren plant. Then tank production ended. In 2000, as the Army was downsizing and restructuring, the plant where over sixty thousand tanks had been manufactured or upgraded was transferred to the city of Warren.

Tanks were no longer being built at the Detroit Arsenal, but there was no slowdown in TACOM's operations. After the Gulf War, peacekeeping, humanitarian missions and disaster relief were added to the Army's responsibilities. In 1992 Hurricane Andrew slammed into the Florida coast causing extensive damage. Elements of the Army were deployed in a disaster relief effort with its vast logistics system managed by TACOM. Brigadier General James W. Monroe, TACOM's Deputy Commander, led the Logistics Support Group. TACOM, in addition to supporting the Army's fleet of trucks and trailers, sent 6,000-pound forklifts to the Florida National Guard and provided water trailers and hurricane damage repair kits for the relief effort. During the mid-1990s TACOM's mission was further expanded to include all the Army's small arms, boats, railcars, armaments, water purification, bridging, supply, fuels and lubricants.

Through all this change, TACOM's primary responsibility remains keeping the Army ready to fight a war anywhere in the world. During the mid-1990s, TACOM became the Tank-automotive and Armaments Command, when it took over operations at arsenals in Rock Island, Illinois, and Picatinny, New Jersey, and maintenance depots in Anniston, Alabama, and Texarkana, Texas. From 1995 through the present, TACOM, through its Logistics Area Representatives (LAR), manages the vehicles and logistic support for U.S. forces throughout the world. The LARs serve as TACOM's "eyes and ears" in the field, assisting soldiers in the maintenance and repair of their equipment.



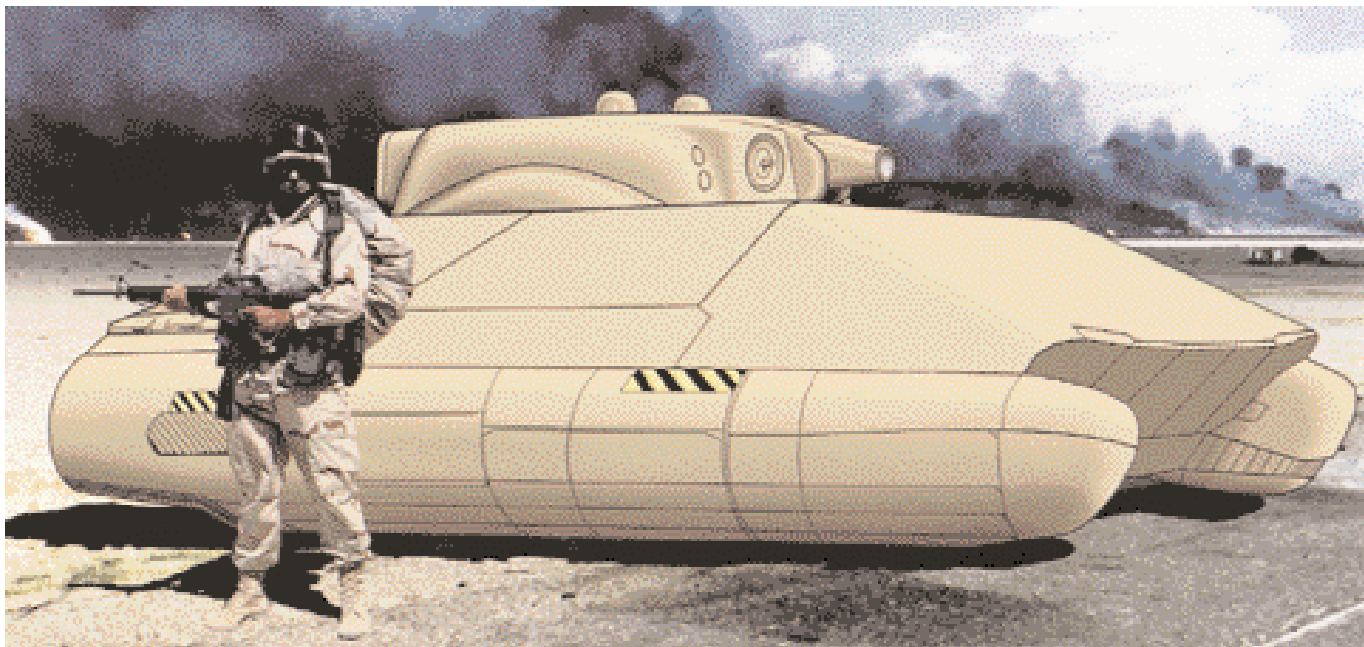
Tom Sherry

**Part of TACOM's current function is to help train Army mechanics on new equipment. Here, mechanics from the First Armored Division learn how to repair the M2 Bradley fighting vehicle's engine.**

## THE FUTURE COMBAT SYSTEM

Today, the Army faces a new type of war; one where it will need to get quickly to the fight anywhere in the world. The current force, while the most formidable in the world, is too heavy. As a result, the Army is transforming itself. The transformation plan calls for three categories of forces—Legacy, Interim and Objective. TACOM will support all three.

Legacy forces contain the Army's current vehicles, which must be maintained and modernized since the Army may be asked to protect the nation's interests. The Interim force is designed to meet the Army's objective of deploying a specially trained, ready-to-fight medium brigade anywhere in the world in ninety-six hours. To do its job, this brigade needs lightweight, heavily armored, air transportable vehicles. These vehicles are being placed on contract and production will begin soon. The Objective force is the Army's future. The Tank Automotive Research Development and Engineering Center (TARDEC), a TACOM subordinate activity, along with its partners in industry, academia and government, is determining what equipment the Army will need to win future wars. For the



Objective force, TARDEC engineers are creating vehicle concepts with characteristics and features designed to meet known and potential future threats. This next generation of vehicles, called the Future Combat System, is scheduled to be deployed in 2010.

Spread over five states and eighty-one countries, TACOM facilities include 1.2 million square feet of laboratories and research and development centers and 3.8 million square feet of production facilities. Within this vast square footage is a work force of over eleven thousand civilians and soldiers, twenty-five percent of whom are located in Michigan. The TACOM family manages and supports over 3,000 systems and 281,000 vehicles all over the world. How important is the work of TACOM? According to best-selling military author Tom Clancy, the Army's ground vehicles "are today the most capable, mobile, reliable, and robust in the history of motorized war." In his 1994 *Armored Cav: A Guided Tour of an Armored Cavalry Regiment*, Clancy attributed this achievement to the "concerted, long-term efforts" of TACOM, which is "the heart of the Army's efforts to modernize its ground vehicles."

With more than fifty years of experience to draw upon, TACOM is well equipped to help the Army achieve its goal for lighter, more lethal and more survivable vehicles, while at the same time maintaining the current fleet. Achieving these present responsibilities and future goals continues to require a strong working relationship with the private sector, especially the American automobile industry. The

**This concept illustration shows what a future combat vehicle may look like. It is one of the many possibilities that engineers at the Detroit Arsenal, along with its partners in industry, are developing for the Army's Future Combat System.**

National Automotive Center (NAC), founded by the Department of Defense in 1992, serves as a conduit between the Army, industry, academia and federal agencies to share and develop technologies that have both commercial and military applications. Headquartered at TACOM, in

Warren, the NAC resides at the center of a concentrated source of automotive intellectual property unmatched anywhere in the country.

During the dark days of early 1942 a few Americans remained confident of eventual success against the Germans and Japanese. One of those was Lt. General Brekon B. Somervell, head of the Army's Services of Supply. Responsible for making sure the Army had the necessary equipment to fight a war, Somervell reminded Americans that when Hitler "hitched his chariot to an internal combustion engine, he opened up a new battle front—a front that we know well. It's called Detroit." As the Army prepares to confront the future, TACOM will be there, working with the automobile industry—developing, purchasing, fielding and sustaining the materiel—just as its predecessor did over a half century ago. ■

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“Our M1s were the most awesome machines in the Arabian desert and the embodiment of the spirit of TACOM.”

—Colonel Donald Schenk, Executive Officer  
Second Brigade, First Infantry Division, Operation Desert Storm

Nicknamed “Whispering Death” because of its stealth and speed, the M1 Abrams battle tank was an ever-present threat to the Soviet bloc during the Cold War and proved itself as a highly mobile, lethal war machine during Desert Storm. The M1 was conceptualized during an early 1970s joint engineering effort between the U.S. Army and Germany. After the venture failed, Army engineers at the Detroit Arsenal developed the current tank. Chrysler first produced the Abrams in 1980. Nearly ten thousand Abrams have been manufactured.



General Dynamics

# Present Day VEHICLES

MANAGED BY THE DETROIT ARSENAL



Tom Sherry

The M2 Bradley Fighting Vehicle is a full-tracked, lightly armored, 30-ton fighting vehicle operated by a crew of three. The Bradley served in Desert Storm to protect mounted infantry and cavalry combat operations from artillery and small arms fire.



Tom Sherry

The Heavy Expanded Mobility Tactical Truck (HEMTT) is made by Oshkosh Truck in Oshkosh, Wisconsin. Diesel-powered HEMTTs transported fuel, ammunition and other supplies across the Iraqi desert during Operation Desert Storm. Amazingly, this 67.5-ton truck was able to travel through the deep sand without mishap.



In 1984 the military began buying High Mobility Multi-purpose Wheeled Vehicles (HMMWV) from AM General. This four-wheel-drive vehicle, more commonly known as the “Humvee,” proved itself as a fast transport vehicle and command post during Operation Desert Storm. Today, U.S. forces use more than 123,000 HMMWVs in a variety of military police and scout vehicle missions.