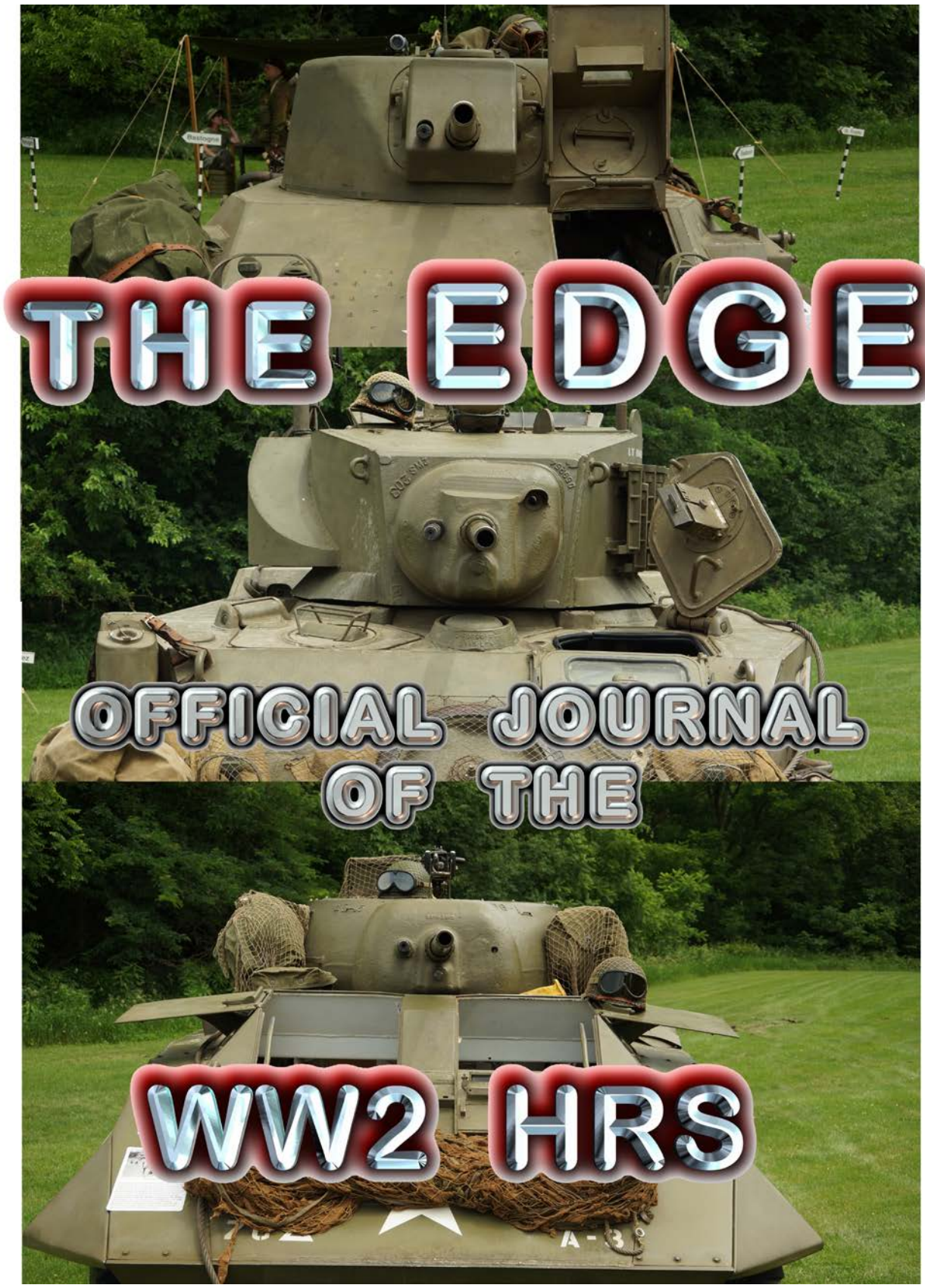

Photos from June Dixon, ILLINOIS Event (70th Tank Battalion)

THE EDGE * VOLUME 22 * ISSUE 6 * JULY 2013

WWII HISTORICAL RE-ENACTMENT SOCIETY Inc.

THE EDGE

The Hetzer - 2ND PANZER

CONTENT

WWII HISTORICAL RE-ENACTMENT SOCIETY Inc.
COMMUNICATIONS

From the Axis Representative

The 2013 reenacting season is in full swing now. There have been a good number of events so far, with more to follow. There is one aspect in reenacting I would like everyone to take a moment to think about. This aspect is executions. Two typical scenarios in which reenactor executions occur are the "prisoner running away" scenario, and the "command staff sitting at a café" scenario. So when and why do these scenarios occur at reenacting events?

The "prisoner running away" scenario usually happens at the end of public battles, because of reenactor boredom, and because the end of the battle has not been quickly announced to the public. So what is the big deal anyway? It is unrealistic, even for our unrealistic battles. Why would an enemy who has surrendered, and is unarmed and surrounded, suddenly turn and run away? What is even worse in a scenario like this, is when it is not coordinated between the two parties involved. The person running away is essentially forcing the "victor" to execute them unwillingly. I actually witnessed a "real" vet reenactor become very upset when he was forced to execute a prisoner running away. This scenario is flat out unrealistic, and looks silly.

The "command staff sitting at a café" has become cliché when an event has an actual town for a background. So what is the big deal anyway? It generally never happened in the "real" war, just in the movies. Why would a group of high ranking officials sit out in the open, in partisan territory with no security? Perhaps all of the movies showing this have had an effect.

I encourage event hosts and reenactors to think outside the standard clichés when it comes to showing our "reality" to the public. Let's work on conclusions to ending public battles and try to incorporate more realistic scenarios. Let's try and work on quickly announcing the ending of battles, and not letting the movies be a major point of our historical reference.

Thanks, Doug. dbloge@yahoo.com

German Army Weapons Demonstration

EVENTS

July	July 2013
Jul	No events listed.
	August 2013
17 Aug 	**10TH ANNUAL VETERANS APPRECIATION DAY** Loc: 2808 Old Hunning Rd, High Ridge, MO 63049 Dates: 17 August 2013 Event Times: 12 noon till 6pm Registration Times: 10am 17 Aug Pre-Registration: http://10thannualveteransappreciationday.eventbrite.com Fee: N/A Contact: Gary Adkins, FSSF 6-3 papajoad@20thcenturygi.com or Ken DeClue - Event Chairman at 314-723-0117 Website: http://veteransappreciationdayhighridgemo.webs.com Authenticity Notes: HRS rules apply Prohibited Vehicles/Items: NO live munitions Restrictions on Minors: NO underage drinking Other restrictions: N/A Sponsoring Unit(s): First Special Service Force, 6th CO 3rd REG, HRS / Second 25th Australian Infantry Battalion, 25th Brigade, 7th Division
	September 2013
06-08 Sep	**WORLD WAR TWO DAYS** Loc: Dellwood Park, Lockport, IL Dates: September 6-8, 2013 Event Times: 9:00 am Friday to 5:00 pm Sunday Registration Times: 12:00 Noon Friday Pre-Registration: Yes Fee: None Contact: Rich Russo vizsla25@sbcglobal.net Website: http://www.lockportwwii.com/ Authenticity Notes: HRS Rules Apply Prohibited Vehicles/Items: None Restrictions on Minors: HRS Rules Apply Other restrictions: None Sponsoring Unit(s): 5.Kp Grossdeutschland

19-22 Sep	**WWII DAYS MIDWAY VILLAGE, ROCKFORD IL.** Loc: Midway Village, 6799 Guilford Road, Rockford, IL Dates: September 19, 20, 21, and 22 Event Times: -Thursday Sept. 19: 12:00pm Gates open for setup -Friday Sept. 20: 9:45-2:15pm School tours No personal vehicles allowed in Living History Campsite -Saturday Sept. 21: 11:00am-5:00pm Museum is open to the public -Sunday Sept. 22: 11:00am-4:00pm Museum is open to the public - 7:00pm Park closes to everyone Registration Times: Registration will be located at the hospital, we will have signs pointing you in the right direction. -Thursday Sept 19, 2pm-9pm Please do not arrive before 12:00pm Thursday! -Friday Sept 20, 8am-9:30am then will reopen 2:15pm until 10pm -Saturday Sept 21, 7am-10am Pre-Registration: Unit CO's: Please e-mail Scott Koelling or Dave Fornell (davewwii@comcast.net) to pre-register your unit beginning April 1. Individuals with approved unit may not preregister until June 1. Fee: none Contact: Scott Koelling, 2.Panzer Division - Overall coordinater Website: http://www.ww2rockfordevent.com Authenticity Notes: Any WWII impressions may set up authentic camps. Partisans welcome and will be subject to S&A Inspection. Prohibited Vehicles/Items: No overnight vehicles permitted in campsite area. Other restrictions: No weapon discharges after 10pm. Motels: http://skoelling.homestead.com/page4rockford.html Sponsoring Unit (s): 2nd Panzer Division, 353rd Infantrie
October 2013	
18-20 Oct	**WELCOME HOME, STARS AND STRIPES REMEMBERS WW II** Loc: Stars & Stripes National Military Museum & Library, 17377 Stars and Stripes Way, Bloomfield, MO 63825 Dates: 18-20 October 2013 Event Times: Open to the public: 9am - 5pm 19 October 2013 Registration Times: 3-7pm 18 October 2013 & 7-9am 19 October 2013 Pre-Registration: Eventbrite Link: http://ssrwwii.eventbrite.com Fee: Free to re-enactors, nominal fee for the public Contact: Gary Adkins: papajoad@20thcenturygi.com or Sean Burton: ALEX6357@aol.com Website: http://welcomehomestarsstripesremembersswwii.webs.com Map: http://welcomehomestarsstripesremembersswwii.webs.com/map Authenticity Notes: All HRS Safety and authenticity Rules apply Prohibited Vehicles/Items: NO live ammo of any kind. Restrictions on Minors: HRS rules apply Other restrictions: N/A Sponsoring Unit(s): First Special Service Force, 6th CO 3rd REG HRS and Second 25th Australian Infantry Battalion, 25th Brigade, 7th Division HRS, Members: 6th Corps Living History Group, St Louis, MO

2nd Annual WWII Tribute at Kuipers Family Farm

Saturday, 31 August 2013 10AM – 6PM
Sunday, 1 September 2013 10AM – 4PM

Location
Kuipers Family Farm is 1 hour west of Chicago near Dekalb, conveniently located near I-88
1N318 Watson Road, Maple Park IL
www.KuipersFamilyFarm.com

Tentative Schedule
Set-Up: begins Friday, August 30th at 4PM
Registration: Friday 4PM – 10PM, Saturday 6AM – 8:30AM
Battles: Saturday and Sunday at 12PM and 3PM

Additional information will be posted as it becomes available at
www.709th.org
www.KuipersFamilyFarm.com

Kuipers is pleased to once again kick-off the start of their fall season by building on the success of last year's event. The facility was a huge hit with both participants and the public primarily due to the unique grounds used for the skirmish scenarios and encampments. A large, natural hillside overlooking an expansive terrain boasting prairie, pine and fir tree fields offered a great experience for all who attended. Participants were welcomed in the Orchard Shop and Farmhouse Kitchen along with being supplied with the farm's famous apple cider doughnuts each day. The Kuipers family owns a fleet of excavation equipment and is very willing to help establish defensive positions to allow for excellent assault scenarios in the hope that this location will become a premier WWII era event.

Kuipers Farm 2012 Events Videos

HRS 14 Kuipers Farm Part 1 - Camps
http://www.youtube.com/watch?v=XeSzauicF2U

HRS 14 Kuipers Farm Part 2 - Battle
http://www.youtube.com/watch?v=wGYvU0zmBY0

WW2 Days 2013

September 6-8

Dellwood Park, Lockport IL

Presented by: Lockport Community Park District

And 5.Kp Großdeutschland

World War 2 days in Lockport is returning for its third year after a great 2012 event. This year we will be even larger than last with the addition of many more activities and events both for the re-enactors and the public.

All ETO impressions are welcome, although this year will return our focus to the Western Front for the main field battles, with some smaller scale Eastern Front and Early War battles to take place as well.

Due to the huge popularity of this event in the local community, the Park District and the Event hosts have had the opportunity to add some new activities to the schedule.

New for 2013

The Park District has worked with the Experimental Aircraft Association to change the date of their annual fly in to Lewis University Airport to coincide with the WW2 Days event.

What does this mean? This means that the EAA's B-17 Aluminum Overcast will be doing fly overs, along with many other WW2 vintage aircraft. As part of the event the Park District will be offering a FREE shuttle service between the event at Dellwood Park and the airport, so you will be able to see both events! The EAA will be selling rides in the B-17, see the event website for details.

Watch this Video of a flight in the EAA's B-17 Aluminum Overcast
http://www.youtube.com/watch?v=vDhOYDKzqNI

Also new for 2013 will be a charity 5k run for the Wounded Warrior Project on Thursday September 5th. This 5k will be followed by a live concert in the band shell for all participants and veterans. Registration and details will be on the event website.

Friday Evening the local Moose Lodge will be hosting a Spaghetti dinner for ALL re-enactors.

More activities are still being added, check the event website http://www.lockportwwii.com and Facebook page https://www.facebook.com/groups/282323608542064/ for further details.

Returning for 2013

Just as the last 2 years the event will feature 2 main battles a day on a large battlefield with pre-constructed fortifications, foxholes, and buildings. We will also do a twilight battle on Saturday which will be a different theme than the main field battles. All battles will again include armor and heavy weaponry, this year 2nd Panzers Hetzer will be making its debut at this event. The Military Veterans Museum has been invited to bring there T-34-85 Tank.

We will be having a battlefield work day on August 29th to build buildings, emplacements, and fortifications, any help is appreciated.

The Park district is once again bussing in WW2 veterans and hopes for similar attendance as last year, with around 40 vets attending. It is a truly unique experience to visit the VIP tent with these veterans.

Dellwood Park, Lockport IL

WW2 Days 2013

Event Schedule

Saturday, September 7th

9:00 a.m. – Park Opens
9:15 a.m. – Flag Raising by VFW Post 5788
10:15 a.m. – WWII Weapons Demo
11:30 a.m. – Battle
1:00 p.m. – Andrews Sisters Performance
2:00 p.m. – Homefront Presentation
2:30 p.m. – WWII Vet Procession to Battlefield
3:00 p.m. – Battle with Pyrotechnics
4:00 p.m. – Tribute to WW2 Vets
4:30 p.m. – Music and Dance Lessons, Live Band
6:30 p.m. – Dusk Battle (Eastern Front or 1939)
7:15 p.m. – USO Show, Live Band

Sunday, September 8th

9:00 a.m. – Park Opens
9:15 a.m. – Flag Raising by VFW Post 5788
10:15 a.m. – WWII Weapons Demo
11:30 a.m. – Battle
12:30 p.m. – WW2 Girls Baseball Demo
1:00 p.m. – Andrews Sisters Performance
3:00 p.m. – Battle with Pyrotechnics
4:00 p.m. – Tribute to Veterans and Servicemen

For more event information, re-enactor registration, and directions please visit the event website. http://www.lockportwwii.com
Or contact Rich Russo: vizsla25@sbcglobal.net

2012 Events Videos

WW2 Battle Introduction
http://www.youtube.com/watch?v=vHPUPCa_vzg

Invasion of Poland
http://www.youtube.com/watch?v=WROFX8daimM

Invasion of Russia
http://www.youtube.com/watch?v=zRiSw6p7QR8

WW2 Battle France
http://www.youtube.com/watch?v=TwI13FLfY2U

WW2 Allied Army Weapons Demonstration
http://www.youtube.com/watch?v=sbwVqJnajqk

WW2 German Army Weapons Demonstration
http://www.youtube.com/watch?v=Bz7KBbhXIk8

Public WW2 Displays
http://www.youtube.com/watch?v=EB_BBOXDdx4

Andrews Sisters Performance
By The Legacy Girls

OFFICIAL INFO

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HOW TO ATTEND a Board Meeting:

Monthly teleconference Board meetings are open to all members. Members do not need to register for the meetings nor do they need to contact the president or any board members.

They need to contact their unit commander for the call information to include phone number and password. This creates less of a choke point and gets the information out to more with less hassle.

The monthly board meeting time/dates will change to accommodate the board members time schedules. Please contact your unit commander for more information regarding date, time, and log on information.

All of the HRS Board Meeting Minutes from the past five years are posted on the HRS WEB Site.
Current HRS By-Law call for these official business reports to be re-published here in The Edge.
See the BOD Minutes Page at http://WorldWarTwoHrs.org/Business.htm for past meeting Minutes

W W I I H R S Minutes

2013 Minutes January February March April May June July August September October November December	**2012 Minutes** January February March April May June July August September (canceled) October November December (No quorum)
2011 Minutes January February March April May June July August September October November December	**2010 Minutes** January February March April May June July August September October November December
2009 Minutes January February March April May June July August September October November December	**2008 Minutes** January February March April May June July August September October November December

WWII HISTORICAL RE-ENACTMENT SOCIETY Inc.

About Us

The World War Two Historical Re-enactment Society is an organization of over 1200 men and women members from coast to coast, as well as Canada and Europe. Our mission is to bring the history of World War Two to life with public displays, simulated battles, participation in parades, and a variety of other community activities.

The society strives to honor and preserve the memory of those who served in World War Two, as well as preserve the artifacts of that period.

Our members carry out a wide range of historical impressions, including those of The United States, the United Kingdom, the Soviet Union, Poland, and Germany.

Our focus is entirely on the military history of World War Two. We have no sympathy for the ideology of Nazism or fascism. Such beliefs are not welcome here.

If this exciting and rewarding hobby appeals to you, please consider joining us. Our hobby is dependent upon the talents and enthusiasm of its members and there is always room for new interest! Please contact any of our board members today for more information.

The

www.WorldWarTwoHRS.Org

WEB Site Is Hosted by Socket.NET

MEETING MINUTES

Board Meeting 30 May 2013

ROLL CALL:

Position	Name	Present
President:	Jonathan Stevens (acting)	Yes
Vice President:	Jonathan Stevens	YES
Treasurer:	Charles Gallagher	No
Secretary:	Eddie Mayton	YES
Allied Representative:	Ron Kapustka	YES
Commonwealth Rep:	Bryce Seyko	No
Axis Representative:	Doug Loge	YES
Newsletter Editors:	Jeff Skender	YES

HRS Members Present
Tim Scoutan, Allen Jones, Andy Rab, Wayne Mcully. Doug Testenson, Holly Branton, Carlos Ramirez. Dave Weakly, Mary Shay

Reading of the April, 2013 minutes: The April, 2013 meeting minutes were read by Eddie Mayton. A motion was made by Doug Loge to approve the minutes as read, which was seconded by Jon Stevens. A vote was taken and the Minutes were approved as read.

Old Business
Regional Event Funding- Tabled for June Meeting

New Business

Unit Charters

New Charters:

7th Infantry Division, still revising the charter will be submitted when done, tabled for next month.

USO Camp Shows, Andy explained the purpose of the Unit. Doug asked about number of Members and possibly combining with the current USO. Andy explained the difference. No further questions and charter is passed to the S&A committee.

Midwest Women's Historical Baseball League- Mary Shay Discussed the purpose of the unit. Replica uniforms and games will be played at events with enough people to play. Everything will be period Correct. Doug asked about insurance. The issue will be looked into and the charter will be sent to the S&A committee. Several other questions were asked by Jon and Andy.

Probationary Charters:

82nd Airborne Division, 307th Airborne Engineer Battalion; Information still needed in Jon's opinion. It was suggested that people did not join last year and they are not meeting HRS standards and not showing up to events. It was suggested to just defunct them. Jon suggested waiting on the 327th unit. A discussion was held. Ron Kapustka suggested putting them on probation. This unit was chosen to be defunct. A vote was held and the Unit was voted to be defunct.

5th Inf Div; This unit was chosen to be defunct. A vote was held and the Unit was voted to be defunct.

101st Abn, 321st Glider Field Artillery Battalion; this unit was charted until next month.

Defunct Charters:
American Red Cross Welfare Unit, wants to dissolve into another unit a report will be provided by next meeting.

Treasurer Report
Charlie was not present and Jon provided some numbers.
$3,896.72 PNC Checking
$47,920.20 PNC Savings
$1,754.20 Wells Fargo
$53,571.71 Total

Secretary Report
Card situation discussed

Commonwealth Report
Bryce gone

Allied Report
Nothing to report

Axis Report
The forum is defunct. It's not used but comments and suggestions are appreciated.

Edge Report
June edge is published nothing else to report.

Business Manager Report
David not present, tabled.

Committee Reports
S&A- vehicle things are being discussed.

Unit Commanders- not much activity

Vehicle – HRS vehicle listing

Legislative Committee - nothing

Grant Proposal

Doug has yet to receive a response. An overview was provided. A large discussion was held about the grants and what to do about the money. There was a bit of confusion. Many people had problems with this discussion. Doug wanted a vote despite people having large reservations and wanted more discussion on the topic. Doug Loge motioned, Ron Kapustka seconded. A vote was held and it was voted down in its current form. This will have further discussion over the next 30 days and will be brought up for another vote. Information needs put out so that the membership has more information on it. Ron Kapustka and Eddie Mayton suggested emailing it to unit commanders to get more people talking about it.

Dakota City Event Funding
Same as last month.

Open Comments
None

Motion to end made by Ron Kapustka and seconded by Eddie Mayton.
A vote was held and the meeting was adjourned at 5/30/2013 9:20:39 PM.

Military Veterans Museum Brings out its T-34-85 Tank To it's First Reenactment

Museum Volunteers S. Van Linn, D. Kersztyn, and A. Allen (left to right) pose in front of the T-34-85 that they operated at the Peoria WWII reenactment. This is the first reenactment this T-34-85 Tank has been at in about 20 years.

The Military Veterans Museum is in Oshkosh, Wisconsin, about 1.5 miles south of the EAA Museum. 4300 Poberezny Road Oshkosh, WI 54902.

Where did this T-34 Tank come from?

It is the same tank you saw at Iola quite a few years ago.
The below article is from the December 23, 1991 issue of People Magazine.
==========
All Bob Costa wanted for his Wisconsin Military Museum was a Soviet Tank. All he had to do, it turned out, was ask Mikhail Gorbachev.

"THE SOVIET T-34 TANK LUMBERED MENACINGLY down the ramp of the freighter Aleksandr Starostenko. Its turret rotated until the 85-mm cannon pointed toward town. For Maj. Alexander Vorobijov, it was a triumphal moment. They would be proud of him in Moscow. He had fulfilled his mission. He had brought his tank to Milwaukee (Wisconsin).

No, this is not the opening of some Tom Clancy-ish tale of superpower collision. It actually took place Oct. 24 (1991) on a Milwaukee dock, right here in the U.S.A. And it happened because Bob Costa, 53, asked Mikhail Gorbachev if he wouldn't mind sending him a tank.

Costa, a father of two, works as a warehouseman for Roundy's, a Pewaukee, Wis., food distributor. But military history is his obsession. In helping start the Wisconsin Military History Museum—due to open in the spring of 1993—Costa estimates he has spent $80,000 of his own money over the past 10 years.

In 1989 Costa read about the T-34, considered by many the premier tank of World War II. He decided the museum should have one. But where to get it? Where, indeed? Costa contacted Gorbachev in May 1990. "We would display this tank with honor," he wrote. Gorby—in a message relayed through the Soviet Embassy in Washington three months later—said, "Da!"

"It's unbelievable," says Costa, "that an average person can make a request of the President of the Soviet Union and he'd take time to approve it."

Back in the U.S.S.R., Major Vorobijov was given the job of finding a tank, finally locating one—which had seen action against the Japanese in the closing days of the war—in an obsolete weapons yard. He had it refurbished, then accompanied it on its journey, by freighter, from St. Petersburg to Milwaukee. His pride and joy was briefly put on display at a local Pick 'N' Save grocery, owned by Roundy's, and will spend the next year at Fort Knox, Ky. In 1993 it will return to Wisconsin, as a symbol of a hot war fought 50 years ago—and of a cold war that has finally ended."
==========
Unfortunately, his museum never panned out so he is giving it to our museum.

On 4 November 2012, Military Veterans Museum and Education Center took possession of the T-34-85 tank.

4 November 2012 A M984 HEMTT wrecker pulls the T-34-85 from its storage spot of over 15 years.

Military Veterans Museum PHOTOS

4 November 2012

1158th Transportation Company personnel stand in front of the T-34-85 that they loaded onto their M-1000 HET trailer.

1158th Transportation Company personnel stand in front of the T-34-85 after a successful mission.

The T-34-85 in its new home at the Military Veterans Museum and Education Center in Oshkosh, WI.

The Military Veterans Museum was started in 1990 by five WWII Vets that didn't want to see their military service forgotten. For years the Museum was in an Oshkosh mall by the Fox River. When it changed hands the new management proposed terms the Museum could not agree on. Therefore Military Veterans Museum vacated the spot and had most all items in storage for the last 5+ years while gathering funds for the new building. The Museum tried to show the vehicles as much as possible to stay in the public eye during this trying time.

T-34-85 first run at Military Veterans Museum

After 4 months of hard work from Museum volunteers, the T-34-85 had its first run on March 31, 2013.

On 21 May 2013 Military Veterans Museum Volunteers took the T-34 for a test run
In preparation for its first reenactment of the 2013 season on June 1st in Peoria, IL.

The two things that were everywhere you turned in Peoria, ILL were **Mud**
And people interested in the T-34-85 Tank.

On 1 June 2013 in Peoria, ILL Military Veterans Museum volunteer D. Kersztyn
Is video-interviewed by the WW2 HRS Press Corps (Heinz Thiel)
Watch part of the interview here
http://www.youtube.com/watch?v=vm3_WV1MKW0

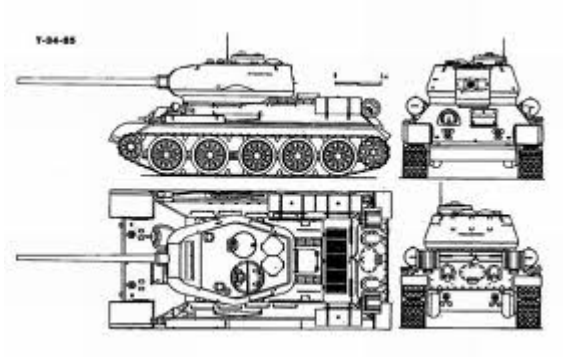
Without the support of infantry tanks are easy targets for the enemy.
Here German re-enactors take the Military Veterans Museum's tank crew captive and capture the tank for their own use.

German re-enactors pose with Military Veterans Museum's T34-85 tank and crew.

A T-34-85 tank on display at Musée des Blindés in April 2007

The Soviet medium T-34 Tank was Produced from 1940 to 1958

Number built: T-34s= 35,120.... T-34-85 = 48,950
Weight: T-34 = 26.5 tons, T34-85 = 32 Tons
Crew: 4
Main Armament: T34 = 76.2mm Gun T34-85 = 85 mm Gun
Ammunition: T34 = 100 rounds T34-85 = 60 rounds
Secondary Armament: 2 × 7.62 mm machine guns
Engine: 500-hp 38.8-L V12 Diesel
Operational Range: 250 miles
Fuel: 215 U.S. gallons
Speed: 33 mph



From Wikipedia, the free encyclopedia

The T-34 was a Soviet medium tank produced from 1940 to 1958, which had a profound and permanent effect on the field of tank design internationally, as well as armoured unit tactics. When it first appeared on the battlefield in 1941, German tank generals von Kleist and Guderian called it "the deadliest tank in the world." The T-34's 76.2 mm (3 in) high-velocity gun was the best tank gun in the world at that time; its heavy, sloped hull armour was impenetrable by standard antitank weapons; and it was very agile. It has often been described as the most effective, efficient and influential design of World War II, although its armour and armament were surpassed by later tanks of the era. It was the mainstay of Soviet armoured forces throughout World War II, and widely exported afterward. It was the most-produced tank of the war, and the second most-produced tank of all time. In 1996, T-34 variants were still in service in at least 27 countries.

At its introduction, the T-34 was the tank with the best balance of firepower, mobility, protection and ruggedness, although its battlefield effectiveness suffered from the unsatisfactory ergonomic layout of its crew compartment, scarcity of radios, and poor tactical employment. The two-man turret crew arrangement required the commander to aim and fire the gun, an arrangement common to many tanks of 1940; this proved to be inferior to the three-man (commander, gunner, and loader) turret crews of German Panzer III and Panzer IV tanks. However, according to analysis at the Aberdeen Proving Grounds of a T-34 sent over by the Soviets in 1942, the T-34 had the best optics of any tank so far analyzed there. In early 1944, the improved T-34-85 was introduced, with a more powerful 85 mm (3.35 in) gun and a substantially improved three-man turret design with heavier armour.

The T-34 was the most important weapon fielded by the Red Army in World War II. Sloping armour increased protection, the V-2 diesel engine used a less flammable fuel, the Christie suspension was fast on rough terrain, and wide tracks gave low ground pressure for good mobility in mud and snow, although reliability and manufacturing issues dogged the wartime production models. The 76.2 mm main armament remained effective to decreasing degrees through the end of the war; the improved 85 mm gun was among the world's best in early 1944, and ensured that the overall T-34 design would remain competitive with German designs.

The T-34 continued to give the Red Army a critical advantage in the war, even after its technological advantages had been equaled and surpassed. The design and construction of the tank were continuously refined during the war to enhance effectiveness and decrease costs, allowing steadily greater numbers of T-34s to be fielded despite heavy losses. The chassis was employed in the successful SU-85 and SU-100 tank destroyers, as well as the SU-122 self-propelled howitzer. By the war's end in 1945, the T-34 had replaced many light and heavy tanks in service, and accounted for the majority of Soviet tank production. Its evolutionary development led directly to the T-54/55 series of tanks, built until 1981 and still operational as of 2013.

Pre-production prototype A-34 with a complex single-piece hull front.

Type	Production (June 1941 – May 1945)
Light tanks	14,508
T-34	35,119
T-34-85	29,430
KV and KV-85	4,581
IS	3,854
SU-76	12,671
SU-85	2,050
SU-100	1,675
SU-122	1,148
SU-152	4,779

Development and production

Political pressure came from conservative elements in the army to redirect resources into building the older T-26 and BT tanks, or to cancel T-34 production pending completion of the more advanced T-34M design. This political pressure was brought to bear by the developer of the KV-1 and IS-2 tanks, which were in competition with the T-34.

Resistance from the military command and concerns about high production cost were finally overcome by anxieties about the poor performance of Soviet tanks in the Winter War in Finland, and the effectiveness of German tanks during the Battle of France. The first production T-34s were completed in September 1940, completely replacing the production of the T-26, and T-28.

T-34 tanks headed to the front.

After Germany's surprise invasion of the Soviet Union on June 22, 1941 (Operation Barbarossa), the Wehrmacht's rapid advances forced the evacuation of tank factories to the Ural Mountains, an undertaking of unprecedented scale and haste that drove Soviet armoured forces, factory workers and rail crews to the limits of human endurance. Alexander Morozov personally supervised the evacuation of all skilled engineers and laborers, machinery and stock from KhPZ to re-establish the factory at the site of the Dzherzhinski Ural Railcar Factory in Nizhny Tagil, renamed Stalin Ural Tank Factory N.183; Morozov's bureau redesigned components of the T-34 to make production as efficient as possible. The Kirovsky Factory, evacuated just weeks before the Germans surrounded Leningrad, moved with the Kharkiv Diesel Factory to the Stalin Tractor Factory in Chelyabinsk, soon to be nicknamed Tankograd ("Tank City"). The workers and machinery from Leningrad's Voroshilov Tank Factory N.174 were incorporated into the Ural Factory and the new Omsk Factory N.174. The Ordzhonikidze Ural Heavy Machine Tool Works (UZTM) in Sverdlovsk absorbed workers and machines from several small machine shops in the path of German forces. While these factories were being moved at record speed, the industrial complex surrounding the Dzherzhinski Tractor Factory in Stalingrad continued to work double shifts throughout the period of withdrawal (September 1941 to September 1942) to make up for production lost, and produced 40% of all T-34s during the period. As the factory became surrounded by heavy fighting in the Battle of Stalingrad in 1942, the situation there grew desperate: manufacturing innovations were necessitated by material shortages, and stories persist that unpainted T-34 tanks were driven out of the factory directly to the battlefields around it. Stalingrad kept up production until September 1942.

Polish T-34 Model 1943 in Poznań, Poland.
The model 1943's hexagonal turret distinguishes it from earlier models.

Barring this interruption, the only changes allowed on the production lines were to make tank production cheaper and simpler. New methods were developed for automated welding and hardening the plate, including innovations by Prof. Evgeny Paton. The design of the 76.2 mm F-34 gun Model 1941 was reduced from the earlier model's 861 parts to 614. Over two years, the unit production cost was reduced from 269,500 rubles in 1941, to 193,000, and then to 135,000. Production time was cut in half by the end of 1942, even though most experienced factory workers had been sent to the battlefield and replaced by a mixed workforce that included 50% women, 15% boys and 15% invalids and old men. T-34s, which had been "beautifully crafted machines with excellent exterior finish comparable or superior to those in Western Europe or America", were much more roughly finished; this did not compromise the mechanical reliability however.

In 1942 and 1943 the Red Army emphasized rebuilding the losses of 1941 and improving tactical proficiency. The T-34's design was 'frozen' for the most part; the rate of production increased rapidly and, typically, design improvements were focused on the production aspect. Soviet designers were aware of certain design deficiencies, but most of the desired remedies would have slowed tank production and were not implemented. A few improved features, however, were provided. A less cramped hexagonal turret was introduced in 1942, that had been derived from the abandoned T-34M project; because it used flat armour plates rather than curved ones, it was actually faster to produce. Subsequently, a commander's cupola for all-round vision was added. Limited rubber supplies led to the adoption of steel-rimmed road wheels, and a new clutch was added to the improved five-speed transmission and engine, improving reliability and making the driver's duties a less difficult physical challenge.

In 1943, T-34 production had reached an average of 1,300 per month; this was the equivalent of three full-strength Panzer divisions. The T-34 came to symbolize the effectiveness of the Soviet counterattack against the Germans. By the end of 1945, over 57,300 T-34s had been built: 34,780 T-34 tanks in multiple variants with 76.2 mm guns in 1940–44, and another 22,559 T-34-85s in 1944–45.

The T-43 (right), next to a T-34 Model 1943

T-43 project

After German tanks with the 75 mm (2.95 in) gun were fielded in 1942, Morozov's design bureau began a project to design an advanced T-43, aimed at increasing armour protection while adding modern features like torsion-bar suspension and a three-man turret. The T-43 was intended to be a universal tank to replace both the T-34 and the KV-1 heavy tank, developed in direct competition with the Chelyabinsk heavy tank design bureau's KV-13 project. In late 1942 the Soviets encountered the new German Tiger I tank and, in July 1943, the Panther tank. Experience at the Battle of Kursk and reports from front-line commanders indicated that the T-34's 76.2 mm gun was now inadequate. An existing 85 mm (3.35 in) anti-aircraft gun was identified as effective against the new German tanks, and could be adapted to tank use. Unfortunately, the T-43 prototype's heavier armour was still not proof against the Tiger's 88 mm gun, and its mobility was found to be inferior to the T-34's, even before installing a heavier 85 mm gun. Although it shared over 70% of its components with the T-34, a commitment to manufacturing it would have required a significant slow-down in production. Consequently, the T-43 was cancelled.

T-34-85 with Polish Army markings

T-34-85

The Soviet command then made the difficult decision to retool the factories to produce an improved version of the T-34, with a turret ring enlarged from 1,425 mm (56 in) to 1,600 mm (63 in), allowing a larger turret to be fitted. The T-43's turret design was hurriedly adapted to fit the T-34. This was seen as a compromise between advocates for the T-43, and others in the high command who wanted to continue to build as many 76 mm armed T-34s as possible, without interruption. The resulting new T-34-85 tank had a much better gun and finally, a three-man turret with radio (which had previously been in the hull). Now the commander needed only to command the tank, leaving the operation of the gun to the gunner and the loader.

Although a T-34-85 was still not a match for a Panther, the improved firepower made it much more effective than before. The decision to improve the existing design instead of tooling up for a new one allowed the Soviets to manufacture tanks in such numbers that the difference in capabilities could be considered insignificant. In May 1944, the Wehrmacht had only 304 Panthers operating on the Eastern Front, while the Soviets had increased T-34-85 production to 1,200 tanks per month.

Following the end of the war, a further 2,701 T-34s were built prior to the end of production.

Under license, production was restarted in Poland (1951–55) and Czechoslovakia (1951–58), where 1,380 and 3,185 T-34-85s were made, respectively, by 1956.

Altogether, as many as 84,070 T-34s are thought to have been built, plus 13,170 self-propelled guns built on T-34 chassis.


T-34 Model 1942 s ekranami(Russian for "with screens"), With appliqué armor welded to the hull, near Leningrad, 1942

Design

The initial T-34 version had a 76.2 mm gun, and is often called the T-34/76 (originally a World War II German designation). In 1944, a second major version began production, the T-34-85 (or T-34/85), with a larger turret mounting a larger 85 mm gun. The T-34 had the coil-spring Christie suspension of the BT, using a "slack track" tread system with a rear-mounted drive sprocket and no system of return rollers for the upper run of track, but dispensed with the heavy and ineffective convertible drive. It had well-sloped armour, a relatively powerful engine and wide tracks.

The T-34, like many other contemporary tanks, required the tank commander to aim and fire the gun while having to coordinate with other tanks and potentially also being a platoon commander. Contemporary German medium tanks (but not light tanks) had three-man turret crews that divided the work between commander, gunner and loader. This problem, which had been recognized before the war, was to be corrected with the addition of the upgraded three-man turret on the T-34-85 in 1944. Some tanks also had appliqué armour of varying thickness welded on to the hull and turret. Tanks thus modified were called s ekranami (Russian: с экранами, "with screens").

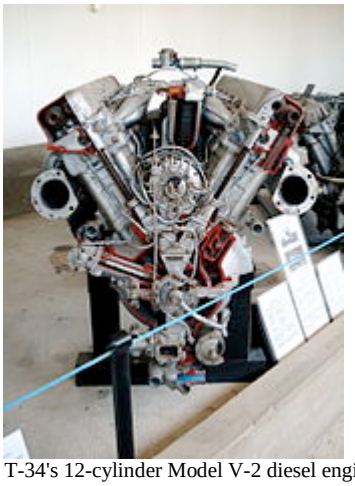
The US conclusions regarding the mechanical reliability and manufacturing of the 1941 T-34 version tested at the Aberdeen Proving Grounds were as follows: although in 1941, the T-34 could engage any German tank effectively, it did suffer from certain severe mechanical problems. For example, engines would grind to a halt from dust and sand ingestion as the original "Pomon" air filter was almost totally ineffective and had insufficient air-inflow capacity, starving the combustion chambers of oxygen, lowering compression and thereby restricting the engine from operating at full capacity — this was later partially remedied by the addition of the "Cyclon" filters on later models — and transmission and clutch assemblies were prone to serious mechanical problems.

Firepower

The T-34's 76.2 mm (3 in) gun with anti-tank ammunition was able to penetrate any German tank's armour at normal combat ranges. The F-34 gun firing APCR shell had the capability to penetrate 92 mm of armour at 500m. The best German tanks of 1941, the Panzer IV Ausf F had 50 mm frontal armour and Panzer III had only 50 mm. This gun also fired an adequate high explosive round.

The gun sights and range finding for the T-34's 76.2 mm F-34 L/42.5 gun, either the TMFD-7 or the PT4-7, were rather crude, especially compared to those of their German adversaries, affecting accuracy and the ability to engage at long ranges. German soldiers found that the Soviet armour attacked in rigid formations and took little advantage of terrain. As a result of the T-34's two man turret, weak optics and poor vision devices, Germans noted:
T-34s operated in a disorganized fashion with little coordination, or else tended to clump together like a hen with its chicks. Individual tank commanders lacked situational awareness due to the poor provision of vision devices and preoccupation with gunnery duties. A tank platoon would seldom be capable of engaging three separate targets, but would tend to focus on a single target selected by the platoon leader. As a result T-34 platoons lost the greater firepower of three independently operating tanks.

The Germans noted the T-34 was very slow to find and engage targets while the Panzers could typically get off three rounds for every one fired by the T-34. The 85 mm (3.35 in) ZiS gun of the T-34-85 greatly increased firepower over the previous 76.2 mm F-34 cannon. The length of the 85 mm gun barrel (4.645 meters) made it necessary for crews to be careful not to plough it into the ground on bumpy roads or in combat; A.K. Rodkin commented: "the tank could have dug the ground with it in the smallest ditch. If you fired it after that, the barrel would open up at the end like the petals of a flower." Standard practice when moving the T-34-85 cross-country in non-combat situations was to fully elevate the gun, or reverse the turret.



The T-34's 12-cylinder Model V-2 diesel engine
At the Finnish Tank Museum in Parola

Mobility

A long road march could be a punishing exercise for a T-34 tank at that time. When in June 1941 D.I. Ryabyshev's 8th Mechanized Corpsadvanced towards Dubno, the corps lost half of its vehicles. A.V. Bodnar, who was in combat in 1941–42, recalled:

From the point of view of operating them, the German armoured machines were almost perfect, they broke down less often. For the Germans, covering 200 km was nothing, but with T-34s something would have been lost, something would have broken down. The technological equipment of their machines was better, the combat gear was worse.

The Soviet wartime experience is reinforced by US testing at the Aberdeen Proving Grounds regarding the Christie suspension and the tracks:

The Christie's suspension was tested long time ago by the Americans, and unconditionally rejected. On our tanks, as a result of the poor steel on the springs, it very quickly broke and as a result clearance is noticeably reduced. The deficiencies in our tracks from their viewpoint results from the lightness of their construction. They can easily be damaged by small-calibre and mortar rounds. The pins are extremely poorly tempered and made of a poor steel. As a result, they quickly wear and the track often breaks. The tracks were the most frequently repaired part.

A.V. Maryevski later remembered: The caterpillars used to break apart even without bullet or shell hits. When earth got stuck between the road wheels, the caterpillar, especially during a turn – strained to such an extent that the pins and tracks themselves couldn't hold out.

Ergonomics and reliability

The use of poorly machined, low quality steel side friction clutches and the T-34's outdated and poorly manufactured transmission meant frequent mechanical failure occurred and that they "create an inhuman harshness for the driver".

The loader also had a difficult job due to the lack of a turret basket (a rotating floor that moves as the turret turns), although the same fault was present on all German tanks prior to the Pzkw-IV. The floor under the T-34's turret was made up of ammunition stored in small metal boxes, covered by a rubber mat. There were nine ready rounds of ammunition stowed in racks on the sides of the fighting compartment. Once these initial nine rounds had been used, the crew had to pull additional ammunition out of the floor boxes, leaving the floor littered with open bins and matting and affecting their performance.

The commander fought the tank at a disadvantage; the forward-opening hatch and lack of turret cupola forced him to observe the battlefield through a single vision slit and traversable periscope. German commanders liked to fight "heads-up", with their seat raised and having a full field of view - in the T-34/76 this was impossible. Russian veterans condemned the turret hatches of early models. Nicknamed pirozhok (stuffed bun) because of its characteristic shape, it was heavy and hard to open. The complaints of the crews urged the design group led by Alexander Morozov to switch in August, 1942 to using two hatches in the turret.

Interior of a T-34/85 viewed from the driver's hatch, showing the ammunition boxes on which the loader had to stand in the absence of a turret basket.
In the foreground is the driver's seat.
Levers for radiator flaps can be seen on the firewall.

Although in 1941, the T-34 could engage any German tank effectively, it did suffer from certain severe mechanical problems. The US conclusions regarding the mechanical reliably and manufacturing of the 1941 T-34 version tested at the Aberdeen Proving Grounds were as follows: Judging by samples, Russians when producing tanks pay little attention to careful machining or the finishing and technology of small parts and components, which leads to the loss of the advantage what would otherwise accrue from what on the whole are well designed tanks. Despite the advantages of the use of diesel, the good contours of the tanks, thick armor, good and reliable armaments, the successful design of the tracks etc., Russian tanks are significantly inferior to American tanks in their simplicity of driving, maneuverability, the strength of firing (reference to muzzle velocity), speed, the reliability of mechanical construction and the ease of keeping them running.

A lack of properly installed and shielded radios – if they existed at all – restricted their operational range to under 10 miles. Similarly, the turret drive had poor reliability as suggested by US testing at the Aberdeen proving ground in 1942: The main weakness [of a two-men turret of T-34 Model 1941] is that it is very tight. The Americans couldn't understand how our tankers could fit inside during a winter, when they wear sheepskin jackets. The electrical mechanism for rotating the turret is very bad. The motor is weak, very overloaded and sparks horribly, as a result of which the device regulating the speed of the rotation burns out, and the teeth of the cogwheels break into pieces. They recommend replace it with a hydraulic or simply manual system.

Armour

The T-34 was one of the most heavily-armoured tanks in the world in 1941. The sloped armour shape provided maximum protection, at the cost of a cramped interior. The armor suffered from build quality issues, especially of plate joins and welds, as well as the use of soft steel combined with shallow surface tempering. The following was noted by US engineers at the Aberdeen Proving Grounds: "In a heavy rain lots of water flows through chinks/cracks, which leads to the disabling of the electrical equipment and even the ammunition".

In one wartime account of the effectiveness of the T-34's armour, a single T-34 came under heavy fire upon encountering one of the most common German anti-tank guns at that stage of the war time: "Remarkably enough, one determined 37 mm gun crew reported firing 23 times against a single T-34 tank, only managing to jam the tank's turret ring." Although the German anti-tank gun crew managed to score 23 hits, the T-34 referred to did not manage to hit the AT gun once.

As the war progressed, the T-34-85 became an increasingly easy target for the more powerful 75 mm and 88 mm armed tanks; weapons could even pierce the turret relatively easily. The turret armour of the T-34-85, which was cast, was softer than the cold-rolled armour plate of the other parts of the tank and according to one source, it offered poor resistance even to the high-velocity 37 mm shells of automatic AA guns at close range.

German training mockup of a T-34
Built over a captured Polish TK-3 tankette

Combat in June 1941

The appearance of the T-34 in the summer of 1941 proved a psychological shock to German soldiers, who had expected to face an inferior Soviet enemy. For the most part these expectations were accurate, but the T-34 was a notable exception, superior to any tank the Germans then had in service; the diary of Alfred Jodl seems to express surprise at the appearance of the T-34 in Riga. Initially the Wehrmacht had great difficulty destroying T-34 tanks in combat, as standard German anti-tank weaponry proved ineffective against the T-34's heavy, sloped armour. The high-velocity 76 mm gun was also superior and greatly feared, earning the nickname "Crack-Boom" from German tank crews, reflecting the sound of the gun firing ("crack"), immediately followed by the destruction of its target ("boom"). The Red Army had at the start of hostilities 967 T-34 tanks and 508 KV tanks concentrating them into five of their twenty-nine mechanized corps.

One of the first known encounters against a T-34 involved the 17th Panzer Division near the Dniepr River; the T-34 crushed a 37 mm anti-tank gun, destroyed two Panzer IIs, and left nine miles of destruction in its wake before a howitzer destroyed it at close range. The combat statistics for 1941 show that the Soviets lost an average of over seven tanks for every German tank lost. The Soviets lost a total of 20,500 tanks in 1941, approximately 2,300 of them T-34s and over 900 heavy tanks (mostly KVs).

The Soviet corps that were equipped with these new tanks had within weeks had lost most of their T-34 and KV tanks, although German reports did not note such a massive elimination in combat. At least half the first summer's total tank losses came about due to mechanical failure, lack of fuel or abandonment rather than direct fire from German tanks or artillery. There was a shortage of repair equipment and recovery vehicles, and it was not uncommon for early T-34s to enter combat carrying a spare transmission on the engine deck. Improvements were made throughout production, with a new gearbox in 1942, as well as many individually minor updates. Even during the Battle of France, the Germans' 37 mm PaK 36 anti-tank gun had earned the nickname "Door Knocker" among German crews, due to its inability to penetrate anything but the lightest tank armour, though it worked very well at announcing the presence of the gun crew. The PaK 36 proved to be completely ineffective against the T-34, earning the contemptuous nickname "Door Knocker" from German troops; the Germans were forced to deploy 105 mm field guns and 88 mm anti-aircraft guns in a direct fire role to stop them.

There was a shortage of repair equipment and recovery vehicles. Other key factors diminishing the initial impact of T-34s on the battlefield were the poor state of leadership, tank tactics, and crew training; these factors were consequences of Stalin's purges of the Soviet officer corps in the late 1930s, particularly the Great Purge of 1937, reducing the army's morale and efficiency. This was aggravated by the loss of the best-trained personnel during the Red Army's disastrous defeats in 1941. Typical crews went into combat with only their basic military training plus seventy-two hours of classroom instruction; according to armour historian Steven J. Zaloga,

During 1941 about a quarter of the troops had no military training whatsoever. Most commanders felt lucky to have T-34 drivers with three to five hours instruction ... The tactics were also related to poor training. The individual tank commanders lacked situational awareness ... The enormous shortcomings in training and tactics demonstrated by Red Army tank units rendered the T-34 a very blunt sword. The lack of recovery vehicles and spare parts for the KV and T-34, combined with production defects and inept use by poorly trained crews.

Early-war T-34s proved to have effective armour, firepower, and mobility, drawbacks include poor crew comfort, vision devices, and internal layout. In 1941, the thick sloped armour could defeat all German anti-armour weapons except the towed 88 mm flak guns at normal combat ranges. By mid-1942, the T-34 had become vulnerable to improved German weapons and remained so throughout the war, but its armour protection was equal or superior to contemporary tanks such as the M4 Sherman or Panzer IV.

Burning T-34, 1941

In terms of firepower, the T-34's 76 mm (3 in) gun with anti-tank ammunition could penetrate any 1941 German tank with ease. This gun also fired an adequate high explosive round. In 1943, the 76 mm could not penetrate the Panther's hull front armour and was out-ranged by the Panther's long 75 mm and the Tiger's 88 mm. The introduction of the Soviet 85 mm gun in 1944 did not make the T-34-85 equal in firepower, but could penetrate the armour of both Panthers and Tigers at up to 500 m (550 yd); the German 88 mm could destroy a T-34 at 500 m (550 yd) or more.

In terms of mobility, in the final years of war, the T-34's wide track, good suspension and powerful engine gave it unparalleled cross-country performance, though poor ergonomics, reliability, and crew comforts negated much of this advantage. First-generation German tanks, although more reliable, could not keep up cross country.

Visibility from the driver's seat was also poor, which affected the driver's ability to see folds in the ground as well, or have as wide a range of vision as in some other tanks.
The loader also had a difficult job due to the lack of a turret basket (a rotating floor that moves as the turret turns).

Other key factors diminishing the initial impact of T-34s on the battlefield were the poor state of leadership, tank tactics, and crew training, a consequence of Stalin's purges of the Soviet officer corps in the late 1930s, aggravated by the loss of the best-trained personnel during the Red Army's disastrous defeats in 1941. Many crews went into combat with only their basic military training plus seventy-two hours of classroom instruction. These problems were exacerbated by the T-34's lack of radios during the early part of the war, making it practically impossible to co-ordinate tank units in combat. German tank soldiers found that the Soviet armour attacked in rigid formations and took little advantage of terrain. By 1943–44 however these problems had largely been corrected.

Soviet and German AFV strength, Spring 1942		
	Soviet 1-May-42	German 1-Jun-42
Tanks	3,976	~2,400
Heavy	660	
Medium	1,291	
Light	2,025	
SPG	0	~600
StuG/StuH		~400
JgPz/SPA		~200
TOTAL	3,976	~3,000
Notes: German numbers are estimates by AFV historian Thomas Jentz.		

Further combat (1941–1943)

During the winter of 1941–42, the T-34 again dominated German tanks through its ability to move over deep mud or snow without bogging down; German tanks could not move over terrain the T-34 could handle. The Panzer IV used an inferior leaf-spring suspension and narrow track, and tended to sink in deep mud or snow.

The German infantry, at that time armed almost entirely with PaK-36 37 mm (1.46 in) antitank gun, had no effective means of stopping T-34s. Crews of these weapons fighting on the Eastern front found it even more badly outmatched by the armour of Soviet tanks, often having to rely on heavier towed firepower, such as the relatively rare but effective Pak 38, the newer and much heavier Pak 40 and especially the 88 mm Flak guns that could not be moved into location as easily.

Soviet and German AFV strength, Summer 1943		
	Soviet 1-Jul-43	German 1-Jul-43
Tanks	9,832	~2,500
Heavy	893	
Medium	5,492	
Light	3,447	
SPG	364	~1,800
Heavy	104	
Medium	174	
Light	86	
StuG/StuH		~1,000
JgPz/SPA		~800
TOTAL	10,196	~4,300
Notes: German numbers are estimates by AFV historian Thomas Jentz.		

The T-34 was essential in resisting the German summer offensive in 1942, and executing the double encirclement maneuver that cut off the German Sixth Army at the Battle of Stalingrad in December 1942. The Sixth Army was surrounded, and eventually surrendered in February 1943. This was the turning point of the war on the Eastern Front.

As the war went on, the T-34 gradually lost some of the advantage it had at the beginning. By the end of 1943 or by 1944, it had become a relatively easy target for German 75 mm armed tanks and anti-tank guns, while hits from 88 mm-armed Tigers, anti-aircraft guns, and PAK 43 anti–tank guns usually proved lethal. The earlier models of the T-34, until the Model 1942, had cast turrets whose armour was softer than that of the other parts of the tank, and offered poor resistance even to the 37 mm shells of automatic AA guns. The heavier German weapons could pierce the turret armour relatively easily. Starting with the Model 1943, cold-rolled armour plate (similar to that used for the tank hull) was welded in a sloped hexagonal design, improving turret armour protection.

A T-34 from Factory N.112 destroyed at the village Prokhorovka

In July 1943, the Germans launched Operation Citadel, in the region around Kursk, their last major offensive on the Eastern Front in World War II and the debut of the Panther tank with its long-barrelled 75 mm gun. The campaign featured the largest tank battles in history. The high-water mark of the battle was the massive armor engagement at Prokhorovka, which began on July 12. Over 6,000 fully-tracked armored vehicles, 4,000 combat aircraft, and 2 million men are believed to have participated in these battles. Despite losing enormous numbers of T-34 tanks, the Red Army was able to replace its losses and steadily wear down the German forces until the offensive ground to a halt.

Destroyed T-34

The battles around Kursk in the summer of 1943 demonstrated conclusively that the 76.2 mm gun of the T-34 was no longer as cruelly effective as it was in 1941. Soviet tank crews were unable to penetrate the frontal armour of the Panther or the Tiger I at standard combat ranges, and were forced to rely on flanking maneuvers and overwhelming numerical superiority, continuing to attack despite high casualties. The Soviet high command's decision to focus on one cost-effective design, cutting costs and simplifying production wherever possible, had proven to be an astute choice for the first two years of the war. But at last the high command realized that their decision would serve them well no longer, and orders went out to develop a substantially improved tank with a gun that could destroy the Panther and Tiger I.

In 1943, the Soviets had formed Polish and Czech armies-in-exile, and these started to receive the T-34 Model 1943 with hexagonal turret. Like the Soviet forces themselves, the Polish and Czech tank crews were sent into action quickly with little training, and suffered high casualties.

Rear view of a T-34-85 from Factory 174. In the centre is a circular transmission access hatch, flanked by exhaust pipes, MDSh smoke canisters on the hull rear, and extra fuel tanks on the hull sides.

Introduction of T-34-85

The 85 mm ZiS gun of the T-34-85 greatly increased firepower over the previous 76.2 mm F-34 cannon. The length of the 85 mm gun barrel (4.645 meters) made it necessary to be careful not to dig it into the ground on bumpy roads or in combat; A.K. Rodkin commented: "the tank could have dug the ground with it in the smallest ditch. If you fired it after that, the barrel would open up at the end like the petals of a flower."

By the last years of the war the Soviets' improving tactics were still inferior to the Germans', but the Red Army's growing operational and strategic skill and its larger inventory of tanks helped bring the loss ratios down. The T-34-85 in early 1944 gave the Red Army a tank with better armour and mobility than German Panzer IV and Sturmgeschütz III, but it could not match the Panthers armour or 7.5 cm KwK 42 gun. A tank's principal offensive role during World War II was not to engage other tanks but to attack the enemy line, punch a hole through it then quickly race through and attack the enemy's logistical system. Tank to tank battles did occur, but relatively rarely, as the defenders moved their own armoured units into position to stop the breakthrough; and if it happened the T-34-85 was good enough to allow skilled crew and tactical situations to tip the balance against German Panthers and Tigers.

Soviet and German AFV strength, Spring 1944

	Soviet 1-Jun-44	German 1-May-44
Tanks	5,380	~1,500
Heavy	467	
Medium	3,766	
Light	1,147	
SPG	2,031	~2,700
Heavy	139	
Medium	244	
Light	523	
StuG/StuH		~1,500
JgPz/SPA		~1,200
TOTAL	7,411	~4,200

Notes: German numbers are estimates by AFV historian Thomas Jentz.

At the start of the war, T-34s were about four percent of the Soviet tank arsenal, but by the end it comprised at least 55% of tank production (based on figures from; Zheltov 2001 lists even larger numbers). By the time the T-34 had replaced older models and became available in greater numbers, newer German tanks, including the improved Panzer V "Panther", outperformed it. The Soviets' late-war Josef Stalin tanks were also better-armed and armored than the T-34.

The improved T-34-85 remained the standard Soviet medium tank with an uninterrupted production run until the end of the war. The Germans responded to the T-34 by introducing completely new, very expensive and complex second-generation tanks, greatly slowing the growth of their tank production and allowing the Soviets to maintain a substantial numerical superiority in tanks. Production figures for all Panther types reached no more than 6,557, and for all Tiger types 2,027. Production figures for the T-34-85 alone reached 22,559. The T-34 replaced most light, medium, and heavy tanks in Soviet service.

Egyptian Army T-34-85 in the Egyptian Military museum

The T-34-85 tank initially cost about 30 percent more to produce than a Model 1943, at 164,000 rubles; by 1945 this had reduced to 142,000 rubles. During the course of the Great Patriotic War the cost of a T-34 tank reduced by almost half, from 270,000 rubles in 1941, while in the meantime its top speed remained about the same, and its main gun's armour-penetration and turret frontal-armour thickness both nearly doubled.

Comparisons can be drawn between the T-34 and the U.S.'s M4 Sherman tank. Both tanks were the backbone of the armoured units in their respective armies, and both were upgraded extensively and fitted with more powerful guns. Both were designed for ease of manufacture and maintenance, sacrificing some performance for this goal. Neither were equals to Germany's heavy tanks, the Panther or the Tiger, the Soviets used the IS-2 heavy tank and the U.S. the M26 Pershing as the heavy tanks of their forces instead.

Tanks were expected to have many roles on the battlefield, the foremost being infantry support and exploitation. The tank-versus-tank role was also important. German tank production was limited to relatively small numbers of superior but complex vehicles—in part because of production diversion into self-propelled guns, but also due to Allied bombing of German factories and the loss of key metal supplies such as molybdenum—which put them at a numerical disadvantage.

Manchurian campaign, August 1945

Just after midnight on August 9, 1945, under cover of a torrential downpour and through terrain believed by the Japanese to be impassable by armoured formations, the Soviets invaded Japanese-occupied Manchuria. Red Army combined-arms forces achieved complete surprise and used a powerful, deep-penetrating attack in a classic double encirclement pattern, spearheaded by the T-34-85. The few Japanese tanks remaining to face them were mainly Type 97 Chi-Ha medium tanks, whose low-velocity 57 mm gun was no match for them; and the Japanese had no artillery larger than 75 mm, no modern antitank weapons, and weak support from IJAAF forces, engineering and communications. Japanese forces were overwhelmed, and their emperor transmitted a surrender order on August 14, although due to their fragmented communications front-line units did not receive this order until August 19.

A North Korean T-34-85 caught on a bridge south of Suwon
By U.S. attack aircraft during the Korean War.

Korean War (1950–1951)

Many Soviet-client and former Soviet-client states used T-34-85s after the end of World War II. A full brigade equipped with about 120North Korean T-34-85s spearheaded the invasion of South Korea in June 1950. Additional T-34 tanks later joined the first assault force after it had penetrated into South Korea. The North Korean tanks had overwhelming early successes against South Korean infantry, Task Force Smith and U.S. M24 Chaffee light tanks. The World War II-era 2.36-inch bazookas used by the Americans were useless against the T-34s, as were the 75 mm cannons of the M24 Chaffee.

The North Korean T-34s lost their momentum when they encountered U.S. M26 heavy tanks and ground-attack aircraft, and when the U.S. infantry upgraded their antitank weapons to 3.5-inch Super Bazookas hurriedly airlifted from the United States. The M4 Sherman (M4A3E8 model) and British tanks such as the Centurion, Churchill, and Cromwell also entered the war. The tide turned in favor of the United Nations forces in August 1950, when the North Koreans suffered major tank losses during a series of battles in which their foes brought their newer equipment to bear. The U.S. landings at Inchon on September 15 cut off the North Korean supply lines, causing their armoured forces and infantry to run out of fuel, ammunition and other supplies. As a result, the North Koreans had to retreat, and many T-34s and heavy weapons were abandoned. By the time the North Koreans had fled from the South, a total of 239 T-34s and 74 SU-76s had been lost. After November 1950, North Korean armour was rarely encountered.

A few more tank engagements occurred when China entered the conflict in February 1951 with four regiments of tanks (a mix of mostly T-34-85 tanks, a few IS-2 tanks, and other AFVs). However, because these tanks were dispersed with the infantry, tank to tank battles with UN forces were uncommon. China produced T-34 tanks under the designation Type 58, though production soon stopped when the Type 59 became available. At least one T-34 has also been spotted in China, converted into a fire-fighting vehicle.

A 1954 survey concluded that there were in all 119 tank vs. tank actions involving U.S. Army and Marine units during the Korean War, with 97 T-34-85 tanks knocked out and another 18 probable. The M4A3E8 was involved in 50% of the tank actions, the M26 in 32%, and the M46 in 10%. The M26 and M46 proved to be an overmatch for the T-34-85 as their 90 mm HVAP round could punch all the way through the T-34 from the front glacis armour to the back, whereas the T-34-85 had difficulty penetrating the armour of the M26 or the M46. The M4A3E8, firing 76 mm HVAP rounds, was a closer match to the T-34-85 as both tanks could destroy each other at normal combat ranges; however, the HVAP round gave the M4A3E8 an advantage in penetration.

A Bosnian Serbs Army T-34-85 with added rubber plates as additional armor near Doboj, spring 1996.

Use in other countries

The Soviet and Finnish armies used T-34s until the 1960s, the former included the 76.2mm gun armed versions until at least 1968 when they were used in filming the sequel to the film The Living and the Dead. The Finnish tanks were captured from the attacking Soviets or trophies purchased from Germany. Many of the T-34-85s were enhanced with Finnish or Western equipment, such as improved optics.

T-34s equipped many of the Eastern European (later Warsaw Pact) armies, and armies of other Soviet client states. They served in the suppression of the East German uprising of June 17, 1953, as well as of the Hungarian revolution of 1956. Cypriot National Guard forces equipped with some 35 T-34-85 tanks helped to enforce a coup by the Greek junta against President Archbishop Makarios on July 15, 1974. They also saw extensive action against Turkish forces during the Turkish invasion in July and August 1974, with two major actions at Kioneli and at Kyrenia on July 20, 1974. The T-34-85 also used in the Middle East, the Vietnam War, and even as recently as the Bosnian War.

In May 1995, a Serb T-34-85 attacked an UNPROFOR outpost manned by the 21st Regiment of the Royal Engineers in Bosnia, maiming a British peacekeeper. Croatia inherited 25 or 30 from Yugoslavia, but has since withdrawn them from service. T-34s were sporadically available in Afghanistan, but it is not known if T-34s were used against coalition troops, and Saddam Hussein had T-34s in the Iraqi army in the early 1990s. Several African states, including Angola and Somalia, have employed T-34-85s in recent years. Cuban T-34-85s also saw action in Africa.

The T-34 - the Legend vs. the Performance

From: The Great Military Myths of World War II by Nigel Askey

The technical superiority of the T-34 in 1941 (and during WWII in general) has become the stuff of legend. Its apparent superiority has become so entrenched in the psyche of post WWII authors that it is now assumed without question. Some go as far as to claim the T-34 as "the finest tank of the twentieth century" and the T-34 "rendered the entire fleet of German tanks as effectively obsolete". However, if battle performance was (and indeed still is) the ultimate determinant of the effectiveness of any weapon system, then unlike some legends in WWII, the tactical combat record of the T-34 does not match up to its legendary status. An objective look at the T-34's record, without preconceptions, reveals questions which are hard to answer given the T-34's apparent superiority.

T-34 and KV Tanks Were Only Available in Small Numbers in 1941?

There is little doubt that as an all round tank the T-34 was the most powerful medium tank in the world in 1941, with far reaching influences on future tank design. Historically, the poor showing of the T-34 in 1941 has been entirely attributed to the general state of the Red Army's mechanized forces in 1941, and the 'small' number of T-34s available. This is accomplished with statements along the lines that 'T-34 and KV tanks were only available in small numbers', and 'the small number of available tanks were distributed amongst the Army in small packets'. These statements are only true if the number of T-34s involved is measured relative to other Soviet tank types available during the second half of 1941, and not if measured against the number of German tanks available during the same period. Logically, it is only the latter comparison that is important if assessing relative combat performance.

From June to December 1941, the Soviets either already had in service or placed in service, a total of at least 3 017 T-34s out of a manufactured total of 3 111. This is not a small number even by later WWII standards. With this number, the T-34 tanks must have been much more established than common perception.

The total number of German Pz IIIs, Pz IVs and StuG assault guns committed to the East Front during the entire period under consideration, was 2 686. This figure includes Pz IIIs with only 37mm guns, all the tanks in all the units that arrived as reinforcements, and all replacements up to December 1941. These were the only general issue German AFVs with any reasonable chance of success in one to one combat with a T-34 or KV tank, and based on a cursory analysis of armour and firepower, this chance was theoretically low. In other words, even in 1941 the Red Army fielded over 1.1 times more T-34s than any German AFV 'theoretically' capable of taking them on. (If we add the 1 563 even more powerful KV I and II tanks fielded by the Soviets in 1941, this figure increases to 1.7). This is before we even consider the thousands of other tank types that the same German Pz IIIs, Pz IVs and StuGs had to fight against during 1941.

T-34 and KV Tanks Were Distributed Amongst the Army in Small Packets in 1941?

So what about the 'small packet' statements regarding T-34 deployments? On 22nd June 1941 the majority of T-34 tanks were actually concentrated in several powerful units, and not dispersed in small packets. For example, the 4th and 7th Tank Divisions, 6th Mechanized Corps, Western Special Military District had 238 T-34s and 114 KVs on strength on 22nd June 1941. The 8th and 32nd Tank Divisions, 4th Mechanized Corps, Kiev Special Military District had 313 T-34s and 99 KVs on strength on 22nd June 1941. Considering that T-34 and KV tanks apparently 'rendered all German tanks as obsolete', then these four tank divisions easily represented the most powerful concentrated armoured formations in the world during the whole of 1941 and well into 1942. From late August 1941 the Red Army started creating tank brigades, each with 29 authorized T-34 and KV tanks (and 38-64 lighter tanks depending on TOE). By October 1941 many of these tank brigades were in action, but by then many of the panzer division's panzer regiments were dispersed over wide areas and had far fewer numbers of operational tanks. In short, by late 1941 the Germans had almost as many problems concentrating their armour as the Soviets did.

The T34's Overall Combat Results in 1941

The combat results for 1941 show the Soviets lost an average of over seven tanks for every German tank lost. If all German fully tracked AFVs (assault guns, tank destroyers, SP artillery, etc) and losses from Germany's allies are included in the German figures, then the ratio drops to 6.6 to 1 in the German favor.

Of the total of 20 500 Soviet tanks lost in 1941, approximately 2 300 were T-34s and over 900 were mostly KV heavy tanks. Even if the T-34's loss ratio was better than seven for every German tank, it was still most likely in the region of four or five to one. Frankly, if 2 300 of any new Wehrmacht tank type had been lost within six months of its first deployment, even with a loss ratio of one to one (let alone 0.2-0.3 to one), then most WWII historians would have described the tank's combat record as an unmitigated disaster.

More informed commentaries relating to the T-34's combat performance in 1941 consider factors such as: the T-34 tank crews had little time to train on their machines, they had major ammunition supply problems, and the support infrastructures were not in place to recover damaged machines. These arguments have a lot more merit than the 'only small numbers available' or the 'committed in small packets' arguments. There is no doubt that a large proportion of T-34s in 1941 fell victim to operational type losses, especially in the situations the Red Army found itself in during the summer of 1941. Many T-34s had little or no armour piercing ammunition in June 1941, although they did in the months that followed. Many T-34s were abandoned and lost due to breakdown, being bogged down or simply out of fuel. The Red Army's tank divisions, already short of tractors, had little to no recovery vehicles or even time to recover these tanks. However, even if we assume a staggering 40-50% of T-34s were operational losses (which is probably too high an estimate), then the T-34's loss ratio in tactical combat is still around two-three to one in the German favor.

The T-34's Design Weaknesses

When one considers the apparent superiority of the T-34, the question has to be asked: why did the T-34 consistently suffer at least a two-three to one loss ratio against 'inferior and obsolescent' enemy tanks in tactical combat, i.e. when actually shooting at each other? Either the German's combat proficiency was supernatural, the Soviet's combat proficiency was unbelievably incompetent, or there were design flaws inherent in the T-34 as a complete weapon system which are not apparent in a cursory analysis of combat power based on armour and gun penetration. I believe the latter to be the case. The T-34/76's one great weakness was its fire control efficiency. It suffered from the same two-man turret syndrome as other Soviet tanks in this period, namely that the tank's commander, gun aimer, gun firer and platoon commander (if a platoon leader), were all the same person. Exacerbating this was the fact that the T-34/76 had relatively poor main gun optics quality, no turret basket, a very cramped and low turret (the gun could not depress more than three degrees severely restricting use on a reverse slope or at close range), poor turret drive reliability, no radios, and generally poor target observation and indicator devices (including no turret cupola and only one vision periscope for the tank's commander). All these factors are considered in detail in calculating a tank's Fire Control Effect. The T-34 is discussed here as a case history. In summary, the T-34/76's inherent fire control efficiency was so bad that even well trained and experienced tank crews were put at a severe disadvantage. For inexperienced tank crews, with no radios and probably no organized combined arms support, it was a disaster.

So what was the result of the T-34/76's two man turret, weak optics and poor vision devices? German tankers noted "T34s operated in a disorganized fashion with little coordination, or else tended to clump together like a hen with its chicks. Individual tank commanders lacked situational awareness due to the poor provision of vision devices and preoccupation with gunnery duties. A tank platoon would seldom be capable of engaging three separate targets, but would tend to focus on a single target selected by the platoon leader. As a result T-34 platoons lost the greater firepower of three independently operating tanks". The Germans noted the T-34 was very slow to find and engage targets while the Panzers could typically get off three rounds for every one fired by the T-34.

A combat account from Operation Barbarossa highlights the problem with the T-34/76's fire control systems and also why its overall combat power is so overrated. "Remarkably enough, one determined 37mm gun crew reported firing 23 times against a single T-34 tank, only managing to jam the tank's turret ring". In this engagement T-34 proponents will highlight the impunity of the T-34 to the 37mm Pak 36 AT gun. However this is hardly surprising against a gun that can only penetrate 29mm of 30 degree sloped armour at 500metres with ordinary AP ammunition. What is really important in this story is that the AT gun managed to get 23 shots off, and it turns out that the T-34 in this report didn't even manage to hit the AT gun. Once better AT guns appeared, which they rapidly did, T-34s would be lucky to survive 2-3 rounds. Contemporary German tank crews would have been be appalled if they let enemy AT guns get more than two rounds off before they took defensive action. This example highlights the difference between tanks designed to optimize all their fire control related systems and hence maximize their firepower, and those that weren't.

The T-34's Performance in 1942

The problem with using 1941 figures however is that T-34 proponents will always argue that the operational state of the Soviet mechanized forces and the general situation in 1941 were the primary factors in the T-34's combat performance in 1941. So what of the T-34's combat record in later years when these factors were removed or when they swung in the Soviet's favor?

The combat results for 1942, 1943, 1944 and 1945 show the Soviets lost an average of 6, 4, 4 and 1.2 tanks respectively, for every German tank lost.(12) If all German and Soviet assault guns, and all other types of fully tracked AFV losses are included, then the ratio changes to 5, 3, 3 and 1.3 for 1942, 1943, 1944 and 1945 respectively, in the German favor.(13) The figures for 1945 are not much use as the majority of German losses were operational or strategic, i.e. they are classified as lost when Germany surrendered in 1945. The figures for 1942 to 1944 are more useful in assessing the T-34's tactical combat performance.

The year 1942 deserves particular attention, because at the operational level the sides were more evenly matched. In this year the most common Soviet main battle tank was the T-34/76. The most common German main battle tanks were Pz IIIs with long and short 50mm guns and Pz IVs, most still with short 75mm L/24 guns. The Pz IV and StuG assault guns with long 75mm L/43 or L/48 guns had only began appearing on the East Front in limited numbers. This gun was capable of destroying a T-34 frontally at around 1 000 meters. However, only 870 Pz IVs and 699 StuG IIIs with the long 75mm gun were manufactured in the whole of 1942, and many of these didn't reach the East Front until 1943. Hence for most of 1942 the majority of German tanks were still the older and apparently obsolete types. In addition many publications rate the Pz IV with the long 75mm gun as only equivalent to the T-34/76 in terms of firepower, but still much weaker in terms of armour and mobility.

So what happened? The Soviets still managed to loose 15 100 fully tracked AFVs in 1942 including 6 600 T-34s and 1 200 of the even more powerful KV heavy tanks. This meant their loss ratio was almost as bad as 1941. To a large extent it was worse than 1941 because in this case over half the tanks destroyed were T-34 and KV tanks, and the large majority of losses were due to direct enemy fire and cannot be attributed to operational losses. There is no doubt that on average German tank crews in 1942 were probably still the best trained and most experienced in the world. However, this does not explain how apparently obsolete and inferior German AFVs achieved a kill ratio of better than three to one against T-34s in direct combat, unless the overall combat power of the T-34 is historically overrated. The T-34 must be the only tank in history rated as the best in the world in the same year it lost three or four for every enemy AFV destroyed.

It is also worth taking a look at the principal causes of T-34 losses from June 1941 to September 1942. A Soviet wartime study indicates the following weapon types as responsible for T-34's destroyed.

Causes of T-34 losses from June 1941 to September 1942
(expressed as % of total)

Weapon Calibre	% Lost
20mm	4.7%
37mm	10%
Short 50mm	7.5%
Long 50mm	54.3%
75mm	...10.1%
88mm	....3.4%
105mm	...2.9%
Unknown	7.1%

It is well known that the only German weapon fielded in 1941 normally capable of destroying a T-34 or KV at long range, was the 8.8cm Flak 18/36 (88mm Anti Aircraft Gun). Accordingly the Flak 18/36 achieved a fearsome reputation as a tank destroyer on both the East and West Fronts. In many battles during 1941 and to a lesser extent 1942, the '88' is often credited with stopping T-34s and KVs when all else had failed. However, we find from above that relatively few T-34s were destroyed by 88s and almost as many T-34s were destroyed by artillery. Either way, relatively few T-34s (6.3%) were destroyed by flak guns or artillery at long range. It also appears (as we would expect) that relatively few were destroyed by direct attack from aircraft (probably some of the unknown and possibly some of the 20mm). Most significantly, approximately three quarters of T-34s were destroyed by standard issue 1941-42 German tanks and AT guns (excluding 75mm guns). These weapons (20-50mm) would have needed to get perilously close to a T-34 frontally, or hit it in its more vulnerable side or rear armour. The conclusion has to be that the large majority of T-34s were destroyed because their crews could not pre-empt these weapons from getting into a killing position (usually because no crew member was in a position to see the enemy early), and were slow to acquire the enemy target once it became known. This is consistent with a very poor Fire Control Efficiency (FCE) factor in the T-34/76.

The T-34's Performance in 1943

By 1943 the strategic initiative had swung in the Soviets favor. Operationally the sides were similar, but as better German tanks reached the battlefield the combat power of individual AFVs had started to swing against the Soviets. Nevertheless, many current publications still rate the T-34/76 as the best all round medium tank in the world, until the advent of the Panther tank which appeared in limited numbers after mid 1943. Despite the Germans loosing large numbers of tanks as operational losses (due to them being abandoned on the battlefield as they retreated) and erosion of tank crew quality, they still achieved a fully tracked AFV kill ratio of around three to one during 1943. In this year the Soviets lost a staggering 23 500 fully tracked AFVs including 14 700 T-34s, 1 300 heavy tanks and only 6 400 light tanks.

Close to two thirds (63%) of AFVs lost were T-34s. As in 1941 and 1942, at least three T-34s were lost for every enemy fully tracked AFV destroyed. The vast majority of these losses were due to direct enemy fire and cannot be attributed to operational losses, because by 1943 the Soviets were most often gaining control of the battlefield and were recovering almost all disabled and partially destroyed tanks. Indeed, it was the Germans who were suffering increasing numbers of operational losses, so if anything the T-34's tactical loss ratio in 1943 was probably closer to four or five to one.

The T-34's Performance in 1944

Even the Soviets realized that the 1943 loss/kill ratio was unsustainable. In order to restore the technological balance they attenuated T-34/76 production and moved quickly to up gun the T-34 with a new turret and the 85mm M-1944 ZIS-S53 L/51.5 gun, designated the T-34/85.

By 1944 the Soviets had the absolute strategic initiative, with massive numerical superiority, and in terms of supply distribution and support, operational superiority. They had the luxury of being able to concentrate large armoured forces at any points on the front they desired while still being able to strongly defend everywhere. In terms of tactical combat proficiency, the Soviets could claim to have tank crews as well trained and experienced as the Germans. In addition the RAF and USAF had given the Soviets critical air superiority for the first time. For most of 1944 the Soviets had technical parity in terms of AFVs, with the large majority of T-34s now being the T-34/85s. The Soviets, and most modern publications, claim the T-34/85 was much superior to any model Pz IV or StuG assault gun and similar in combat power to the Panther. On top of this the Soviets had large numbers of the new IS-2 heavy tanks, one of the most powerful tanks in WWII, as well as the almost equally powerful ISU-122 and ISU-152 assault guns.

In 1944 the Soviets still managed to lose 23 700 fully tracked AFVs of which only 2 200 were light tanks: the highest number of AFV losses in a single year by any country in history.(20) Of these losses 58% were T-34s, the large majority being T-34/85s. Despite all possible factors being in their favor and despite massive German operational losses during 1944, the Soviets still managed to loose around three AFVs for every German AFV destroyed, or around four tanks (mostly T-34/85s) for every German tank destroyed.

Conclusions Regarding the T-34's Overall Performance as a 'War Winner'

The T-34 is possibly the only weapon system in history to be rated by most commentators as the finest all round weapon in a century of warfare, and yet never consistently achieved anything better than a one to three kill-loss ratio against its enemies.(21) The fact that the USSR produced 54 550 T-34s (easily the most widely produced tank of WWII) and hence produced a 'war winning' tank is a separate strategic level discourse and should not be confused with giving the T-34 credit for being effective at the tactical level.

Undoubtedly the T-34 went a long way to enabling the USSR to be ultimately victorious, but the price was huge with approximately 44 900 T-34s (82% of total production) being irrecoverably lost. Soviet output during WWII was 99 150 fully tracked AFVs (including all types of assault and self-propelled guns) produced from June 1941 to May 1945, and an additional 11 900 tanks and self-propelled guns received via Lend Lease. The Germans are often criticized for their low tank production during WWII: being accused of producing too few high quality tanks with too many refinements and excessive quality control during production. In support of this statement the figure of only 26 900 German tanks is quoted as being produced during WWII. However tanks formed only part of German AFV production: they actually produced 26 925 tanks, 612 command tanks, 232 flame tanks, 10 550 assault guns, 7 831 tank destroyers, and 3 738 assault and self-propelled artillery AFVs, from 1938 to May 1945. A total of around 49 900 fully tracked AFVs out of a total production of 89 254 AFVs of all types. This represents around 50% of Soviet fully tracked AFV production during WWII. It should be remembered (a fact that seems to be often forgotten) that Allied strategic bombing reduced German AFV production by at least 10% in 1943, 40% in 1944 and even more during 1945, exactly when German AFV production had peaked.

There is no doubt that German tanks possessed many refinements, subtleties of design and high quality components which contributed to a relatively slow production rate. In comparison Soviet tanks had a generally rough and ready finish, and lacked many features which were assumed essential by German tankers and to a large extent by their Western Allied counterparts. There were of course considerably more Soviet tanks, which ultimately helped them to win the war. Nonetheless, it was these same refinements and subtleties of design which gave German tank crews the edge in combat at the tactical level, and it is these which are picked up in the methodology detailed in Part II-'The Operation Barbarossa: the Complete Military Simulation- The Barbarossa Simulation's Resource Database'. As always, the Soviets had a choice regarding weapon system production during WWII: they could have mass produced more lower quality and less refined AFVs, or produced less more refined and higher quality AFVs. They chose the former and achieved strategic success, but paid an exceptionally high price in terms of human life. In terms of AFVs, this 'price' was the loss of 96 500 fully tracked AFVs compared to 32 800 German fully tracked AFVs (on the East Front) during WWII (2.94 to 1). The German losses include all SP guns, SP artillery, and several thousand vehicles captured when Germany surrendered.

One very significant point about these figures is that if we remove the 11 900 AFVs received by the Soviets via Lend Lease, and allocate all German WWII fully tracked AFV production to the Wehrmacht's East Front forces (i.e. add those lost fighting the Western Allies), then the Germans would have only needed kill loss ratio of 2.45 to 1 in order to have destroyed all Soviet fully tracked AFVs that existed on 22nd June 1941 (23 300 AFVs) and all 99 150 fully tracked AFVs produced during the war (122 450 AFVs). This figure is well below the 2.94 to 1 kill-loss ratio historically achieved. These figures demolish another more recently fashionable myth relating to the East Front; specifically that the Soviets (largely due to the huge number of T-34s produced) could have won WWII without any input from the US or Commonwealth forces. This is before we even consider the effects of increased German production (of all weapon types) due to the absence of Allied strategic bombing, the direct effects of German air superiority on the East Front from 1943 onwards, the effects of the Red Army loosing over half its motorized transport, and the effects of 9-10 000 additional (and fully supplied) heavy 88mm flak guns on the East Front from 1941 onwards.

The ongoing discourse on the strategic decisions regarding weapon manufacture is not particularly relevant here: we are specifically focused on the inherent tactical combat power present in specific AFV designs. In the T-34's case however, there appears to be confusion among T-34 enthusiasts between the strategic features of the T-34's design (ease of manufacture, simplicity of design, etc) and the tactical features of its design (the overall combat power (OCPC) inherent in the individual vehicle). To put it another way, the T-34 was a 'war winning' tank but this should not detract from the fact that at a tactical level its performance during four years of continuous war was relatively poor. If there was ever a case for not basing a tank's overall combat power on over simplified parameters such as thickness and slope of frontal armour, and penetration of a single round from its main gun, then the T-34's case is it.

FROM THE EDITOR

Heinz Thiel GD5.Heinz.Thiel@GMail.Com

HELP WANTED

I am looking for re-enactors who are preserving the memories and equipment of WW2.

I am looking to be transported back in time to re-live the history of the World War 2 era.

I want to know how the military equipment worked and was used.

I want to see how the battles were fought.

I want to see how they lived and experience how they felt.

Okay (you say) this is what the WW2 HRS is all about... Come to one of our reenactments and let me tell you about WW2.

Great I will do (or have done) that!

The men and women of the HRS put on great public shows and I have captured those shows on video.

Here is the problem (challenge) when we are at the re-enactment... the public is there and we are putting on a show for them.

I understand re-enactors have spent enormous amounts of time and money on there impressions and equipment. I know your have read many books and herd WW2 veterans speak.

What I would like to do show-off your WW2 equipment and historical knowledge in a VIDEO (in proper context, with out the public, or other modern items in the background).

What I am willing to do is work with you (or your unit) at some appropriate location (setting) to capture your efforts to preserve the memories, history and equipment of WW2 in a high quality video.

What I can not do at a re-enactment is stop the battle while that 747 airplane fly's past. Or ask the public to stop talking during your equipment demonstration.

However if we get together a location without the public, then we can re-shoot a talk when someone's car alarm goes off in the background.

At many events I am there the day before, and can work with the re-enactors (you) to capture what ever impression you are doing, or get the details of your equipment.

Here is the catch... You need to contact me!

GD5.Heinz.Thiel@GMail.Com

Then we can work out the details.

My goal is to reward all the effort you have put into preserving the memories and equipment of WW2.

Do you have a good re-enactment picture? ..... Then Send it in to me for publication The Edge.

Heinz Thiel GD5.Heinz.Thiel@GMail.Com

It does not matter when or where it is from. Good Pictures are Timeless.

Medical Equipment on display at the 2013 Rails-To-Victory re-enactment in South Elgin, ILL.

Dave Fornell's collection of US Army equipment
On display at the 2013 Dixon, ILL Re-enactment

Photos from the 2013 Dixon, ILL Re-enactment

Photos from the 2013 Peoria, ILL Re-enactment

Which way should I go?
Sorry but just to humors to pass up.

From: _____

_____

_____

To: _____

_____

_____

_____