



A wounded American soldier aboard a U.S. Army hospital train during the Korean War. US National Archives

Medical Railroading During the Korean War 1950-1953

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While the role of rail transportation during the American Civil War, World War I, and World War II has largely been acknowledged by historians, the importance of railroads in the Korean War 1950-1953, like the conflict itself, has mostly been forgotten. Both sides, the United Nations Command and the Communist forces, relied heavily on railroad transportation during the hostilities.

Though described as a limited war, the Korean Conflict was not a small war: Large quantities of men and materiel moved up and down the Korean peninsula. Due to the inherent efficiency of railways in large-scale movements and the inadequacy of roads and air transport, railways held a paramount role in UNC-theater military transportation. Approximately 95 percent of all supplies that were cleared at ports moved by rail to forward supply points. The same was true in the movement of personnel, including rotating troops and evacuating casualties.¹

This article examines the use of rail transportation in evacuating casualties for the U.S. Army and its allies within the UNC. It is a compelling story of courage, improvisation, and innovation on the part of army medical personnel and railroaders. In the conclusion, I will examine the implications for the U.S. Army of the extensive use of railroads in medical evacuation during the Korean War.

Railroads in the American Civil War, and later

The Army's use of railroads in medical evacuation began during the American Civil War, 1861-1865, where special-purpose hospital cars were used to evacuate the wounded.² The Prussians sent military observers who were attached to the Union Army, and the railway aspects

of the conflict were carefully studied in Prussia and other German states.³ In the Franco-Prussian War (1870-1871), the Prussians improved on American evacuation concepts, devising an elaborate medical evacuation system based on railway transport. The relatively small number of deaths from wounds of German forces attested to the success of this system. Casualties were evacuated from the front lines to the interior of Germany by special trains that were staffed by surgeons, nurses, pharmacists, and cooks. The most heavily wounded were removed from the train into hospitals situated in towns nearest the frontier, and their places were filled with men whose wounds were healing; the process continued into the interior of Germany. Observers of the German medical evacuation system noted the favorable effect on the morale of soldiers. Every soldier knew that if he was wounded, he would be quickly conveyed home to be tended by his own people and not remain in a field hospital behind enemy lines.⁴

This evacuation system proved effective and was further developed by the Germans as well as adopted by other nations such as Great Britain, which used four hospital trains, constructed and organized on the German model, in South Africa during the Anglo-Boer War (1899-1902). Railroads were used for medical evacuation by all powers in the First and Second World Wars, integrated with other modes of transportation. At the time of the Korean War, the U.S. Army continued to use railways within a comprehensive medical evacuation system based on American experiences in the Civil War, influenced by German developments, and further developed during the world wars to move casualties to rear-area hospitals or for further evacuation out of the theater of war.



Prior to the Korean War, the Korean railroads had seen extensive use for the evacuation of casualties and other aspects of military logistics in the Russo-Japanese War of 1904-1905, and a series of conflicts the Japanese Empire was involved in from 1914 to 1945. The Japanese built the Korean railroad system between 1904 and 1945 as a strategic network connecting Korean ports to Manchuria. The Korean railroad system was almost entirely a very well constructed military railroad for the benefit of Japanese forces.⁵ The Japanese developed the Korean highway system to serve purely local needs and to serve as a feeder system to the railroads.⁶ Thus by 1945, the approximately 4,200 miles of Korean railroads held a dominant strategic and economic role. The equipment and operations were based on American practices, which were deemed best to meet the heavy transportation requirements on the Korean peninsula. Rolling stock had American characteristics, with four- or six-wheel bogie trucks and automatic knuckle couplers.⁷

Following the Japanese surrender at the end of World War II, U.S. forces occupied Korea south of the 38th parallel, and the Soviets occupied Korea north of the 38th parallel, as agreed at the Yalta Conference. For the American occupational government or the U.S. Military Government in Korea, the railroad system was highly important, because it provided nearly all transport services in country for American forces.

A functioning national railway system also was vital for the future of the country. From September 14, 1945, to September 7, 1948, the USMGIK operated the Korean railroads with the intention of quickly training the Koreans to run the railroads themselves. This was not an easy task, because before 1945, Korean railroads were under tight control of the Japanese state. The Japanese held administrative and technical jobs, while Koreans for the most part worked in manual labor; positions largely attainable by Koreans were as track and car repairmen, roundhouse hostlers, and passenger-car cleaners.⁸ Despite largely perfunctory training of Koreans by Transportation Corps personnel to assume technical and managerial positions, the USMGIK seems to have been successful in this effort. From September 7, 1948, the official founding of the Korean National Railroad, and the outbreak of the war on June 25, 1950, railroads in South Korea operated with improving efficiency while carrying an increasing amount of freight and passengers.⁹

Establishing a Korean state

As the façade of wartime amity between the United States and Soviet Union was quickly disappearing, the Soviets rejected a plan for an immediate Korea-wide election of a unified government, and refused to admit the United Nations temporary commission to the Soviet-controlled zone in the north. With this refusal, the United States allowed elections to take place south of the 38th

parallel, and the Republic of Korea was thus established on August 15, 1948. Under Soviet tutelage, a Communist government, the Democratic People's Republic of Korea was formed in North Korea soon after.

While the United States was forthcoming with assistance to rehabilitate the railroads, as well as other utilities and industries in South Korea, it was not so forthcoming in equipping the ROK armed forces. American military advisors trained Korean military personnel, but American political leaders studiously withheld such weapons as tanks and medium and heavy artillery that might have given the South Koreans an offensive capability. Unfortunately for the South, the Soviets exercised no such restraint in providing arms for their North Korean allies.¹⁰

Pusan Perimeter: First phase of the Korean War

The Korean War began at 4 a.m. on Sunday, June 25, 1950, when 90,000 North Korean People's Army (NKPA) troops, supported by 120 T-34 tanks, numerous pieces of heavy artillery, and 180 Yak fighter planes and medium bombers streamed southward across the 38th parallel. The United States and the U.N. reacted quickly to the invasion. With the approval of the U.N. Security Council, Gen. Douglas MacArthur was appointed as commander-in-chief of the U.N. Command, and the United States and 19 other nations rushed military forces or medical units to the Korean Peninsula to stem the Communist aggression.¹¹

The first American personnel to react were occupational forces stationed in Japan. The Eighth United States Army in Japan consisted of 50,000 soldiers, which was merely an occupation force, not a rapid-reaction combat force. All types of equipment were very much in short supply.¹² Given a shortage of motor vehicles and the condition of transportation in Korea, the EUSA and the beleaguered Republic of Korea Army depended heavily on KNR trains for overland transportation.

But the immense traffic demands quickly overwhelmed both the KNR management abilities and the movement control capabilities of the ROKA, which were both relatively new and inexperienced organizations. A tremendous burden of heavy military traffic and masses of refugees made it impossible for the young railroad organization to cope without outside assistance.¹³ Consequently, in July 1950, EUSA negotiated – through the U.S. Ambassador to Korea, John J. Muccio – the transfer of operational control of KNR from the ROK government to the U.S. Army.¹⁴ On August 26, 1950, the U.S. Army activated the Third Transportation Military Railway Service (3rd TMRS), which would eventually grow to an organization of two railway operating battalions, one railway shop battalion, and a military police battalion. It also supervised 32,000 KNR civilian employees.¹⁵ Korean personnel were vital, since the 3rd TMRS's very much under-strength units could hold out no hope of running the railroad without them.

Operation of hospital trains was a function of the U.S. Army Medical Corps, in close cooperation with the 3rd TMRS. The medical corps personnel provided care for patients, while 3rd TMRS personnel maintained equipment, moved trains, and coordinated schedules.¹⁶

The first U.S. Army force to enter Korea was the 24th Infantry Division, which was sent up to the front lines by rail in early July 1950 as its units arrived. The 24th Medical Battalion and the 8055th Mobile Army Surgical Hospital arrived in Taejon on July 8, 1950, from Pusan to support front-line troops operating about 20 miles north. The medical units were under-strength, short of drivers, and equipped with World War II-vintage ambulances, which needed constant repair. Furthermore, they found the very rough roads to be hard on patients they were evacuating.

Medical officers quickly found that rail movement was faster, as well as easier on casualties. Given the extensive railroad system and the rough condition of Korean roads, it became standard practice of the medical corps to maximize the use of rail to move casualties and minimize the use of roads as much as possible. According to Gen. James A. Van Fleet, commander of the EUSA (April 1951-February 1953), "Motor transportation for these long rides was unthinkable and not used."¹⁷

On a few occasions, railway section cars, usually used to transport track-repair crews, were pressed into service evacuating casualties to clearing stations. However, in the beginning of July 1950, most patients were moved from the aid station at Kong-ju to the railhead at Nonsan by motor ambulance, and then from Nonsan to Taejon by rail. The division headquarters medical detachment had two "doodlebugs" (self-propelled rail cars) to carry out this

mission. The medical corps operated doodlebugs earlier in Korea during the USMGIK period, to transfer patients to Seoul from outlying garrisons. They were gasoline-powered cars built by the Japanese, based on American design. Similar cars were developed in the United States in the 1920s and 1930s to serve lightly traveled branch lines and to provide local service on main lines.

The medical corps had also operated similar equipment in Germany to support the occupation forces. Doodlebugs held an advantage over standard locomotives and passenger cars in that they did not require a turntable or wye to reverse direction, and they could be operated from either end. The 24th Medical Battalion and the 8055th MASH found suitable accommodation in a large school in Taejon. Three ambulances were kept at Taejon Station to receive patients arriving by doodlebug, and take them to the clearing station and MASH hospital. The most serious casualties were then taken to an airstrip and evacuated directly to Japan. Lightly wounded men were treated in Taejon and given hot food, a chance to take a shower and get a night's rest, and usually returned to duty. Men with wounds that required evacuation were sent from Taejon to the 8054th Evacuation Hospital in Pusan by rail.¹⁸ To transport patients to Pusan, three Korean coaches were quickly refitted with crudely built litter racks. The coaches were coupled to freight trains moving toward Taegu and Pusan. Attendants rode to Taejon in the improvised hospital cars as they were coupled to the next freight train heading north.¹⁹

At first, a doctor, a nurse, and a medical-aid man accompanied patients, but as the shortage of personnel grew more critical, a single nurse rode trains with only an aid man or two for assistance. Nurses for this duty were drawn from the evacuation hospital and the MASH unit on a rotational basis, but because this proved to be unsatisfactory, three nurses were assigned to permanent hospital-train duty.²⁰ To bring medical supplies up, one of

the medical supply non-commissioned officers from the 24th Medical Battalion rode with the casualties to Pusan. He requisitioned supplies at the medical supply depot located near Pusan station. They were loaded in the empty hospital cars of the next train heading north. On the night of July 16-17, 1950, the 24th Medical Battalion and 8055th MASH were withdrawn by rail about 20 miles south to Yongdong as the NKPA advanced on Taejon.²¹

As UNC forces withdrew southward into the so-called Pusan Perimeter, additional railway equipment was quickly dedicated to medical use. Box cars and coaches were converted, and a few ancient hospital cars previously used by the Japanese Imperial Army were put into service. Medical corps malaria-control detachments were assigned to keep this rolling stock free of lice and fleas, using dustings of DDT. At Taegu, one box car was kept stocked with C-rations, fruit juice, litters, and blankets to supply the hospital trains as they were being made up.²² Supplies distributed to each hospital car included cans of drinking water and fruit juice, C-rations, and footlockers containing plasma, dressings, alcohol, merthiolate (an antiseptic and antifungal agent), syringes, a bedpan, and a urinal. Each nurse carried her own supply of narcotics and sedatives.²³

Given the improvised nature of the hospital cars, which lacked the wide doors of purpose-built medical rolling stock, patients carried on litters had to be loaded through windows. However, patients with long leg casts or splints presented a problem, because they wouldn't fit through a window opening. To solve this problem, the window was removed and the soldier's foot was left protruding through the opening. According to one nurse:

That wasn't so bad. It was hot and we needed the extra circulation of air, but the railroad went through so many tunnels and there was so much soot and cinder that we had to cover our patients' faces with damp cloths to protect them.²⁴

The Army medical corps, with assistance of the 3rd TMRS, made a stellar effort at improvising to make best use of material that was readily available in Korea to facilitate comfortable and swift medical evacuation during the chaotic days of the Pusan perimeter. Despite the great talent of Army railroaders and medical personnel at improvisation, the U.S. Army received some adverse press reaction in United States because of the type of equipment being used. According to Gen. Crump Gavin:

The cars were old, with coal stoves, windows out and screens missing and generally dilapidated. That was all we had: The Pullmans had been lost when Seoul fell.²⁵

One controversy that arose during the time was the question of why the Allies didn't make greater use of air

evacuation rather than relying on surface transportation (hospital trains and hospital ships) in the early months of the war. On July 4, 1950, the commanding general of the Far East Air Force, Gen. George E. Stratemeyer, informed Gen. MacArthur that the FEAF was prepared to airlift casualties to Japan. EUSA made use of air evacuation where possible and necessary, especially for most serious cases.

However, FEAF complained that EUSA was not using the full medical airlift capacity available. From July 1 to September 15, 1950, 13,015 patients were evacuated from Korea, of which only 3,855 (29.6 percent) were evacuated by air. During the Pusan perimeter phase of the war, the nearest airfield to the front along the Naktong River was the K-2 Airfield near Taegu. Because of about six miles of rough roads between K-2 and Taegu and a lack of a railhead at the airfield, EUSA preferred to move its casualties by hospital train to Pusan. From Pusan, most patients were moved to Japan by sea and some were flown out of K-9 Airfield in East Pusan. K-9 Airfield had no medical holding facilities, and patients faced lengthy delays in waiting for air transportation. EUSA could not afford to count on such a "catch as catch can" system of air evacuation, and accordingly used more reliable railway and ocean transportation. Medical airlift out of Korea was dependent on good weather, and EUSA needed mass evacuation in all kinds of weather. FEAF's own examination of air evacuation in the first two months of the war judged itself to have "a rather spotty history" in this effort.²⁶

Making a trip to Korea on September 9, 1950, FEAF chief surgeon Col. Clyde L. Brothers discovered that EUSA wanted air evacuation, but only on an orderly and regular basis.²⁷ Furthermore, many Army officers felt that the Air Force disdained troop-carrier operations, giving them the lowest priority in personnel and equipment, and therefore were unwilling to rely heavily on the Air Force for casualty evacuation. FEAF wanted a greater role in the theater in medical evacuation, but EUSA flatly rejected this.²⁸

Furthermore, a great shortage of transport aircraft existed. The largest transport FEAF had was the C-54 Skymaster (similar to the commercial DC-4 airliner). When used in medical evacuation, a C-54 could carry 30 patients on litters, plus related medical staff; FEAF had only six of these aircraft available in Japan on July 1, 1950. The C-54s were too heavy, and they damaged runways when landing on Korean airfields, which had been built by the Japanese for fighter planes and light bombers and transports. Therefore airlift operations to and from Korean airfields was restricted to far smaller C-47 Dakotas (military version of the DC-3) until engineers could improve the runways.²⁹ The Army chose to remain with its own evacuation system, relying more on hospital trains than aircraft in the theater, rather than an untried system advocated by the Air Force. According to Brig. Gen. L. Holmes Ginn of the U.S. Army Medical Corps, who was on EUSA staff:

One of the self-propelled "doodlebugs" operated by the U.S. Army Medical Corps in Korea. Built in Japan, the gasoline-powered cars were based on American designs of the 1920s and 1930s. U.S. Army Transportation Museum Collection, Fort Eustis, Virginia



We always tried to utilize the most economical means available that were consistent with the welfare and comfort of the patients, and our hospital trains provided the maximum comfort.³⁰

The rough-and-ready period of medical railroading would not last through 1950. On August 1, 1950, the Army's surgeon general received a request from Gen. MacArthur for two hospital trains for use in the Far East. This rolling stock would have to come from the United States. Eventually, all serviceable hospital cars in storage since the end of World War II were sent to Korea. U.S. Army hospital cars existed in Japan, however, the equipment was 3-foot, 6-inch gauge rather than the American and Korean standard gauge of 4 feet 8½ inches.

In November 1950, hospital cars began to arrive from the United States. By the year's end, two complete 10-car trains were forming a continuous shuttle between the front and Pusan.³¹ As the modern hospital cars began arriving in the theater operations, hospital trains could provide immediate care at forward railheads and comfortable transportation for patients to rear area hospitals and embarkation points. As these modern hospital trains came into service, the UNC experienced rapidly changing tides of war, offensive actions, withdrawal, and renewed offensives.

U.N. Command offensive fights back

The tide of the Korean War changed quickly as UNC forces made an amphibious landing at Inchon on September 15, 1950.³² It was accompanied by a breakout from the Pusan perimeter, which started four days later. The UNC breakout first went slowly, due to fierce resistance by NKPA. However, as the vise closed, the UNC offensive quickly turned into a rout of NKPA troops. On October 1, 1950, the

ROK 1st Corps advancing on the east coast pushed across the 38th parallel into DPRK territory. Two days later, EUSA began its assault north on the western half of the peninsula. North of the 38th parallel, the transportation situation was the same as in South Korea. Trains were running as soon as lines were hastily restored, and this had to be done as quickly as possible to support the advancing forces. On October 19, 1950, the UNC entered Pyongyang and after this, the advance continued north in pursuit of remnants of the NKPA forces and DPRK government functionaries.

On the east coast, the ROK 1st Corps advanced quickly, capturing the port of Wonsan on October 20, 1950. The U.S. Marine 1st Division began advancing north from the ports of Wonsan and Hungnam inland to the mountainous region surrounding the Chosin Reservoir, moving toward the Yalu River. To support this advance, the Marine 1st Service Battalion put the Chosin branch of the narrow-gauge Shinko Railway back in service. This line ran from Hamhung, adjacent to port of Hungnam, to facilities on Chosin Reservoir. By November 11, 1950, the narrow-gauge line was clear all the way to the bottom of Funchilin Pass at Chinhungni, 35 miles from Hamhung.³³

To speed casualty evacuation, several heated railway cars were equipped as hospital cars on the narrow-gauge line. At Hamhung, the 1st Marine Division Hospital treated casualties, or evacuated more serious cases to the hospital ship *S.S. Consolation* in Hungnam harbor.³⁴ Elsewhere as the railway lines were being restored and reconnected, the 66 pieces of standard-gauge rolling stock modified as hospital cars were kept in constant use.³⁵ In October 1950,

A short hospital train leaves a forward railhead at Pukchong, Korea, with a load of patients bound for rear hospitals on November 27, 1950. U.S. Army Transportation Museum Collection, Fort Eustis, Virginia



hospital trains began scheduled runs between ASCOM (Army Support Command) City at Pupyong near Inchon and Pusan. A train left ASCOM City every evening, stopping at the 64th Field Hospital at Taejon and the 514th Clearing Company in Taegu. With these stops, the hospital trains made the run in two days.³⁶ The modern hospital cars began arriving in Korea just in time in November 1950. The tide of the Korean War was again changing, but a war that many people thought was almost over would continue for more than two years.

Chinese intervention – UNC withdrawal and counter-offensive

Starting approximately November 2, 1950, the UNC came into contact with Chinese troops, possibly volunteers, which had reinforced the remnants of NKPA. By November 6, 1950, five Chinese divisions (10,000 men each) had crossed the Yalu. Clearly, UNC was facing a new war. By November 24, 1950, more than 300,000 troops of Communist Chinese Forces were in Korea. On November 29, 1950, Gen. MacArthur instructed UNC commanders to make whatever withdrawals were necessary to escape being enveloped by the CCF, which was pushing hard and deep through UNC units near the Yalu River, and he ordered the U.S. Marine 1st Division to pull into a beachhead around the east coast port of Hungnam.³⁷

Railroad transportation for the retreat was vital, according to the EUSA transportation officer, Col. Edmond C.R. Lasher. He said: "There's no question that the railroad saved our necks."³⁸ As the order to withdraw was given, the EUSA began "one of the strangest, wildest rail operations of any war."³⁹ EUSA systemically evacuated troops, administrative personnel, and refugees, as well as supplies and equipment, largely using rail transportation. Trains carrying casualties received first priority in moving southward.⁴⁰

Once UNC forces reached roughly the 38th parallel, the cycle of withdrawal started again when, on December 31, 1950, CCF launched an offensive with the main objective of capturing Seoul. UNC forces were ordered to evacuate Seoul and fall back to a line about 40 miles south, where an offensive would begin at the first opportunity after forces were reorganized.⁴¹ The evacuation of Seoul took place on January 3-4, 1951. In addition to the removal of military personnel, equipment, and materiel, thousands of civilians, Korean civilian hospital patients, orphans, and prison inmates were moved southward by rail.

As rolling stock was staged for a mass exodus southward, rail traffic northward was minimized to comprise ammunition, aviation, and motor vehicle fuel, rations, and the 10-car hospital train between ASCOM City and Pusan.⁴² On the night of January 4, 1951, the hospital at ASCOM City was closed and just as the last hospital train departed, retreating troops set fire to ammunition and various supplies that could not be evacuated from the vast

support complex, to avoid their being commandeered by the enemy. The result was a series of huge explosions.⁴³ As trains carrying supplies and equipment were made ready to leave southward, hundreds of refugees climbed aboard, riding on top or hanging on the sides, sometimes with tragic effect. People on top of the cars were crushed in the tunnels, while others died of exposure in sub-zero temperatures, or lost their holds from the side of freight cars and fell off.⁴⁴

Despite the chaotic and frightful nature of the withdrawal, the 3rd TMRS continued to maintain support to front-line combat units. Successive railheads were set up at points where combat units could draw fuel, rations, and ammunition, and evacuate casualties. Hospital trains ran overcrowded with patients, as medical personnel fit them in all available spaces, sometimes two to a bed, on the floor, and in corners. As trains reached their southern terminus, many patients were immediately flown to Japan to relieve already-burdened hospitals in Pusan.

When one railhead closed as the front advanced south, a new one was opened further south. This started after the Allied withdrawal from Taedong outside of Pyongyang and continued until a final defensive line was reached on January 25, 1951, and UNC forces went on the offensive.⁴⁵ As UNC began moving north toward the 38th parallel, the greatest challenge for 3rd TMRS, KNR, and the U.S. Army of Corps of Engineers was repairing track, tunnels, bridges, and other facilities leading north – the same infrastructure that withdrawing UNC forces had demolished, and which then were bombed by the FEAF. The 3rd TMRS restored railroad operations to forward areas as quickly as possible. The work was done on the heels of advancing UNC combat units. Some repair work and reopened track were under the range of CCF artillery fire.⁴⁶

Despite the chaotic period of withdrawal after CCF forces intervened in the Korean War, UNC medical railroading capabilities improved greatly from November 1950 to February 1951. With modern hospital ward cars and kitchen cars arriving in November, the medical corps deployed two specialized units of personnel to man hospital trains in December 1950. The 20th Hospital Train Unit and the 22nd Hospital Train Unit were formed in 1928 as part of the regular army, seeing service in the European theater of World War II. They were inactivated at the end of the war. In October 1950, they were reactivated, and each unit was authorized personnel strength of three officers, six nurses, one warrant officer and 39 enlisted men. The 20th Hospital Train Unit and the 22nd Hospital Train Unit saw their personnel strength combined into one unit – the 8138th Hospital Train Unit – in July 1952. With advisory support and assistance of the U.S. Army, the ROKA medical corps established the 1st ROKA Hospital Train Unit on December 10, 1950.⁴⁷ These units would continue their work unabated as fighting lasted though 1951 to the end of July 1953, when an armistice was eventually signed, ending the fighting.



Stalemate and armistice

In late June 1951, Communist officials publicly suggested that an armistice was possible on the Korean Peninsula, after which the UNC broadcast an offer to open armistice talks, which received an affirmative reply from the Communists. The talks began on July 10, 1951, taking place mainly at Panmunjon on the 38th parallel. The start of negotiations raised hopes that the war would soon be over, but intense fighting continued along the 38th parallel as talks went on in an often-tedious fashion.⁴⁸ As the fighting continued, the evacuation of sick and wounded by hospital trains remained a critically important task for the 3rd TMRS, in close cooperation with the medical corps' 20th and 22nd Hospital Train Units.⁴⁹

In summer 1951, the 3rd TMRS in cooperation with KNR and the Army Corps of Engineers' 32nd Engineer Construction Group, restored railroad lines northward very close to the front. Hospital trains could evacuate casualties directly from front-line areas. In one location, the forward railhead was a mere 8,000 yards from enemy lines.⁵⁰

Hospital trains began operating from forward railheads in the combat zone to hospitals in Taejon, Taegu, and Pusan. At these railheads, hospital trains received wounded, often from ambulance convoys of box ambulances and litter-carrying jeeps. With the stabilization of the front, the railroad line north was restored from Seoul to Uijongbu, and then to Chorwon, running through the rear of front-line infantry divisions. Along this line, EUSA placed all forward medical installations, including the all-important MASH units. Critically wounded men were flown by helicopter from battalion aid stations at the front to the nearest MASH hospital. Often head, chest, and abdominal cases were on an operating table within a matter of minutes after a soldier was wounded. After initial treatment, seriously wounded patients were quickly loaded aboard a fully staffed, fully equipped hospital train for further evacuation to the rear.⁵¹

Pusan remained the most important terminus for hospital trains, as it had a major in-country hospital complex, including the 8054th Evacuation Hospital, the Swedish Red Cross Hospital, the 1st Prisoner of War Field Hospital, and the hospital ship *S.S. Hope* in Pusan harbor, which was a sizable hospital in itself. Further evacuation from Pusan was carried out by sea or air to the 118th Station Hospital on the southernmost Japanese island of Kyushu. Within the Pusan area, hospital trains made a short run between K-9 Airfield in East Pusan and the complex of hospitals in the city. The trains picked up seriously wounded patients that had arrived from forward airstrips by air.

Despite the short distances involved, the terrible condition of Korean roads, even in the vicinity of Pusan, precluded the use of road-bound motor ambulances, to

spare patients unnecessary discomfort. Specially equipped ambulance-buses, which could travel on railway lines, shuttled between K-9 and Pusan hospitals as the hospital train stood by waiting for more aircraft to arrive, serving as a mobile medical holding facility.⁵² Another short hospital train run was also made between the 8055th MASH hospital in Uijongbu and the 121st Evacuation Hospital at ASCOM City, which was near Kimpo Airport (K-14 airfield). From Kimpo Airport, casualties from the British Commonwealth Division were evacuated by Royal Australian Air Force C-47 Dakotas directly to the British Commonwealth General Hospital in Kure, Japan.⁵³

When hospital trains made the run from forward railheads and Pusan, the standard hospital train consisted of 13 cars – eight hospital ward cars for carrying patients, a kitchen-dining and pharmacy car, an officer personnel car, two orderly cars and a utility car. Despite the fact that the repatriation of war dead was the responsibility of the U.S. Army Quartermasters Corps' Graves Registration Division, and not the medical corps, hospital trains also were used to move specially converted rolling stock for use as mortuary cars. When their movement was necessary, the mortuary cars were placed at the end of regular hospital trains. The deceased were moved from forward railheads to Pusan, where they were sent onward to their country of origin.

Hospital-train consists could vary to as few as seven cars per train. Often Korean coaches converted to hospital ward cars were combined with purpose-built cars. In total, 62 hospital ward cars and seven kitchen cars were shipped from the United States, all constructed in 1944 and 1945 for stateside service. These cars arrived in Korea between November 1950 and March 1951.⁵⁴ By the end of 1951, 90 hospital cars were operating on KNR; these cars were divided into eight full hospital trains. In addition, the U.S. Army contracted with Mitsubishi of Japan to construct standard-gauge ward cars for Korean service. Between April and July of 1952, a total of 118 Mitsubishi-built cars were sent to Korea between April 1952 and July 1952. With this additional equipment available, the 1st ROKA Hospital Train Unit was able to put three hospital trains in operation by August 1952 with the assistance of the 8138th Hospital Train Unit and the 3rd TMRS. These trains were tasked principally with evacuating ROKA and ROK Marine Corps casualties from the combat zone to hospitals in the Taejon, Taegu and Pusan. Although the 1st ROKA Hospital Train Unit operated converted civilian passenger cars rather than purpose-built hospital cars, the unit quickly gained a reputation for efficient and conscientious work.⁵⁵

As the war drew to an end in 1953, hospital trains enjoyed a high profile and a sensitive role in two operations associated with the armistice negotiations. These two operations, Operation Little Switch and Operation Big Switch, involved the exchange of prisoners of war. Operation Little Switch was enacted after the Communists accepted UNC's call for

Patients aboard a modern U.S. Army hospital ward car.
U.S. Army Signal Corps Collection, U.S. National Archives

an early exchange of sick and wounded prisoners of war. The Little Switch provided valuable experience for Operation Big Switch, the general exchange of prisoners that came after the armistice was signed.⁵⁶

According to an agreement between the Communists and UNC, Operation Little Switch was scheduled to take place from April 20 to May 4, 1953. The POWs had to arrive at the exchange area at Panmunjom exactly on schedule. The slightest delay could become the target of Communist propaganda and possibly serve as an excuse for scuttling the armistice.⁵⁷ Most of the POWs held by UNC were at a large prison camp complex on Koje Island near Pusan. They were moved by Navy LST to Pusan and then from Pusan by hospital train to Munsan, where they were transferred by ambulance convoy to Panmunjom. The hospital cars were specially equipped with telephones for intra-train communications. Windows were covered with strong screens to protect passengers from rocks and other objects thrown by Korean civilians along the right-of-way. The 3rd TMRS also took special precautions in moving the trains over their 304-mile-long route by sending a pilot locomotive in case of obstructions on the track or to serve as a substitute locomotive. A wreck train equipped with a wrecking crane followed in case of a derailment. Within the 14 days of Operation Little Switch, 6,670 Communist POWs were repatriated, with every hospital train arriving on schedule.⁵⁸ Once the armistice was signed, the Operation Big Switch began as soon as practically possible. From August 5 to September 6, the UNC transferred more than 75,000 prisoners of war directly to the Communists in the demilitarized zone at Panmunjon, and the Communists sent back more than 12,000 bushels to the UNC. A majority of POWs held by UNC was at the prison camp complex on Koje Island, on Korea's south coast, and were transferred by water to Pusan and moved by rail to Munsan, the nearest railhead near Panmunjom. Some 22,000 Chinese and North Korean POWs chose not to be repatriated. They were first moved to the Neutral Nations Repatriation Commission facilities in the demilitarized zone, where they were held in commission custody for 120 days, as stipulated in the truce agreement.

On January 23, 1954, non-repatriates, former CCF and NKPA troops, were moved from the demilitarized zone—the Koreans to reception centers throughout the ROK and the Chinese to Inchon or K-16 Airfield in Seoul for transport to Taiwan.

To facilitate this movement of non-repatriates, the 3rd TMRS used seven diesel-electric hauled trains of 22 cars of Koreans to reception centers, and three hospital trains for ill Koreans and Chinese to hospitals in Taejon or to the K-16 Airfield.⁵⁹ The last major operation for U.S. Army hospital trains on the Korean peninsula was a civilian relief effort in response to a large-scale catastrophe. On the night of November 27, 1953, a blaze that started in crowded

refugee housing quickly spread by strong winds, resulting in a firestorm that destroyed 3,000 buildings in downtown Pusan, including the main railroad station. A hospital train was sent to Pier Number 1 (the international steamship pier) adjacent to Pusan Station to provide medical assistance to Korean civilians affected by the fire.⁶⁰

With the end of hostilities, the 3rd TMRS initiated retrograde operations. American Car & Foundry-built ward hospital cars and kitchen cars, as well as other special equipment, such as diesel-electric locomotives and wrecking cranes, were returned to the continental United States to stand by for mobilization to other theaters of operation or stateside use.⁶¹ The 8138th Hospital Train Unit was deactivated and its personnel rotated back to the United States. The 1st ROKA Hospital Train Unit remained an active unit, and its capabilities improved as it was a vital logistics support element in the ROKA. Both the 1st ROKA Hospital Train Unit and the U.S. Army 8138th Hospital Train Unit were credited in saving thousands of lives and operating efficiently under arduous conditions.⁶²

UNC medical railroading: Equipment and operations

Perhaps the most impressive aspect of the hospital-train operations was the modern hospital ward cars, which were brought from the United States and Japan. Though well-equipped with various medical facilities, the hospital cars were constructed on standards of passenger cars used on the best limited trains in the United States. They made a strong positive impression on UNC personnel. Many of the patients were incredulous that such luxury could exist in such a poor and war-torn country.⁶³ According to EUSA Transportation Officer Col. Lasher,

Boy, we certainly got some beautiful hospital cars. Boy! Great big long windows in them so convalescents could look out the windows as the train went along and operating all sort of medical facilities on these trains. Air-conditioned. The only air-conditioned stuff we had...⁶⁴

The familiarity of an American passenger train gave a morale boost to wounded American GIs, who felt as if they were getting closer to home as soon as they were loaded aboard the hospital ward cars.⁶⁵ The hospital ward cars brought from the United States were self-contained medical facilities, functionally planned, containing 36 berths arranged in tiers of three, a dressing table, kitchen, and quarters for attendant. Constructed by American Car & Foundry for use during World War II, they were 84 feet 6 inches long and rode on six-wheel trucks. However, these cars were limited to use on certain KNR main lines, as they were too long and the trucks were a problem on sharp curves. As a result, the U.S. Army issued Mitsubishi a contract to construct new ward cars. The Mitsubishi cars were 78 feet, 11 inches long and rode on four-wheel trucks,

which allowed them to handle tight curves. Even so, these cars were too heavy to operate over some lightly engineered branch lines.

Both the Mitsubishi and ACF cars were fully compatible with Korean rolling stock, which was built to American specifications.⁶⁶ The kitchen cars ran at the head end or rear of hospital trains and could supply food more efficiently than the individual ward car kitchens, and provided meals for the older converted ward cars without kitchens. While not always providing meals, the ward car kitchens were used to provide hot coffee at all times, as well as other beverages.

The kitchen cars were also constructed in 1944 by ACF. They were of utilitarian design, resembling large boxcars, and were outfitted with diaphragms and end doors to provide a passageway to other cars. They had no vestibules with end doors, but a center side door to load supplies. They were 50 feet 6 inches long and had a short wheelbase, with express-car type trucks, which offered a safe ride at speed.

A typical meal on a hospital train consisted of steak, pineapple, and coffee with real cream.⁶⁷ The American Red Cross also provided notions and comfort items for patients, such as books, writing paper, cards and other incidentals aboard each hospital ward car. The ward cars were organized in a standard way so medical personnel

could work interchangeably on all cars and trains without wasting time looking for supplies or equipment.⁶⁸

The hospital rolling stock generally provided safe and comfortable quarters for patients, and no serious accidents occurred that caused injury to their occupants. On the other hand, enemy attacks against hospital trains did occur. Despite being clearly marked with red crosses, and having protected status under international law, hospital trains were attacked by NKPA troops on four occasions. In three of these cases, the attacks were launched by stragglers behind friendly lines who were bypassed by advancing UNC troops. The attacks were haphazard ones, using light weapons; no serious injuries resulted to patients or medical personnel. In two cases, the locomotive crews suffered serious injuries. In all cases, patients were adequately cared for and successfully evacuated without great delay.⁶⁹

Little danger of air attack existed, as the FEAF gained control of the air war during the first days of fighting. Third TMRS personnel received training to operate anti-aircraft guns, but this training was never put to use. As a security measure against ground attacks, two sandbagged flat cars were attached to the front and back of many hospital trains. Equipped with machine guns, these cars were manned by 12 military policemen.⁷⁰ Based on train protection practices



A U.S. Army hospital car built by American Car & Foundry in 1944. These cars' 84-foot length and six-wheel trucks combined to limit their usefulness during the Korean War. Robert J. Wayner Collection

One of the 41 Mikado-type engines employed in Korean hospital-train service by the U.S. Army Transportation Corps. U.S. Army Transportation Museum Collection, Fort Eustis, Virginia

used in the European theater during World War II, some trains carried a military police jeep mounted with a heavy machine gun and secured to the flat car. This was done in a way that allowed the jeep to ride properly, but it was capable of being loosened rapidly and unloaded by means of ramps, allowing it to provide maneuverable defense of the train.⁷¹

Not only was protection from attack a matter of concern for the operation of hospital trains, but so was procurement and maintenance of adequate motive power to pull them steadily over the sharp grades of the KNR. The KNR steam locomotives were mainly Japanese-manufactured engines based on standard American designs. KNR locomotives

included Prairie 2-6-2, Ten-Wheeler 4-6-0, Consolidation 2-8-0, Mountain 4-8-2, Santa Fe 2-10-2, Mikado 2-8-2, and Pacific 4-6-2 types. The U.S. Army Transportation Corps brought 41 Mikado-type locomotives to Korea, most of them of recent Japanese manufacture, to help alleviate motive power shortages. Built for mainline passenger service, the KNR Pacific-type engines pulled the limited express trains operated by 3rd TMRS, the KCOMZ *Comet* and the EUSAK *Express*, which ran between Seoul and Pusan as well as other passenger movements such as troop trains.⁷² The powerful, newly manufactured Mikado-type locomotives were relegated mainly to heavy freight trains, but took on one very important role in passenger operations: They were given the task of moving hospital trains. Steam to provide heat was needed continually for the hospital cars, and the Mikado types could provide it steadily. The Pacific types were faster locomotives, but could not be relied on to efficiently handle the heavy steel hospital cars.⁷³

In 1951, the U.S. Army Transportation Corps also sent to Korea 35 brand-new 105-ton, 800-horsepower Electro-Motive Division SW8 diesel switcher units. Diesel-electric locomotives held several advantages over steam power under Korean operating conditions. The need to haul fuel to engine terminals was greatly reduced, which meant that gondola cars could be freed for other traffic. To do the same amount of work, a steam engine required 20 gondola cars of coal, compared to one tank car of diesel fuel for a diesel-electric engine. The 700-mile range of the diesel-electric locomotives meant infrequent refueling and longer hauls.

Diesel-electrics also had an advantage on the severe grades of KNR, where the SW8s' electric-driven axles and flexible truck frames could deliver more steady power at the rail than steam-driven wheels. Despite not being equipped with steam generators to supply steam heat to passenger cars, the SW8s were used to pull hospital trains. The 3rd TMRS's 765th Transportation Railway Shop Battalion came up with an innovative way to solve this problem. The 765th TRSB mounted serviceable boilers

from dead-lined 2-foot-6-inch narrow-gauge locomotives in boxcars or baggage cars. These cars served as steam generator cars to provide heat and power to SW8-drawn hospital trains.

In 1952, a pair of six-axle, 1,600-horsepower MRS-1 diesel-electric locomotives was deployed to Korea for test purposes. These units were especially designed to U.S. Army Transportation Corps specifications. As they could haul passenger trains at 65 mph and were equipped with steam generators, the MRS-1s were readily used in hospital-train service.⁷⁴ In addition to improvising steam generator cars, the 765th TRSB constructed other innovative equipment to facilitate medical evacuation by rail.

Auto-rail bus ambulances

A notable innovation was the construction of vehicles that could travel on roads as well as on rails, to take advantage of the smooth ride and speed of railroads, while retaining the more flexible movement of a motor ambulance. The 765th TRSB mounted Evans Products Auto-Rail Conversion Kits, which consisted of auxiliary flanged wheels for motor vehicles, on the front and back of standard Army buses. Evans had marketed the auto-rail devices to American railroads to allow section men and track inspectors to easily reach sites along the right of way. Some electric traction lines had experimented with auto-rail buses to run on rubber tires on public streets and on rails in their own private rights of way.

Once the 765th TRSB installed flanged wheels, it ripped out the bus seats and replaced them with fixtures for hospital litters. These ambulance buses drove as close as possible to the front, picked up casualties, and continued on conventional rubber tires to the nearest railroad spur or branch line. They then pulled onto the track at locations such as grade crossings and turned lengthwise on the rails. The Auto-Rail flanged wheels were cranked down by hand. When in railroad mode, the rubber tires still provided propulsion and braking; the flanged Auto-Rail wheels provided guidance. Once on the railroad, an ambulance bus proceeded to a MASH unit or to a junction to meet a conventional hospital train. The ambulance buses were also used between airfields. As the ambulance buses were built on truck frames that made for rough riding on Korean roads, they traveled by rail as much as possible to speed movement and minimize discomfort.⁷⁵

Conclusions

The auto-rail buses were a good example of how the 3rd TMRS and army medical corps met medical evacuation problems with improvisation and innovation. The Korean War came unexpectedly for the United States, and the Korean peninsula posed difficult transportation problems, but the Korean railroads played a larger role and did a more effective job than initially expected.⁷⁶ As rail transportation

proved its worth and it seemed that theater rail operations would be significant in the next major conflict, the U.S. Army Medical Corps and the U.S. Army Transportation Corps heeded many of the lessons learned in Korea. In August 1953, the Army began receiving new hospital cars that operated as a five-car self-contained hospital train, generating its own power and heat and which could be blacked out for concealment against attack while maintaining full interior lighting. The hospital cars were fitted with shower and lavatory facilities for ambulatory patients and staff. It rode on adjustable trucks and wheelsets so that it could run on standard gauge (4 feet 8½ inches) or broad gauge (5 feet 1 inch) track and had interchangeable American or European style couplers. These cars were constructed by the St. Louis Car Co., measured 66 feet 2 inches in length, and rode on short four-wheel trucks.

Another innovation from Korea that was improved upon was the auto-rail ambulance bus, which had railway wheels that could be raised and lowered automatically, and which were adjustable to run on standard or broad-gauge track. Modern self-propelled railcars equipped for medical evacuation were also maintained as part of the Army's foreign-service rolling stock fleet, which stood by for deployment in overseas contingencies.

In April 1953, the Army began adding to the foreign service fleet 96 MRS-1 locomotives, which were steam-generator-equipped and could readily be used with the circa-1944 ward cars and converted passenger cars in hospital-train service. The MRS-1s, like the new hospital cars, could run on both standard and broad-gauge track and could be fitted either with American style automatic couplers or buffer plates.

During this period, the U.S. Army also purchased 61 European-built passenger cars that could serve both as troop sleepers and hospital ward cars for use by North Atlantic Treaty Organization forces.⁷⁷ In the Vietnam Conflict of the 1960s and 1970s, medical evacuation by rail did not play a role, as casualties came more incrementally, Vietnam's rail system was not very extensive, and there were no clear front lines.

Throughout the 1950s and 1960s, the Army's fleet of medical rolling stock remained at the ready for a major war in Europe or renewed hostilities on the Korean peninsula, which fortunately never came. During this period, a number of Army reserve units consisting of medical service personnel had the task of providing hospital-train personnel if mobilized. As air evacuation equipment and methods improved during the Vietnam War, the planned role of medical corps railway equipment became more limited, principally to speed casualties from forward railheads to the nearest suitable airfield for evacuation out of theater. In the mid-1970s, with the drawdown in forces after the Vietnam War, active-duty and reserve hospital-train units were inactivated and medical rolling stock became surplus.



SW8 No. 2000 departs Pusan, Korea, for Seoul with the EUSAK *Express* on July 9, 1951. This was the first run of a diesel-electric-powered passenger train on the Korean peninsula. The keystone insignia represents the 724th Transportation Railway Operating Battalion, which was a Pennsylvania Railroad-sponsored reserve unit activated in August 1950 for service in Korea. The 712th Transportation Railway Operating Battalion (a Reading Railroad-sponsored reserve unit) was also activated in August 1950 for Korean service. Both battalions drilled in Philadelphia before being activated. U.S. Army Signal Corps Collection, U.S. National Archives

An auto-rail ambulance bus of the 765th TRSB near the front lines. U.S. Army Signal Corps Collection, U.S. National Archives



Thereafter, the U.S. Army left operation of hospital trains to host nations in which U.S. forces were stationed. Some of the surplus ACF hospital ward cars that served in Korea saw second careers to transport show people and performing animals within the circus trains of the Ringling Brothers and Barnum and Bailey Combined Shows. Others were converted to standard passenger cars for service on the Alaska Railroad or used by Amtrak as baggage cars, or in maintenance-of-way service on the Northeast Corridor.⁷⁸

The Federal Republic of Germany and the Republic of Korea continued to maintain railway medical evacuation capabilities. For the ROK armed forces, given the relatively short distances involved and excellent railroad system, hospital trains are still an efficient means for mass casualty evacuation. The 1st ROKA Hospital Train Unit, which later became the ROK National Defense Hospital Train Unit, is still an active group, supporting the ROK armed forces.⁷⁹ In 1969, the ROK replaced its Korean-War-era cars with new purpose-built equipment. In 1999, its rolling stock was entirely replaced again with new rolling stock that is equipped with self-contained air-conditioning and ventilation systems, up-to-date medical treatment equipment, and special cushioned trucks for a smooth ride. The new ward cars are fitted with self-contained berths, allowing the easy movement of patients in serious condition as well as providing conventional seats for ambulatory patients. The rolling stock is designed to be used for the evacuation and stabilization of serious combat casualties, as well as for routine movement of patients between military hospitals and clinics in peacetime.⁸⁰ As a legacy of successful medical railroading during the Korean War, the National Defense Hospital Train Unit still stands ready to support the defense of ROK and to save lives.

Although the Korean War ended in a stalemate on the 38th parallel, the ROK retained its national integrity. In the global struggle of the Cold War, the United States contained Communist forces, preventing them from entirely controlling the geo-strategic Korean Peninsula. In the wake of the war, the ROK became a largely stable and powerful military partner of the United States in northeast Asia. By the 1970s, for the United States and its allies, strategic stabilization that allowed for meteoric regional economic growth was the greatest positive result of the conflict. In retrospect, the Korean War was a key event of the 20th century as a crucial turning point in the Cold War. The medical personnel and railroaders who staffed and ran hospital trains during the Korean War had an important if now obscure part in this story.

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