

2. The Quartermaster Corps Develops the Jeep

The jeep had its origins in a small car designed and built by the Austin Motor Car Company of Birmingham, England, to address a European market that was somewhat different from the American market. Population density in Europe was great and gasoline prices were higher, and that translated into demand for a smaller automobile than American automakers produced. In 1929, the company formed a subsidiary, the American Austin Car Company, which acquired the plant of the Standard Steel Car Company in Butler, Pennsylvania. Because of the timing and the American market, however, the Austin car was not very successful, and in 1936 the American Austin Car Company was acquired by the American Bantam Car Company.⁶⁴

Meanwhile, the U.S. Army's Quartermaster Corps had begun looking for small vehicle to replace the motorcycle equipped with a sidecar. The Army purchased an experimental car from Austin in 1933 for tests at Fort Benning. The two-seat car was open but otherwise of conventional design. As the Army tested that car, engineers at the Tank Section of Fort Benning's Infantry School began development of a vehicle called the Howie machine-gun carrier, intended to be capable of carrying a machine-gun tripod and two soldiers lying prone. The vehicle had a very low profile and travelled at a low speed. In 1937, engineers at the Quartermaster Corps' Holabird Depot ordered a new experimental version of a small vehicle from Bantam. The engineers had already developed a preliminary design, which included what would become the familiar body shape. They worked out final details with an engineer at Bantam. The specifications for the vehicle had changed: the soldiers were back in a seated position, and the vehicle had to be capable of traversing rough terrain. It still needed to be capable of carrying a machine gun on a tripod, plus ammunition. The Army wanted the vehicle to be built of conventional commercial parts. After some tests, the Quartermaster Corps ordered three more test models in 1938, one each for Fort Benning, Fort Riley, and the Holabird Depot. While the regular Army tested those three vehicles, Bantam provided some of its cars to the Pennsylvania National Guard, in the process learning more about how its vehicles performed in military situations.⁶⁵

⁶⁴E.P. Hogan, "The Story of the Quarter-Ton: The Army's Smallest Car Known as a 'Jeep'," unpublished historical report dated 15 July 1941 in NARA, Records of the Office of the Chief of Ordnance, RG-156, Entry 646A, box A711, p. 1; Herbert R. Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," unpublished historical report dated 1943 in NARA, Records of the Quartermaster Corps, RG-92, Entry 2116N, box 2, p. 6.

⁶⁵There is a nice summary of the Quartermaster Corps' development of the jeep in Risch, *The Quartermaster Corps: Organization, Supply, and Services*, 139-141. See also Hogan, "The Story of the Jeep," 1-4; Francis H. Fenn (president of American Bantam Car Corporation), testimony given 6 August 1941 to the Truman Committee Investigating National Defense, HFM Acc. No. 435, box 30, Mass Jeep Shipped folder, p. 1; Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 6-12.

The next stage in the development of the jeep was a 1940 request for bids to supply the Army with 70 experimental vehicles for further testing. This number grew out of an investigation made by a sub-committee of the Ordnance Department's Technical Committee. Because the prototype Howie machine-gun carrier was considered a combat vehicle, the Army asked Ordnance to consider the 1/4-ton 4 x 4 experimental truck as a vehicle that could satisfy the requirements of carrying a machine gun and crew. Ordnance performed some tests on the earlier Bantam vehicles and on a Bantam chassis, agreeing that with modifications the vehicle could serve to carry a machine gun. The sub-committee, Col. Howie, and Bantam engineers met in June 1940 to draw-up some new specifications. Ordnance then recommended that the Quartermaster Corps procure 70 experimental vehicles, 40 to be tested by the infantry, 20 by the cavalry, and 10 by the artillery. The infantry and cavalry wanted the new truck to be a vehicle which had all four wheels steering, rather than the front two wheels only. Although the Quartermaster Corps opposed this feature because it would require four constant velocity joints instead of two, placing a further demand on one of the already recognized bottlenecks in producing the new vehicle, and because it would make the truck more difficult to maintain in the field, the Quartermaster General agreed to have eight of the experimental vehicles built as the four-wheel steer type. Meanwhile, Bantam worked closely with the Spicer Manufacturing Company of Toledo, Ohio, to develop stout four-wheel drive axles and transfer case for the light-weight truck, and Bantam opted for an engine made by Continental Motors that was larger than its own Bantam engine.⁶⁶

American Bantam proposed to negotiate a contract with the Quartermaster Corps to supply the 70 vehicles, but the Corps decided it was time to start opening the process to other bidders. Only one other company submitted a bid. The bid of Willys-Overland, Inc., was lower than Bantam's bid, but Bantam received the contract because it was willing to meet the Army's specifications and schedule. Although invited to do so, Ford did not submit a bid. Rigorous tests of the 70 Bantam vehicles at Holabird convinced the Army to begin equipping its units with the new four-wheel drive 1/4-ton truck. In October 1940, the Quartermaster Corps invited bids and negotiated contracts with American Bantam, Willys-Overland, and Ford for 500 of the vehicles each, specifying that all 1,500 axles and transfer cases would be supplied by Spicer. The Corps decided to enter three contracts, rather than one, because it wanted to develop production capabilities with several firms in case many more of the vehicles were needed. Other branches of the Army, as well as other government agencies, objected, however, to awarding contracts to Willys and Ford. After heated debate among the various parties, the Assistant Secretary of War authorized the Quartermaster Corps to negotiate three contracts of 1,500 vehicles each. Each of the three companies was supposed to build the vehicles identically so that Army mechanics in the field would be maintaining completely standardized vehicles.⁶⁷

⁶⁶Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 21-27.

⁶⁷Hogan, "The Story of the Jeep," 4-8; Fenn testimony, 2; Lt. Col. Edward S. Van Dusen (Quartermaster Corps), testimony given 13 August 1941 to the Truman Committee Investigating National Defense, HFM Acc. No. 435, box 30, Mass Jeep Shipped folder; Rifkind, "The Jeep -

The Army initially referred to the small truck as a Light Command and Reconnaissance Car, intending that it compete with the standard motorized three-passenger tricycle and with the motorcycle-and-sidecar that accompanied the Nazi Panzer tank divisions. This intention was very obvious in the reports various units of the Army sent back to the Quartermaster Corps as their soldiers worked with the jeeps in maneuvers. Among the questions the Quartermaster Corps asked unit commanders to consider in their reports was how the jeeps performed in various conditions and circumstances as compared specifically to motorcycles with sidecars and to motorized tricycles. The Quartermaster Corps received reports from infantry, cavalry, armored, field artillery, reconnaissance, supply, and other units, commanders of which were overall very enthusiastic about the jeeps' performance, nearly always reporting that the jeeps were superior to the motorcycles and tricycles. The feedback the Corps received from these units also helped to develop the final production specifications that were adopted in 1942, as units offered advice on minor modifications to such items as the canvas top, the side mirrors, the collapsible seats, windshield wipers, all intended to make the jeep a more serviceable vehicle in battlefield conditions.⁶⁸

The three auto companies did not interpret the Army's specifications identically. The Bantam version, for example, was under the Army's weight limit, while the Willys version was over the limit because it had a bigger Willys engine. Ford delivered its jeeps with Fordson farm tractor engines, necessitating a different shape to the hood. Each of the three had different shapes to the front fenders. All three versions revealed structural weakness during the tests of 1941. The Army decided that the Willys model would become the standard, mainly because, although heavier than the specifications allowed, it performed better than the other two. The Army next decided to let a contract for 16,000 jeeps, but this time the entire order would go to one company. The Willys bid was slightly lower than Ford's, but the Quartermaster Corps wanted to award the contract to Ford because it possessed greater production capabilities. The Office of Production Management, however, overruled the Quartermaster Corps, so the Army

Its Development and Procurement under the Quartermaster Corps, 1940-1942," 27-34, 55-74; "Ford Motor Company Operations under GPW Reconnaissance Car Contract and GPA Amphibian Contract," unpublished report (n.d.). in HFM Acc. No. 435, box 7, FMC Operations under GPW Contract folder, pp. 1-2

Sources from the period provide inconsistent accounts of the numbers involved in the contracts for 1500 jeeps. "Ford Motor Company Operations under GPW Reconnaissance Car Contract and GPA Amphibian Contract" and Col. Van Dusen's testimony suggest that the total number was 1500 jeeps, with each of the three companies producing 500. Hogan's report, Bigger's testimony, and the Thomson and Mayo history indicate that each company contracted to make 1500 units. The latter number seems to be corroborated by the "Statistical Work Sheets, to 1 August 1945," in NARA, RG-156, Entry 936, box L181, p. 155, which shows that American Bantam supplied the Army with a total of 2,642 jeeps during and prior to the war.

⁶⁸Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 34. The reports, typed on standardized forms, from units stationed throughout the U.S. are in NARA, RG-92, Entry 1890A, boxes 477, 478, and 479.

awarded the contract to Willys. Within a few months, though, as appropriations for ordnance procurement continued to increase, it became evident that Willys could not meet the Army's needs, so the Quartermaster Corp negotiated an additional contract with Ford, which was instructed to follow the Willys drawings and specifications. During the course of the war, Ford built more than 280,000 jeeps, and Willys built about 350,000, the parts of both companies' jeeps being completely interchangeable. Bantam, on the other hand, received no further contracts to build jeeps because the Army did not think the company had sufficient production capacity. Bantam's production for the Army thereafter was limited to small trailers.⁶⁹

The jeep became a staple of Army units in World War II, even though there had been considerable wrangling within the Army and between the Army and the competing auto companies concerning how the vehicle would be built and who would build it. Parties not participating in the bidding process also got involved in the controversies. Awarding of the three contracts for 1,500 vehicles each to Bantam, Ford, and Willys in 1940 generated controversy in the national press, especially because Ford, which heretofore had not been part of the process, was one of the companies receiving a contract.⁷⁰ Then Congress investigated the Quartermaster Corps' process of contracting for jeeps in 1941. Early that year, the U.S. Senate created a committee, chaired by Harry S. Truman, to investigate the national defense program and contracts the government had entered pursuant to the program. In August 1941, the Truman Committee heard testimony from the president of American Bantam and representatives of the Quartermaster Corps and the Office of Production Management concerning decisions made in awarding jeep contracts. Later that year, a sub-committee of the House Military Affairs

⁶⁹Fenn testimony, 2; Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 95-112, 143-159; John D. Biggers (Office of Production Management), testimony given 13 August 1941 to the Truman Committee Investigating National Defense, HFM Acc. No. 435, box 30, Mass Jeep Shipped folder; Nelson, *Arsenal of Democracy*, 177-178; Harry C. Thomson and Lida Mayo, *The Ordnance Department: Procurement and Supply* (Washington, DC: Washington, DC: 1960), 276-278; "Statistical Work Sheets, to 1 August 1945," in NARA, RG156, Entry 936, box L181, p. 155.

⁷⁰Ford Motor Company was singled out for criticism because it was seen as a giant corporation intruding on a specialty market developed by a small company, American Bantam, and because of Ford still had a poor record in negotiating with organized labor (see section on labor in this report below). There was also concern that Ford was trying to use its contract to get the contract for four-wheel-drive axles taken from Spicer. I.F. Stone was especially prominent in his journalistic attacks; see I.F. Stone, "Behind the Ford Contract," *PM* (14 December 1940); Stone, "Ford Still Gets the Breaks Even if It Does Jam Defense," appearing in both *The Nation* (30 December 1940) and *PM* (30 December 1940); Stone, "Army Alters 'Midget' Car to Please Henry Ford," *PM* (19 January 1941); Stone, "Ford Contract Inquiry Urged," *PM* (24 January 1941). Stone was also critical of the Willys contract; see Stone, "Willys-Overland Gets Army Favor on Midget Cars," *PM* (16 February 1941). The controversy is summarized in Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 76-84 and 84-95.

Committee also investigated the jeep contracts. After thorough review, neither congressional committee took steps to reverse decisions made by the Quartermaster Corps.⁷¹ Although these controversies are an interesting part of the history of the jeep, they are beyond the scope of this report.

The new vehicle quickly became very popular among soldiers and the public alike, who called it the "jeep" as a phonetic shortening of the Army's classification for the vehicle, the GPW.⁷² As the war progressed, Willys began looking to the post-war potential for marketing jeeps to a civilian population. The company ran advertisements claiming that its engineers had "created and perfected the jubilant Jeep." Already resentful that it had lost the Army's jeep contracts, Bantam filed a complaint with the Federal Trade Commission that Willys' advertisements were unfair competition. The FTC investigated the history of the jeep's development, ruling in 1948 that Willys' advertisements were indeed unfair, ordering Willys to cease and desist. Within the Army, on the other hand, General Campbell, Chief of Ordnance, was more gracious. Even though the Ordnance Department had contracted with Willys and Ford to manufacture hundreds of thousands of jeeps from 1942 onward, Campbell issued a statement in 1944 that the Quartermaster Corps was entitled to the credit for having developed the jeep and brought it into production.⁷³

3. Ford's Production of Jeeps

As described above, each of the three companies providing experimental jeeps during 1940-1941 development period engaged in some research and development to help the Army find a satisfactory design. A Ford report also indicates that Ford had hoped to build its jeeps using some of its own parts that were comparable but not identical to those being made or purchased by Bantam and Willys. The Army, however, was determined that all the parts of all the jeeps be interchangeable, which forced some practices upon Ford that company engineers

⁷¹Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 112-128. Testimony before the Truman Committee is cited elsewhere in this report and may be found in HFM Acc. No. 435, box 30.

⁷²Although other authorities attribute the name "jeep" to the phonetic contraction of G.P., Rifkind offers a more complex history in the first footnote of his "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942." He reports that prior to application of the name to the "truck, 1/4 ton, 4 x 4," the 1-2-ton 4 x 4 truck was also called a jeep. During 1941 maneuvers when the Army was testing the 1/4-ton truck, it was variously called "jeep," "baby jeep," and "peep." Other names included "jeepie," "son-of-a-jeep," "blitz-buggy," "bantam," and "puddle jumper." A variant of the spelling was "geep." By February 1942, soldiers and mechanics applied the name "jeep" solely to the 1-4-ton truck as the 1/2-ton 4 x 4 truck was replaced by a 3/4-ton model. "Jeep" did not attain official military status as a name.

⁷³Thomson and Mayo, *The Ordnance Department: Procurement and Supply*, 279.

apparently did not relish. Discussions between engineers of Ford and the Quartermaster Corps concerning jeep engines are illustrative. During the round of contracts in which each company supplied the Army with 1500 vehicles, Bantam used a 112-cubic-inch engine made by the Continental Motor Company, Ford used its own 119-cubic-inch engine that it made for Ford tractors, and Willys made its own 139-cubic-inch engine. It was the Willys engine, in part, that put the Willys jeep over the weight limit for that round of production, but the Army decided that it preferred the more robust Willys engine. It therefore decided the Willys engine would be standard in all jeeps. Shortly thereafter, though, when the Quartermaster Corps decided it needed to have Ford producing jeeps as well, Ford estimated it would cost \$4,000,000 to modify its Rouge plant to manufacture the Willys engine. Ford therefore proposed to use its Ford tractor engine block with larger cylinder bores. Wanting complete interchangeability in its jeeps, the Quartermaster Corps nevertheless insisted that Ford tool-up to make the Willys engines. Willys agreed to provide Ford with all plans and other documents necessary to produce the engines.⁷⁴

By the time Ford was ready to start producing jeeps in large numbers, however, the U.S. was at war, and much of the space at the Rouge plant was taken producing other ordnance for the war effort. Ford therefore proposed that the Ordnance Department allow the company to assemble jeeps at its Chester, Dallas, Louisville, and Richmond branch plants. According to a Ford analysis, this introduced a certain inefficiency to the company's overall jeep operation. The government was asking Ford to make 350 jeeps per day. One of those branch plants could have handled the task, but instead the work was spread among several plants working at less than capacity. Ford acknowledged, on the other hand, the an advantage accrued to the government. Most of the jeeps were assembled on the coasts, so the government incurred less cost shipping finished vehicles to port facilities.⁷⁵

Ford's Rouge plant produced the first 77 of the company's jeeps with Willys engines in January 1942. The following month, while the Rouge plant turned-out 1,460 jeeps, Chester, Dallas, Louisville, and Richmond branches got their jeep assembly lines underway. Chester produced 184 jeeps in February 1942, Dallas produced 197, Louisville 107, and Richmond 170. In March, all the plants were producing at about their intended capacity, and the company produced 8,920 jeeps. The following month, Ford set its overall record of jeeps produced in a single month: 11,159 vehicles. The Chester and Richmond plants also set their individual plant records in April 1942: 2,425 and 2,000 respectively. The Rouge plant ceased assembling jeeps

⁷⁴Col. Van Dusen testimony, 5; "Ford Motor Company Operations under GPW Reconnaissance Car Contract," 1-2; Rifkind, "The Jeep - Its Development and Procurement under the Quartermaster Corps, 1940-1942," 128-143. Rifkind provides numerous details concerning the Corps' negotiations leading to the contracts with Ford to make jeeps. For example, he describes the process by which, for the first time in the United States' mobilization of industry in support of the war effort, the government was able include in the contract with Ford the stipulation "that all special dies, jigs, fixtures, and other tools to be acquired for the production of these vehicles will become the property of the United States." (p. 141-142)

⁷⁵"Ford Motor Company Operations under GPW Reconnaissance Car Contract," 2-4.

in September 1942, with a brief resumption in mid-1943. Chester ceased producing jeeps in January 1943. The Edgewater branch assembled 1,333 jeeps in early 1943. The Dallas, Louisville, and Richmond plants continued assembling the quarter-ton trucks until the Ford contract ended in July 1945. During that period of production, Ford manufactured its own Willys engines, as well as axles, drive shafts, and some of the springs, transmissions, and bodies, at the Rouge and the Lincoln plants. It made the little bits of trim at the Highland Park plant. Ford purchased all the other components of the jeeps it made, including frames, wheels, steering gears, and brakes, from suppliers who also supplied Willys. The following table shows the totals for each of the Ford plants that made jeeps during the war:

**Ford Motor Company Jeeps Built in WWII
by plant⁷⁶**

Rouge (includes 4,458 experimental vehicles before the GPW contract)	26,017
Chester	18,533
Dallas	93,748
Edgewater	1,333
Louisville	93,364
Richmond	49,359

At the Richmond plant, Ford dedicated 142,000 square feet of space on the first floor to jeep assembly. The functions of the Ordnance Department's tank depot (see below) occupied 105,162 square feet on the first floor and 71,714 square feet on the second. Ford retained 92,460 square feet on the first floor and 71,411 square feet on the second for its own operations. Even though American automakers were no longer allowed to produce civilian autos, the government recognized that it was important to keep the nation's existing fleet of private cars and trucks in running order to transport workers to and from work and to transport materials. Therefore, the government allowed the automakers to keep their service parts networks operating. During the war, the Richmond plant continued to serve as a distribution point for Ford parts, not only for Richmond's service area but for those of the Long Beach and Seattle branches as well. In December 1942, about 140 workers staffed the Service Stock Department at the Richmond branch, and it handled a volume of parts about twice that of any other Ford service branch in the U.S. The remaining 16,778 square feet on the first floor and 8,875 square feet on the second served what Ford classified as mixed uses. These areas included toilet facilities and general offices that served the entire building.⁷⁷

⁷⁶"Ford Motor Company Operations under GPW Reconnaissance Car Contract," 15-16A. Note that the July 1945 report by the commanding officer at the Richmond Tank Depot, "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 16, states that Richmond assembled 49,361 jeeps and not 49,359.

⁷⁷"Richmond Branch Operations under Contract W-883-ORD-2676," HFM Acc. No. 672, box 2, Defense Production - Richmond Branch folder, 8-9; Superintendent's Office to W.A. Abbott and Abbott to Supt's Office, memoranda dated 18 and 28 December 1942, HFM Acc. No. 371,

When the Quartermaster Corps granted Ford the contract to assemble jeeps at Richmond, it transferred George U. McFadden there to supervise the contract. A civilian, McFadden had been posted at one of the General Motors plants in Oakland, from where he managed a large Quartermaster Corps contract with GM for trucks as well as supervising all other Quartermaster procurement contracts on the West Coast. After the Army transferred procurement of motor transport vehicles from the Quartermaster Corps to Ordnance, McFadden transferred to Ordnance as well. For most of the duration of the war, his title in the Ordnance hierarchy at Richmond was chief resident inspector.⁷⁸ Richmond's contract to assemble jeeps actually was implemented in several phases:

**Jeeps Assembled at Richmond under Ordnance Contracts
by contract no. and date of contract**

W-374-Ord-2734	2-18-42	2,500 jeeps
W-374-Ord-2742	4-10-42	10,941
W-374-Ord-2798	11-10-42	5,410
W-374-Ord-2862	3-10-44	24,951
W-20-018-Ord-4920	2-20-45	4,423 (8,097 in original order)
Total		49,225 jeeps ⁷⁹

As the above table suggests, the last contract was originally for 8,097 jeeps, but when the contract was terminated on 28 July 1945, and the last several thousand jeeps were cancelled along with the contract. Of the jeeps assembled at Richmond, roughly 70% were boxed for shipment overseas and the remainder were delivered to the Army on wheels.⁸⁰

box 16, folder 4.

⁷⁸"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 49-50. McFadden was transferred to the San Francisco Ordnance District, Tank-Automotive Branch, as Chief Inspector in January 1945; see "Richmond Tank Depot, Vol. III, 1 January to 31 March 1945," NARA, RG-156, Entry 646, box A600, 10.

⁷⁹"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 49-52, 75; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 16-17. Note that there is a discrepancy between the total shown in this table and the total presented in a previous table for jeeps produced at the various Ford plants. The total shown here is the arithmetic total of the numbers of jeeps produced under the various contracts, according to the Ordnance sources cited. Other Ordnance sources, however, show different totals. It is not known at present which is the accurate figure.

⁸⁰"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 75; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 17.

Assembly of jeeps at Richmond was a fairly simple process. The plant received most components from Dearborn, including the frames, which had already received a first coat of paint there. Workers placed a frame on the assembly-line conveyor and then attached springs and front and rear axle assemblies. Then they gave the entire chassis a second coat of paint. Next they installed the engine, steering gear, transmission, transfer case, battery, wheels, radiator, body, gasoline, oil, and coolant. A Ford inspector then started the jeep for the first time and took it for a five-mile test drive, noting deficiencies, which were rectified upon return to the plant. Then Ford turned the jeep over to Ordnance for inspection and acceptance. Ordnance inspected every jeep with at least a one-mile road test. Ten percent of the jeeps received a five-mile test, and one percent received a 100-mile test. Once accepted, Ordnance returned each jeep to Ford, which sent it to a screen room for a radio suppression test under the supervision of an Ordnance inspector. Then Ford took the jeep to the disassembly line where it was prepared for boxing. Boxed jeeps were loaded onto railroad cars for shipment to a Port of Embarkation elsewhere in the country or delivered to the Stockton Ordnance Depot, where they awaited shipment back to the San Francisco Port of Embarkation. In April 1944, McFadden received an award of \$250 from the War Department for suggesting that the Stockton Depot establish a sub-depot at the Richmond Tank Depot for jeeps eventually headed to the San Francisco Port, thus obviating a needless shipment of jeeps to Stockton and back to the Bay. In early 1945, by which time it was calculated his idea had saved about \$200,000, the War Department awarded him an additional \$560.⁸¹

The *Richmond Independent* and local radio stations reported on 10 May 1945 that the Ford Motor Company's contract to produce jeeps would end July 31st, after which Willys-Overland would be the nation's only jeep manufacturer. Yet the Richmond Tank Depot did not receive official notice of the contract termination until May 23rd. The last jeep rolled off the Richmond assembly line on July 26th, it was boxed and ready for shipment at 3:00 pm on the 28th, at which time Ford's jeep assembly contract with Ordnance terminated. By that time, the reconversion to civilian production was well underway, and Ford announced it would begin producing civilian trucks at the Richmond branch on August 1st (see section on reconversion below). The company intended to produce 1,000 trucks of the same type it had been making when civilian production ceased on 24 March 1942.⁸²

D. Tanks and the Richmond Tank Depot

During the sixteen years prior to 1935, the United States manufactured 33 tanks. Between 1935 and 1940, the nation produced 1,000 tanks. In the period 1940-1945, the Arsenal

⁸¹"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 51-52; "Richmond Tank Depot, Vol. III, 1 January to 31 March 1945," 10.

⁸²*Richmond Independent* (10 May, 13 July 1945); "Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," 95, 139; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," NARA, RG-156, Entry 646, box A601, pp 3, 16, 27.

of Democracy produced 87,619 tanks, in addition to tens of thousands of other combat vehicles.⁸³ The Richmond Tank Depot was but a small component of America's huge technological system developed to manufacture fighting vehicles, but it played an integral role in that critical portion of the system between the tank factories and the Ports of Embarkation, where the Army loaded tanks and other ordnance on ships and sent them overseas to U.S. Army units, U.S. Marine Corps units, and the fighting forces of England, the Soviet Union, and other Allies. This section describes the Richmond Tank Depot's role in the context of that much larger system for producing and shipping tanks and other combat vehicles.

To manufacture the combat vehicles it needed, Ordnance contracted with a wide variety of companies possessing the physical plant required, include manufacturers of cars and trucks, farm machinery, and railroad cars and locomotives. The following table lists just a sampling of the kinds of combat vehicles made and the companies that produced them:

Manufacturers of Select Combat Vehicles⁸⁴

Combat Vehicle	Manufacturers	Peacetime Production
M5 light tank	American Car and Foundry Cadillac, Detroit Cadillac, Southgate, CA Massey-Harris	railroad cars automobiles automobiles farm tractors
M4 medium tank	American Locomotive Baldwin Locomotive Detroit Tank Arsenal Fisher Tank Ford Motor Company Lima Locomotive Pacific Car Pullman Standard	locomotives locomotives tanks car bodies automobiles locomotives railroad cars railroad cars
M2 half track	Autocar Co. White Motor Co.	trucks trucks
M3 personnel carrier	Autocar Co. White Motor Co. Diamond T. Motor	trucks trucks trucks

⁸³Campbell, *The Industry-Ordnance Team*, 219.

⁸⁴"Statistical Work Sheets," Vol. 41, to 1 August 1945, unpublished report in NARA, RG-156, Entry 936, box L181.

International Harvester

trucks & tractors

As the Army began increasing the output of tanks and other combat vehicles in 1940 and 1941, it recognized a bottleneck in the system. Manufacturers that had contracted to produce tanks would roll nearly finished vehicles off their assembly lines, but sometimes the tanks would sit on lots outside the factories for weeks awaiting accessories, like radios and small arms, or awaiting shipping orders. The delays were not the fault of the contractors but rather of Ordnance, which had the responsibility of supplying the accessories and making sure each tank was properly outfitted for its particular destination. Such delays sometimes slowed production, because contractors did not have sufficient storage space. The delays also depressed morale among factory workers, who were being asked to speed production to assist the nation's war preparedness only to see tanks sitting idly on the ground. The Ordnance Department therefore decided to establish tank depots, under the command of a new Intermediate Storage and Depot Unit, where nearly-finished tanks would await final outfitting. Ordnance started its first tank depot in January 1942 in leased shops of the New York Central Railroad at Toledo, Ohio, contracting with the Electric Auto-Lite Company to operate it. A few months later it contracted with the Ford Motor Company to establish tank depots at the branch plants at Chester and Richmond, the former primarily for processing vehicles to be shipped from the East Coast and the latter primarily for processing vehicles to be shipped from the West Coast. In December 1942, Ordnance moved its Ohio tank depot from Toledo to Lima, and the United Motors Service Division of General Motors took over the operation. Ordnance also had a depot at Longe Pointe in Montreal, Quebec, which processed American-made tanks prior to their shipment to Great Britain under the lend-lease program.⁸⁵

To appreciate the role of Richmond and the other tank depots, it is important to understand their position within the larger Ordnance scheme for managing the nation's production of tanks and other vehicles. The tank depots were part of the Tank Depot Section, which was one small unit within the Tank-Automotive Center, Detroit (later renamed Office of the Chief of Ordnance - Detroit), the creation of which has already been described. Within the organizational structure of the T-AC, major organizational components were each divided into two tiers of staff units and operating units. Staff units had responsibility for various administrative functions, while operating units managed actual operating functions at that particular level in the hierarchy. Thus, T-AC, under the command of the Deputy Chief of Ordnance/Chief of Center, was divided into several branches. The staff branches were designated Executive, Control, and Legal, and there were several sections under them, such as the Policy, Organizational Planning, and Statistics sections under the Control Branch and the Publications, Security, and Fiscal sections under the Executive Branch. There were five

⁸⁵"History - Tank Depot Section," unpublished report in NARA, RG-156, Entry 646, box A272, OCO-D file, Engineering-Manufacturing, Vol. I, Tank Depot Section, pp. 1-3, 6; "Industrial Service Tank Depot Operations (Final Issue), January 1942 thru December 1945," unpublished report in NARA, RG-156, Entry 962, box L303, pp. 1-18; Harry C. Thomson and Lida Mayo, *The Ordnance Department: Procurement and Supply* (Washington, DC: Government Printing Office, 1960), 254.

operating branches: Development, Engineering, Manufacturing, Supply, and Maintenance. Each operating branch was in turn divided into two tiers of staff sections and operating sections. Planning and Control, Statistics, and Inspection were among the staff sections in the Manufacturing Branch. The Tank Depot Section was one of six operating sections in the Manufacturing Branch, the others being Tanks & Combat Vehicles, Transport Vehicles, Parts & Supplies, Tools & Equipment, and Miscellaneous Products.⁸⁶

As Ordnance was developing the system of tank depots, it recognized that it would have to coordinate closely with the Signal Corps, the branch of the Army responsible for procuring, inspecting, and supplying the Army's fighting units with radios and other communications equipment. As an organization within the Army, the Signal Corps went back to just before the Civil War and the work of Albert J. Myer, who developed a code to be used with flags for transmitting information over distances beyond earshot. He continued to serve the Army's communications needs during the Civil War and after. In 1880, the Army officially created the Signal Corps, and Myer became its general. The Signal Corps was responsible for adapting new communications technologies to military purposes, including the telegraph, hot-air balloons, the telephone, and the wireless radio. In the two years prior to the establishment of the tank depots and America's entry into the war, the Signal Corps was just finishing its adaptation for military use of the FM radio equipment developed for police work by a man named Fred Link. With the help of Bell Laboratories and Western Electric, the Signal Corps was perfecting sets of short-range FM transmitters and receivers that allowed voice communications within and between tanks and other combat vehicles. The Signal Corps would be responsible for inspecting the installation of this equipment by workers at the tank depots. Other Signal Corps equipment installed in tanks by workers at the tank depots included flashlights and flag sets. Working through the Ordnance Department, the Signal Corps was also responsible for seeing that manufacturers produced tanks and other vehicles that were prepared to receive appropriate radio installations.⁸⁷

The San Francisco Ordnance District received instructions from the Office of the Chief of Ordnance in May 1942 to begin the preliminary work of establishing a tank depot in the Bay Area. By then, the Richmond branch had been assembling jeeps for several months. A short time later, an officer in Washington called the Ford Motor Company to inquire about the availability of the Richmond branch to prepare tanks for shipment overseas. Ford's Richmond

⁸⁶"Organization of the Ordnance Department, 1940-1945," unpublished historical report in NARA RG-156, Entry 948, box L239, organization chart between pp. 54 & 55.

⁸⁷"History - Tank Depot Section," 18-20; "Industrial Service Tank Depot Operations (Final Issue), January 1942 thru December 1945," 6-7; Dulany Terrett, *The Signal Corps: The Emergency* (Washington, DC: Government Printing Office, 1956), 3-21; George Raynor Thompson, Dixie R. Harris, Pauline M. Oakes, and Dulany Terrett, *The Signal Corps: The Test* (Washington, DC: Government Printing Office, 1957), 70-72. For a summary of continuing developments in tank communications equipment during the war, see George Raynor Thompson and Dixie R. Harris, *The Signal Corps: The Outcome* (Washington, DC: Government Printing Office, 1957), 118-122.

plant made an ideal facility because of ample outdoor space for storing vehicles and good access for shipping by both rail and sea. On 12 July, the San Francisco Ordnance District received official notification that the Richmond branch was to serve as a tank depot and that the Ordnance Department had chosen the military officers who would supervise the installation. The actual contract no. W-833-Ord-2676 between the War Department and the Ford Motor Company was dated 20 July 1942. It was a cost-plus-fixed-fee contract aimed at handling the equivalent of 250 tanks each month for a year. It stated that Ford would receive, store, prepare, complete, modify, and pack vehicles of many kinds, including light, medium, and heavy tanks, tank destroyers, heavy wrecking trucks, half-track vehicles and personnel carriers, and scout cars. The Richmond

Tank Depot would also receive spare parts and accessories for those vehicles and prepare them for shipping. Destinations for vehicles, parts, and accessories would be both domestic and foreign. Under the contract, Ford would commit the entire craneway (40,000 square feet) plus 15,000 square feet of interior space adjacent to the craneway, 23,400 square feet on the pier, and 77,000 square feet of parking space.⁸⁸

When the tank-depot contract was signed, the Richmond branch was using the craneway to box jeeps for shipment abroad. That operation had to be moved outside immediately. Shortly thereafter, Ford built a boxing shed along the east side of the plant to facilitate the crating of jeeps and other vehicles. To make way for Ordnance Department staff, Ford created offices in the branch showroom. The assembly room was converted into an employment office (including waiting room and physical examination room), and an office for the Signal Corps. Ford remodelled the west end of the oil house for use as Ordnance's executive office. By August 8th, Ordnance had already assigned 400 vehicles to the Richmond Tank Depot. Shipping orders were in hand for 225 of them, and 121 had actually arrived. Processing the first vehicles progressed slowly, however, because Ford workers were still getting used to the new kinds of work, and there were shortages of parts and equipment such as radios and guns that were to be installed at Richmond. Ford employees worked eight-hour days and six-day weeks.⁸⁹

As Ford's managers at Richmond were organizing themselves to supervise the work of a tank depot, the San Francisco Ordnance District had to organize its formal presence at the Richmond plant. During August, the depot's first month of operation, three military officers (one from the Signal Corps and two from Ordnance) and 23 civilian Ordnance employees organized an office. There was relatively little ordnance being shipped through Richmond yet, so the new personnel had a chance to get used to new procedures and help the Ford people do the same. To make security at the plant easier, Ordnance required that all of its employees wear identification of the Ford Motor Company's workers. The volume of ordnance arriving at the Richmond Tank Depot increased dramatically in September and continued to do so thereafter. Part of the increase was due to tanks being processed for the British. The first official representative of the British Army, Sgt. H.A. MacKenzie, joined the staff at the Richmond Tank Depot in September, and a civilian representative arrived in November, both working in connection with the Lend-

⁸⁸"San Francisco Ordnance District History, 1939-1942," unpublished historical report in NARA RG-156, Entry 646, box A576, San Francisco Ordnance District, Vol I, Part 3, pp. 118-119; "Richmond Branch Operations under Contract W-883-ORD-2676," unpublished historical report in HFM Acc. No. 672, box 2, p. 1.

There is little evidence that many combat vehicles were shipped from the Richmond Tank Depot via ships that docked at the plant. One document, "Industrial Service Tank Depot Operations (Final Issue), January 1942 thru December 1945," unpublished report in NARA, RG-156, Entry 962, box L303, p. 16, had this to say in 1945: "The property is located on San Francisco Bay and has wharf and dock space available, permitting direct loading on ships. Advantage has been taken of this asset on all occasions in which circumstances permitted."

⁸⁹"Richmond Branch Operations under Contract W-883-ORD-2676," 1-3.

Lease.

Some time later, they were joined by Major G. Alexeev, a liaison officer representing the Soviet Government Purchasing Commission. And on 1 October 1942, jurisdiction for the jeep contract transferred from the Quartermaster Corps to the Ordnance Department. As a consequence, seven civilians from the Quartermaster Corps working at the Richmond branch transferred to Ordnance. The end of 1942 found the staff of the Ordnance Department struggling to keep up with the volume of work demanded of them at the Richmond Tank Depot.⁹⁰

But Richmond was not the only Ordnance installation experiencing difficulties. With the rapid mobilization of production, manufacturers found many materials in short supply. There was a nationwide shortage of the steel alloy needed for tracks, so manufacturers appealed to the War Production Board for the necessary materials. Meanwhile, early in the tank depot program, tank manufacturers took advantage of the depots, shipping them tanks that were still missing parts for which the contractors were responsible, such as tracks. Tanks at depots in November 1942 were missing an average of forty specified items. In January 1943, Gen. Christmas issued an order forbidding factories from shipping tanks that were not fully equipped with items for which the producers were responsible. By March, inspections showed that tanks at depots were missing only three items on average.⁹¹

These problems manifested themselves at the Richmond Tank Depot as well. From the outset, arriving tanks were missing important pieces of equipment that manufacturers should have provided. Late in September 1942, the Ordnance staff at the Richmond depot received an order from the Office of the Chief of Ordnance stating, "Ship no Vehicles from the Depot until on-vehicle materiel is complete for the vehicles on hand." The depot was not able to ship its first group of fully equipped tanks until 19 October 1942. Meanwhile, the Tank-Automotive Center, Detroit, authorized Richmond and the other tank depots to report incomplete tanks to the Army Inspector of Ordnance at the respective plants from which the tanks had been shipped. Shortages on tanks decreased gradually through the fall until December, when Richmond received its first tank fully equipped by the manufacturer: Cadillac Division, General Motors Corporation, Southgate, California. Richmond also had difficulty procuring the equipment it was responsible for placing on the tanks prior to shipment. Again, the Tank-Automotive Center placed its own authority at Richmond's disposal in helping to secure the needed supplies. Nevertheless, tank shipments from the Richmond facility grew monthly through the end of the year.⁹²

⁹⁰"San Francisco Ordnance District History, 1939-1942," Vol I, Part 4, p. 119-121; "History of the Richmond Tank Depot, Contract W-883-ORD-2676, Richmond, California (October 1943)," unpublished historical report in NARA RG-156, Entry 646, box A273, Office of the Chief of Ordnance - Detroit, Engineering-Manufacturing, Vol. IV, Part 1, October 1943, Tank Depot Section, p. 1-2.

⁹¹Thomson and Mayo, *The Ordnance Department: Procurement and Supply*, 255.

⁹²"San Francisco Ordnance District History, 1939-1942," Vol I, Part 4, p. 121-123.

The Richmond branch quickly became so adept at receiving, modifying, and shipping vehicles that by the end of 1942 it had already shipped 1,720 vehicles, or more than half its expected yearly total. Maj. Reed, the commanding officer of the Richmond Tank Depot, anticipated that the Ford workers would be able to ship more than 1,000 vehicles in each of January and February 1943. To maintain such a delivery schedule, Ford agreed, at the Army's request, to increase to amounts of space at the plant available to the tank-depot function. Moreover, once the workers had gained their experience, they were completing work on the tanks and other combat vehicles at about two-thirds the cost that had been estimated. In light of these accomplishments, Maj. Reed recommended the Ford Motor Company, Richmond branch, for an Army and Navy "E" Award in January 1943, just six months into the contract. The Richmond Tank Depot received the award in July 1943 (see section below on Patriotism).⁹³

A year into its operation, the Richmond Tank Depot under the command of Major Dick R. Reed had an Ordnance Department staff of five military officers (including Reed) and some 60 Civil Service employees. Reed headed the Executive Office, which also included an executive assistant and two secretaries. Captain M.L. Taylor was in charge of the Inspection Section, which also included Leo A. Young, chief inspector for Tank Depot operations, G.U. McFadden, chief inspector for the jeep production contract, two secretaries, and 16 inspectors, four of whom were women. Lt. H.H. Josephs was the Property Officer. He headed a Property Section comprised of one assistant and 15 clerical workers, 14 of whom were women. Roscoe B. Smith, a civilian, headed the Fiscal Section, which had a time checker and two accountants, both women. Capt. G.W. Allyn represented the Field Service, and he was also the Executive Officer in Reed's absence. In addition, the Signal Corps had a contingent of one officer, Lt. Vincent J. Zumpano, and twelve civilians, four of whom were women. In October 1943, Zumpano was transferred to Philadelphia and replaced at the head of the Signal Corps staff by Lt. E.D. Carnes.⁹⁴

⁹³"Richmond Branch Operations under Contract W-883-ORD-2676," 7; Dick R. Reed to Co. K.B. Harmon, letter dated 11 January 1943, appended to "Richmond Branch Operations under Contract W-883-ORD-2676." A table in NARA, RG-156, Entry 646, box A272, OCO-D file, Engineering-Manufacturing, Vol. I, Tank Depot Section, shows vehicle units received and shipped by the Richmond Tank Depot as of 28 December 1942. Total units shipped is 1,607, which differs from Capt. Reed's figure of 1,720 vehicles, but that may be because Reed reported vehicles, and the table reported vehicle units.

⁹⁴"History of the Richmond Tank Depot, Contract W-883-ORD-2676, Richmond, California (October 1943)," unpublished historical report in NARA RG-156, Entry 646, box A273, Office of the Chief of Ordnance - Detroit, Engineering-Manufacturing, Vol. IV, Part 1, October 1943, Tank Depot Section, p. 1-2.

A year after it began operations, the Richmond Tank Depot was receiving and processing hundreds of vehicles each month. In July 1943, for example, Richmond received vehicles for processing in the following numbers:

M3A3	light tanks	862
M5A1	light tanks	134
M4 of several models	medium tanks	242
M16	multiple gun motor carriages	50
M8	75-mm howitzer motor carriages	4
M10	3" howitzer motor carriages	51
M8	armored car	50
M3A1	scout car	250
M2, M3, M5	half-track	217
misc.	trucks, tractors, and trailers	522

The Richmond plant received those vehicles from Ordnance Depots and various manufacturers, including Cadillac, Chevrolet, Ford, Fisher Body, Pacific Car, Pullman, American Locomotive, Kenworth, White Truck, Diamond-T, International Harvester, Allis Chalmers, and John Deere.⁹⁵

Another tally showing the complexity of operations at the Richmond Tank Depot comes from a report for October 1943, when the facility received 2,528 vehicles and shipped 1,413. Of those shipped, 537 were crated for overseas delivery to U.S. forces, and 158 were shipped under the Lend-Lease program. At the end of the month, there were 3,280 vehicles on the grounds at the tank depot representing 31 different models, including five kinds of tanks as well as armored cars, several kinds of half-tracks, motor carriages for assorted large gun configurations (howitzers, multiple gun arrays, etc.), and numerous tractors, light, medium, and heavy trucks, cranes and wrecker trucks, and landing vehicles. That month, the Richmond Tank Depot also embarked on a new program of repairing and overhauling tanks and half-tracks that had been damaged during practice exercises at various of the Army's training bases in the western U.S. At the beginning of October, Ford had 672 men and 248 women working on the tank-depot contract. By the end of the month, the number of men increased to 753, but the number of women dropped to 227. Ford also made some physical changes at the facility to better accommodate rainy weather during the winter months. Construction crews built a loading dock along the east side of the plant and a shed-roof over the #2 track, which next to it. Beginning October 12th, crews at the depot also moved all stored vehicles to a lot across Hall Avenue so that fill could be added to the storage lot at the Ford branch and the surface graded to allow improved drainage. During the previous rainy season much of the operation around the Richmond Tank Depot had been mired in mud.⁹⁶

⁹⁵"Office of the Chief of Ordnance - Detroit, Engineering - Manufacturing, Vol. III, July-September 1943," unpublished historical report in NARA RG-156, Entry 646, box A273, tables for Richmond Tank Depot at the end of Chapter VIII, Tank Depot Section.

⁹⁶"History of the Richmond Tank Depot, Contract W-883-ORD-2676," 3-5; see also photos appended to the report showing vehicles in the mud. Photographs of the overhauled M2 half-

The volume of vehicles that moved through Richmond in October mirrored activity at the Chester and Lima tank depots as well. That month, the three depots shipped a total of 13,562 vehicles, and they processed even more. This was because the nation's and the tank depots' capacity of production exceeded the capacity of the nation's ships and ports of embarkation to ferry the ordnance to overseas theatres. The total number of vehicles in inventory at the three tank depots was 10,282 on October 1st. At the end of the month, they collectively held 14,105 vehicles. With so many vehicles in reserve, the Ordnance Department had the depots maintain a more level rate of production and eliminate much of the overtime that had been logged during previous months trying to rush crucial orders to the front.⁹⁷

At the end of the war, the Tank Depot Branch of the Engineering & Manufacturing Division, OCO-D, compared the nature and number of vehicles processed and shipped by Richmond with those shipped by the other tank depots as follows:

This Depot has handled primarily West Coast export and domestic shipments and the volume of vehicles handled to date has not been as great as for the Chester and Lima Tank Depots. It is also to be noted that, whereas Chester and Lima Tank Depots handle similar type vehicles, the Richmond Tank Depot has handled models and types dis-similar in some respects from other Depots. For instance, this Depot has handled very few vehicles for lend-lease agencies but has handled almost 100 per cent of Marine Corps requirements for Ordnance vehicles.⁹⁸

As mentioned above, the Richmond Tank Depot processed and shipped 55,904 vehicle units during the war. Chester and Lima processed and shipped 152,300 vehicle units and 91,079 vehicle units, respectively.⁹⁹ The reason Richmond supplied nearly all of the combat vehicles for the Marine Corps, by the way, is that the Marines were largely responsible for amphibious landings used in capturing islands from the Japanese during the War in the Pacific.

The Richmond Tank Depot had a steady stream of vehicles to process throughout the war years, but occasionally the War Department made special requests of the workers at the plant. Once such instance occurred in spring 1944. Early on the afternoon of Saturday, March 18th,

tracks are presented in a subsequent report, "Richmond Tank Depot," Vol. II, part 2, December 1944, NARA, RG-156, Entry 646, Post-WWI Division Services and Other Units, Executive Division Historical Branch, Histories of Ordnance Installations & Activities, 1940-1945, San Francisco Ordnance District, box A600.

⁹⁷"Office of the Chief of Ordnance - Detroit, Engineering - Manufacturing, Vol IV, Part 1, October 1943," unpublished historical report in NARA RG-156, Entry 646, box A273, p. 37.

⁹⁸"Industrial Service Tank Depot Operations (Final Issue), January 1942 thru December 1945," 17.

⁹⁹"Industrial Service Tank Depot Operations (Final Issue), January 1942 thru December 1945," tables p. 2.

Maj. W. Delbert Ball, the new commanding officer who had arrived at the Richmond Tank Depot in January, received a message from the Office of the Chief of Ordnance - Detroit stating that the Army had an urgent need for sixty carloads totalling 120 landing vehicles, and those vehicles had to depart Richmond within 48 hours by special train to New York. (Could it be that these landing vehicles would be sent from New York to England in preparation for the D-Day invasion?) The entire workforce, Ordnance and Ford employees alike, worked long hours through the weekend and met the 48-hour deadline. Some workers endured a 16-hour workday, went home for only 4 hours rest, and then returned to help finish the job. The Richmond Tank Depot had already received Army-Navy "E" Awards for excellence in production for the war effort over long periods (see section below on Patriotism). For their efforts on that weekend, workers at Richmond received an immediate telegram from the Office of the Chief of Ordnance stating, "Richmond's performance in recent urgent shipment most outstanding accomplishment and great contribution to war effort."¹⁰⁰

The Ford management and production workers at the Richmond branch were judicious in the expenditure of energy, and they were not willing to exhaust themselves needlessly. That attitude was demonstrated that same spring when the Richmond Tank Depot received word that the Army needed hundreds of 2-1/2 ton 6 x 6 trucks to be cut in half and then bolted back together prior to shipment overseas. The purpose of the exercise was to prepare the trucks so that they could be shipped to an air field, unbolted, loaded into transport planes, flown to the battlefield, and then bolted back together for use in supplying troops. Each truck modified would be worth 1.7 contractual units. OCO-D told Richmond it would send modification kits for the job, setting a deadline of April 15th. Trucks began arriving the first week in April, and crews began modifying a few trucks each day in the absence of kits or instructions. OCO-D pressured Richmond to get the rate up to 100 trucks per day. By authorizing overtime and instituting other emergency measures, the Tank Depot got its rate up to 50 trucks per day by April 20th. Even as OCO-D was urging greater output, Maj. Ball contacted the ports and found that there were no shipping orders for the trucks he was readying. Despite the pressure from above, he therefore maintained output at 50 truck per day, continuing to authorize overtime to meet that rate. The Richmond Tank Depot completed the order on May 10th, but then the crated trucks sat on the lot for more than a month, occupying valuable storage and work space. After the episode, Ball reported to his superiors that the experience had demoralized both the management and the union at the Richmond plant.¹⁰¹

¹⁰⁰Delbert Ball to All Personnel - Richmond Tank Depot, memorandum dated 21 March 1944, copy appended to "Richmond Branch Operations under Contract W-883-ORD-2676," 7; "Richmond Tank Depot, Vol. I, 1 January to 30 September 1944," unpublished historical report in NARA RG-156, Entry 646, box A599, p. 8.

An article in the April 1943 of *American Magazine*, "American Workers Licked Rommel!" by Don Eddy, tells another dramatic story of the tremendous effort workers at the Chester Tank Depot made to process tanks and prepare them for shipment to North Africa in time for the British Army to defeat Field Marshal Rommel's tank corps. A typescript of the article is appended to one of the copies of "History - Tank Depot Unit."

¹⁰¹"Richmond Tank Depot, Vol. I, 1 January to 30 September 1944," 6-8; "Richmond Tank

By the spring of 1943, the U.S. government had spent \$250,000,000 paying contractors to build and equip sixteen factories for producing tanks at an aggregate capacity of 7,705 vehicles per month. The companies were producing tanks at a rate of about 4,000 per month, and output was starting to meet the demand. Recognizing that it had built surplus capacity for the production of tanks, Ordnance began to discontinue some of the sixteen contracts for tanks. Four were terminated in October 1943 and four more the following year. That brought the capacity to make tanks down to about 4,000 per month, but by then output had dropped to about 2,000 per month. These changes yielded some improvements in the overall system, however, as labor and machine-tool shortages in the tank industry were largely alleviated. Shortages of tanks on the battlefield continued, though, because commanders wanted ever more of the newer units. In 1944 and early 1945, Ordnance again tried to increase production, but shortages in tools, capacity, and labor precluded the output meeting demand. As an alternative to building new tanks, Ordnance embarked on a program of remanufacturing tanks and other combat vehicles. This involved reconditioning units that had been used for training troops in the U.S. before they were shipped overseas. These vehicles, which tended to be older, were sent to manufacturers to have their engines overhauled, worn tracks replaced, and guns reconditioned. Then after a new coat of paint, the remanufactured combat vehicles were ready to battle, at about half the cost of building a comparable new vehicle.¹⁰²

The Richmond Tank Depot was also involved in some of the remanufacture programs, beginning in 1943. In subsequent years, Richmond continued to participate in the program. In 1944, for example, Ordnance had 300 light tanks stored at Yermo, California, that had originally been consigned to the Chinese government. The British had a greater need for the tanks and convinced Ordnance to repossess them, requesting that the Richmond Tank Depot modify them to meet British specifications. Richmond began shipping the modified tanks by rail to the New York Port of Embarkation in July.¹⁰³

Richmond's record of performance reflected the national manufacturing trend, although Richmond's peak of production came, not surprisingly, some months later than tank manufacturers' peak of production, since Richmond was processing vehicles already shipped from factories elsewhere. Richmond's peak month for vehicles shipped was May 1944, when the depot shipped more than 2,800 tanks and trucks. Richmond's peak month for contractual units shipped was June 1944, when the depot shipped more than 2,400 units (that being the month when the depot modified a large number of the 2-1/2-ton trucks worth 1.7 units each). During the second half of 1943 and the first half of 1944, Richmond's production had been fairly steady at about 1,600 vehicles worth about 1,200 units. After the peaks in 1944, production at Richmond dropped of to less than 1,000 contractual units per month for August through December. Responding to the drop in demand, Ford laid-off about 500 workers in October,

Depot, Vol. II, part 1, 1 October to 31 December 1944," RG-156, Entry 646, box A599, p. 2.

¹⁰²Thomson and Mayo, *The Ordnance Department: Procurement and Supply*, 255-259.

¹⁰³"Richmond Tank Depot," Vol. I, 1 January to 30 September 1944, NARA, RG-156, Entry 646, box A599, 8-9.

roughly one-third of the total work force. Then in 1945, production picked-up again, rising to a

second peak of nearly 2,000 units in March. Production remained above 1,000 units for the duration of the war.¹⁰⁴

In August 1944, the Army had seven officers and 69 civilians working at the Richmond Tank Depot. The following table shows the employment levels Ford had at the depot that month:

**Employment at the Richmond Tank Depot
August 1944**

Executive and Administrative personnel			15
Office and Clerical Employees			124
Engineering			3
Custodial			94
Guards			85
Shop Foremen			109
Inspectors			41
Production Workers:	male	female	
1st shift (10:30 pm - 6:30 am)	189	73	262
2nd shift (6:30 am - 2:30 pm)	647	172	819
3rd shift (2:30 pm - 10:30 pm)	344	124	468

In addition, the Ford Motor Company had 412 men and 114 women working during the 2nd shift either in the stock parts department or on the payrolls of sub-contractors in jeep production, which made a total of 2075 production workers in the Richmond Tank Depot.¹⁰⁵

During the peak production in 1944, so many vehicles had arrived that the Richmond Tank Depot filled the parking space available on the Ford property and secured a nearby island from the Maritime Commission, where LTVs (landing vehicle tracked) could be parked. The vehicles had to be driven through about 400 yards of water to get to the island for parking. In October, Ordnance leased land at Lathrop, in the San Joaquin Valley south of Stockton, and moved the vehicles there, because the rainy season was coming and the island, built of silt, was expected to become too muddy to be serviceable. By the end of the war, Ordnance had leased four separate parcels of land near the Ford property, including ground owned by the Parr-Richmond Terminal Corporation and Filice & Perrelli Canning Company, to store vehicles for

¹⁰⁴"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 2, 10, 17; "Richmond Tank Depot, Vol. V, 1 July to 3 September 1945," RG-156, Entry 646, box A601, pp. 101-102.

¹⁰⁵"Richmond Tank Depot, Vol. I, 1 January to 30 September 1944," 26-27.

which there was insufficient space on the Ford lot.¹⁰⁶ Some vehicles sat on the various lots so long that in December Ordnance directed Ford to establish a program for inspecting vehicles' fuel systems to determine whether they needed to be degummed. Enough vehicles were in need of such remedial action that Ordnance authorized Ford inspect and degum pilot models of fourteen distinct vehicles so that the contract could be modified to specify a price for inspecting and removing gum from each kind of vehicle. Ordnance also began shipping vehicles from other depots to Richmond for degumming.¹⁰⁷

The fluctuations in production were frustrating for the Ford Motor Company and the Ordnance commanding officer. Both parties were trying to keep the unit cost as low as possible, which meant that employment levels had to match demand. Yet it was hard for both Richmond and OCO-D in general to predict demand because situations on the various fronts of the war were nearly impossible to predict. If Ford maintained an employment level that was higher than needed to meet demand, then unit costs rose. If Ford released employees because predicted demand was down, and then the depot received a sudden emergency order for production, the remaining employees would have to work overtime, thus raising the unit costs.¹⁰⁸

Because the nation was at war, security at the Richmond Plant Depot was a high priority. According to Maj. Ball, however, this entailed little change from the Ford Motor Company's practices during peacetime. Ford had a department at the Richmond branch called Plant Protection, and the guards who worked for that department changed their practices little on account of the war-production contracts. In addition to securing the property and building, the employees of Plant Protection enforced all of the company's rules and procedures on the premises. This included monitoring time cards and accounting for all materials received and shipped. Plant Protection's duties also extended to enforcing rules like the ban on smoking everywhere on the 43-acre property except the cafeteria. According to Ball, military inspectors who visit the Richmond Tank Depot routinely reported favorably on the Ford's security organization.¹⁰⁹

Because of the high degree of security imposed on the Richmond Tank Depot's operations, the military shielded the plant from public view, and that included the view of newspaper reporters. The Ordnance Department finally opened the plant to reporters in early July 1943, when Col. Harmon of the San Francisco Ordnance District and Capt. Reed, commanding officer of the tank depot, hosted a tour by journalists and photographers

¹⁰⁶"Richmond Tank Depot, Vol. I, 1 January to 30 September 1944," 9; "Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 112-113; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 85.

¹⁰⁷"Richmond Tank Depot, Vol. III, 1 January to 31 March 1945," NARA, RG-156, Entry 646, box A600, 2-3.

¹⁰⁸"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 2-3, 18.

¹⁰⁹"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 8-9.

representing Bay Area new organizations. Nearly every Bay Area paper featured a prominent article describing the lifting of secrecy at the plant, the kinds of tanks and other combat vehicles being processed, the assembly of jeeps, the large numbers of women working there, and the tasks involved in preparing vehicles for shipment overseas.¹¹⁰ A story run in *The Labor Herald* (the newspaper of the Congress of Industrial Organizations, or CIO, for northern California) provides an interesting insight into the extent of secrecy prior to the July 8th tour. Just as Ordnance was hosting the tour, *The Labor Herald* ran an article about Soviet soldiers fighting the Nazis near Odessa. One of the Soviet soldiers' battle cries was, "Remember Workers in California," because the soldiers knew their tanks came from a city in California, but *The Labor Herald* could not reveal the name of the city. The paper could only write that CIO members worked on tanks there. Following the tour, however, *The Labor Herald* was able to publish a follow-up story revealing that those Soviet tanks came from the Richmond Tank Depot.¹¹¹

W.A. Abbott was Ford's plant superintendent during the entire war. Maj. W. Delbert Ball was the commanding officer through October 1944. The following month, Capt. George A. Spiker took charge as commanding officer when Ball was transferred to San Francisco to take charge of Ordnance District's Tank-Automotive Branch.¹¹²

During the course of the tank-depot contract, Ford sub-contracted some of the work to other companies. W.A. Bechtel in Oakland, as well as Moore Equipment Company, Allison Steel Manufacturing Company, and Stewart & Stevenson, sub-contracted to recondition some GPW units. These were jeeps that had been remanufactured by others, sent to the Richmond Tank Depot for processing and boxing, and then rejected during inspection because of mechanical deficiencies. The sub-contractors were to repair the deficiencies. This was apparently a troublesome process, because numerous vehicles returned to the Richmond Tank Depot were still deficient after inspection. K&D Industries of Sacramento and Harris Manufacturing of Stockton had sub-contracts worth \$83,236.24 and \$31,040.48, respectively, to prepare vehicles to be stored at Lathrop Holding and Reconsignment Point, one of the extra plots of land leased to store excess vehicles.¹¹³

¹¹⁰"Ford Plant Here Main Coast Tank Depot," *Richmond Independent* (8 July 1943): 1; "Richmond Ford Plant Now Is Huge Army Tank Arsenal," *The San Francisco News* (8 July 1943): 2; "Women on Assembly Line Turn Out More Daily Than Pershing Had in 1918," *The Call Bulletin* (San Francisco, 8 July 1943): 11; "Ford Plant Lifts Veil of Secrecy," *Oakland Tribune* (8 July 1943): 1; "'Flivver' Plant Becomes Huge Army Depot," *San Francisco Examiner* (9 July 1943): 9; "Army Lifts Veil and Shows How Bay Tank Depot Works," *San Francisco Chronicle* (9 July 1943): 5.

¹¹¹"Tanks from U.S.A.," *The Labor Herald* (9 July 1943): 2; "Richmond Auto Workers Made Russ Hero's Tank," *The Labor Herald* 23 July 1943): 7.

¹¹²"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 21, 45.

¹¹³"Richmond Branch Operations under Contract W-883-ORD-2676," 5; "Richmond Tank Depot, Vol. III, 1 January to 31 March 1945," 72-73, 185-187; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 86-87, 145.

As the processing of combat vehicles began to decrease in the spring of 1945, operations at the Richmond Tank Depot were seriously interrupted on May 2nd, when the partially outfitted *SS Drexel Victory* side-swiped the waterfront loading dock of the Ford plant as the ship was being tugged from Kaiser's Richmond shipyard no. 2, severely damaging the gantry crane that served the Ford dock. The collapsing gantry crane damaged the brick wall of the plant, which in turn damaged one of the interior overhead cranes in the craneway. The accident also damaged five military vehicles that had been stacked nearby.¹¹⁴

Another accident had occurred the previous month that reflected a different sort of laxity as the war drew to a close. On April 14th, two Ford workers took an amphibian jeep for an unauthorized cruise in the bay while a group of the vehicles was being prepared for shipment. Ordnance and Ford managers had received instructions not to test the amphibians because they were not yet ready for travel in water, but the workers evidently had not heard or heeded the instructions. The amphibian jeep sank about 100 feet from shore in 30 feet of water. One worker swam to shore, but the other had to be rescued by some nearby Signal Corpsmen. The depot had to hire a barge and diver to locate and retrieve the jeep.¹¹⁵

Immediately after V-J Day, the government terminated most contracts for the production of ordnance and other items needed for the war effort. Ford's contract to operate the Richmond Tank Depot was not, however, one of those immediately ended, although within a few days the steady stream of vehicles arriving at the depot for processing ceased. Some vehicles already en route to Richmond did arrive in the days immediately following V-J Day. In September, only 240 vehicles, representing odds and ends from vehicle manufacturers around the country, arrived at Richmond. The last vehicles received by the Richmond Tank Depot were two heavy tanks, which arrived during the first week of October. Meanwhile, more than 4,000 vehicles on the lots in Richmond still had to be processed to make them usable by the Army. One of the main changes in processing after V-J Day was that workers no longer prepared vehicles for shipment overseas, although some of the vehicles already under order for shipment abroad were still shipped after Japan surrendered. After mid-August, most vehicles were prepared for long-term storage at domestic Army depots in Utah and elsewhere in California.¹¹⁶

During the first week in September, the Richmond Tank Depot was shipping about 30 vehicles per day. On the 10th, Ford transferred 200 workers to Ordnance work and increased the rate to about 75 vehicles daily. Ford put workers on a 48-hour week on the 15th to increase

¹¹⁴*Richmond Independent* (3 May 1945); "Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," 99-100, 153-158.

¹¹⁵"Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," 21-23; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 7.

¹¹⁶*Richmond Independent* (16 August 1945): 1, 15 and (22 August 1945): 1-2; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 88-92, 132-133, 157.

output further. On 28 September 1945, the Richmond Tank Depot finally received notice that Ford's contract would terminate on October 31st. The depot also received the last of many change orders, no. 95, stating that Ford was to provide all labor and materials necessary for dismantling and preparing for shipment all government-owned equipment and other property. The termination notice included an exception for change order no. 95, recognizing that dismantling the government's operation would not be complete by the end of October.¹¹⁷

At the beginning of September, there were still more than 1,000 vehicles being stored at the Lathrop facility, and Harris Manufacturing was still engaged in its sub-contract for "preservative maintenance" of the vehicles. Shortly thereafter, the Richmond Tank Depot received orders to ship all those vehicles directly to the Tooele Ordnance Depot in Utah, by-passing Richmond. Ordnance therefore terminated its contract with Harris Manufacturing and took bids from three companies, including Harris, to simply prepare the vehicles for shipment to Tooele. K&D Industries of Sacramento was the low bidder and received the contract, work to be completed by October 24th (later amended to November 13th). In the end about 250 of the vehicles stored at Lathrop were sent to Richmond before being shipped to their final destinations.¹¹⁸ By the end of September, the Richmond Tank Depot had shipped enough vehicles that it was able to vacate all the nearby leased lots except the one being leased from the Parr-Richmond Terminal. Ordnance vacated that last leased lot by the end of October.¹¹⁹

The Richmond Tank Depot met its deadline, shipping the last of its vehicles on October 31st. Some of the vehicles stored at Lathrop were not shipped, however, until mid-November. By the end of October, the force of Ordnance employees dropped to 40. Most of them received notices that their employment would end November 17th, with a few remaining to complete the paperwork of terminating the contract with Ford. One Ordnance employee, Mary Ambrosio, resigned her Ordnance position in the Property Branch to go to work for Ford.¹²⁰

E. Patriotism

During World War II, there were many ways individuals and groups could demonstrate their patriotic commitment to their nation's war efforts. The most direct participation, of course, was through military service, especially on the front lines with the Army, Navy, Marines, and Army Air Force. Others, such as the men and women who worked at the Richmond Tank Depot, set aside their normal pursuits to work long hours producing the materiel needed by the military

¹¹⁷"Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 141, 155-156.

¹¹⁸"Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 144-148; "Richmond Tank Depot, Vol. VI, October 1945," 1, 6.

¹¹⁹"Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 152; "Richmond Tank Depot, Vol. VI, October 1945," 7.

¹²⁰"Richmond Tank Depot, Vol. VI, October 1945," 1-2.

to prevail over the Axis powers in the war. Citizens who did not undertake either of those direct kinds of participation in the war effort, nevertheless had other means to contribute to the cause. One was through the purchase of War Bonds. A program the Army devised to instill in citizens a more tangible contribution to the war was to allow groups who bought War Bonds to designate their purchases of bonds towards the cost of specific vehicles. In November 1944, the Richmond Tank Depot received a shipment of plaques from OCO-D, engraved with the names of organizations presenting vehicles to the Army by purchasing War Bonds. For example, the students of Garfield Heights High School in Ohio purchased enough bonds to present the Army with a light tank; the Ladies Auxiliary of Lodge No. 9, Brotherhood Protective Order of the Elks, St. Louis, presented a heavy tank; the Commercial Telephone Employees of Alexandria, Virginia, presented a half-track personnel carrier; the Abraham and Chaia Rosenblum Foundation presented a scout car; the Class of 1944 at Overbrook High School in Philadelphia presented two scout cars and a half-track personnel carrier, and other organizations made like presentations.¹²¹

The practice continued into 1945, although simple decals replaced the plaques as the means of naming the organization that was presenting a particular vehicle to the Army. In March 1945, the Northern California War Finance Committee sent the Richmond Tank Depot 143 decals, each decal naming a school or other organization, representing the like number of vehicles school children purchased for the Army through War Bonds. Most of the schools were in California, but other western states were represented as well. Eleven Richmond schools purchased a total of fifteen vehicles, and some of the Richmond students and teachers were able to tour the depot and watch workers affix the decals to their vehicles.¹²²

Workers at ordnance facilities throughout the nation worked long days and weeks at often tedious jobs supplying soldiers, sailors, and airmen with the weapons, ammunition, and equipment they needed to wage war against the Axis powers. Companies operating the plants had huge orders to meet while facing chronic shortages of labor and materials. Absenteeism and labor turnover were high in many industries. Nevertheless, many of the workers were driven by a tremendous sense of patriotism, that they were doing their bit to help win the war. And many of those workers also sought to help foster that sense of patriotism throughout their workplaces through formally and informally instituted practices.

One practice entailed the circulation of stories portraying the mutual goodwill exhibited by Americans on the homefront as they worked together with the military to win the war. Two stories broadcast by the Lima Tank Depot are illustrative. During August 1943, there was a tremendous volume of tanks and other vehicles being prepared for shipment overseas, and the bottleneck in the system was in the crating department, where each vehicle was placed in its own wooden box. There were not enough workers to maintain the pace of crating that was required for the depot to meet its shipping deadline. Near week's end, the top Ordnance officer posted

¹²¹"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 47, 70.

¹²²"Richmond Tank Depot, Vol. III, 1 January to 31 March 1945," 178-179, 202-204.

signs around the plant stating, "Nailers Wanted. 16 to 60 Years. Please Help." Workers at the plant carried the message home, and over the weekend some 700 townsfolk, representing

professions from farmers and butchers to doctors and lawyers, came to the plant to lend a hand. Thanks to the weekend "Commandos," the Lima Tank Depot met its August deadlines.¹²³

In another Lima story, a worker had lost his wallet one day while processing a medium tank. After looking everywhere he could, he had concluded he would never find it again. Sometime later, though, he received the wallet in the mail, accompanied by a note from the soldier in North Africa who had found it. The wallet still held all of the Lima worker's money and identification papers, and the note thanked the worker for the job he was doing and begged that he keep it up.¹²⁴

To reward firms that excelled in production for the war effort and to publicize those good efforts in furtherance of national purpose, the military awarded firms the "E" Award. The Richmond branch received four such awards, the first on 31 July 1943. The ceremony at which the Richmond branch actually received the award took place on 24 August outside the plant. Richmond civic leader Fred Parr served as master of ceremonies, introducing Col. K.B. Harmon, chief of the San Francisco Ordnance District; Navy Capt. (ret.) Harvey Delano, War Plans Officer for the Twelfth Naval District; J.R. Davis, the Ford Motor Company's Western regional manager; and W.A. Abbott, superintendent of the Richmond branch. The award included a special flag that the Richmond branch could hoist on its flagpole below the flag of the United States. Employees also received special "E" pins. Following the ceremony, employees and their families and friends were able to walk along the roadway west of the plant, which was lined with dozens of examples of the vehicles the Richmond Tank Depot was processing. This was one of the first times people who did not work at the Richmond branch had been able to see what was happening there and the kinds of vehicles the Army was sending overseas to support the troops. The other "E" awards followed on 29 January and 14 October 1944 and 5 May 1945. Rather than new flags, the subsequent awards each entailed a new star that the Richmond branch could add to its "E" Award pennant.¹²⁵

In January 1946, Gen. L.H. Campbell, Chief of Ordnance, sent Col. K.B. Harmon, Chief of the San Francisco Ordnance District, a letter requesting a list of "outstanding" prime contractors in the San Francisco District, contractors which excelled in meeting the following criteria:¹²⁶

¹²³"Office of the Chief of Ordnance - Detroit, Engineering - Manufacturing, Vol. III, July-September 1943," unpublished historical report in NARA RG-156, Entry 646, box A273, p. 26.

¹²⁴"Office of the Chief of Ordnance - Detroit, Engineering - Manufacturing, Vol. III, July-September 1943," 26.

¹²⁵"Richmond Branch Operations under Contract W-883-ORD-2676" (HFM), 7; "Richmond (Cal.) Branch Receives Army-Navy 'E'," *Ford Times* (17 September 1943): 5; *Richmond Independent* (2, 23, 24, & 25 August 1943, 15 June 1945); "Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," 102, 227-229.

¹²⁶Gen Campbell to Col. Harmon, letter received 5 January 1946, NARA, RG-156, Entry 654J, box 21, publications & reports, 1941-1945.

Criteria for selecting "outstanding" prime contractors:

- a. getting into production in an unusually short time
- b. distinction in quality of their production
- c. unusual contribution to development, testing, or engineering
- d. unusual reduction in cost
- e. outstanding performance on spare parts deliveries
- f. outstanding performance in handling engineering changes
- g. special distinction in cooperating with Ordnance
- h. high performance in meeting schedules
- i. special managerial skill in using sub-contractors and avoiding excessive new facilities

Harmon responded with a list of 47 contractors whose record he and his staff considered outstanding. Of those, he highlighted 21 as being especially outstanding. The Ford Motor Company was one of the especially outstanding prime contractors for its operation of the Richmond Tank Depot. Other Richmond firms on the list were: the Chemurgic Corporation, which developed pyrotechnic materials; American Radiator and Standard Sanitary Company, which produced hand grenades; and Rheem Manufacturing Company, the Richmond plant of which made M13 cartridge storage cases. Companies in the San Francisco Ordnance District receiving Army-Navy "E" Awards, in addition to Ford's Richmond plant, were: Columbia Electric & Manufacturing Company of Spokane, which made artillery shells; Yuba Manufacturing Company of San Francisco, which produced 155mm howitzers (five of its sub-contractors in the Bay Area also received the Army-Navy "E" Award); and Fanger Research & Development Company of San Francisco, which developed a new manufacturing method for a split ring used on Yuba Manufacturing's 155 howitzer. Ford's Richmond plant was apparently the only one to receive multiple "E" Awards, and Harmon cited the facility for never missing a production deadline.¹²⁷

One thing private firms like Ford were not allowed to do during the early part of the war was advertise the contributions they were making to war production. The War Department prohibited announcements of any contracts received for production of ordnance. Richmond and the other Ford branches received instructions from Dearborn that the Ford News Bureau would make any such announcements on behalf of the company, but only when significant percentages of contracts had been delivered to the Army and then only after any announcement had been cleared with the War Department. It was in this context of secrecy during the early part of the war that the Richmond Tank Depot had been closed to the eyes of the public until reporters were allowed to view operations in July 1943 (described above), shortly before the August 1943 "E" Award ceremony.¹²⁸

¹²⁷"List of Ordnance Contractors," list attached to Col. Harmon to Gen. Campbell, letter dated 5 January 1945, NARA, RG-156, Entry 654J, box 21, publications & reports, 1941-1945.

¹²⁸Superintendent's Office to J.R. Davis and W.A. Abbott, memorandum dated 18 September 1942, HFM Acc. No. 371, box 16, folder 4.

Workers at the Richmond branch did more to support the troops in the field than simply do excellent work in preparing tanks and other combat vehicles for shipment abroad. They also undertook a special project aimed at bolstering the morale of soldiers on the front lines, far from home. Under the leadership of Frank Vivian, an engineer in the boiler room, members of UAW Local 560 who called themselves the "boilerhouse gang" collected current magazines and newspapers from members of the community, wrapped them in packages, and placed a package in each completed jeep or tank before it was sealed for shipment. By November 1944, workers at the Richmond Tank Depot had sent 40 tons of magazines, bundled and stowed in vehicles, to the troops in the theatres of war. The Ford Motor Company allowed its employees to conduct the project on company time and provided work space for the packages to be assembled. Vivian also used his own wages to purchase small American flags so that a flag would adorn each vehicle that left the Richmond Tank Depot. He estimated that by September 1944 he had purchased 18,000 flags.¹²⁹ The bundles of periodicals each carried a copy of a letter, of which the following are a few of the lines being sent in September 1944:

For over two years, we old engineers at the Ford Motor Company Powerhouse at Richmond, California, Ford Plant, which is now known as the Richmond Tank & Motor Vehicle Depot, have been placing bundles of periodicals and magazines in export jeep crates, tanks, and other battle-wagons--where there is spare space to stow them.

The 'honeys' who now work in the plant bring them into the powerhouse and we engineers in our spare time bundle them up--for you!
The boys and the gals--at the Ford Richmond Tank Depot--will relax no effort until this job is done--we promise you.¹³⁰

Vivian tried to think of other ways to boost morale for soldiers fighting overseas and convey to them the patriotic spirit of the ordnance workers on homefront. Whenever he saw that the Richmond Tank Depot was processing a group of tanks or other vehicles under a "deadline" order, he suspected that the tanks were bound for a beach landing. He would find a location in one of the vehicles to place an American flag of standard size, accompanied by a note saying, "HI 'BUDDIE,' PUT THIS GRAND OLD FLAG UP ON THE HIGHEST PEAK, MOUNTAIN

¹²⁹"'GI Bundles' - Richmond Tank Builders Keep South Pacific Servicemen Happy," *The Labor Herald* (San Francisco, 22 September 1944): 2; "Richmond Branch Employee Places Flags on Tanks at Coast Depot," *Ford Times* (28 May 1943): 6; "Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 59-60, 89.

A photograph in HFM Acc. no. 89, box 1, Richmond Branch WWII Photos folder, show one of the bundles of periodicals as it was found in the engine compartment of a jeep sent to the Studebaker Proving Ground. An accompanying photograph shows the periodicals, displayed on a table. They included: *Life*, *Collier's*, *Hollywood*, *Movieland*, *Screen Romances*, *Photoplay*, *San Francisco Examiner*, and *Oakland Tribune*.

¹³⁰Letter quoted in "'GI Bundles'--Richmond Tank Builders Keep South Pacific Servicemen Happy," *The Labor Herald* 22 September 1944): 2.

OR HILL ON WHATEVER ATOLL IT HAPPENS TO LAND ON. GOOD LUCK AND GOD-BLESS YOU'ALL, Signed- VIV." He claimed to have received a letter from Iwo Jima, accompanied by prints of Jack Rosenthal's famous photograph for the Associated Press, stating that the flag planted by Marines atop Mount Suribachi was one of the flags Vivian had placed in a piece of ordnance equipment at the Richmond Tank Depot.¹³¹

And Vivian also tried to boost the morale of his fellow workers in Richmond by writing notes to accompany the bundles of periodicals and asking the soldiers and service-women who found the notes to write back. Then he would distribute the letters he received. Here's a sample recorded in one of Capt. Spiker's monthly histories:

One of the bundles of magazines which you sent overseas is being put to good use in our club here in Australia. Men on leave from New Guinea, and nurses too, are reading the magazines....Keep up the good work. *Margaret Griffin, American Red Cross*

Magazines received. A thousand thanks from happy Yanks. *Cpl. I. Horning from the Pacific*

These bundles were distributed by us to the Red Cross installation and Army and Navy hospitals in this area. The boys are so hungry for home town news and American magazines of any kind, that our office has been flooded by servicemen, both Army and Navy and even men from the American Transport Service, who have found that they are here and have tried to borrow them. As far as they go, we have filled all requests....I want to thank each and every one of you for the fine spirit displayed in doing this service for the fighting forces....I also want to add that good services like this are too few. Yours is one of the first that I have run across in my two years of overseas service and since I have been in all the forward areas, as well as the bases in the rear, I am speaking from experience and sincerely express my gratitude for this type of service... *Lee Morrow, Area Director of Recreation, American National Red Cross, South Pacific and Southwest Pacific*

If you've ever been alone, and out of no where a friend came in, you'll know how the books were received here in the bush of Australia. *"Yanks down under"*

Were you here to see the faces of our nurses when your magazines were delivered, you would feel amply repaid for the effort put forth in procuring same. For the majority of us it was the first opportunity we have had to read, yes, even see a Good Housekeeping, McCalls, Cosmopolitan or Ladies' Home Journal for many long months. Needless to say, they were snatched up very eagerly and they

¹³¹Frank Vivian to Gen. Levin H. Campbell, Jr., letter dated 30 September 1945, HFM Acc. no. 89, box 1, Richmond Branch WWII Awards & Correspondence folder.

will pass through many hands, I assure you. *Chief nurse of a service hospital in France*

You'll never know just how pleasant was the surprise that the men of this installation had upon opening a water-proofed Armored Car M-8 yesterday and finding your bundle of magazines. *An Ordnance gang of twenty men in Italy*¹³²

The last of the letters bore the date 29 September 1944 and referred to a bundle bearing the date 21 July 1944. The fact that only two months separated placing the bundle in a vehicle and a group of soldiers writing a letter back to Richmond is testimony to how quickly vehicles were shipped overseas to the theatres of the war once they had been readied for shipment at Richmond.

Those who received the bundles were not only appreciative of the periodicals, as the following quote demonstrates:

We can safely say that RTD [Richmond Tank Depot] has a much better record for equipment arriving in good shape than any other Depot we've received equipment from; and don't think that isn't very vital when time is very short. *Somewhere in the Pacific*¹³³

Some of the letters Vivian and his crew received were from servicemen who were also members of UAW Local No. 560, which represented the Ford workers at the Richmond Tank Depot. Those servicemen were also appreciative of the fact that the local sent them issues of the Richmond plant's shop paper. One soldier thanked the local for sending him the paper, which "keeps us informed of the home front we are fighting to defend."¹³⁴

In July 1945, Vivian and his boilerhouse gang folded the 8-foot by 12-foot American flag that had flown over the Richmond Tank Depot for 3-1/2 years and placed it, accompanied by a letter and a poem, in an M8 armored car bound for the Pacific theatre. The letter explained to whoever unpacked the flag how much the Ford workers at the Richmond Tank Depot loved it, that it represented their "high-spirited efforts in helping to win this terrible war," and that the Richmond workers hoped that the victorious American soldiers and Marines would be able to fly that particular flag atop the tallest flagpole in Tokyo. The poem expressed in verse Vivian's and his fellow workers' patriotism and their commitment to the cause for which the U.S. fought in the war.¹³⁵

¹³²"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 89-91.

¹³³"Richmond Tank Depot, Vol. III, 1 January to 31 March 1945," 198.

¹³⁴"GI Bundles'--Richmond Tank Builders Keep South Pacific Servicemen Happy," *The Labor Herald* 22 September 1944): 2.

¹³⁵"Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 22-23, 68-71. Text of the letter and the poem are exhibits to the report on pp. 68-70; a photo of Vivian and some of the

Frank Vivian was the member of UAW Local 560 with the most seniority at the Richmond branch, having started with the Ford Motor Company in 1913. Ford put him in charge of the assembly line at the Panama Pacific Exposition in 1915 (see history of Ford's San Francisco branch plant in Chapter II). He continued with Ford at its San Francisco branch until the company opened its Richmond branch 1939, and Vivian moved there with the company. He again participated in Ford's exhibit at the 1939-1940 Golden Gate International Exposition, located on Treasure Island in the San Francisco Bay. The landscaping there inspired Vivian to develop gardens around the power plant at the Richmond plant. During the war, he converted those gardens to Victory Gardens, planting vegetables instead of flowers. Ever the loyal Ford employee, he also wrote a March 1944 letter to Admiral Emory S. Land of the Maritime Commission recommending that one of the Liberty ships being built at the nearby Kaiser shipyards in Richmond be named for Edsel Ford, who had recently died while president of the Ford Motor Company. Land responded to Vivian, writing that the Maritime Commission had intended to give Edsel Ford's name to a Liberty ship built at Savannah, Georgia, because the Ford family had a country home nearby, but the Ford family asked that a ship not be named for him. For his enthusiastic efforts on a variety of fronts, Vivian was a frequent subject of newspaper articles and favorable reports by Army officers.¹³⁶

The Richmond Tank Depot also mounted periodic War Bond Drives. In November 1944, the plant held its sixth drive, dividing Ford personnel into seven groups and setting a quota for each, with the total for the plant set at \$124,950. Within three days, the employees in every group had exceeded their quotas, and UAW Local 560 purchased an additional \$1,075 in War Bonds. Total collected at the plant for that drive was \$142,185. Enthusiasm for War Bonds was not always high, however. During the seventh drive in June 1945, the Richmond plant barely exceeded its quota, and not until after considerable cajoling by Ordnance staff. One explanation for the difficulty in meeting the quota was that many employees, who might otherwise have purchased bonds, quit before the drive, while new hires had already purchased bonds as individuals.¹³⁷

President Franklin D. Roosevelt died on 12 April 1945, a Thursday. His successor, Harry S. Truman, asked that all plants engaged in war production continue full work schedules, holding any commemorative services either Saturday or Sunday. Workers at the Richmond Tank Depot

women who comprised the boilerhouse gang appears on p. 71.

¹³⁶"GI Bundles," 2; "Richmond Branch Employee", 6; Robert H. Wall, "He Keeps Them Flying," ms dated 25 March 1943 and attached to Maj. Dick R. Reed to District Chief, letter dated 27 March 1943; Frank Vivian to Emory S. Land, letter dated March 1944; Land to Vivian, letter dated 7 April 1944, all items in HFM Acc. no. 89, box 1, Richmond Branch WWII Awards & Correspondence folder.

¹³⁷"Richmond Tank Depot, Vol. II, part 1, 1 October to 31 December 1944," 59; "Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," 171-172.

paused for five minutes of silence twice on Saturday the 14th, once during the day shift at 10:00 am and once during the evening shift at 5:00 pm, to honor their fallen President.¹³⁸

May 8th was V-E Day. The news was broadcast at 6:00 am Pacific time. Most of the day-shift production workers at the Richmond Tank Depot did not hear the news immediately because they were in transit to work, which began at 6:30 am. V-E Day evolved as a normal work day, because there was still a war to be won in the Pacific. Ordnance and Ford employees expressed any jubilation they may have felt without taking time off from work. By early August, Japan's surrender appeared imminent. To avoid any celebratory damage to property owned by the government or the Ford Motor Company, Ordnance and Ford management posted notices on a plant bulletin board that a plant holiday would begin as soon as news of the end of hostilities arrived. In an August 10th telegram, Col. Harmon of the San Francisco Ordnance District authorized the Richmond Tank Depot to pay all workers sent home on the anticipated V-J Day for a full shift. There were 379 workers at the Richmond Tank Depot during the night shift of August 14th, when news of Japan's surrender arrived, at which time those workers were sent home. All 1,138 employees working on Ordnance contracts then received a two-day holiday.¹³⁹

¹³⁸"Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," NARA, RG-156, Entry 646, box A601, p 6.

¹³⁹"Richmond Tank Depot, Vol. IV, 1 April to 30 June 1945," 83, 102-103; "Richmond Tank Depot, Vol. V, 1 July to 30 September 1945," 93-94, 106; Harmon to Commanding Officer, Richmond Tank Depot, telegram dated 10 August 1945, exhibit Ha, p 106 of vol V.