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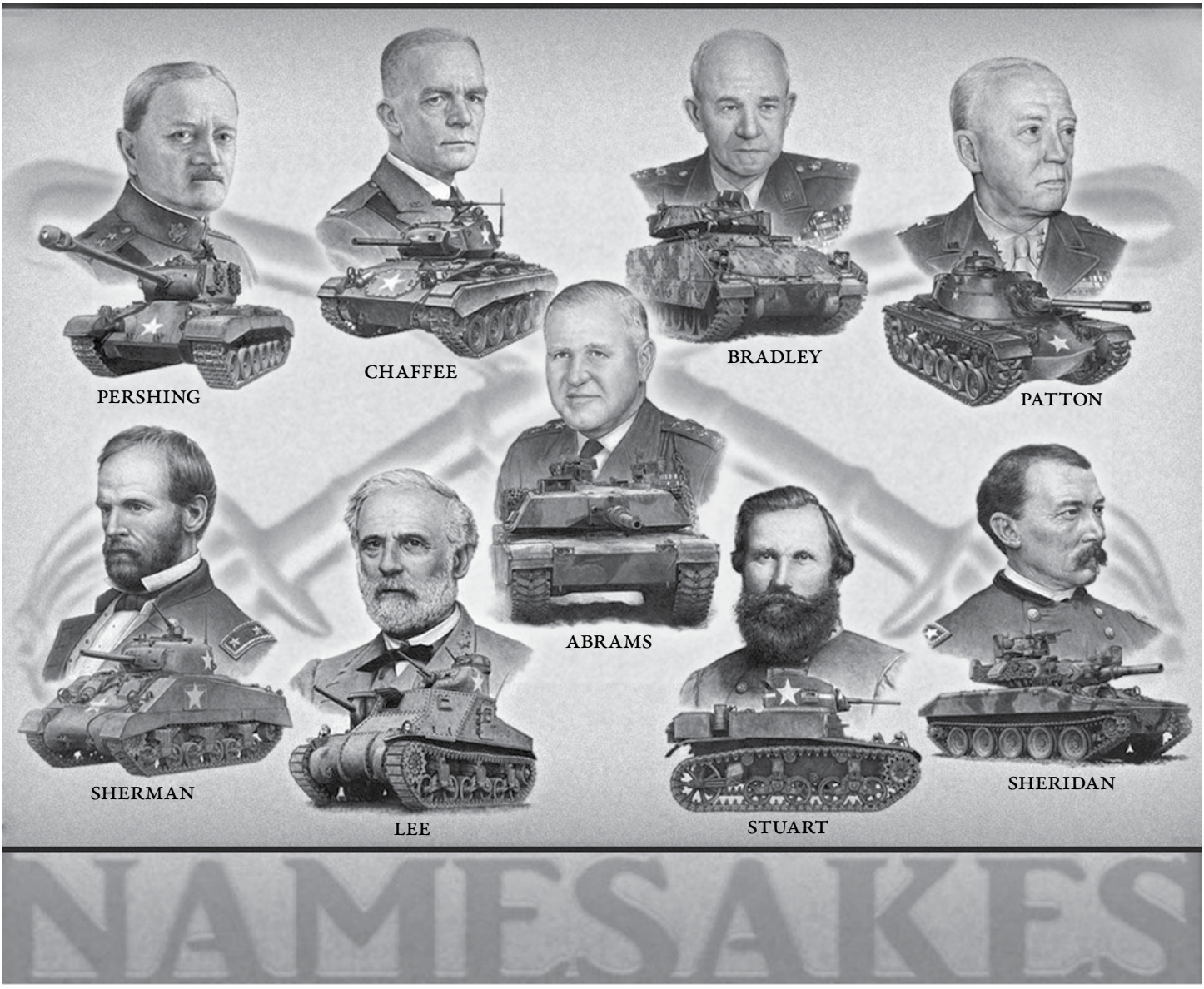
Sponson BOX ©

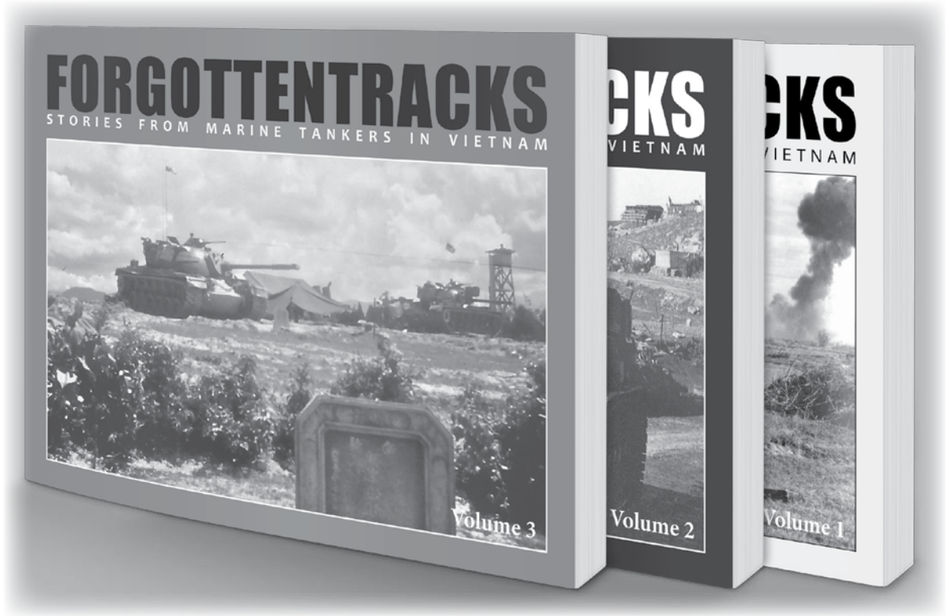
Voice of the USMC Vietnam Tankers Association

Ensuring Our Legacy Through Reunion, Renewal & Remembrance™



Featured Stories:

Official Publication of the USMC Vietnam Tankers Association



FORGOTTEN TRACKS – VOLUME 3

As part of the USMCVTA History Project, we are pleased to announce that *Forgotten Tracks*, Volume 3 is now available. Copies of all three of the *Forgotten Tracks* book series, Volume 1,2 and 3, are housed in the Library of Congress, the USMC Museum and Library and the Texas Tech University Vietnam Archives.

Forgotten Tracks Volume 3, contains over 70 stories of our experiences during the Vietnam War and a photo gallery of images supplied by Marines who served in-country.

In addition we decided to price all three volumes at one price: $30 each (delivered). Look for the order reply card in this issue of the Sponson Box

If you need more information, please contact Pete Ritch at Phone: 850-734-0014 or via email: goldendog@mchsi.com

You can also purchase any volume of the *Forgotten Tracks* series on-line at our website PX at http://www.USMCVTA.org

SEATTLE 2019

October 31 – November 4, 2019

We will be staying at the Hilton Double Tree Suites Hotel Seattle Airport – Southcenter.

The special reunion room rate will be $129 per night which includes a Free full, hot breakfast. There is a Free airport shuttle that runs 24/7. Free Wi-Fi. Free use of the hotel Fitness Center and the Business Center. Free daytime parking and discounted overnight parking.

The hotel is located two blocks from one of the largest shopping malls in the metropolitan Seattle area. It features over 200 assorted retail stores and there are over 20 restaurants nearby.

Room reservations are being accepted by the hotel starting October 2018.

Toll-Free reservations assistance: 800-222-8733. Please provide our group code ("VTA") and please let the reservation agent know what hotel you are staying. Make sure is it indicated as the "Double Tree Suites on Southcenter Parkway in Tukwila, Washington."

We feel that one of the best parts of our gathering is going to be our planned visit to the Military (Tank) Museum that is located in the town of Everett.

Please note that complete reunion details will be published in the January 2019 issue of our magazine. Please stand by

Letter from the President

TANK REFERENCE BOOK: This issue of our magazine is a slight departure from personal accounts of our time in-country. In this edition we have assembled just about anything that you ever wanted to know about the development and deployment of American tanks. We hope that you enjoy it.

MEMORIAL DAY 2018: I was listening to a program where Karl Marlantes, the US Marine Vietnam veteran and celebrated author of the classic novel, "Matterhorn," was speaking about veterans telling their wartime story. He said, "When you tell your story about your fears ... and when someone listens without judgement, you both become whole again." I assume that what he means is that a lot of our members feel bad about their wartime experiences and they fear bringing them up will cause them grief. As someone who at one time had the same fears, the truth is that when I thought about them, wrote about them and then examine them, I ended up feeling terrific. It's pretty much the same for attending one of our most outstanding reunions.

FORT BENNING: We began production of this issue of our magazine in the June–July period and we had to go to press before we actually conducted our first ever mini-reunion in early September at the USMC Tank School at Ft Benning in Georgia. Even though the gathering lasted just a weekend, we are sure that the 50+ VTA members who attended had a great time. We will recap the event in a soon-to-be published issue of the magazine.

FIRST RESPONDERS: We have received exactly ONE responses from our request for stories ... so that means that either there are no first responders among the membership (other than law enforcement officers) ... and/or it means that Mike Giovinazzo was right in saying that most first responders have a hard enough time writing just their name on paper so we can forget them writing a story about being an EMT or fireman. That's too bad. We will most likely have to belay doing special issue for them.

ONTOS: We have had a resounding (really good) response from the Ontos crewmen. Please keep your eyes peeled for a very special future issue where we plan to celebrate our mighty "Pigs."

LETTERS HOME: I happen to have an excuse, my girlfriend had kept all of my letters that I wrote to her while I was deployed in-country back in the late 60's. Then almost 20 years later, after we got divorced, she burned them all. Do you have an excuse? If you or a family member have one or maybe a few of the letters that you wrote home back in the day, how about making copies and mailing them to the Sponson Box so we can share them with the membership?

SEATTLE: We will be gathering for our 11th biennial reunion and our 20th anniversary on October 31 – November 4, 2019. The next issue of our magazine will have lots of details for you to plan to attend.

REQUEST: Whenever you hear of one of our members passing on to the "Great Tank Park in the Sky" please take five minutes and either call or email me with as much information as you can about him. I see notices on Facebook and other internet locations that I do not frequent very often. Please pass the word directly to me so that we can honor our fallen in our own magazine.

"If you want to go quickly, go alone. If you want to go far, go together."

African Proverb

–John

Member Info Changes

Richard (Rick) Armstrong
8800 Glacier, Apt. 276
Texas City, Texas 77591
Phone: (706) 970-9294 (No change)

Mike Collier
942 Passiflora Ave.
Encinitas, CA 92024
Phone: (760) 753-0556
Email: colliermh@gmail.com

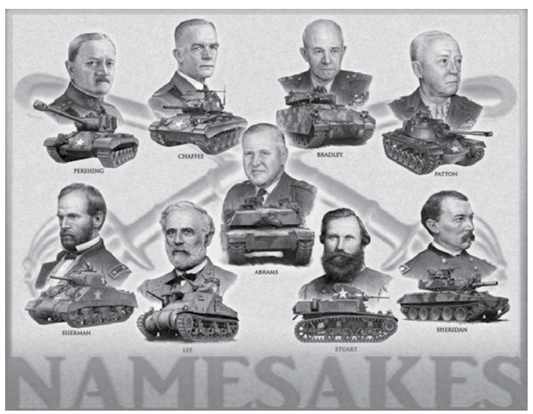
Al Christy
411 E Evergreen St
Payson, AZ 85541

Mike Green
701 Spanish Main Drive
Cudjoe Key, FL 33042
Phone: 267-907-5851

John Lange
Email: jalange@austin.rr.com

Photo from Vietnam

On an operation with the 9th Marines



ON THE COVER: All of the famous generals from who American tanks got their names.

Our Readers Write

(Formally known as "Letters to the Editor")

Vietnam – Viet Nam

Ron Dudek writes: I liked the small article regarding the correct way to spell Viet Nam. To go one step further Viet means the "people," and Nam means "South." The southern people of Viet Nam.

Also how many vets know what the colors of the South Vietnamese flag stood for? Yellow is the color of the people, Red is the blood that was shed, and the three red stripes stands for North Central and South. I've learned a lot in my many tours of Vietnam, that includes tons of trivia and good conversational subjects.

Ambush Valley

Pete Ritch comments: Another great issue of the Sponson Box arrived yesterday and I've already read it cover to cover.

Question: One of the articles in the issue titled "3rd Battalion, 26th Marines fight with the NVA 324B Division in September 1967 During the Vietnam War" refers to a major Operation and refers to the support of Marine tanks. I did not see the unit name of the tanks anywhere in the article. Any idea "who were those guys" in the Iron Horses?

John Wear replies: I should have had an Editor's Note on both the Book Review for "Ambush Valley" by Eric Hammel and on the Dick Camp story of the 26th Marines battle with the NVA that you mention. They are one in the same. If you have not had the chance to read Eric Hammel's book ... or Dick Camp's book "Lima Six"... they both detail the same engagement. The tanks involved were from Bravo, 3rd Tanks. Guy Wolfenbarger is one of the few remaining tankers still living.

Tank and Ontos Crewmen:
2nd Lt. Paul Drnec Plt Ldr. (B-21 and B-25)
Sgt. Frank Vining TC (B-21)
Cpl. Jack Wilder TC (B-22) WIA
GySgt. Harold Tatum Plt Sgt. (B-25) KIA
Cpl. Gary Young Loader (B-25) WIA
L/Cpl. Louis Ryle Driver (B-25) WIA
PFC James Wilson Gunner (B-25) KIA
Cpl. Guy Wolfenbarger TC (F-23) WIA
L/Cpl. Wayne Chapman Gunner (F-23) WIA
Sgt. Charles Witkamp Plt. Maintenance Man
Sgt. Leroy Davis Jr. TC Ontos KIA
L/Cpl. Randall Browning TC Ontos WIA (Navy Cross)

John Wear also got a phone call from Terry Hunter who said that he was with Bravo Co, 3rd Tanks during this same time frame but Terry said that he had been on R&R when the "Ambush Valley" engagement took place. When Terry reported back to Camp Carroll and before he could even change back into his utility uniform, they loaded him and a bunch of other Marines onto six-by trucks and they drove hell bent for leather to the "C-2" firebase. Terry figures that he was part of some sort of "reactionary force" sent to relieve that beleaguered tank crewmen from the massive battle that they had just been involved. Terry said that he did not remember much other than Louis Ryle driving his tank by himself back to Camp Carroll and he also recalls getting a pretty serious NVA arty barrage after the reactionary force arrived at C-2..

Marines at Belleau Wood saved Paris

John Wear writes: This past Memorial Day weekend I was at a festival called "Territory Days" where 40,000 citizens gather in Old Colorado City for three days. Besides it being like a State or County Fair, there is a very nice Memorial Day remembrance program with a color guard, bugler playing taps and a moment of silence. On the first day I set up a tent and sold my hand-made pottery. During the event a Marine amtrac officer veteran stopped by and we must have swapped sea stories for over an hour. It was great fun. One of his stories was that his dad had been a WW2 US Army soldier who landed on D-Day and was wounded at the "Battle of the Bulge" and afterward he was shipped home. At the age of 45 his dad passed away when the future Marine officer was just 14 years old. Later this same Marine veteran decided to take a vacation trip and to retrace his dad's footsteps in Europe. As he was passing through France, he decided to visit the Belleau Wood site (or as the French call it, "The Marine's Woods.") He went to the two-story house that is the museum and the French lady at the desk asked in very broken English if he was a US Marine. When he said, "Yes." She handed him a key and told him to go to the locked gate and pass through to the fountain and drink from it. He did and found out later that just about every "famous" Marine in our glorious history has drunk from that same fountain.

He also told me that another really cool thing was that maybe 20 years ago, he got a letter from one of the WW2 US Army vets who had been with his dad at the Battle of the Bulge and the old vet wanted to tell the son what a great guy his dad had been and what a hero he was. It is a shame that the old vet did not contact the father before he had passed away.

Nice Memorial Day stories... And yet one more reminder that we all need to write and publish our own story (in the Sponson Box) of our time in Vietnam.

Grumpy Old Men?

Just thought I'd pass this along. While traveling through Oklahoma I stopped at a convenience store for gas. After starting the pump I headed for the store for a drink. Before I could get to the door a kid's car wizzes passed me with music a blaring. I was wearing my USMC VTA cover. The kid gets out with piercings and tattoo's all over his body and his music still blaring. He looks at me and said "Wow you drove a tank." >>

I said "yes".
He said "What kind?"
I said "M48A3"
He said "Cool". He stuck out his hand for a shake and said "Thank you for your service" and held the door for me. I felt like kicking my own ass. I thought, "You old fart maybe you ought to lighten up on these kids!!!" Guess you learn something every day. Only hope my grandkids will do the same, and really, I think they will.

Dave Owen

Dick Peksens asks: "Have you ever seen one of these M48's in action?"

John Wear writes: I have several friends who are US Army Vietnam veterans who served in the 69th Armor Regiment. This august group served in the Central Highlands and while they never did provide direct support to any infantry units and they did not feel that they needed any "crunchies" around their vehicles, they did do silly shit like this mine sweeper. Their mental attitude was that tanks could do it all. They did not need engineers sweeping roads or grunts providing security.

Dick Peksens replies: When we replaced the Americal Division at LZ Ross and LZ Baldy in 1969, the Army was conducting their daily road sweep from Ross (along Route 1 north of Tam Ky and Chu Lai) to Baldy. The Army would "push" an unmanned Six-By truck down the road using another Six-By truck locked to the unmanned one. If they hit a mine, they would push the damaged six-By to the side of the road for towing away later and they'd attach a new "target"! We, of course, switched to the age-old "Tank First" method.....

An Elephant in the Room?

Rick Armstrong was driving through Sweetwater, TX, and saw this old M-103 "Elephant" tank sitting behind a chain link fence.

Richard Carmer at Quantico

Our reunion photographer, Richard Carmer writes: And speaking of 7th Marines, I attended the Vietnam 1/7 reunion last month in DC and the Guest Speaker at the banquet was Sec of Defense Gen James Mattis. He was Bn commander of 1/7 sometime after Vietnam and he gave a great speech. He mingled with the troops during the one hour cocktail party. He is so laid back that when someone called him. "Sir," he just said. "Call me Jim." Of course, no one did. We also went to the USMC Museum in Quantico and for the first time ever the Silent Drill Team did their thing inside of the museum. Those guys are good and if you look closely at the enclosed photo you will notice that even their rifles are synchronized.

Thank You's from Members

Tom Hayes writes: Thank you for posting Bill Kilgore's name in the "New Guys" of the last issue of our magazine. He and I have now written letters and keep in touch since serving together in C Co, 3rd Tank with (then) GySgt Jim Langford. Bill was a 2841 Radio Tech so he carried the PRC 25 on a lot of patrols that HQ platoon ran with Top Langford. Does anyone from C Co remember the names of the villages along the Cua Viet River? Were they My Loc and Mai Xa Thai? HQ moved a lot during the summer and fall of 1968 and I am trying to remember were we were.

I am also interested in seeing stories in the Sponson Box about famous Marines like Steve McQueen, George C Scott, George Peppard, the Everley brothers. What outfits were they in and when?

John's reply: Yes, My Loc, An Loc, Mai Xa Thai were all (abandoned) villages that were on the north side of the Cua Viet River where, after the massive battle that the 4th Marines fought in the spring of 1968, Charlie Co, 3rd Tanks ended up occupying as our TAOR until November when we moved to Quang Tri.

The main reason that the Sponson Box does not post stories about "famous" (mostly Hollywood actors) Marines is that you can easily look them up on the Internet or find their stories in books such as "Is Anyone Here A Marine" that details their lives.

Mike Green writes: I just wanted to let you know I real- *(Continued on page 38)*

A Letter Home

On February 1, 1966, PFC Hiram D "Butch" Strickland was killed while on patrol near Bon Son, Vietnam. Almost a month after his personal effects had been mailed home to his family in Graham, NC, some of his buddies found a notebook beside his bed. It had been overlooked because it had fallen by the side of his tent. On the pad, in PFC Strickland's own handwriting, was the following letter:

Dear Folks,

I am writing this letter as my last one. You've probably already received word that I'm dead and that the government wishes to express its deepest regret.

Believe me, I didn't want to die, but I know it was my part of the job. I want my country to live for billions and billions of years to come.

I want it to stand as a light to all people oppressed and guide them to the same freedom we know. If we can stand and fight for freedom, then I think we have done the job God set down for us. It's up to every American to fight for the freedom we hold so dear. If we don't, the smells of free air could become dark and damp as in a prison cell.

We won't be able to look at ourselves in a mirror, much less at our sons and daughters, because we know we have failed our God, country, and our future generations.

I can hold my head high because I fought, whether it be in heaven or hell. Besides, the saying goes, "One more GI from Vietnam, St. Peter; I've served my time in hell."

I fought for Sandy, Nell, Gale [his sisters], Mom, and Dad. But when the twins and Sandy's kids get old enough, they'll probably have to fight too. Tell them to go proudly and without fear of death because it is worth keeping the land free.

I remember a story from Mr. Williams' [Thomas Williams, a teacher at Strickland's high school] English class when I was a freshman that said, "The cowards die a thousand times, the brave die once."

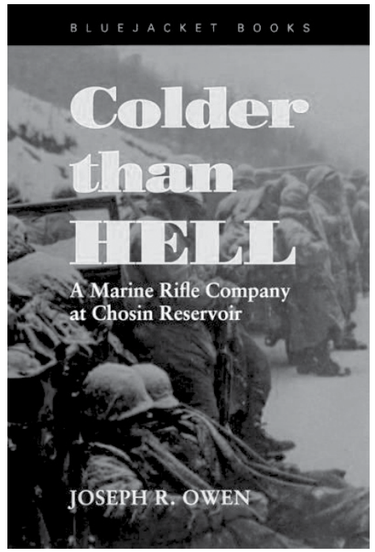
Don't mourn me, Mother, for I'm happy I died fighting my country's enemies, and I will live forever in people's minds. I've done what I've always dreamed of. Don't mourn me, for I died a soldier of the United States of America.

God bless you all and take care. I'll be seeing you in Heaven.

Your loving son and brother,

Butch

Editor's Note: Some of you may be lucky enough to have had family or friends who saved some of the letters that you wrote home. If you or they do then please make a copy and send them in so we can all share them. ■



Colder than HELL

BY JOSHEP R. OWEN

Rarely has a memoir of a major military battle been written so clearly and bluntly honest as Colder Than Hell: A Marine Rifle Company at Chosin Reservoir, published by the Naval Institute Press, 1996. The author, Joseph R. Owen, was an enlisted Marine for three years during World War II. He was recommended for OCS, but the war ended and he was honorably discharged. After completing college, he applied for OCS again and received his commission as a 2nd Lieutenant in 1950.

Joe, as he preferred to be called, was 6'5" and 225 pounds. He reported in to Camp Pendleton just as the North Koreans commenced overrunning their brethren to the south. He was assigned to B/1/7. Being the only second lieutenant in the company, he was given command of the 60mm mortars.

Many of the young Marines called up to fill out the ranks of the 7th Marines in August of 1950 were reservists. Some of them had never been through boot camp. Many of the regulars, however, had prior combat experience. Under the leadership of Lt. Owen and his senior NCOs, the green boots were soon whipped into some semblance of combat readiness after six weeks at Pendleton. Then, further training aboard ship had his mortar crews ready for whatever awaited them when they off-loaded in Korea.

Owen describes in great detail the fighting that his Marines experienced as they continued their attack northward, pushing the retreating North Korean Army ahead of them. The reader feels as though he is alongside Lt. Owen as he directs his mortars in support of his attacking company, many times saving the day due to the highly accurate fire delivered from his mortars.

Then, as the 7th Marines reached the vicinity of the Chosin Reservoir, winter descended upon them. They had not been issued cold-weather gear and suffered for days in the freezing weather before their winter gear arrived. Some Marines came down with pneumonia. But even the shoe-pacs issued them were ineffective, and many Marines eventually developed frost bite. When the Marines realized the Chinese held the high ground and greatly outnumbered them, the hard reality sunk in that they would not be home for Christmas as promised.

Author Owen's description of the fierce fighting that ensued in minus 20- degree weather is powerful and inspiring. His battalion commander, Lt. Col. Ray Davis, was always up front with his Marines. Davis would later receive the Medal of Honor. Three other B/1/7 Marines would be awarded the Navy Cross.

The reader will come to appreciate the pivotal role played by Marine Corsairs in helping the Marines avoid the same calamity that befell the Army units retreating from the Chosin area. Repeated strafing and bombing attacks by the Corsairs kept the Chinese from cutting off the MSR. Hundreds of vehicles carried the 7th Marines dead and wounded south to Koto-ri as the freezing Marine infantry fought off any ambushes they encountered along the way. Lt. Owen was seriously wounded by a Chinese sniper and evacuated to Koto-ri. Only 27 Marines from B/1/7 were not killed or wounded by the end of that epic battle.

No Marines have ever had to fight under such demanding conditions. Joseph Owen's powerful narrative is a must read for anyone who wants to know what the "Frozen Chosin" was like from a veteran's personal perspective. Owen supplements his account with tales from other survivors which only adds to the realistic portrayal of the heroic fighting withdrawal of the Marines from Chosin Reservoir.

Submitted by James Coan ■

Willard Fiske Lochridge

HOME OF RECORD: Scarsdale, New York

Silver Star

Awarded for Actions During: Vietnam War

Service: Marine Corps

Rank: Second Lieutenant

Unit: 3d Tank Battalion. 3d Marine Division (Rein.), FMF

GENERAL ORDERS: CITATION:

The President of the United States of America takes pleasure in presenting the Silver Star to Second Lieutenant Willard F. Lochridge (MCSN: 0-92140), United States Marine Corps, for conspicuous gallantry and intrepidity in action while serving with Company B, 3d Tank Battalion, 3d Marine Division (Rein.), FMF, in connection with combat operations against insurgent communist (Viet Cong) forces in the Republic of Vietnam on 5 September 1966. Commanding a platoon of tanks in support of Company K, Third Battalion, Ninth Marine Regiment, Second Lieutenant Lochridge's unit encountered two companies of well entrenched Viet Cong Regulars. Under intensive small arms, heavy automatic and anti-tank fire, the Company's lead platoon sustained several casualties. Second Lieutenant Lochridge immediately maneuvered his tanks to aid in transporting the wounded to a landing zone for evacuation, then delivered protective fire for the helicopters to land. While leading the advance units of the Company on a second assault of the enemy's fortifications, the force again came under intense enemy fire. His tank was struck by .57-mm recoilless fire which wounded and temporarily blinded him. With immediate reaction and despite his wound, Second Lieutenant Lochridge continued his attack against the anti-tank weapon and promptly neutralized it with fire from his armored vehicle. Through the highly accurate firepower of the tanks, the Company was successful in penetrating the enemy's positions, receiving credit for twenty-three confirmed enemy dead found in the trench line. By his exemplary leadership, calm reaction under fire, unrelenting devotion to duty, and his aggressive fighting spirit, Second Lieutenant Lochridge upheld the highest traditions of the United States Naval Service. ■

To the Great Tank Park in the Sky

"As you walk down the fairway of life you must smell the roses, for you only get to play one round." — Ben Hogan

Lt. Col. Willard F. Lochridge IV

If you were a civilian and a friend of his, you called him Willy. If you were not a civilian, you addressed him as "Sir" or "Colonel." To the United States Marine Corps, he was Lt. Col. Willard F. Lochridge IV. Willy died of cancer on May 14. He served two tours in Vietnam, from 1965 to 1967, as an armor officer. He held, among other awards and decorations, a Silver Star, two Bronze Stars with Combat V for Valor, and a Purple Heart.

He never talked about his medals, or how he got them. In the 20-plus years I knew him, he only told two stories about Vietnam. One took place at night, with Marine tanks laagered in the darkness. His platoon heard strange noises coming from the jungle. They staged a reconnaissance by fire, sending 90mm HE rounds tearing into the darkness, and when it was over, everything was quiet. In the morning, the Marines sent a patrol to investigate, and it reported that the tanks had killed an elephant.

Willy's other story concerned a Marine in his platoon who was terribly wounded. Willy propped him up and spoke to him, telling him that a helicopter was on the way and to hang on.

"My left arm is gone, sir," said the Marine.

Lt. Lochridge slid his own left arm around behind the wounded man and pulled it in front of the Marine.

"No, look, you've still got it," said Lochridge, "you just can't feel it."

The Marine smiled and died before the helicopter got there.

Something to think about on Memorial Day.

Editor's Note: "Lurch" Lockridge wrote prolifically about his time in-country and shared with us many of his stories in our magazine. There are more stories to come.

1ST Sgt Albert "Bert" Trevail

1943–2018

Albert Dennis "Bert" Trevail, 74, of Cypress, Texas, died May 27, at a local hospital, surrounded by his loving wife of 31 years, Sheila, and his daughter, Amber. He was born on July 11, 1943, in Brown's Hill, Quebec, Canada, and was the son of Silvanus and Florence Anne (Matthews) Trevail.

His wife, Sheila (Murphy) Trevail; children and their spouses, Michael Trevail of Newtown, Amber and Tomas Eggers, Gene and Karen O'Laughlin, Christopher Trevail, and Jeffrey Trevail; grandson, Joseph; nephew; and brother, Lloyd Trevail, and sister, Shirley Beasley, both of Canada, survive him.

Throughout Mr. Trevail's life, his primary focus was always his family, then his lifelong public service. He served in the Canadian Army and enlisted in the United States Marine Corps during the Vietnam War, serving three consecutive combat tours as a tank commander in Alpha Company, 3rd Tank Battalion, 3rd Marine Division, eventually retiring from the US Marines as a First Sergeant with 21 years of service. Mr. Trevail was a decorated war veteran, having received numerous awards, including the Bronze Star with combat "V" and Purple Heart. While in the Marine Corps, he earned multiple academic degrees, enabling him to become a school educator after his military retirement. He retired for the second time after a 25-year teaching career that spanned the globe from Italy to California. Once retired for the second time, Mr. Trevail had more freedom to ride his motorcycle across the country and make jewelry in his spare time.

A memorial ceremony will take place at a later date on the Southern California coast. Arrangements will be made through the family.
Dave Woodward wrote: Bert was my first tank commander in the Nam, January 1968...I replaced a guy going on R and R...He was an E-4..I was a boot PFC...Bert was the man who knew everything about a tank from the tracks to the radios to who really ran the platoon...I really respected this man...A true Marine and a man who taught us all how to get the job done....take no prisoners..... It seems to me that Bert was meant to be there for all of us new guys...On my second tour...Bert was still there...Now an E6 and me E4 and my own command....however ..Bert had never went home or on leave ...that I know of....I am deeply saddened by the news of his death....Semper Fi....Slow Salute ...Fallen Warrior.

Darrell L. Clock

1947–2018

Darrell L. Clock, 70, of Gaston, passed away on June 23, 2018 while working with family in his barn. Darrell lived his life as a proud American, Marine, farmer, husband, father, grandfather, son, brother, brother-in-law, uncle, and friend to many. He was born July 5, 1947 in Marion, Indiana. He was a 1965 Graduate of Gaston High School and was a Purdue University Alumni. Darrell proudly served his country as a Sergeant and tank commander in Vietnam and received a Bronze Star for heroic achievements during combat action. After returning home from war he farmed with his dad for 30 years and farmed with his son and son-in-law for the remainder of his life. He was a member of the USMC Vietnam Tankers Association and Lifetime member of the NRA and American Angus Association.

Darrell is survived by his loving wife of 49 years, Jeni Clock; their two children, Andy Clock (wife Beth) of Marion and Abbi Rudy (husband Chad) of Summitville;

Memorial contributions may be given to the USMC Vietnam Tankers Association, 73 Stanton St., Rochester, NY 14611 or to the Gaston United Methodist Church, 105 Main St., Gaston, IN 47342.

Major John "Jack" Anthony Schuyler

1928 – 2018

John Anthony Schuyler, 89, of Annapolis, passed away June 24th at Anne Arundel Medical Center after a brief illness, with his loving family at his side.

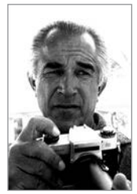
Jack was born on July 13, 1928 in Evanston, Illinois and was brought up in East Orange, New Jersey. He enlisted in the U.S. Navy two weeks before his 17th birthday in 1945 and served on submarines for four years before being released from active duty and entering the University of Maryland in 1949. While there, he met Constance Alexandra Cook and they married in 1951. He re-enlisted in the Navy for one additional tour, after which he returned to the University of Maryland to earn a B.A. in Criminology in 1955. That same year, Jack entered the Officer Candidate program of the United States Marine Corps, proudly serving until his retirement in 1970 with the rank of Major. He was a career tanker who served as a Company Officer at the United States Naval Academy, and on the staff of the Chairman, Joint Chiefs of Staff. He served in the Viet Nam War, 1st Tank Battalion, from 1967-68.

After military retirement, Jack began a new career with the State of Maryland becoming the Assistant Executive Director of Maryland Police and Correctional Training Commissions, retiring from the Commissions in 1993 as Executive Director. During his tenure, in 1991, he served as Advisor to the Estonian Police Department by request of the Republic of Estonia to the Governor of Maryland. He also returned to Estonia twice to work at the Estonian National Defense Academy.

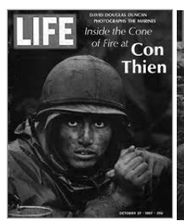
Jack was a member of St Paul's Anglican Church in Crownsville, a former member and vestry member of All Hallows Parish in Davidsonville, a member of the USMC Vietnam Tankers Association and the University of Maryland Alumni Association.

Jack loved the Corps, his country, and his family. Always a rich and amusing storyteller, he gathered his much-loved tales from his service with the Navy and Marines, his early childhood, and his many adventures from domestic and worldwide travels. He loved life and hated to see it end and will be missed beyond measure by his devoted family.

David Douglas Duncan



David Douglas Duncan, the LIFE magazine photographer who died on June 7, 2018, at 102, was in Tokyo in 1950 when the Korean War began. He had been a Marine officer during World War II, so his pictures of war had the breathtaking clarity and intimacy of a lover. He was not a lover of war but of the Marine Corps. He knew what a Marine was doing on the front line, what he was thinking and why–and he showed it. His pictures were collected in the best-selling book This Is War! The photos have no captions. None are needed.



William N Cotton

1937 – 2018

William Noel Cotton, age 80, of Murfreesboro, TN, went to be with the Lord on Friday, June 22, 2018.

A native of Coral Gables, FL. Mr. Cotton had a very strong Christian faith. He was a proud veteran of the United States Marine Corps having served with 1st Tank Battalion in Vietnam in motor transport. Later, he retired with the Department of Transportation with the State of Florida. He was also a former member of the USMC VTA. ■

(Editor's Note: We are in the process of testing a new section of this issue of our magazine. Most of the stories come from the Vietnam Veterans Memorial archives.)

Regarding Sean

BY NICOLLE DRUMHILLER

In the spring semester of my college sophomore year, each student in my art class was expected to visit Washington, DC, to "discover the American spirit" and to express it through our art project.

Upon arriving in Washington, we chose to separate and meet up at the end of the day to share ideas. I had visited the Vietnam Veterans Memorial with my Dad several times, so it was where I decided to wait for an inspiration. I spent a few hours talking to volunteers and passersby.

It wasn't until late afternoon, when I noticed a man whom I had seen several times throughout the day. He was sitting on a bench facing the Vietnam Women's Memorial, impassively observing people as they walked from the Wall. His canes were lying on the bench beneath him and his jacket rested across his knees.

I guessed he was a Vietnam Veteran, not because he was disabled or the appropriate age, but rather because of his intense presence. His cool stare seemed to reach out to a memory – some distant anger he was struggling to hide. I wanted very much to talk with him, as I had so easily stuck up conversations with strangers all day, but I felt intimidated. I thought he needed to be alone. I was about to pass by him when I caught his glance – I knew that this was probably my best chance to meet him so I walked over and introduced myself. He seemed very surprised that I noticed him, and he smiled warmly. We talked for some time about our families, friends, and favorite past times, it was as if we were old friends.

At the early signs of dusk in deep red and golden hues from the Wall, the tone of his voice sounded more subdued. I sensed he wanted to speak about the war or the loss of his leg, but he was obviously holding back. I confessed to him I had seen him on several earlier occasions that day and he started to explain why he was there so long, but paused suddenly.

"So, you know then? I know where his name is, which panel, which line, the exact location. But I can't bring myself to do it. I'm nothing compared to him, I can't face him, I can't let myself remember, and I certainly can't see my pitiful reflection in that Wall. I'm not ashamed I served in Vietnam. I'm not saying that's why I'm pitiful. I'm pitiful because he should have lived; he deserved to come home; I wish it was me on that damn Wall; it's my place; I inspired his eagerness to be a hero."

I took his hand in mine and held it tightly as he wept.

"I'll go with you if you don't want to go alone." He held my hand tighter and with his other hand touched my face gently. "You're some kind of angel to care about an old man like me. I suppose deep down I was hoping you would care or at least notice I'm in pain."

I gathered up his canes for him and we silently walked down the path towards the Wall together. He paused and stood still in front of one panel. He didn't say anything to me, he only took my hand and balanced himself in front of the panel. Reaching out carefully with his free hand, he touched the name of the hero he had mentioned earlier. I couldn't read the name, feeling this was his private moment and so I looked away. I stayed with him for support but I knew he needed to see his own reflection alone in the Wall. As he leaned forward to rest his head against the Wall, I turned around to comfort him, tears streaming down his face as he put his arm around me for balance. I cried with him as we walked slowly away from the Wall.

He saw my tears and held me close. "He was my brother you know, and in my mind he's still twenty years old." We both glanced back toward the Wall, as I helped him to a bench. "Why did you take time for me?"

I brushed fresh tears from my eyes as I said, "I respect you for serving in Vietnam. I wanted to make sure you felt welcome home."

As we parted, he kissed me respectfully on each side of my face. We never exchanged addresses or telephone numbers, but our experience together would bind us forever in spirit. Before he left, he turned around and said, "If you need to remember me, my name is Sean, you can find me forever in the reflection of that Wall, and if you want to remember anyone who has their name on that Wall, just understand the price of freedom and promise us you'll never forget." I watched him as he left, feeling somewhat lost inside. When I met up with students from my art class, I couldn't quite explain my discovery of the American spirit to them, but Sean became more than my art project, he enlightened a part of my soul. In my life – whatever might happen – I will never forget him, or the gift he gave me. ■

Post Traumatic Spouse Disorder

BY MARCIA FALK

Wife of VTA member, Steve Falk

An invitation to the women's breakfast at the Tanker's Association Reunion, St. Louis, Missouri in September, 2017, was extended and open to all the women. That being my first women's breakfast, I decided to attend to have a cup of coffee and enjoy a social opportunity with just women. I walked in shortly after it was in progress and listened as the women introduced themselves and shared a few details of their lives; family, children, grandchildren, and, from those who were married, who their spouses were.

When my turn came around, I introduced myself and shared a few details about my life and my family. I found myself going beyond the requested "introduction," sharing my marriage of almost fifty years to my husband Steve who served in the Marine Corps First Tanks in Vietnam from 1967-1968. In those moments, I began to share the ups and downs of life which are normal, everyday affairs, but not when compounded by the likes of P.T.S.D. from a war fought half a century earlier and carried throughout the days of my marriage.

I had discovered, shortly after our honeymoon, that the man I knew before his time in Vietnam was not the same. I figured that it was just "adjustment" time for newlyweds. Life became busy raising a family of four children and carrying on our responsibilities as a couple and parents. The atmosphere in our home was generally one of happiness and contentment, but there were times throughout those years of emotional stress that affected us all. There were highs and lows. Trauma of that experience was seemingly buried from day to day until it reared its ugly head in many forms. Life was much like a roller coaster that kept us often in the state of emotional confusion. I knew as a wife and mother that something was seriously wrong, but had no idea these episodes were the lingering effects of war. Who knew? We didn't. We endured.

I have often said that my husband might have left Vietnam, but Vietnam has never left him.

I have come to learn that there is help for those who suffer from P.T.S.D. and it has been and continues to be a blessing. There's counseling and therapy from the V.A.; there are books written on the topic and information on the internet.

I have found solace in my faith and in sharing my life with other women who have had similar experiences with their spouses and family members. Having the opportunity such as the woman's breakfast at the Tankers Association Reunion to share my thoughts and experiences, as well as sharing social times with the wives of some of the men with whom my husband had served, has brought support and strength. It has also brought a deeper understanding of the sacrifices made by our men and women in the military and families carrying the psychological, as well as emotional and physical scars, of war forever.

My hope is that by sharing my life's experiences with the women at breakfast gave us the opportunity to connect on common ground. After all we are in this together, no matter how many years have passed.

Recently, a former classmate of mine expressed her feelings about Vietnam saying that it's time we get over Vietnam.

Oh, if we only could! ■

Tanks are Cool!!!

Roger "Blues" Unland takes the gunner's seat

1st Sgt Rick Lewis writes: A few of us VTA boys went over to 29 Stumps to see one of our guy's grandson who is assigned to Bravo Co, 1st Tanks. We had a very good visit with Bn. staff and they took us on a great tour of the great "iron beast." It was a kick to climb all over outside and inside of the tanks. However, I do believe they made the inside smaller. Or maybe we have just gotten bigger ... and we are surely not as nimble as we once were. Plus, the temperature was 107 degrees, a cool day out there.

And for your information, the Bn has two female tankers. One is a 1st. Lt. and has a platoon. The second is a crewman (or is it a crew person?). Gee, it's getting harder to tell us apart anymore.

Belmo Explains It Better

A few months ago as part of what I am pretty sure is their annual plan to help their wives (Mary and Casper) retain their sanity, "Blues" and "Sparrow" made their annual visit from their homes in Southern California to my home in South San Francisco (note: San Mateo County; not located in San Francisco City or County). One day during that visit, Blues mentioned that Rick Lewis had said that he thought a few of us who live out here in "The People's Democratic Socialist Republic of California" should get together and visit 1st Tanks, which is presently home- based at Marine Corps Air Ground Combat Center, 29 Palms, AKA "The Stumps." Being a Marine who always enjoys spending time with Marine brothers of all ages and one who also has a special reason for participating in such a visit (which I will later reveal), I said "Hell yeah, let's do it." So, with some help from a brother who I served with in Bravo Company 5th Tanks, I made the short 500 plus mile drive from the San Francisco Peninsula to the Stumps. I just returned from that visit. As one would expect, it was a great experience for us all but, as I have stated for me, it was very special and here is the reason why.

As you are aware almost two years ago, while we were at our reunion in Washington DC, my grandson "T.J." called me on my cell phone and advised me that he had decided that after he graduated from high school he wanted to be a Marine just like his cousins Jason, Mike, Rodney Raymond, Uncle Dominic, Great Uncles Stan and Herb and me. But, T.J. specifically wanted to be the kind of Marine he has heard so much about. T.J. wanted to be a USMC tanker. The last time I saw T.J. was at his MCRD San Diego graduation in December of 2015, and since then he has "made it all happen." T.J. has been serving with Bravo Company, 1st Tanks, for almost a year now. He's a Lance Corporal (meritoriously promoted) who now sits in the gunner's seat of a tank in Bravo's 3rd Herd (B-34 Aka "Black Pearl").

The brother Marines who made the visit with me were Rick Lewis, Roger "Blues" Unland, and Bill Stevenson (see photo attached). During our visit, we met a few of our younger brothers and, as one would expect, it was a great experience for us all, but for me it was so very special. We all talked about making the visit an annual or biannual event that can include more USMC Vietnam Tankers who live out here on the "Left Coast." Of course, that would only become a reality if there was an interest in such an event.

FYI; for those brothers who know my son Dominic, but did not have the opportunity to talk with him during our 2017 reunion, here is an update. In 2014, after ten years of active duty Dominic became a "Prior Service Marine." With the exception of having lost his mother (my ex-wife) earlier this month, and having to deal with his many service connected disabilities and VA challenges, he is doing well. He is presently enjoying his 4th year as a full-time college student. His course of study has included Automotive and Welding Technology. He resides in Richmond Heights, Missouri.

Semper Fidelis
Belmo

Rick's Camaro

Rick Walters writes: Many Marines bought Camaro Z28's after Vietnam. Frank Fowler bought a Z28 through the PX while he was still in-country and took delivery when he got back to the World. It is more of a road car with great handling than it's a drag car. The Z28's ran much better than Ford's Boss 302 and, to be honest, I have been a Ford man for my entire life.

Joe Tyson's Grandkids' New Toy

Joe Tyson writes: Check it out. It has an 8 HP motor and holds 4 kids or One Adult & 2 kids. Going to make barrel into a potato cannon. I just have to paint it Marine Corps green, if it ever stops raining.p. ■

HENRY WHALEY

We need a photo of Cpl. Henry Whaley, who was the loader on a tank Bravo-11, and who drowned when his tank sank in a river on 3/30/66, just 6 miles outside Da Nang. We need any picture of him for a "Fallen Heroes" presentation, as well as getting it added to the Virtual Wall. He is one of the few tankers with no photograph on the Vietnam Veterans Memorial website.
Please contact: Bob Peavey (Phone) 770-365-3711 or (Email) at REPV@comcast.net

John Michael Hill

Lt. Col. Ken Zits called on Friday, July 6, 2018, to tell me that Sgt. Hill was a member of Ken's tank company, Bravo Co, 1st Tanks. Ken also said that he seems to recall that Sgt. Hill was "short" on his tour just before he was KIA. Ken said that Hill had orders to Quantico for the Enlisted Commissioning Program (ECP) where, after taking a short school, he would become a brand new 2nd Lt. Ken also indicated that **Ted Quackenbush** was with Sgt. Hill when he was KIA. We have asked Ted to submit a story as well.

OPERATION BUFFALO JULY 1967

Richard Peksens sent the below photo. We think that it may have been taken around July 2, 1967 during "Operation Buffalo."

#1 QUESTION: Do you know of this photo? Do you recognize any of the Marines in it? If so please let me know.

#2 QUSTION: The Marine holding the KIA's arms has red hair and is wearing shower shoes (in the field?).

Hank Brightwell writes: I do not recognize anyone nor do I recognize the tank with "MAMMY JAMMER II" on the gun tube. I'll pass on to Greg Kelly as he may recognize it from "A" Co.

Greg Kelley writes: I don't know for sure. I do remember running into a red-haired E-5 up at Con Thien once, but I don't remember his name.

The Marine to the left on the fender who is wearing shower shoes has red hair.

JOHN COX

John Cox (MOS 2141) had been a VTA member from 2009 to 2013 when he just dropped out. This past June I sent him a note asking him why he left the VTA.

John's reply was: "The USMC VTA was enjoyable and it was nice seeing some of my old buddies. However I have moved on in life and try not to dwell on the past. I assure you that you or the association did nothing to make me not want to participate."

Phone: 352-486-3199
Email: soapypony@aol.com

REQUEST: If anyone would like to contact John and try to get him to rejoin the brotherhood, that would be commendable.

TANKER FOUND!

This photo is of LCpl Anthony Bennet (far left) who I think was the driver of the "Upside Down Tank" that hit the mine in Aug '67. In the center is Chico Perez (Poncho) who was a tanker from a different crew. *(Continued on page 17)*

Once, always Marine

Quantico, Va.

FRED REED

It never leaves you. Turn off of Route 1 with its ugly strip development, drive past the Iwo Jima statue and across the lovely wooded expanse of this big Marine base, and you come to Q-town, as it is locally called – a patch of beer halls, tattoo parlors and fixum-boot places of the sort outside every Marine base.

I suppose it's tawdry, but at the same time it's not, and it's sure another world. For example, guys stride about in USMC T-shirts with huge shoulders, narrow waists and no hair. After the pudge and yuppies of Washington, it's like leaving a plummy district of San Francisco and stumbling into a Roman camp on the Rhine.

I went into the Command Post, a pub welcoming, as a sign said, Marines past, present and future. I hadn't been there for years. The place was still pleasantly gloomy, with all manner of Marine memorabilia on the walls. Business was slow in the afternoon. The stock-car races roared from a television. A blond waitress past prom age slung mugs of brew for a group of 40ish sergeants whom she knew by name. The two conversations I could half overhear dealt with amphibious armor and demolitions. The Marine Corps is not a kinder, gentler world, and doesn't want to be.

I pulled on a draft Bud and kept to myself. For the umpteenth time I tried to figure out this crazy organization. For inexplicable reasons, the old saying, "Once a Marine, always a Marine" is true. I come into these unsophisticated, friendly, unapologetically hard-nosed dives and somehow feel at home. Nowhere else does it for me, except the back streets of a few Asian cities. Washington's fashionable bars remind me of terraria for frivolous but exotic orchids. The pressroom at the Pentagon feels like a meeting place for vaguely carnivorous space aliens. The Command Post makes sense to me. Why? Beats me.

Maybe it's because the Marines don't whine. In a society dedicated to complaining, Marines don't. On the walls were some of the slogans the Corps holds holy. "Nobody ever drowned in sweat." "Either lead, follow, or get the hell out of the way." "To err is human, to forgive divine, neither of which is Marine Corps policy."

Maybe it's the unrepentant irreverence of the Marines. In this they are like Southerners, another group I feel at home with. Both are immune to the temptations of the zeitgeist. You can't impress a Marine, can't make him feel guilty because he doesn't have socially appropriate feelings about sexism or handguns. He may agree with you, but only by accident. You can arouse his admiration, but only on his terms – outshoot him, drink more beer or run more miles, and you will get his attention, but don't tell him you're a terribly important executive or secretary of the Army ("We all got problems, Bud.").

History hangs heavy in the Command Post, although I'm not sure everyone would feel it. Lewis Lapham, the editor of Harper's, once said percipiently that writers are realists pretending to be romantics, and that soldiers are romantics pretending to be realists. Indeed. In Marine bars you see pictures of leather-helmeted fighter pilots of World War II, gazing into the forgotten Pacific skies. Military men, especially Marines, are often emotionally more connected to the past than are civilians. The sergeant down the bar occasionally mentioned villages in Vietnam, places dimming in the national memory as a new generation arises.

Part of the appeal of the Marines, I think, is that you at least come out with stories to tell. So few people these days have stories. Marine boot camp is the funniest place on earth for guys with a certain robust sense of humor. The things Marines do – running the bars of Okinawa, driving preposterous semiaquatic floating iron boxes in heavy surf, stomping through jungles full of weird bugs lusting for human flesh – just plain promote tale-telling. I think a lot of former jarheads remember their years in green as a time when life still had bite.

And, of course, there's the Marine conviction that non-Marines are deprived and sad creatures to be treated with pity. "Army guys? They're all frustrated ballerinas. They wear all those badges and ribbons and gewgaws to keep their morale up, see, or else they'd be afraid of just about everything." This isn't fair, but, well, it isn't intended to be.

A curious outfit, the USMC, but good to have around. ■

Reed, based in Alexandria, Va. writes exclusively on military affairs. Distributed by Universal Press Syndicate.

Retired, Undefeated

BY SGT. WALTER WOOD, USMC CORRESPONDENT

For Leatherneck Magazine, July 1945

The tank was scrapped, they said. But they were wrong. Liz, the battered, snub-nosed Gen. Sherman wasn't scrapped. She was retired, undefeated.

Liz was hit before she made it to the beach, but Liz was the kind of tank that's hard to stop. On D-Day she was the second Sherman in a column of five grinding across the coral shelf reef toward Peleliu through water almost turret deep. The Japs in hill position ashore "walked" their mortar barrage on the column from front to rear. The lead tank staggered under a direct hit. Oily black smoke almost obscured the column. The Liz got it on the nose – a mortar shell smack dab on the muzzle of the turret gun. The hole in the gun muzzel was no longer round. It was shaped like an egg. It made Liz fighting mad. Liz was madder even than she had been months before at Arawe, New Britain, so she didn't need any prodding by Sgt. Stanley E Piotrowski of Dearborn, Michigan, to lunge forward and make the beach.

Later, Liz was proud of the way her crew took care of her nose and got her back into the fight. Five hours of sawing, 22 hack-saw blades, and a blow with a sledge hammer took ten inches off of her gun barrel and she returned to battle in time to knock out the biggest pillbox on Peleliu's airport and destroy a Jap tank in the enemy counter-attack across the airfield late in the afternoon.

Besides Sgt. (Pete) Piotrowski, the tank commander there was Sgt. Theodore L. Belgarde of White Fish, Montana; the driver Corporal Anthony (Pat) Flaherty of St. Paul, Minnesota; gunner Corporal Evan M. Knott of Chelsea, Michigan; assistant gunner J. Vranich of Buffalo, NY. They had driven Liz to a ditch on the perimeter of the beachhead and parked her there. It was a hot spot to work in but Liz could take it, and the sweating Marines would jump in the ditch whenever the Japs sent heavy stuff their way. The crewmen were in and out of the ditch more than quite a few times, and many sniper bullets pinged off Liz's thick skin as they sawed the gun barrel.

Sgt. Piotrowsk was afraid they wouldn't make it. He was mad, too. When he wasn't sawing, he was yelling "Hurry up! Hurry up!" He thought that he and Liz were going to miss all the action.

It was 0900 when they started. Soon after, other Marine tankmen come over to help. There was Plt. Sgt. Bernard N. Rosoff of Brooklyn, NY, who took charge of the working party, Sgt. Cecil E Argo of Wewoka, Oklahoma, driver of another tank, and Corporal Luther D. Mulanaz of Corcoran, CA, loader of still another Sherman. All took turns sawing. Rosoff was hit in the arm by mortar shrapnel even though he jumped in the ditch when that close one landed. He kept on working and didn't think much about the sore arm. Seven days later, the arm was swollen and discolored and he was evacuated to a hospital ship off shore. By noon that day, it was hotter than the well-known hinges and all the available water was rust-colored and tasted like the oil can from which it was poured. They sawed on Liz until 1400 that hot day, spending blade after blade, and when there was only a half inch of steel holding it, broke the end of the barrel off with a swing of the sledge hammer.

Snub nosed Liz was ready then to avenge her humiliation. When Piotrowski opened the throttle, she rolled up within a few yards of the reinforced concrete pillbox filled with Japs and let herself go. She knocked the emplacement out with 45 rounds of shells fired from her sawed-off gun and cut down the Japs who tried to escape with her .30 caliber machine guns.

Liz felt better and dropped back to the edge of the airstrip, a lady-in-waiting. She didn't have to wait long. At 1630 the Jap tanks came out. Liz selected one and went in and made the kill. Liz's number was 13, but it's plain to see the it wasn't up. She spent 35 days on Peleliu. When she got back to her home base, Liz was scrapped, or, as Sgt. Piotrowski put it, "retired – undefeated."

Looking For

(Continued from page 15)

The Marine on the right is Cpl. Hansen from supply. The rest of the crew from the mined tank: Sgt Joseph Hallas (Youngstown, OH); LCpl Richard Smith (Hopewell Junction, NY); and LCpl Kenneth Sphon (Portland, OR). Bennet was from Tulsa, OK. That is as much information that I have.

I did get a chance to meet up with Ray Scheurich. I took a vacation and flew out to Washington, DC and we spent a few days together. Nam was the last time I saw Ray and it was 50 years and one month since we had seen each other. From what he told me, the retriever was the lead vehicle which hit a mine and threw a track. And that is what he was told. He is still trying to find out exactly what happened. Fifty years is a long time. It is funny how some things that you can remember and some that you can't no matter how hard you try. It was great to get together after all of these years. I hope that any information that I pass on is helpful.

Semper Fi,

Adan Zlotek
Derby, NY ■

The Evolution of the American Tank

Evolved from slow, lumbering, and malfunctioning origins, the modern Main Battle Tank can cross long distances rapidly and engage targets at ranges unimaginable to soldiers and commanders in World War I trenches. But these monstrous metal warriors would be nothing without their clunky forebears.

Getting Into the Fight

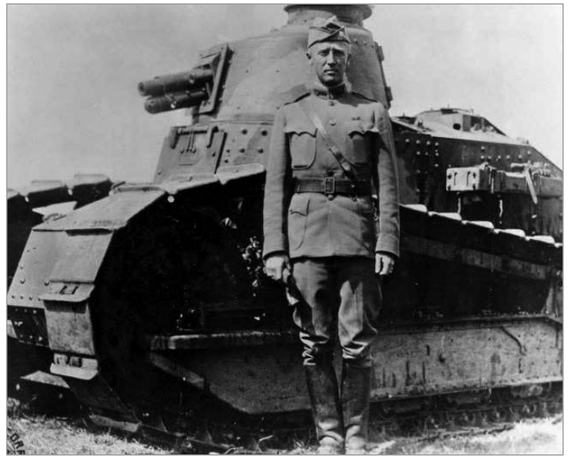
British Mark 1 tank, Sept. 25, 1916.

Much like the beginning of its side arms and rifles, the early U.S. tank owes much to the French and British. When the U.S. entered World War 1 in April 1917, they had little idea of the tank's potential. The British had only debuted their heavy tanks in September 1916, during the Battle of the Somme, and it would be another six months before these tanks delivered an impressive breakthrough at the Battle of Cambria. Most American military observers were unimpressed but some officers felt differently. Even before the American Expeditionary Force arrived in France, General Pershing took a liking to the tank. Seeing the metal monster in action, Pershing ordered the formation of an American tank corps before the end of 1917. In the spirit of cooperation, Britain and France shared tank designs, and the U.S. were interested in combining the British heavy and French light tank doctrines into one force, using them to punch through an enemy's frontline.

Two men, who would go on to become major figures during the next world war, began fitting this new battlefield beast into the U.S. army's ranks. In France Captain George Patton worked hard to assemble the U.S. Tank Corps, while in the U.S., Captain Dwight Eisenhower helped create the U.S. Tank Service.

Patton pushed hard for his assignment to the Tank Corps and was eventually ordered to establish a light tank school to train the first generation of American tankers. Patton and his men began training with the French Renault FT. The FT was a two-man light tank, the first to incorporate a turret which could rotate 360-degrees, armed with a 37mm cannon. Designed to be supported by infantry, the FT reached top speeds at around 6mph. It wasn't blazing fast, but it could provide mobile firepower wherever, whenever. Patton admired the FT's speed, mobility, maneuverability, and its ability to knock over small trees. Patton also shaped the Army's tank strategy, writing a highly detailed report on how to best deploy tanks. In December 1917, Colonel Samuel Rockenbach was placed in command of the still tankless U.S. Tank Corps. Rockenbach and Patton faced a massive challenge getting the Corps into action.

"Unless I get some tanks soon I will go crazy for I have done nothing of any use since November and it is getting on my nerves," writes an impatient Patton in a letter to his wife.



George S. Patton standing next to a FT tank, summer 1918.

American troops going to the battle line in the Forest of Argonne, Sept. 26, 1918.

A tank corps without tanks, Patton's men instead trained with wooden mock-ups, learning how to work their guns in the FT's confined turret. When the first tanks finally arrived, the tank crews quickly got to grips with their new vehicles.

The roar of the tank's engine made communication impossible, so the tank's commander/gunner had to communicate with the driver through a system of kicks to signal stop, reverse, left, and right. By March 1918, Patton had trained his first batch of tank crews, and with his recent promotion to Lt. Colonel, he formed the 1st Light Tank Battalion, and he was eager to see action, writing to his wife: "I am getting ashamed of myself when I think of all the fine fighting and how little I have had to do with it!"

Back in the U.S., the Tank Service's mission was to train a much larger force to help with the planned 1919 offensives. Like the Tank Corps in France, the Tank Service the gear needed for training. The war ended before Eisenhower and his men saw action. Following the FT design, the Army needed thousands of tanks. While Ford developed the M1918, a 3-ton light tank, the FT was the first tank to be manufactured in America. The M1917, as it became known, didn't reach France before peace broke out in Europe, so U.S. troops used French-made Renault FTs to finish out the war. These tanks saw action for the first time during the Battle of Saint-Mihiel and the Meuse-Argonne Offensive in September 1918. Patton, now commanding the 1st Tank Brigade, led 144 tanks into battle.

Before the battle, he told his men: "No tank is to be surrendered or abandoned to the enemy. If you are left alone in the midst of the enemy keep shooting. If your gun is disabled use your pistols and squash the enemy with your tracks... If your motor is stalled and your gun broken, still the infantry cannot hurt you. You hang on [and] help will come. In any case, remember you are the first American tanks. You must establish the fact that American tanks do not surrender! As long as one tank is able to move it must go forward. Its presence will save the lives of hundreds of infantry and kill many Germans. Finally, this is our big chance. Make it worthwhile."

At Saint-Mihiel many of Patton's tanks got bogged down in sodden French soil, but enough pushed on to help capture several key positions. 2nd Lt. Paul Haimbaugh summarized his experience of fighting in a tank as getting "shot-up, put out a half-dozen machine-gun nests; clean up another sunken road with machine guns placed every ten feet along it." During the Meuse-Argonne Offensive Patton insisted on leading from the front, he was wounded in the thigh and the war ended soon after, much to Patton's disappointment.

Taming the New Beast of the Battlefield

After World War 1 military spending declined immensely. While American tanks proved their worth during the fighting, the Tank Corps shrank from 20,000 men in November 1918, to just under 300 by 1919. By 1920 the Tank Corps was no longer an independent branch of the Army, and America stopped most experimentation and development tanks as the M1917 slowly became obsolete. Contrary to how Patton had seen tanks as the new cavalry, the Army instead focused on linking them to the infantry. With funding for new tanks drying up, Patton transferred back to the cavalry in despair, while Eisenhower took a staff job a year later.

M2 tank during the Guadalcanal Campaign, 1942.

Fitters assemble an M2A4 tank at a British depot, 1941.

Between wars, American tank development puttered along, only producing two light tank designs, the M1 and M2. These light tanks weighed less than 15 tons with the machine gun-armed M1 being originally called a 'combat car.' The M2, armed with a 37mm gun and several .30-caliber machine guns, had slightly better armor and its 250-horsepower engine reached speeds of 35mph. Throughout the 1930s, the M2 eventually evolved into the M2A4, a tank with thicker armor and better weaponry, which eventually saw action during the Guadalcanal campaign. By 1939 the U.S. was building a heavier version of the M2 light tank, unimaginatively called the M2 medium tank. Just over 100 of these thanks were built before another world war shifted production to other medium tanks. As the world once again descended into conflict, the Army realized the potential of the tank. Eventually, it would be America's industrial >>

capacity that would overwhelm Nazi Germany, an enemy that wielded tank warfare with deadly efficiency during the Blitzkrieg.

The American Tank and a World at War

American M3 Lee medium tank and its crew at Fort Knox, Kentucky, 1942.

In December 1941, the U.S. officially entered the single greatest armed conflict in human history. During the war, American factories would produce tens of thousands of tanks, which would gain legendary status. A year before the attack on Pearl Harbor, the Lend-Lease agreements supplied Britain and the Soviet Union with over $50 billion (nearly $700 billion today) worth of war material including aircraft, warships, vehicles, and tanks. Seeming to make up for lost time, the U.S. made a staggering 90,000 tanks from 1939 to 1945.

The first American tanks saw action not with U.S. soldiers at all, but with the British. Nearly 200 M3 Stuart light tanks took part in Operation Crusader in North Africa. But the tanks failed to penetrate German armor. Instead, they were re-deployed in the Pacific where no Japanese armor would challenge them. It would be the M3 Lee, a medium tank, that would eventually supply the British in North Africa. Receiving nearly 3,000 of the new tanks, the British deployed the M3 Lee in May 1942. Designed only two years earlier, the M3 Lee was really a stopgap measure. While the Lee was liked for its powerful 75mm main gun, its 51mm frontal armor, it was too tall, making it an easy target. Another big issue was its archaic sponson-mounted main gun, which was reminiscent of the tanks of World War 1, and it performed poorly in rough country. Although the Lee remained in service throughout the war, it was the M4 Sherman, an all-round medium tank, that would become a legend on the battlefield. The Sherman, designed in 1940 to address the Lee's shortcomings, coming with a 75mm gun as standard, it had a five man crew. Despite the cramped conditions, the M4 evolved rapidly throughout the war with six tank variants and a dozen specialized vehicles like mine exploders, duplex drive amphibious Sherman's, rocket launching tanks, flamethrower tanks, and tank recovery vehicles.

Not only was the M4 versatile it was well suited for mass production with nearly 50,000 made between 1942

U.S. Sherman tank in Iwo Jima with flamethrower, March 1945.

and 1945. It also helped that the Sherman proved to be a very reliable and easy to maintain in the field, a feature that quickly endeared the tank to its crews. The M4 went on to become the armored spearhead in North Africa, Italy, the Pacific, and Europe. Patton, a military man intimately familiar with U.S. tanks, put them to good use. He led the Third Army during its breakout from the Normandy beachhead and its dash across France. Pushing his men hard and his tanks even harder, he reportedly once said that "my men can eat their belts, but my tanks have gotta have gas."

But despite its immeasurable benefits compared to the M3 Lee, the Sherman was still incredibly noisy, making navigation difficult. Freeman Barber, a radio operator, recalled decades later that they "tied a rope to the driver and steered him like a horse... pull left to go left, right to go right, pull back to stop, and kick him in the back to go forward." Its armor was also unevenly distributed with Barber saying how German shells "ripped right through us. Ours just bounced off the panzers." Its weapons stowage was also a problem because a well-placed enemy shell could ignite it, causing the tank to burn and explode. This unfortunate side effect eventually earned the Sherman tank a nickname by the German army–"Tommy cooker." The problem was fixed stowing the ammunition in "wet storage" with water jackets protecting the shells. American tanks in the hands of Allied tank crews were instrumental in driving back the Wehrmacht, liberating Western Europe and cutting a swathe through the island chains of the Pacific. While not the most technically advanced thanks on the battlefield, they were able to take on the enemy.

The Cold War Heats Up

1st Marine Division with the M46 Patton tank in North Korea, 1950.

Despite its shortcomings, the Sherman remained in service during the Korean War alongside newer tanks including the M26 Pershing, which briefly saw action at the end of World War II, and the M46 Patton. The Patton, the first in a family of tanks named after the legendary General Patton, it boasted a larger 90mm gun, thicker armor, and a more powerful V12 engine. During the early phases of the war, American tanks went up against Soviet-supplied North Korean T-34s. But these were quickly dealt with and tank battles became few and far between. Instead, tanks increasingly acted as infantry support. In this role the Pershing, with its unreliable transmission, was eventually replaced by the M46.

Throughout the Cold War most of America's tanks were deployed in Western Europe, facing down the threat of a massive Soviet armored offensive. But in the mid-1960s the Cold War began to heat up in southeast Asia and some American tanks found themselves fighting in Vietnam. With the lessons learned in Korea, the Army developed new tanks, the M47 and M48 Patton's. While the M47 never saw action with the Army, it was widely exported to America's NATO allies before a further improved M48 was introduced in 1952.

The M48 became the workhorse tank of the Vietnam war along with the M551 Sheridan light tank. While American

US Marine M48A2 tank with grunts in Vietnam

M60A1 tank in West Germany, 1982.

tanks in Vietnam found themselves supporting the infantry, the fighting was no less hard, as one Marine recalled: "We fired a dozen rounds of canister in two minutes...the heat and smoke inside the turret became intense; I had never fired so many 90mm rounds in such rapid succession."

At one point the enemy got so close they climbed on top of the tank, and the fighting was so desperate they had to call for another tank to 'scratch their back'. Firing a 90mm beehive anti-personnel round directly at the besieged tank, sending 4,400 metal darts washing over the hull.

In 1961, the U.S. introduced the M60, ushering in a new concept, the Main Battle Tank (MBT). The Army envisaged the MBT as a universal tank that was maneuverable, packed a punch, and was well-armored yet light. Using new lighter composite armor, more efficient engines, and improved suspension, the MBT combined the firepower and protection of a heavy tank with the mobility of a medium tank. The M60 wasn't deployed to Vietnam, instead, the U.S. sent its newest tank to West Germany. Packing a 105mm gun, armor up to 10 inches thick, and a 750 brake-horsepower engine, the M60 could travel up to 30mph and only required a crew of four. The Army fielded three major variants with the last, the M60A3, meeting a similar fate as the M48–rendered obsolete in the 1990s by the M1 Abrams.

Enter the M1

US Marine in an M1 Abrams tank, February 2, 2011.

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Development of a new Main Battle Tank to replace the aging M60 Patton began in the 1970s, and after a decade of research and development the M1 Abrams was born. Boasting new lighter composite armor, a 105mm (later 120mm) gun and a top road speed of 45mph, the M1 was designed to match the formidable new Soviet T-80 MBT. The Abrams has a four-man crew and could be fitted with explosive reactive armor that can destroy warheads. The 1990 Gulf War saw the Abrams go into action for the first time alongside the older M60 Patton. One of the new technologies built into the Abrams was GPS. It was an invaluable tool during the Gulf campaign, making it much simpler for U.S. forces to navigate the vast distances of the Iraqi deserts.

M1 Abrams tank firing its main cannon during the Gulf War, 1991.

The Gulf War saw the last great tank battles of the 20th century. On the February 26th, 1991, at the Battle of 73 Eastings, the superior technology and training of the M1 Abrams and its crews came to the fore as Captain H.R. McMaster seized the initiative and led a 9-tank troop straight at the heart of an elite Iraqi armored division. It wasn't long before McMaster's troops were joined by several more and the American M1A1s pushed through the Iraqi lines.

McMaster later recalled the battle, describing how his troop of tanks cut "a five kilometer-wide swath of destruction through the enemy's defense...we had the advantage and had to finish the battle rapidly." Inside the tanks, the Abrams' gun stabilization system kept the 120mm M256A1 smoothbore gun on target, allowing the gunners to pour armor-piercing rounds with depleted uranium penetrators, and M830 high-explosive anti-tank rounds onto the Iraqi tanks. Once the enemy frontline was broken McMaster used his tanks' speed and maneuverability to swing around and attack the Iraqi reserves. "More of the enemy came into view. We drove our tanks into the center of the [Iraqi] position and destroyed many of the enemy vehicles from the rear." The day after the battle at 73 Eastings, the 1st Armored Division clashed with several Iraqi armored divisions at Medina Ridge, this would be the last major tank battle of Operation Desert Storm. Iraqi forces lost 186 tanks while the U.S. lost only four.

M1 Abrams tanks enter Baghdad in 2003.

Since then, the M1 Abrams has been upgraded and deployed during the 2003 invasion of Iraq. U.S. tanks also played a key role in the fall of Baghdad with M1A1 and M1A2 Abrams spearheading the attack on the city's airport. Some M1s were equipped with the Tank Urban Survival Kit (TUSK) to improve the tank's protection against infantry anti-tank weapons during the close urban fighting and during the occupation phase of Operation Iraqi Freedom.

The new M1A2 Abrams SEP v3 battle tank, at the Aberdeen Proving Grounds in Maryland, is the latest and greatest U.S. tank. It was delivered to the Army on Oct. 4, 2017.

Since 2003, the U.S. has increasingly fought insurgent forces that don't have tanks, and tanks are unsuited to counter-insurgency operations like those in Afghanistan. It's like having a hammer but needing a scalpel. However, Russia and China continue to develop their own tank arsenals with Russia's high-tech new T-14 Armata and China's VT4.

In October 2017, the U.S. Army received the first of its new enhanced M1A2s which have improvements to counter IEDs, better communications, and enhanced power generation systems. New technologies like railguns, drones and ultralight armor will be the key to creating an incrementally better tank than the Abrams, but this is some years away.

While the U.S. was quick to realize the tank's potential, they have not always been at the forefront of tank development. Lagging behind during the interwar period, it was only America's impressive industrial capacity that enabled them to catch up and gain an edge.

But since V-E Day in 1945, the U.S. has led the way, developing some of the most successful tanks of the Cold War along with the modern and formidable M1 Abrams. With all the advanced tools of modern warfare, the tank still remains the U.S. military's armored spearhead on the ground–just as it had been a century earlier on the trench-laden fields of France.

Editor's Note: The US Army has recently decided that they need a lighter-weight, infantry-friendly combat vehicle to replace the M-1 tank. The scuttlebutt is that the Dept. of Defense may be taking the old M-60 "Patton" medium gun tank and refitting it with new highly computerized fire control systems and other modern upgrades and modifications. For the cost of one M1A4 Abrams, four M-60's can be redone and the contract is said to be for 5,000 M-60 variants. ■

ARMOR DATES OF INTRODUCTION

Rest-of-world benchmarks are italicized

1915
Armored Car No. 1
Armored Car No. 2

1916
Mark I (UK)
Mack White Armored Cars

1917
Renault FT (France)
King Armored Car

1918
6-ton Tank M1917
3-ton Special Tractor M1918

1920
Heavy Tank Mk. VIII

1928
Medium Tank M1
Light Tank M1

1930
6-ton Tank M1917A1

1931
Armored Car M1

1934
Scout Car M1

1935
Char B1 (France)
Light Tank M2A1
Light Tank M2A2
Combat Car M1
Convertible Medium Tank M1

1936
CTL-3
SOMUA S 35 (France)

1937
Scout Car M2
Scout Car M3
Scout Car M4 (T13)

1938
Light Tank M2A3
Combat Car M1A1
Combat Car M1A1E1

1939
CTL-3A
Pz.Kpfw.IV Ausf.D (Germany)
Sd.Kfz.251 Ausf.A (Germany)
Scout Car M3A1
Medium Tank M2

1940
Light Tank M2A4
T-34 Model 1940 (USSR)
Medium Tank M2A1
Combat Car M2

1941
Light Tank M3 Stuart
Half-track Personnel Carrier M3
Half-track Car M2
Light Tank M3(diesel) Stuart
Medium Tank M3 Lee
LVT1
75mm GMC M3
81mm Mortar Carrier M4
CTL-3M

1942
Medium Tank M3A1 Lee
Medium Tank M3A2 Lee
Medium Tank M3A5 Lee
105mm HMC T19
Medium Tank M4A1 Sherman
75mm HMC T30
Medium Tank M3A3 Lee
Light Tank M5 Stuart
Medium Tank M4A2 Sherman
37mm GMC M6
105mm HMC M7
Pz.Kpfw.IV Ausf.G (Germany)
Light Tank M3A1 Stuart
Medium Tank M3A4 Lee
Medium Tank M4A3 Sherman
MGMC T28E1
Medium Tank M4 Sherman
Medium Tank M4A4 Sherman
Pz.Kpfw.Tiger Ausf.E (Germany)
Light Tank M3A1(diesel) Stuart
Light Tank M3A3 Stuart
3" GMC M10
75mm HMC M8
155mm GMC M12
Armored Car T17E1 Staghound I
3" GMC M10A1
TRV M31B1
Cargo Carrier M30
Light Tank M5A1 Stuart
Half-track Personnel Carrier M5
Medium Tank M7
Heavy Tank M6
57mm GMC T48
MGMC M14
TRV M31
LVT2; Heavy Tank T1E1
Armored Car T17 Deerhound

1943
Pz.Kpfw.Panther Ausf.D (Germany)
MGMC M13
MGMC M15
Universal Carrier T16
Half-track Car M9A1
Light Armored Car M8 Greyhound
Heavy Tank M6A1
Light Tank M22 Locust
81mm Mortar Carrier M4A1
MGMC M16
TRV M32B2
Armored Utility Car M20
Medium Tank M4A6 Sherman
76mm GMC M18
Half-track Personnel Carrier M3A1
Half-track Personnel Carrier M5A1
Half-track Car M2A1
Medium Tank T23
Armored Car T17E2 Staghound AA
CGMC M15A1
MGMC M17
TRV M32B1
CTMS-1TB1

1944
Pz.Kpfw.Tiger Ausf.B (Germany
T-34-85 (USSR)
Medium Tank M4A1(76)W Sherman
81mm Mortar Carrier M21
Medium Tank M4A3(75)W Sherman
Medium Tank M4(105) Sherman
Medium Tank M4A3(76)W Sherman
LVT(A)4
105mm HMC M7B1
Twin 20mm GMC T10E1
TRV M32
Light Tank M24 Chaffee
90mm GMC M36
Medium Tank M4A2(76)W Sherman
Medium Tank M4A3(105) Sherman
TRV M32B3
Assault Tank M4A3E2 Sherman
Medium Tank M4A3(76)W HVSS Sherman
Medium Tank M4(105) HVSS Sherman
Medium Tank M4A3(105) HVSS Sherman
AUV M39
90mm GMC M36B1
Heavy Tank M26 Pershing
LVT4; LVT3; LVT(A)2
Medium Tank M4A1(76)W HVSS Sherman
Medium Tank M4A2(76)W HVSS Sherman
LVT(A)1

1945
155mm GMC M40
TRV M32A1B3
LVT(A)5; Twin 40mm GMC M19
90mm GMC M36B2
TRV M32A1B1
155mm HMC M41
8" HMC M43
Medium Tank M45
105mm HMC M37
Universal Carrier T16E2
AUV M44

1946
FV4007 Centurion Mk.I (UK)

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1948
Medium Tank M26A1 Pershing

1949
Medium Tank M46 Patton

1950
T-54 Model 1949 (USSR)

1951
90mm Gun Tank M47 Patton 47
Twin 40mm SPG M42
76mm Gun Tank M41 Walker Bulldog;
40mm GMC M34

1952
90mm Gun Tank M48 Patton
155mm SPG M53
8" SPH M55
AIV M75
76mm Gun Tank M41A1 Walker Bulldog
155mm SPH M44

1953
APC M59
90mm SPG M56

1954
TRV M74

1955
76mm Gun Tank M41A2 Walker Bulldog
76mm Gun Tank M41A3 Walker Bulldog
Flame Thrower Tank M67
Flame Thrower Tank M67A1
106mm Multiple SPR M50 Ontos
105mm SPH M52
105mm SPH M52A1
155mm SPH M44A1
Twin 40mm SPG M42A1

1956
120mm Gun Tank M103
LVTP5
90mm Gun Tank M48A2 Patton 48;
LVTR1

1957
LVTH6; 4.2" SPM M84

1959
120mm Gun Tank M103A1

1960
APC M113; 105mm Gun Tank M60
MRV M88

1961
107mm Self-propelled Mortar Carrier
M106

1962
T-62 Model 1962 (USSR)
105mm Gun Tank M60A1
105mm SPH M108
155mm SPH M109
120mm Gun Tank M103A2
ACPC M577
ACRC M114
ACRC M114A1
Flame Thrower Tank M67A2
175mm SPG M107
8" SPH M110

1963
90mm Gun Tank M48A3 Patton
SP Flame Thrower M132
SP Flame Thrower M132A1
106mm Multiple SPR M50A1 Ontos

1964
107mm Self-propelled Mortar Carrier
M106A1
ACPC M577A1
APC M113A1
AVLB M60A1

1965
KPz Leopard (FRG)
CEV M728

1966
152mm Gun-launcher AR/AAV M551
Sheridan
FV4201 Chieftain Mk.I (UK)
AMX-30B (France)

1967
90mm Gun Tank M48A3 (Mod B) Patton

1969
ACRC M114A1E1
M163 VADS
SP SAM M730 Chaparral

1970
SPz Marder 1 (FRG)
BMP-1 Model 1970 (USSR)

1971
LVTP7

1972
152mm Gun-launcher AR/AAV M551A1
Sheridan
105mm Gun Tank M60A1(AOS); LVTC7

1973
T-64A (USSR); 152mm Gun Tank M60A2
155mm SPH M109A1

1974
155mm SPH M109A1B

1975
MRV M88A1
105mm Gun Tank M48A5 Patton 48
105mm Gun Tank M60A1(RISE)
FIST-V M981

1976
155mm SPH M109A2

1977
105mm Gun Tank M60A1(RISE)(PASSIVE)
8" SPH M110A1

1978
T-80B (USSR)
105mm Gun Tank M60A3
8" SPH M110A2

1979
ACPC M577A2
105mm Gun Tank M60A3(TTS)
KPz Leopard 2 (FRG)
APC M113A2

1980
105mm Gun Tank M1 Abrams
Commando Ranger (Peacekeeper)

1981
IFV M2 Bradley
CFV M3 Bradley

1982
MLRS M270; SP SAM M730A1 Chaparral
Cargo Carrier M548A1

1983
FV4030/4 Challenger 1 (UK)
AAVP7A1
LAV-25
155mm SPH M109A4
AAVC7A1
AAVR7A1

1984
105mm Gun Tank IPM1 Abrams
M163A1 PIVADS
FAASV M992

1985
120mm Gun Tank M1A1 Abrams
LAV-M; LAV-L

1986
SP SAM M730A2 Chaparral
ACE M9; LAV-R

1987
APC M113A3; IFV M2A1 Bradley
CFV M3A1 Bradley
LAV-AT; LAV-C2

1988
120mm Gun Tank M1A1 HA Abrams
FV510 Warrior (UK)
IFV M2A2 Bradley
CFV M3A2 Bradley
Smoke Generator Carrier M1059

1989
152mm Gun-launcher AR/AAV
M551A1(TTS) Sheridan

1992
Char Leclerc (France)
155mm SPH M109A6 Paladin
120mm Gun Tank M1A2 Abrams

1994
FV4034 Challenger 2 (UK)
T-90 (Russia); ACPC M577A3
Cargo Carrier M548A3

1996
Smoke Generator Carrier M1059A3

1997
HRV M88A2 HERCULES

1998
Mechanized Smoke Obscurant Carrier
M58 Wolf

1999
ASV M1117 Guardian

2000
IFV M2A3 Bradley; CFV M3A3 Bradley
MLRS M270A1
The AFV Database
120mm Gun Tank M1A1D Abrams

2001
120mm Gun Tank M1A2 SEP Abrams

2002
ICV M1126 Stryker

2005
MC-B M1129 Stryker

2006
NBCRV M1135 Stryker
MGS M1128 Stryker

2007
M1200 Armored Knight

2008
120mm Gun Tank M1A2 SEP V2 Abrams

2009
120mm Gun Tank M1A1 SA Abrams

2014
120mm Gun Tank M1A2 SEP V2 ECP1
Abrams

A Tank Development Discussion without Mentioning the M-48 Patton Tank?

Editor's Note: *Back in 2011, "Armor" magazine featured an essay detailing the development of US Army tanks. The author completely left out the* ***M-48 Patton tank*** *in his discussion. I felt compelled to write a Letter to the Editor which the magazine published. The author then wrote a rebuttal that appears below.*
****

Sent: Friday, June 10, 2011 6:56 PM
Subject: RE: REPLY = Rebuttal to Armor Magazine Letter (UNCLASSIFIED)

Dear Mr. Wear,

It is a pleasure to write to you. I was able to find your contact through the great work you are doing on your USMC Vietnam Tankers Website. Thank you for your service the Armor Community and Nation and continued stewardship to a precious portion of our military history. I read your critique to my letter in the latest edition of ARMOR. In the spirit of clarification, one tanker to another, I must say I feel compelled to reply.

You take issue with my claim that, "it is difficult to find an effective medium tank after 1960, as they evolved into heavier main battle tanks." Because I did not address the M48 and M60, I am somewhat ignorant of its achievements and must disqualify my statement. On the contrary, I am very aware of the flexibility of the M48 in all the various spectrums of conflict and environments it served in. The M48 was indeed a champion in Vietnam, the Middle East, Indo-Pakistani Wars, and even Mogadishu (something that Major James did not address either in his initial article).

My statement was not to dismiss the stellar performance of these tanks and their crews, but I considered them both part of the evolutionary transition to main battle tanks. The M48 was not so much a medium tank as it was the interim design for America's first Main Battle Tank. Classified as a "medium" tank, the M48 diverged significantly enough to share more in common with emerging main battle tanks than WWII and Korean era medium tanks. When production ceased in 1959, it required a gun upgrade in order to compete with the T-54/55 (hence, your baby, the M48A3), which it did in spades. By the time of the M48A5 modification, the Patton's more competitive 105mm gun made it virtually indistinguishable from America's first official MBT, the M60 Patton. So, the argument is semantic. I concede the M48 was a medium tank in name. But once the A3 and other variants occurred, it had much more in common with MBTs.

Letters to the editor do not normally include credentials. Your letter assumed my statement was the result of being among "younger folk" with inexperience, and not appreciative of the recent past. I would like to offer my credentials to counter your perception. Like you, my father was an Air Force Officer. He was a C-130 and Jolly Green Giant SAR pilot, and earned the DFC in Vietnam where he was a combat veteran of the Tet Offensive and Khe Sanh. So, I certainly possess a knowledge and appreciation for Vietnam. I possess 17 years as an armor officer in Armor, Infantry, and Stryker formations. I served overseas in Korea as well as two line-combat tours in Iraq (one as an Iraqi Infantry advisor). My assessment emerges from this experience and from a B.S. in military history from West Point, as well as a Masters of Military Art and Science from the School of Advanced Military Studies at Ft. Leavenworth. My credentials speak for themselves. I stand by my assessment.

Again, hopefully this helps you understand the basis for my statement. I am very pleased with your interest in this debate, and humbled that you took the time to respond to ARMOR. I certainly believe the M48 is much underappreciated, and I admire the efforts you have gone through to keep its legacy and those of its crews alive. Best of luck!

GO ARMY!
Sincerely,
MAJ Eric Duckworth
****

Subject: RE: #2 REPLY = Rebuttal to Armor Magazine Letter (UNCLASSIFIED)

Hello Major,

What a nice surprise! Thank you for responding so positively and respectfully. And thank you for your service to our wonderful country. It is young men like you who make this nation strong & safe.

To be honest, I had forgotten that I had written (again) to Armor magazine and since I have not received my most recent issue, I did not know that they had published my comments.

I must admit that as I grow older...(and unfortunately not all that wiser)...I find myself being exposed over and over again to "youngsters" who profess their expertise on a subject when there is absolutely no basis for their "learned" statements. With that said, after reading your resume, I have to admit that I was terribly wrong to assume that you were one of those ne'er do well young-uns.

You do seem to have a far deeper and much more technical knowledge of US armor development than I can profess. And your detailed ex- >>

planation below is testament to your understanding of a far bigger picture than I was ever privy to. As you may or may not know, I was a lowly Marine tank section leader (of three M-67A2 flame-thrower tanks) while I was deployed to Vietnam. Prior to that time, I was a crewman on an M-48A3 on garrison duty at Camp Pendleton, CA. My narrow focus was solely on the Patton tank, so reading your original article made me bristle...unnecessarily I might add.

Just so you know, my son is a 20-year career US Army 1st Sgt. who spent his first fourteen years with the Rangers. Fortunately (or unfortunately) he's deployed and "gotten into the fray" seven times thus far. Thankfully he is now non-deployable for the next three years...and that is a good thing!!!

I wish you the best of good luck to you in your Army career and with your life as it unfolds.

Semper Fidelis,

-John

P.S. I'd like to have your permission to publish your rebuttal letter in the USMC Vietnam Tankers Association news magazine. I am president of this group of veterans and I think that being all Patton "tread heads," the membership might enjoy your words.

The Buzz

The Army Is Closer to Getting a Deadly New 'Tank'

BY KRIS OSBORN – MARCH 5, 2018

The US Army is taking a substantial next step in the accelerated development of a new Mobile Protected Firepower lightweight armored vehicle–designed to support infantry combat teams in fast-moving combat situations. The service, which plans to build prototypes in the next several years, is now beginning to evaluate industry proposals for the new vehicle which seeks to combine rapid deploy ability, maneuverability and maximum survivability for crew members in combat. Army developers tell Warrior Maven the new armored vehicle is expected to change land war by outmatching Russian equivalents and bringing a new dimension to advancing infantry as it maneuvers toward enemy attack.

Senior developers with the Army Research Laboratory have told Warrior Maven about cutting edge efforts to both lighten weight of combat vehicles while simultaneously emphasizing mobility. In fact, as part of this effort, two MPFs are being built to fit on an Air Force C-17 aircraft.

"Making a vehicle lighter weight and more capable requires a multi-function effort. For instance, you can integrate an antenna into the armor protection," Karl Kappra, Chief of the Office of Strategy Management for the Army Research Lab, told Warrior Maven in an interview.

Long-range precision fire, coordinated air-ground assault, mechanized force-on-force armored vehicle attacks and drone threats are all changing so quickly that maneuvering US Army infantry now needs improved firepower to advance on major adversaries in war, Army leaders explain.

"Mobile Protected Firepower helps you because you can get off road. Mobility can help with lethality and protection because you can hit the adversary before they can disrupt your ability to move," Rickey Smith, Deputy Chief of Staff, G-9, TRADOC, told Warrior Maven in an prior interview on the subject..

BAE Systems is a major player among a handful of industry developers submitting proposals; BAE tells Warrior Maven they have succeeded in submitting a proposal for consideration by the Army. General Dynamics Land Systems and SAIC are also among major vehicle manufacturers planning to compete to build the vehicle.

BAE has developed and built a vehicle that is currently going through internal testing. The company will submit the vehicle to the Army on April 2 to undergo additional U.S. government testing as a part of the bid assessment process, company developers said.

"We worked closely with our manufacturing and supply network to identify modern technology that has already been fielded or has been through qualification testing," said Jim Miller, director of Business Development at BAE Systems' Combat Vehicles business, told Warrior Maven. "This allows us to integrate new technology into a proven design to help meet the Army's capability and schedule requirements."

Specifically, BAE developers have explained a few detailed elements of their proposal, to include modifications to a type-classified M8 Armored Gun Systems. The effort, company officials describe, seeks to build upon prior investments in the weapon. Army plans for the vehicle emphasize expeditionary warfare as part of the services' broader pivot to ongoing preparations for major power, large scale mechanized force on force warfare. While this type of training and preparation has always been a key part of the Army calculus, major land war against a near peer adversary is taking on newer urgency in light of today's threat environment. This includes efforts to update traditional Combined Arms Maneuver tactics in response to rapid Russian and Chinese military modernization.

As part of this, the Army is now putting a much higher premium on rapid deploy ability as both a deterrent and modern combat tactic, should the service need to quickly mobilize to address threats. Countering Russian aggression on the European continent, for instance, is a primary example of current Army efforts to strengthen its force posture and train with allies in the region.

With this in mind, the vehicle is intended to be lighter weight and therefore able to keep pace with advancing infantry units. This reality underscores the reason infantry needs tank-like firepower to cross bridges, travel off-road and keep pace with advancing forces.

Smith did not elaborate on any precise weight, but did stress that the effort intends to find the optimal blend of lethality, mobility and survivability. Senior Army leaders, however, do say that the new MPF will be more survivable and superior than its Russian equivalent.

The Russian 2S25 Sprut-SD air transportable light tank, according to Russian news reports, weighs roughly 20 tons and fires a 125mm smoothbore gun. It is designed to attack tanks and support amphibious, air or ground operations. The vehicle has been in service since 2005.

In recent years, lighter weight armor composites have been a central focus of Army developers, at places such as the Army Research Laboratory, for instance. While naturally many details of the vehicle configurations are not available, these kinds of initiatives are indeed likely to figure prominently. In addition, speed and increased mobility are also a major survivability enhancing developmental tactics, Army developers have explained to Warrior Maven. "It (US Army MPF) is a light vehicle but not at the expense of the protection that the Russians accept. The level of protection on the vehicle they (the Russians) airdrop is not even close to what we are talking about," Maj. Gen. David Bassett, former Program Executive Officer, Ground Combat Systems, said last fall at the Association of the United States Army annual symposium.

In light of these kinds of near-peer adversaries with longer-range sensors, more accurate precision fires and air support for mechanized ground assault, the Army is acutely aware that its maneuvering infantry stands in need of armored, mobile firepower.

Current Abrams tanks, while armed with 120mm cannons and fortified by heavy armor, are challenged to support infantry in some scenarios due to weight and mobility constraints.

Accordingly, Smith explained that Infantry Brigade Combat Teams (IBCTs), expected to operate in a more expansive battlespace, will require deployable, fast-moving close-to-contact direct fire support. This fast-changing calculus, based on knowledge of emerging threats and enemy weapons, informs an Army need to close the threat gap by engineering the MPF vehicle. Tactically speaking, given that IBCTs are likely to face drones armed with precision weapons, armored vehicle columns advancing with long-range targeting technology and artillery, infantry on-the-move needs to have firepower and sensors sufficient to outmatch an advanced enemy.

The service expects to award two Engineering Manufacturing and Development (EMD) deals by 2019 as part of an initial step to building prototypes from multiple vendors, service officials said. Army statement said initial prototypes are expected within 14 months of a contract award. While requirements and particular material solutions are expected to adjust as the programs move forward, there are some initial sketches of the capabilities the Army seeks for the vehicle.

According to a report from Globalsecurity.org, "the main gun has to be stabilized for on-the-move firing, while the optics and fire control system should support operations at all weather conditions including night operations."

For the Army, the effort involves what could be described as a dual-pronged acquisition strategy in that it seeks to leverage currently available or fast emerging technology while engineered the vehicle with an architecture such that it can integrate new weapons and systems as they emerge over time. An estimation of technologies likely to figure prominently in the MPF developmental process leads towards the use of lightweight armor composites, active protection systems and a new generation of higher-resolution targeting sensors. Smith explained how this initiative is already gaining considerable traction.

"The science is how do I fuse them together? How do I take multiple optical, infrared, and electromagnetic sensors and use them all at once in real-time " Smith said. This includes the rapid incorporation of greater computer automation and AI, designed to enable one sensor to perform the functions of many sensors in real-time, Kappra said. For instance, it's by no means beyond the imagination to envision high-resolution forward-looking infrared (FLIR) sensors, electromagnetic weapons and EO-IR cameras operating through a single sensor.

"If you are out in the desert in an operational setting, infrared alone may be constrained heat, so you need all types of sensors together, and machines can help us sift through information," added Smith.

In fact, the Army's Communications Electronics >>

Research, Development and Engineering Center (CERDEC) is already building prototype sensors–with this in mind. In particular, this early work is part of a longer-range effort to inform the Army's emerging Next-Generation Combat Vehicle (NGCV). The NGCV, expected to become an entire fleet of armored vehicles, is now being explored as something to emerge in the late 2020s or early 2030s.

One of the key technical challenges when it comes to engineering a mobile, yet lethal, weapon is to build a cannon both powerful and lightweight enough to meet speed, lethality and deploy ability requirements. U.S. Army's Combat Vehicle Modernization Strategy specifically cites the need to bring large caliber cannon technology to lightweight vehicles. Among other things, the strategy cites a lightweight 120mm gun called the XM360 – built for the now-cancelled Future Combat Systems Mounted Combat System. While the weapon is now being thought of as something for NGCV or a future tank variant, its technology bears great relevance to the MPF effort – which seeks to maximize lightweight, mobile firepower. Special new technology was needed for the XM360 in order to allow a lighter-weight cannon and muzzle to accommodate the blast from a powerful 120mm tank round.

Elements of the XM360 include a combined thermal and environmental shroud, blast deflector, a composite-built overwrapped gun, tube-modular gun-mount, independent recoil brakes, gas-charged recuperators, and a multi-slug slide block breech with an electric actuator, Army MCS developmental documents describe. For lighter weight vehicles, recoil limitations are overcome by incorporating the larger caliber rarefaction wave gun technology while providing guided, stabilized LOS, course-corrected LOS, and beyond LOS accuracy."

An article in "Next BIG Future" cites progress with a technology referred to as rarefaction wave gun technology, or RAVEN, explaining it can involve "combining composite and ceramic technologies with castings of any alloy – for dramatic weight reduction." The idea is, in part, to develop and demonstrate hybrid component concepts that combine aluminum castings with both polymer matrix composites and ceramics, the report says.

This article originally appeared on Warrior Maven ■

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Photo from Vietnam

Garry Hall writes: John, that's my tank on Operation Pegasus. It was taken by Darrell Clock from his tank "The Lonely Bull" when we were about 2 clicks east of Ca Lu.

Tankers head for hills — all 6,000 acres

Marine reservists bust out of MCRD, make tracks for Camp Elliott

(Editor's note: This is the second in a two-part series.)

Meredith R. Vezina

Traditions Editor

Courtesy retired Reserve Col. Gerald D. Schmidt

Reserve Lt. Col. Gerald D. Schmidt, commander of the 4th Tank Battalion, discusses the power of a Marine tank flash suppressor's side blast in 1962.

Twenty acres may seem like plenty of space, but for San Diego's reserve tank battalion, the Marine Corps Recruit Depot barely gave them room to park their tanks. So it's not surprising that when the battalion received word in 1958 that they were moving to Camp Elliott, the men were ecstatic. Although it was only 10 miles up the road, Elliott would give them plenty of room to flex their muscles–6,000 acres of hills and ravines.

"We had a lot to gain by moving to Elliott," says retired Reserve Marine Corps Col. Gerald D. Schmidt, the battalion's commanding officer from 1960 to 1963. "Elliott provided us with ideal training facilities."

Established in 1940 on 26,000 acres, Camp Elliott (now a part of Miramar Naval Air Station) played an important role in World War II as a Marine Corps training center. The southern part of the camp, known as Jacques Farm, became a tank school, and during the war, nearly every Marine tanker graduated from Jacques Farm. In 1944, the camp was transferred to the Navy and operated as a training and distribution center. The Naval Training Center established a small-arms range at the camp, but most of the buildings were used primarily as storage facilities.

In addition to gaining ample space for training exercises, the 339 reservists of the I st Tank Battalion (redesignated the 4th Tank in 1962) also converted two of Elliott's main barracks into offices and classrooms.

First activated as the 11th Tank Battalion in San Diego in December 1946, the reservists were called up for the Korean War. While awaiting orders at Camp Pendleton, the tankers were split up and assigned to fight with other units. In May 1952, the reserve battalion was organized as the l st Tank. At that time, the unit consisted of a headquarters and service company and three tank companies. Company C was located in Mattydale, N.Y.

On Elliott's vast, open terrain, the battalion had more than adequate room to maneuver all 20 of its M-48 tanks at the same time. However, the tankers were prohibited from using any of their weapons-the 90mm guns mounted on the tanks or their machine guns -because Elliott was directly under the landing pattern for Miramar Naval Air Station.

"We got around this problem by mounting a rifle on the barrel of a tank," Col. Schmidt told Traditions. "We set up a thousand-foot range and fired a .30-caliber bullet from the rifle. It wasn't as good as the real thing, but it worked out pretty good for us."

A graduate of the University >>

of Wisconsin's Army ROTC, Col. Schmidt re-signed his Army commission for one in the Marine Corps in July 1942. After serving two years in the Pacific, he was assigned to Camp Pendleton as post communications officer until his release to reserve duty in January 1946.

In 1950, Col. Schmidt was in Milwaukee, Wis., when he was called to active duty for the Korean War. "I was a public information officer with Company C, 18th Infantry Battalion, USMCR."

Says Col. Schmidt, who was a captain at the time, 'I'll never forget the trip out to the West Coast. The entire company boarded the train in Milwaukee. But just before the train left the station, this guy in a nice suit (presumably an executive with one of the city's beer manufacturers) came up to me and gave me a key. 'There's a boxcar full of beer on the end of this train,' the guy told me. I guess it was a way of thanking us for serving our country."

Col. Schmidt, concerned about letting a train full of troops loose on a boxcar of beer, tried to keep the cargo a secret, but somehow the word got out. "Everyone kept asking me to open the car, but I wouldn't do it."The colonel held steadfast until the train was side-tracked just outside of Gary, Ind. "It was real hot, and the men reminded me of a saying we had back then-'two cans per man per day.' Everyone drank their two cans in minutes." Col. Schmidt says most of the cargo made it intact to Pendleton.

In 1954, Col. Schmidt was assigned to San Diego Marine Corps Recruit Depot. Two years later, he returned to reserve duty. And in 1960, he became commanding officer of the 1st Tank Battalion.

Col. Schmidt is the first to admit that when he became battalion CO, there were some "large gaps" in his knowledge about tanks. But he requested and took a short tank familiarization course at Camp Pendleton. "It was an excellent course, so good that after I finished the course, I ordered everyone else in the bat-talion to take it."

Because of live-firing limitations placed on the unit at Elliott, the reserve tankers spent two weeks every year either at Camp Pendleton or at Twentynine Palms north of Palm Springs, Calif.

"Summer camp required a lot of long-range planning," says Col. Schmidt. "We always took six or seven tanks with us to Twentynine Palms, and getting them on the trains and tying them down was an art form. The railroad would send people out to show us what to do. Some of our men eventually got jobs with the railroad because they learned a lot about trains and dogging down equipment on flatcars."

According to Col. Schmidt, getting the tanks to Pendleton was a logistical nightmare. "We had to drive the tanks to the Coast Guard Station in San Diego. We always had a police escort and left very early in the morning, before most people were awake. The city had numerous requirements, and we could only take certain roads." Once at the Coast Guard Station, the tankers drove their machines onto LSTs for the trip to Pendleton.

In July 1962, the battalion was redesignated the 4th Tank. And as a result, the unit picked up the 4th's history, dating back to 1943 when it was activated at Camp Pendleton for World War II. With the exception of two officers, the 4th Tank was a reserve battalion. It was the first unit to capture Japanese-mandated territory in the Pacific. And on June 16, 1944, on Japanese-held Saipan in the Marianas Islands, 4th Tank Battalion Gunnery Sgt. Robert H. McCard sacrificed his life to save his crew, a deed for which President Franklin D. Roosevelt post-humously awarded him the Medal of Honor.

In the 1970s the battalion traded in its M-48 tanks for M-60s. While the battalion's headquarters and Company A continued to operate out of Elliott, Company B moved to Yakima, Wash. And by the late l970s, the unit added Company C, located in Boise, Idaho with a detachment in Amarillo, Texas.

Being spread all over the western United States presented the bat-talion with logistical problems -mainly getting the companies together, so they could train as a unit. In an April 1979 interview in Leatherneck magazine, battalion commander Reserve Lt. Col. Eric N. Piper conceded the problem. "We had a chance to have two gun companies and H&S (Headquarters & Service Company) work a combined arms problem in Boise, Idaho this year," Lt. Col. Piper said. "This is the nearest we've come in having the entire unit train together."

In 1984, the entire battalion, under the command of Reserve Lt. Col. Michael Neil, got a chance to train as a unit at Twentynine Palms. " The training was about the best my people could get short of actual combat," Lt. Col. Neil told a reporter.

Little did he realize that six years later, the battalion would be in "actual combat" in the Persian Gulf, and that it would demolish an entire Iraqi tank battalion without sustaining a single casualty.

In a recent letter to Traditions, Reserve Lt. Col. John M. Kaheny, the battalion 's commanding officer in the mid 1980s, wrote that superior training on high-tech equipment accounted for much of the unit's success in the Middle East. Says Lt. Col. Kaheny, "We were the first Marine battalion, active or reserve, infantry or armor, to use the MILES (Multiple Integrated Laser Engagement System) laser system to simulate live firing at the battalion level. It was this type of innovative training that paid off in the Gulf War." ■

Army receives upgraded Abrams tank And more improvements are on the way

BY TODD SOUTH

October 27, 2017

The first of a batch of upgraded M1A2 Abrams tanks has hit the Army, with more improvements coming in the next few years.

Earlier this month, the first of six M1A2 System Enhancement Package Version 3 Abrams tanks rolled off initial production at the Joint Systems Manufacturing Center in Lima, Ohio, the Army announced. These are the first upgrades to the Army's 1,500-tank fleet. They fall in line with overall Army plans to enhance lethality and improve its ground combat systems, preparing them for potential fights with near-peer adversaries. Another such improvement was the recent addition of a 30mm cannon to many of the Army's Strykers, which began deliveries last year.

"This version is the most modernized configuration of the Abrams tank, having improved force protection and system survivability enhancements and increased lethality over the M1A1 and previous M1A2 variants," said Lt. Col. Justin Shell, the Army's product manager for Abrams.

The version three enhancements address on-board power, electronics, computing, weapons, force protection and sensors. They are primarily a bridge to the version four variant planned for the 2020s, Program Executive Office-Ground Combat Systems spokeswoman Ashley Givens told the media. The M1A1 Abrams tank has been in use since the 1980s. The M1A2 version being enhanced has been in production since 2005, according to officials.

According to the Army, the version three upgrades include:

1. Joint Tactical Radio System: The new system integrates various radio types into the system and allows for network readiness and interoperability with the rest of the brigade combat team.

2. Power Generation and Distribution: This enhancement includes improved amperage alternator, Slip Ring, Enhanced Hull Power Distribution Unit/Common Remote Switching Modules, and the Battery Monitoring System. These changes compensate for increased power demands of newer tank equipment.

3. Line Replaceable Unit/Line Replaceable Module redesign: New modules allow for troubleshooting within the system to the card level without the need to remove the entire system to conduct repairs.

4. Counter Remote Control IED Electronic Warfare version 3: this is the latest version of the tank's counter-IED equipment.

5. Ammunition Data Link: The ADL allows tankers to program the M829A4 Advanced Kinetic Energy and Advanced Multi-Purpose rounds.

6. Auxiliary Power Unit: Allows tankers to operate the on-board system during silent watch operations for reduced detection probability.

7. Armor Upgrades: Undisclosed advances in ballistic protection.

The enhancements are being installed at both JSMC in Lima and at the Anniston Army Depot in Anniston, Alabama. The version four variant is scheduled for testing in 2021, production in 2023 and fielding in 2025, Givens said. Version four will add new laser rangefinder technology, color cameras, advanced meteorological sensors, ammunition data links, laser warning devices, integrated on-board networks and more lethal, wider ranging 120mm tank ammunition. The lethality advances center around the third generation Forward Looking Infrared camera, which can detect the enemy at greater distances and through most obscurants. The version four Abrams will also carry a multipurpose 120 mm round. The AMP round will take the place of the High Explosive Anti-Tank round, the Multi-Purpose Anti-Tank, the M1028 Canister to attack dismounted infantry, and the Obstacle Reduction Round that's used to destroy large obstacles.

"These vehicles are not just about assuring our allies, or deterring or coercing potential adversaries," said Maj. Gen. David Bassett, program executive officer for Ground Combat Systems, in a statement. "They are about compelling our enemies and winning the multi-domain battle."

How America's M1 Abrams Tanks Will Defeat One of Its Greatest Foes

BY KRIS OSBORN

February 21, 2017

The Army is fast-tracking an emerging technology for Abrams tanks designed to give combat vehicles an opportunity to identify, track and destroy approaching enemy rocket-propelled grenades in a matter of milliseconds, service officials said. Called Active Protection Systems, or APS, the technology uses sensors and radar, computer processing, fire control technology and interceptors to find, target and knock down or intercept incoming en- >>

Army Abrams tanks, Bradley's and Strykers are being outfitted with high-tech, vehicle-mounted systems which can detect, track and destroy approaching enemy RPG fire within milliseconds.

emy fire such as RPGs and Anti-Tank Guided Missiles, or ATGMs. Systems of this kind have been in development for many years, however the rapid technological progress of enemy tank rounds, missiles and RPGs is leading the Army to more rapidly test and develop APS for its fleet of Abrams tanks.

"The Army is looking at a range of domestically produced and allied international solutions from companies participating in the Army's Modular Active Protection Systems (MAPS) program," an Army official told Scout Warrior. The idea is to arm armored combat vehicles and tactical wheeled vehicles with additional protective technology to secure platforms and soldiers from enemy fire. Vehicles slated for use of APS systems are infantry fighting vehicles such as Bradley's along with Strykers, Abrams tanks and even tactical vehicles such as transport trucks and the emerging Humvee replacement, the Joint Light Tactical Vehicle.

Tuyen: Please tighten up the spacing

"The Army's expedited APS effort is being managed by a coordinated team of Tank Automotive Research, Development & Engineering Center engineers, acquisition professionals, and industry; and is intended to assess current APS state-of-the art by installing and characterizing some existing non-developmental APS systems on Army combat vehicles," the Army official said. General Dynamics Land Systems, maker of Abrams tanks, is working with the Army to better integrate APS into the subsystems of the Abrams tank, as opposed to merely using an applique system, Mike Peck, Business Development Manager, General Dynamics Land Systems, told Scout Warrior in an interview.

Peck said General Dynamics plans to test an APS system called Trophy on the Abrams tank next year. Being engineered as among the most survivable and heavily armored vehicles in existence, the Abrams tank is built to withstand a high degree of enemy fire, such some enemy tank rounds, RPGs, rockets and missiles. Abrams tanks can also carry reactive armor, material used to explode incoming enemy fire in a matter that protects the chassis and crew of the vehicle itself. However, depending upon the range, speed and impact location of enemy fire, there are some weapons which still pose a substantial threat to Abrams tanks. Therefore, having an APS system which could knock out enemy rounds before they hit the tank, without question, adds an additional layer of protection for the tank and crew. A particular threat area for Abrams tanks is the need the possibility of having enemy rounds hit its ammunition compartment, thereby causing a damaging secondary explosion.

APS on Abrams tanks, quite naturally, is the kind of protective technology which could help US Army tanks in tank-on-tank mechanized warfare against near-peer adversary tanks, such as a high-tech Russian T-14 Armata tank. According to a report in The National Interest from Dave Majumdar, Russian T-14s are engineered with an unmanned turret, reactive armor and Active Protection Systems. A challenge with the technology is to develop the proper protocol or tactics, techniques and procedures such that soldiers walking in proximity to a vehicle are not vulnerable to shrapnel, debris or fragments from the explosion between an interceptor and approaching enemy fire.

"The expedited activity will inform future decisions and trade-space for the Army's overarching APS strategy which uses the MAPS program to develop a modular capability that can be integrated on any platform," the Army official said—Rafael's Trophy system, Artis Corporation's Iron Curtain, Israeli Military Industry's Iron Fist, UBT/Rheinmetall's ADS system, and others.

Trophy: DRS Technologies and Israeli-based Rafael Advanced Defense Systems are asking the U.S. Army to consider acquiring their recently combat-tested Trophy Active Protection System, a vehicle-mounted technology engineered to instantly locate and destroy incoming enemy fire. Using a 360-degree radar, processor and on-board computer, Trophy is designed to locate, track and destroy approaching fire coming from a range of weapons such as Anti-Tank-Guided-Missiles, or ATGMs, or Rocket Propelled Grenades, or RPGs,

The interceptor consists of a series of small, shaped charges attached to a gimbal on top of the vehicle. The small explosives are sent to a precise point in space to intercept and destroy the approaching round, he added. Radar scans the entire perimeter of the platform out to a known range. When a threat penetrates that range, the system then detects and classifies that threat and tells the on-board computer which determines the optical kill point in space, a DRS official said.

New foam armor for tanks can pulverize enemies

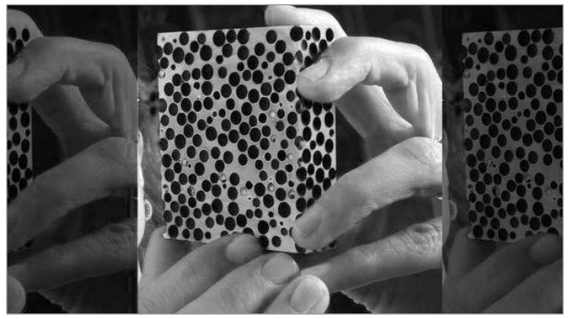
BY ALLISON BARRIE | Fox News

New foam could provide better protection than tank armor

Defense Specialist Allison Barrie shares the inside scoop on breakthrough new foam that could provide better protection than Kevlar or tank armor, and is strong enough to pulverize armor piercing rounds. A revolutionary new material called Composite Metal Foam, or CMF, can pulverize enemy rounds and could even be used as an armor to protect tanks and other combat vehicles.

Believe it or not, this breakthrough foam may provide greater protection than traditional armor steel plates.

It is also far lighter than current armor. How much lighter? This foam has the potential to dramatically reduce the armor weight on combat vehicles by about 65 percent. This is a discovery with potential to revolutionize future tanks and armored vehicles.



Tests continue to prove that this foam not only stops rounds, but it can smash the would-be armor piercing rounds into smithereens.

In addition to defending against direct hits by powerful enemy weapons, the wonder foam may also deliver better protection from explosion blast waves, deadly "cook offs" and even radiation.

Scientists at North Carolina State University and the U.S. Army's Aviation Applied Technology Directorate have been working together on this remarkable foam.

What exactly is it?

Basically, it is foam made out of metal — hence "metal foam." Like shaving foam or sea foam, CMF has holes that help make the material sponge-like. This Swiss cheese-like structure also helps to make CMF lighter than normal metal. Let's say a tank covered in this foam armor gets a direct hit by one of the enemy's tank main guns. When it strikes the CMF, the foam's hollow spheres - the "holes" - absorb some of the strike's energy and help resist damage from the hit.

Armor piercing rounds versus the foam

Armor piercing rounds are a serious threat — and a growing threat, as they have become more widely used by enemies of the United States. These rounds are designed to tear through heavy armor like it is aluminum soup can for maximum destruction. It may seem hard to believe, but tests continue to prove that this foam not only stops rounds, but it can smash the would-be armor piercing rounds into smithereens.

In one test, one inch of this remarkable foam faced off against an M2 .30 caliber armor piercing bullet. The bullet travels with 2,780 foot-pounds of energy and when it makes contact with the foam, that armor piercing round is Hulk-smashed by the foam.

Explosions versus the foam

The CMF is also remarkably good at deflecting blast waves.

Improvised explosive devices (IEDs) have unfortunately become a cruel, crude, commonplace weapon for enemies of the United States. The immediate blast and shrapnel can inflict devastating damage to personnel and vehicles. Less well known, these bombs also pose another threat that is not visible.

The explosions yield shock waves and these invisible waves of energy can impact the brain. These waves can cause harm and play a role in traumatic brain injury.

Tests have shown this foam may also provide better protection for warfighters inside a vehicle from these shockwaves. If a tank is rolling through a war zone and an IED goes off nearby, the foam armor structure helps absorb the blast, better protecting the warfighters inside.

Heat versus foam

Tests have shown the foam can provide enhanced protection from heat. When put to the heat challenge, heat took twice as long to pass through the CMF as it did with typical stainless steel. The foamy holes in the material also play a role in slowing heat transmission.

In practice, this slow heat transmission quality could be vital to save lives. If, for example, heat from a nearby explosion is enough to cause sympathetic detonation of a tank's unfired ammo, then the foam could crucially slow down the travel of this heat. These "cook offs" are very serious and deadly. Even seconds can be paramount in giving the warfighters time to leave the tank before it is too late.

Less weight, more protection

Tanks are beasts. The M1 Abrams Main Battle Tank, for example, weighs in at more than 60 metric tons, so every pound matters. Rolled homogeneous armor steel plate is frequently used for tanks and armored vehicles. The new foam has potential to provide enhanced protection — three times lighter than the current armor approach. Here's a practical example: A future vehicle could theoretically be kitted out with just 4 tons of CMF, rather than 12 tons of the traditional armor. This >>

means approximately the same protection, but with armor that is 8 tons lighter. Imagine what an impact lighter weight could have on future combat vehicles. This remarkable foam would then be providing yet another whole set of advantages, from faster speeds through to more maneuverability and agility.

The Army is considering next gen replacements for the M1 Abrams main battle tank and M2 Bradley infantry fighting vehicle, both of which will require state of the art, groundbreaking armor.

The Super Sneaky Way the U.S. Army Is Getting An Almost New Tank

BY DAN GRAZIER
January 10, 2018

When U.S. Army leaders decided they needed an upgraded version of the M-1 Abrams tank, they wanted to get it without enduring what they consider to be a cumbersome formal acquisition process.

Any program of this scale would ordinarily be classified as a Major Defense Acquisition Program and be subject to the oversight reviews and regulations that status entails. To avoid this, Army leaders claimed a major modernization effort to a weapon central to their very identity was a mere design tweak, and managed the project through the far less rigorous Engineering Change Proposal process.

This is a problem. The MDAP process may be cumbersome, but its intended purpose is to ensure the Pentagon properly evaluates its needs and then enters into programs that will properly meet them. It is also meant to exert the kind of pressure necessary to keep costs under control.

While the system is indisputably flawed — the F-35 is an MDAP — the services should not be permitted to simply ignore the laws. Doing so will almost certainly result in weapons of dubious combat value and more cost overruns. In performing such a maneuver to avoid the toughest of the acquisitions process, the Army is hardly alone. All of the services are increasingly resorting to similar schemes for other high-profile programs. The danger to the taxpayers, to say nothing of the men and women who will have to take these systems into combat one day, is that these complex and expensive weapons systems aren't subjected the kind of outside scrutiny necessary to ensure the services are purchasing suitable and effective equipment.

Hardly a year goes by without some effort to modernize the Pentagon's weapons buying process. Sen. John McCain, an Arizona Republican, succeeded in pushing into law a provision to split the Pentagon's Office of Acquisition, Technology & Logistics into at least two offices.

The long-time chairman of the Senate Armed Services Committee believes this will allow the separate undersecretaries to focus more on their particular offices. The new office of Research and Engineering will focus on innovation while the Acquisition and Sustainment office deals with basic business functions associated with buying and maintaining new weapons.

House Armed Services Committee chairman Rep. Mac Thornberry, a Texas Republican, has introduced legislation meant to streamline the process for the past three years. The latest version would allow the services to purchase more items through commercial marketplaces. Previous similar efforts, such as when the Pentagon attempted to change the definition of commercial items to avoid the competitive bidding process, proved problematic. Earlier efforts were geared towards improving program business models and reducing the process's reports and paperwork.

Congress also effectively outsourced acquisition reform to the defense industry when it created the "Section 809 Panel" as part of the 2016 National Defense Authorization Act to make recommendations to streamline the way the Pentagon buys weapons. This panel is comprised of several members with deep ties to the defense industry and is the subject of a concerted lobbying effort by the contracting community. The effectiveness of such efforts is not yet clear, but that might not matter. The usual result of most such efforts is an even more sluggish process — it is a rare problem that can't be made worse with the addition of more bureaucracy.

From the perspective of the Pentagon, the defense contractors, and their allies on Capitol Hill, there are advantages in procuring weapon systems through means other than the formal acquisition process. The acquisition process is so complicated and involved that the Department of Defense created the Defense Acquisition University in 1991 to educate personnel on navigating various aspects of the process. A full explanation of the process would fill volumes, but even the basics provide a glimpse into the complexity of the process.

A Major Defense Acquisition Program goes through three separate phases. At the end of each phase, a program goes through a review process to determine whether it has met the criteria to move onto the next phase. These transitions are called "milestones." That means we will be spending $22 million to upgrade a $6 million vehicle. A project begins when the services identify a new military need, or what is known as a capability. This is done through the Joint Capabilities Integration and Development System. This process figures out whether a new weapon system is actually needed to fill the perceived capability gap or if a change in tactics or some other non-material solution can get the job done.

This work is reviewed by the Joint Requirements Oversight Council. If they determine a new weapon system is needed, then it goes through the Material Solution Analysis Phase.

A program has to achieve 40 milestone requirements just to pass Milestone A into the second major phase of a program, the Technology Maturation & Risk Reduction Phase. These 40 requirements includes conducting an analysis of alternatives; an independent cost estimate and developing a test-and-evaluation master plan, which is essential to establish clear testing benchmarks to evaluate how the new weapon system performs in combat. While plenty of redundancy exists within the process, it is meant to protect the interests of both the troops and taxpayers. The Government Accountability Office has noted the importance of following through with these steps as part of a knowledge-based process. If the services don't do so, they create situations where programs "carry technology, design and production risks into subsequent phases of the acquisition process that could result in cost growth or schedule delays." Ideally, multiple contractors will build prototypes that will then be tested as part of a competition to see which design performs the intended mission better. The most successful programs begin this way, with the Lightweight Fighter Program and the A-X Program being the most notable examples.

The awarding of a contract for the winning design marks Milestone B, and the program passes into the Engineering & Manufacturing Development Phase. The prime and sub-contractors then finalize the development of the system and begin manufacturing enough production-representative goods to complete the Initial Operational Test & Evaluation process. The successful completion of the realistic combat and live-fire testing phase marks Milestone C, and the program proceeds to full-scale production and deployment to the troops.

Throughout this process, there are numerous review and decision points. This includes a review by the Defense Acquisition Board, which is made up of the Vice Chairman of the Joint Chiefs of Staff, Secretaries of the Military Departments, four undersecretaries of defense, the Director of Operational Test & Evaluation and others.

The Army commissioned General Dynamics to design an upgraded version of the M-1A2 Abrams tank in 2015. The first of what is expected to be 1,500 upgraded versions of the Army's Abrams tanks rolled off the assembly line at the Lima, Ohio, factory on Oct. 4, 2017.

The choice of contractors for the project was hardly a surprise as the Abrams tank is a General Dynamics product. That is not to suggest that another contractor could not perform the work. Other contractors such as BAE Systems also build armored vehicles and their component systems. By designating the project as an Engineering Change Proposal, however, the Army had little need to open it to a competitive bidding process as "most ECPs occur in a sole source environment."

To the casual observer, the Army's newest tank looks very much like the existing tanks. The M1A2 SEPv3 is still essentially an Abrams tank on the outside. However, the vehicle is quite different on the inside. It sports a new suite of communications gear called the Joint Tactical Radio System, which is supposed to fully integrate the vehicle into the Army's command and control network.

To provide the necessary electricity to power all of the new electronics and conserve fuel in situations where the crew does not need to run the gas-turbine engine, an improved generator has been added inside the hull.

The tank uses the same M256 smooth-bore cannon as the existing M-1A1 tanks, but the breach in this variant has been modified to use the Ammunition Data Link to be compatible with the advanced multi-purpose round. This allows the tank's gunner to send a signal to the round right before it is fired, setting its detonation mode to one of three different settings. It can detonate on impact, detonate on a delay for obstacle reduction, or airburst. This single round replaces four existing rounds, reducing the logistical burden of the armored forces, which is always a great concern.

In response to the threat posed by IEDs, the new tank includes a Counter Remote Controlled Improvised Explosive Device electronic warfare package. Should all of that fail, or when enemy fighters use simpler low-tech command-wired IEDs, the tank also boasts additional armor protection.

These are not insignificant changes. They add significantly to an already extremely heavy tank. As someone who spent ten years operating in tanks, I can tell you this is a significant problem. The Abrams tank is already too heavy for most of the world's bridges. This restricts the number of avenues a unit can take to reach an objective, making it much easier for the enemy to predict the unit's movements. It also increases the logistics burden because a heavier tank requires more fuel.

Sources within the Army say the new variant is too heavy for the Army's fleet of Heavy Equipment Transport vehicles. The Army relies on these vehicles to transport the tanks across long distances to conserve fuel and to reduce wear and tear on the tanks. They also do not come cheaply. The 2018 National Defense Authorization Act provides $650 million to upgrade 29 M-1A2s to the new configuration. That means we will be spending $22 million to upgrade a $6-million vehicle.

What makes this particularly curious is that at the same time the >>

Army is dodging the MDAP process with the tank upgrade program, the Hercules tank-recovery vehicle upgrade program is going through the MDAP process. That means the wrecker will receive greater scrutiny than will the weapon it's meant to recover.

The F-35 program is being managed through the regular MDAP process, but officials are now working furiously behind the scenes to prevent the next phase of it from following the same path. No one is quite sure what the latest incarnation of the F-35 will be able to do when the program completes the development and testing process, but that isn't stopping officials from seeking funds for upgrades to the aircraft. They are continuing to develop a list of needed capabilities for the newer version, called Block 4.

The Pentagon estimates the cost just for the initial phase of the modernization program — the research, development, test and evaluation phase — to be more than $3.9 billion through 2022. The Government Accountability Office correctly points out that this "would exceed the statutory and regulatory thresholds for what constitutes a major defense acquisitions program, and would make it more expensive than many of the other MDAPs already in DOD's portfolio."

The F-35 Joint Program Office has strenuously resisted efforts to create a separate MDAP for the Block 4 modernization citing time and money concerns. The Joint Program Office wants to run the modernization program as part of the original contract from 2001. By dodging the MDAP process for this effort, the program would avoid many of the processes meant to ensure proper Congressional oversight.

The program would not, for example, have to go through a Milestone B review, which would establish an acquisition program cost baseline and require regular reports to Congress about the program's cost and performance progress.

Such a move also means the program would not be subject to the provisions of the Nunn-McCurdy amendment which establishes unit cost growth thresholds. This would require the Pentagon to notify Congress if the program's unit cost grows by 25 percent and calls for the program's cancellation if the cost grows by more than 50 percent. This, unfortunately, does not happen very often because the law includes a waiver provision that allows the Secretary of Defense to certify that the program is critical to national security and should be continued. Only one program, the Armed Reconnaissance Helicopter, has been cancelled as a direct result of a Nunn-McCurdy breach.

The biggest ticket item currently attempting to dodge public scrutiny is the Air Force's newest bomber, the B-21 Raider. This program is being managed by the Air Force's Rapid Capabilities Office, a secretive group that is conveniently not subject to many of the regulations Congress imposes upon most acquisition programs.

According to the Air Force's Rapid Capabilities Office website, this outfit has a key advantage the regular acquisition office does not: "waivers to and deviations from any encumbering practices, procedures, policies, directives or regulations may be granted in order to ensure the timely accomplishment of the mission within applicable statutory guidance."

The Air Force has been extremely cagey about releasing cost information about the new bomber. During the bid process, service leaders announced a $550-million-per-aircraft target cost. So far, Air Force leaders have refused to publicly release the value of the B-21's development contract with Northrop Grumman. The stated reason for the secrecy about cost is that a potential adversary could derive information about the size, weight and range. Apparently no one will be able to determine any of that information from the artist's rendering of the new bomber, or from the list of subcontractors Air Force officials publicly announced.

The MDAP process is complex and does often fail to produce weapons that do what they are expected to do or come anywhere close to meeting the original cost expectations. The process is long over-due for a comprehensive streamlining effort. But even though the process is deeply flawed, the protections it includes were put there to protect the interests of the troops and the taxpayers. Just because the services find the process inconvenient, doesn't justify their efforts to dodge the oversight mechanisms provided by federal law.

Unless Congress arrests this disturbing trend, the services are likely to continue to use these schemes to bypass the rules and regulations put in place to protect both the troops and the taxpayers. The people's interests are served only when everyone involved in the process of buying new weapons have the correct information at the beginning. "Up-front realistic cost estimates and technical risk assessments, developed by independent organizations outside the chain of command for major programs, should inform Defense Acquisition Executives," wrote Tom Christie, former Director, Operational Test and Evaluation. "The requirement for those assessments to be independent, not performed by organizations already controlled by the existing self-interests sections of the bureaucracy is essential."

It is understandable that the services want to speed up the process of fielding new weapon systems. While there are many flaws in the current acquisition system, it is not the root of the problem. Service leaders and their partners in the defense industry keep pursuing unrealistic programs and Congress keeps voting for them.

Dodging the current acquisition regulations will not fix that problem, but it will make it easier for all involved to hide the bad results from the people paying for them, but presumably not from those who would suffer the consequences if a weapon were to fail in combat.

Upgrade to Marine tanks will allow gunners to set when shells explode

BY JEFF SCHOGOL

The Marine Corps Times
October 26, 2017

The Marines Corps is upgrading its M1A1 tanks so that gunners can program when 120 mm main gun rounds detonate.

"It puts several ammunition capabilities into a single round," said Lt. Col. Mark Braithwaite. "Given the logistics challenges of carrying multiple types of unique rounds for unique applications, having a round that can handle more than one type of target is particularly advantageous."

Some Marine tanks already have a version of the system, and all of the Corps' roughly 400 tanks will get newer ammunition datalinks in 2020, said Braithwaite, team lead for tank systems at Marine Corps Systems Command.

Using a console, gunners can program Multi-Purpose High Explosive rounds to detonate on impact, explode after a delay or airburst, he said. That way, one type of tank round can be used against enemy armor or infantry, depending on when it explodes.

"The airburst is specifically an anti-infantry capability," Braithwaite said.

The Army's tank fleet includes variants of the M1A2 Abrams tank, which has been produced since 2005, but the Marine Corps has no plans to acquire the newer tanks, he said. Corps officials are committed to making sure the M1A1 is still relevant on the battlefield.

Toward that end, the Corps will begin adding new front and side armor to all of its M1A1 tanks starting in fiscal 2019, said Braithwaite, who could not discuss what the new armor's capabilities are or what types of threats it is designed to defeat. Unlike recent upgrades to the Marines' tanks, the new armor was not inspired experiences in Iraq, he said.

It is expected to take about 15 years to add the armor to the Corps' tanks because the armor is best added when tanks are completely rebuilt at the Anniston Army Depot in Alabama, he said. "Fifteen years is not set in stone because there are a lot of contributing factors to that," Braithwaite said. "The modification is going to be applied as we rebuild tanks, and those numbers can change based on funding how many tanks we do per year."

US Army Tanks Get Futuristic Shields to Destroy Incoming Threats

BY ALLISON BARRIE

U.S. Army M1 Abrams tanks are being upgraded with a sort of invisible shield that will destroy incoming anti-tank missiles and other threats before reaching the tank. Known as Trophy, this cutting-edge technology will provide M1 Abrams tanks with 360 degree protection from threats.

Since the 1950s, the Army has been determined to give tanks something called "active protection systems." The goal of these sorts of systems is to stop incoming projectiles before they reach the tank – creating a sort of invisible shield around them. The Army has chosen Raphael's tech to upgrade 261 M1 Abrams tanks with Israeli-made Trophy active-protection systems. For nearly a decade, Trophy has already been protecting Israel Defense Force Merkava main battle tanks and relied on in conflicts in the Gaza Strip for example. Now approximately 3 brigades worth of U.S. tanks will also bring Trophy into battles.

Several relevant militaries have already equipped some of their tanks with active protection systems. Russia is one country that has been aggressively ramping up their tanks and other assets with active protection systems like Trophy. They've also armed them with a deep arsenal of anti-armor weapons that can seriously damage or destroy the targeted tank in spite of its armor. >>

And the U.S.? In addition to the iconic Abrams tank, the Army is upgrading a number of other combat vehicles. The Abrams M1A2 SEPv3 is expected to provide a significant improvement. This latest version of Abrams delivers a better hull armor and turrets. They also feature enhanced radio systems and power generation amongst other enhancements. For example, should a conflict erupt with Russia, then American tanks absolutely must be prepared to counter Russian firepower. Trophy is an important step to better protect American soldiers and match adversary capabilities.

What is Trophy?

The Trophy Active Protection system, aka "Windbreaker," gives tanks 360 degrees coverage. The system includes four antennas and two rotating launchers mounted on the tank.

If an enemy launches a weapon, like an anti-tank missile, at a U.S. Army tank protected with Trophy, radar or sensors recognize and locate the incoming threat. Tracking radar identifies what kind of threat has been launched at the tank. It distinguishes a rocket from an anti-tank missile, for example. Trophy instantaneously works out where the weapon would strike. If the missile will strike the tank, then it swings into action to protect the soldiers. The system figures out the necessary firing angles to intercept the incoming weapon. The computers relay the firing angles to the two launchers positioned on either side of the tank. The launchers rotate to the correct position and fire a countermeasure. The counter-measure intercepts the anti-tank missile aimed at the U.S. Army and destroys it at a distance before it can reach the tank. One countermeasure option can be a sort of giant, powerful shotgun loaded with buckshot approach. Trophy can fire canisters filled with ball-bearings at the enemy projectile to defeat it.

Invisible shields

Active projection systems create a sort of protective bubble around a tank. Systems like Trophy aim to prevent any incoming threat from getting close to the tank and stop them at a distance away from it. To do so, systems like Trophy use visible countermeasures like the canisters. Another countermeasure in development to fortify this shield around the tank is entirely invisible. Electromagnetic signals can be fired off to interfere with incoming threats and against prevent them from penetrating this protective bubble and reaching the tank. One concern is the detonation of threats in the battlespace.

If Trophy fires a countermeasure and the enemy missile for example is detonated, then safety for those outside the tank could be an issue. While it may not pierce that protective bubble around the tank and successfully prevent Soldiers inside from being wounded, the detonation of the enemy weapon outside the bubble could put nearby dismounted troops at risk.

During the past couple of years, the Army leased and purchased some Trophies to test and investigate and resolve these sorts of concerns before moving forward with the large-scale Trophy upgrades to their M1 Abrams main battle tanks. ■

Our Readers Write

(Continued from page 6)

ly enjoyed the article written by Suzanne Wunsch-Johnson, "For The Love of a Brother." Ironically, I am presently doing volunteer work for "Save Our Key Deer" a non-profit in the Florida Keys. Valerie Preziosi is the dedicated and very committed president of this organization. She and I work together often and just prior to receiving the most recent Sponson Box, she had mentioned that her brother, James L Preziosi, was KIA Oct. 29 1967 while serving as a machine gunner with Alpha Co, 1st Battalion 4th Marines. Upon reading the article. I knew I had to show it to Valerie. Reading the magazine article was an very emotional experience for her. She told me that she will be writing soon to "Tree" concerning her own feelings of loss through the years. I would also like to salute "Tree" for the work he is doing. Meanwhile I've been in contact with 1/4 Association concerning locating any men who had served with James L Preziosi.

In addition, I will be submitting a story or two for the Sponson Box in the near future.

Forgotten Tracks, Vol. 3

Lee Dill writes: Many thanks to the VTA History Project. I always dreamed of being in print and thanks to you, I live on in "Forgotten Tracks Vol. 3." I appreciate you getting me to write. I am grateful for the stories being published in the Sponson Box ... but this is too much. My shit is in a real freaking book! I am humbled. John this to me is a really big deal. I only wish I had more to give. ■

Modern Armored Warfare: The Tanks Quiz

If you're heading into battle, there are worse places to be than behind five inches of steel with a massive gun on a turret to discourage your enemies. See how much you know about armored warfare with this quiz on tanks from WWI to the present day.

1. The technological development of the treaded tank from earlier armored cars was driven by the need to overcome what battlefield obstacle in World War I?
   1. Trenches
   2. Thick concrete walls
   3. Massive piles of corpses

2. How many crew members were required to operate a British Mark I tank, the first to see combat action?
   1. 4
   2. 8
   3. 10

3. Why was the Second Battle of Villers-Bretonneux so notable?
   1. It was the first time tanks fought against tanks in combat.
   2. It was the first time tanks won a battle.
   3. It was the battle during which Germany captured several British tanks, pushing German tank development ahead by decades.

4. The French Renault FT tank was a revolutionary design for what reason?
   1. It was the first tank with a horsepower-per-ton ratio higher than 10.
   2. It was the first tank with a rotating turret instead of side-mounted gun sponsons.
   3. It was the first tank with a crew of one.

5. The Russian T-34 tank was successful in World War II partly due to its excellent performance, partly because the Soviets could produce so many of them. How many did they manufacture?
   1. More than 80,000
   2. Just under 100,000
   3. Almost 500,000

6. What was the most common U.S. tank in World War II?
   1. M3 Lee
   2. M4 Sherman
   3. A13 Covenanter

7. What is the classification of a vehicle designed specifically to combat other tanks, trading off some aspect of performance for increased firepower?
   1. Medium tank
   2. Tankette
   3, Tank destroyer

8. The effective thickness of a tank's armor can be increased by doing what?
   1. Riveting the armor plates instead of welding them
   2. Increasing the internal volume of the tank
   3. Angling the armor relative to the expected direction of incoming rounds

9. What tanks formed the bulk of the Nazi armored force during the Blitzekrieg stages of World War II, when they invaded Poland and France?
   1. Panzer I and II
   2. Panzer III and IV
   3. Jagdpanther

10. The German term for tank destroyer, Jagdpanzer, translates as…
   1. Wolf tank
   2. Hunting tank
   3. Killer tank

11. What World War II battle is considered the largest tank-vs-tank battle in history?
   1. The Battle of Kursk
   2. The Battle of Moscow
   3. The Battle of Berlin

12. After World War II, the various classifications of tanks (light, medium, heavy) were replaced by what new designation?
   1. Pure tank
   2. Main battle tank
   3. Armored gun carriage

13. What was the first main battle tank?
   1. American M46 Patton
   2. Russian KV-2
   3. British Centurion

14. What was the primary tank used by the U.S. in the Vietnam war?
   1. M48 Patton
   2. M60
   3. M1 Abrams

15. A typical round fired from a tank is a ballistic armor-piercing round, basically a large non-explosive bullet shaped 15. A typical round fired from a tank is a ballistic armor-piercing round, basically a large non-explosive bullet shaped to penetrate armor. Another >>

common option is a HEAT round. How do they work?

1. They generate an explosive jet that burns through the armor and damages interior components/ crew.
2. They explode on the surface, damaging armor plates so that subsequent armor-piercing rounds do more damage.
3. They carry an initiator charge that superheats the armor, softening it a fraction of a second before the primary round strikes.

16. Reactive armor attempts to defeat HEAT rounds by doing what?

1. Triggering a controlled explosion that disrupts the explosive jet
2. Absorbing enough of the kinetic impact that the HEAT round's detonator never triggers
3. Instantly adjusting the armor's angle to deflect the round away from the tank

17. When a round strikes metal armor, it can injure or kill the crew without penetration because shards of metal splinter from the inside of the tank. What is the term for this impact shrapnel?

1. Spall
2. Flak
3. Duff

18. The T28 Super-Heavy tank, also know as the T95, was a 100-ton monster meant to smash through concrete defenses (it was never put into production). How did the tracks differ from ordinary heavy tanks?

1. They were completely enclosed within the hull of the tank, except for the bottom surface.
2. It had four sets of tracks, two side-by-side pairs.
3. It had special turning tracks on the front and rear to aid in adjusting the fixed gun.

19. What is the primary tank in use by Russia (and several other nations) today?

1. T-90
2. T-70
3. IS-8

20. The Merkava is the main battle tank of what nation?

1. Israel
2. Syria
3. Belgium

21. The Swedish Stridsvagn 103 was a main battle tank with no turret and a gun in a fixed position. How was the gun aimed?

1. By turning the entire tank and lifting or lowering the suspension to raise or lower the gun
2. By turning the entire tank and using terrain to adjust the gun's elevation
3. By turning the entire tank and adjusting the elevation of the firing angle by using different types of ammunition

22. What was the term used for German tanks in World War II, which translates to "armored combat vehicle?"

1. Freundschaftsbezeigungen
2. Panzerkampfwagen
3. Waffenträger auf Panzer

23. The heaviest tank produced by Germany before the end of World War II was the…

1. Jagdpanzer IV
2. Panther
3. Tiger II

24. The speedy British medium tank the Cromwell was named after…

1. The Cromwell Proving Grounds near Leeds, where it was developed
2. General Nigel Cromwell, 18th century military hero
3. Oliver Cromwell, 17th century politician

25. When a tank is positioned behind a slope or other obstacle so that only the turret is visible to enemies, this is known as…

1. Dismounted
2. Enfilade
3. Hull down

26. Although maintenance and repair units do the big jobs, every tank crew has to know how to perform what basic repair?

1. Replace a broken driveshaft
2. Weld a damaged armor plate
3. Fix a thrown track

27. The Chi-Nu was a World War II tank produced by what country?

1. Russia
2. China
3. Japan

28. The U.S. M3 Lee tank was known by what other name, depending on the specific configuration?

1. M3 Grant
2. M3 Hyperion
3. M3aGf7

29. Most of the Sherman tanks used in World War II were produced where?

1. The Highland Park Ford plant
2. The Detroit Tank Arsenal
3. The Indianapolis Foundry

30. What is the top speed of an M1 Abrams tank?

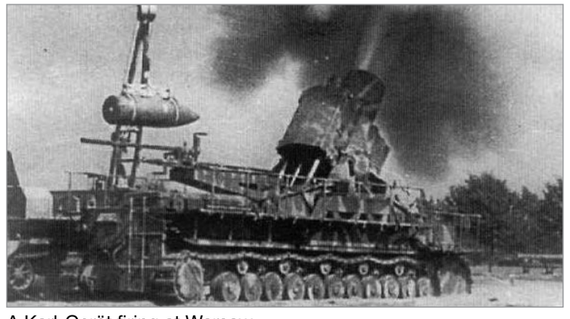
1. 35 mph
2. 60 mph
3. 45 mph

(See Tank Quiz Answers on page 46)

A RUSSIAN TREASURE - OF TANKS!

In this edition of our newsletter, we'd like to look at one of the most unique sites on our exotic Easter Front Tour. This tour to St. Petersburg (the former Leningrad), Moscow and Volgograd (the former Stalingrad) offers an insight into the fierce fighting between the Wehrmacht and the Red Army that remains often underappreciated even today.

Many of Russia's WWII museums and battlefields dwarf most sites in Western Europe, but one of our favorites at Beyond Band of Brothers is the impressive Kubinka Tank Museum near Moscow. The 15th century town of Kubinka used to be a top secret Soviet military site. During and after the Second World War it functioned as a test range for all new Russian tank designs. It was also used to test captured enemy equipment and American and British tanks shipped to Russia as a part of Lend-Lease. Some early German tanks tested there, such as the Panzer I, II and III, were actually acquired peacefully, bought from Germany before the Nazis invaded the Soviet Union. Various Japanese WWII tanks are also on site, having been captured in the Far East.



A Karl-Gerät firing at Warsaw

Today, Kubinka operates as a museum for military vehicles, mainly WWII tanks, housing several rare and unique displays including the ones below:

The Karl-Gerät ("Karl device") is a German heavy mortar used as a siege weapon on the Eastern Front. A total of seven ware built, six named after the Germanic pagan gods Baldur, Wotan, Thor, Odin (the Norse version of Wotan), Loki and Ziu (the German version of Tyr). The seventh was left unnamed and used for testing. The different types of concrete-piercing shells had calibers of 21 or 24 inches, weighed between 2,760-4,780lbs and could be fired at ranges between 4,720-11,000 yds. Each mortar had to be accompanied by a separate crane, a heavy trailer and several modified tanks to carry the ammunition. They could travel on normal and even soft ground but were forbidden from ever making any turns on the latter, as they were liable to throw a track.

The world's best-known rare tank is also a Kubinka resident:

Karl-Gerät siege mortar (with the sole existing Panzer VIII Maus in the background)

the sole surviving prototype of the Panzer VIII, the "Maus." It was intended to be a breakthrough tank, punching a whole through enemy lines and allowing other forces to pour through. Its armor ranged from 8.7-5.9 inches in thickness and was armed with the same 128mm (5 inch) gun as the Jagdtiger heavy tank destroyer, which could destroy all Allied tanks at the time, some from over 2 miles away. In May 1943, a wooden mockup of the Maus was presented to Hitler, who approved the design, though reportedly asked for an even bigger, 150 mm gun.

The legendary Maus superheavy tank

According to the memoirs of Heinz Guderian, the German general who was instrumental in developing the Blitzkrieg tac-

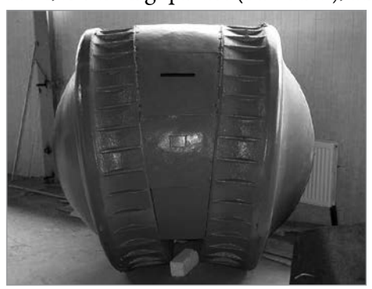
Kubinka's Karl-Gerät and Maus side by side >>

tics, he was the only one to initially oppose the planned super heavy tank because of its lack of any armament other than its cannon and the resulting vulnerability to infantry at short range. Later, the blueprints were amended to include a single machine gun, a smoke bomb launcher, three slits in the turret for crewmen to fire submachineguns through and were intended to eventually also feature a 20 mm autocannon against aircraft. At 200 tons, the Maus was too heavy for bridges and was instead designed to ford rivers or drive under water, with air supplied by a snorkel. The procedure required two tanks, with one crossing while the other supplied it with electricity through a cable.

Of the 5 tanks ordered, only two were ever made and one of those lacked a turret. The one in Kubinka is, in fact, a chimera of the two: the turreted specimen was destroyed but its turret was removed and installed on the half-finished one.

The Maus being prepared for transport to the Soviet Union

Another unique vehicle, much smaller in both stature and fame, is the Kügelpanzer (Ball Tank), also called the Rollzeug (Rolling Vehicle). This bizarre, single-person vehicle is now unarmed but it would have been equipped with a single machine gun. Very little is known about it but it seems similar to other designs created with the intention of crossing WWI-style no man's land. It might have been used as a scout, a cable layer or an artillery spotter. The circumstances of its acquisition are also a mystery. Some sources claim that it was found at the same Kummersdorf proving grounds where the Maus was taken from, but it's more commonly claimed that it was captured from the Japanese in Manchuria in 1945. If the latter story is true, Japan probably received it as part of a technology sharing scheme with Germany, though it's quite likely the Germans already knew it was wholly unsuited for use in WWII.


The obscure and poorly documented Kügelpanzer

Another exotic and perhaps surprising Kubinka inhabitant is a WWI British tank. It is a Mark V, being the last version to see action in the Great War. British tanks at the time were designated either "Male," equipped with 2 two six-pounder guns against enemy tanks and four machine guns, or "Female," with six machine guns but no cannons. A few, including the Kubinka one, are "Hermaphrodites," having only one cannon but five machine guns.


A British WWI tank in a Russian museum dedicated to WWII vehicles

During the Russian Civil War of 1917-1922, Britain supplied about 70 Mk Vs to the anti-communists White Russian Army, some of which were captured and put to Soviet use. The last few of these even survived until World War II and were used as immobile defensive emplacements dug into the ground. In 1945, two badly damaged Mk Vs were found in Berlin after the fall of the city to Soviet forces. Photographic evidence revealed them to be Civil War veterans that were at one point displayed as a monument in Russia. How exactly they got to Berlin and what they did there remains a mystery.


The VsKfz 617 Minenräumer, shown from behind.

Our final pick is the VsKfz 617 Minenräumer, a failed German mine-clearer design. This bizarre vehicle was supposed to go in front of friendly forces and blow up mines with its heavily armored wheels. Its rear wheel could be steered by tightening and loosening the metal chains running to it on the outside of the hull. It was equipped with the turret of a Panzer I, holding a machine gun inside. It was a ponderous beast, easily bogged down by its own weight and unsuitable for speedy Blitzkrieg tactics. Hence, it was discarded as a failure.


Historical side-view photo of the Minenräumer

THE SOVIET QUEST FOR TANKS

The Soviet Union was born during the First World War and faced immediate hostility from the rest of the world, who considered the Communist nation a threat to the status quo. The Russian Empire was still playing economic catch-up with Europe and its fledgling heir was hard-pressed to create a modern military that could protect the Motherland.

The earliest Russian developments in armored warfare actually went back to the last days of Imperial Russia and the early period of World War I. In 1914-15, a young Russian aircraft designer called Aleksandr Porokhovschikov drew up plans for a one-man cross-country vehicle he called the Vezdekhod (goes anywhere). It had a single track running down its middle and was supposed to turn with the aid of a pair of normal wheels, hanging down on each side, which could be lowered to the ground to turn. In practice, the system didn't work and the vehicle never got past the pre-prototype stage but Soviet propaganda later embraced it as the first tank in the world.


The pre-prototype of the Vezdekhod vehicle

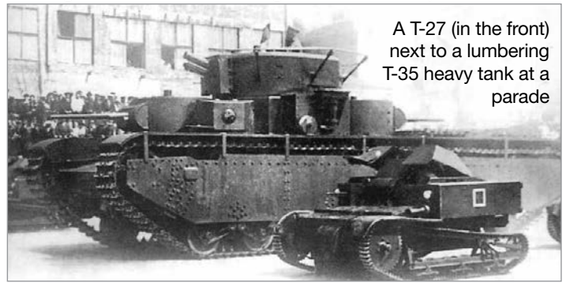
A contemporary experiment was the Tsar tank. Lacking tracks, it had a pair of giant, 27-feet diameter spoked wheels in front and a single wheel in the back. Due to a miscalculation, the back wheel was liable to get stuck in soft ground and ditches and the front wheels were too weak to pull it free. The prototype was abandoned at its test location and broken up for scrap


The Tsar tank

in the 1920s.

Between the world wars, the Soviet Union relied heavily on foreign designs, which they then used as a basis for their own tanks. British tanks were a frequent inspiration but they also produced their own version of the famous French Renault FT, often called the first modern tank. They also invited foreign tank designers, including Germans, to work for the USSR. This gave Soviet engineers work experience which they could later put to use creating new tanks from the ground up. Many vehicles designed in this period never left the prototype stage or were quickly declared failures but several memorable designs were also born.

The T-27, based on the British Carden Loyd tankette (a small, one- or two-man infantry support vehicle, often with a single machine gun as armament) lacked a radio or any other means of communication and was supposed to rely on flag signals. Even when new, it wasn't very good but it became the first of several Soviet tracked vehicles that could be airlifted by attaching them under the fuselage of a TB-3 heavy bomber.


A T-27 (in the front) next to a lumbering T-35 heavy tank at a parade

Intended as a replacement of the T-27, the T-37A and the T-38 that followed closely on its heels where amphibious designs intended for scouting and infantry support. Production of the T-37A was stymied by the use of outdated tools and low-quality steel. The T-38 had a low silhouette and its ability to cross water gave it good long-range mobility but its single machine gun and thin armor made it weak in combat. The lack of a radio meant it wasn't a very good reconnaissance vehicle >>


Rare view of a T-38, note the low profile

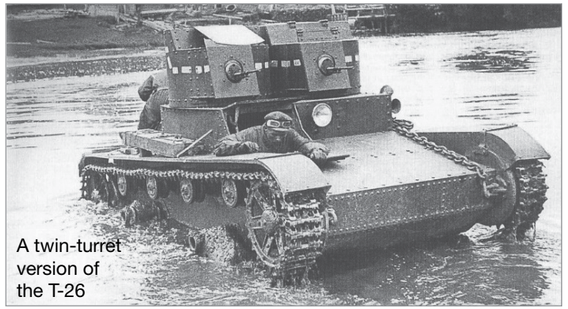
either. While it could get across water on its own, even two infantrymen carried on top were enough to flood the commander's hatch and cause the tank to sink.

Produced from 1928 onwards, the T-18 light tank was considered the first genuinely Soviet-designed tank, even though it was clearly inspired by the Renault FT. Its 37mm French main gun was pretty obsolete by the time and couldn't take out properly armored targets. However, its firing rate of 10-12 rounds per minute and the use of shrapnel projectiles still made it dangerous to infantry and unarmored vehicles. Its small size meant it couldn't cross ditches 2 yards wide. A "tail" extension was added to the front that improved its reach but hindered the driver's visibility and was thus abandoned. It saw some action in the Sino-Soviet Conflict of 1929 but was removed from service in 1932.

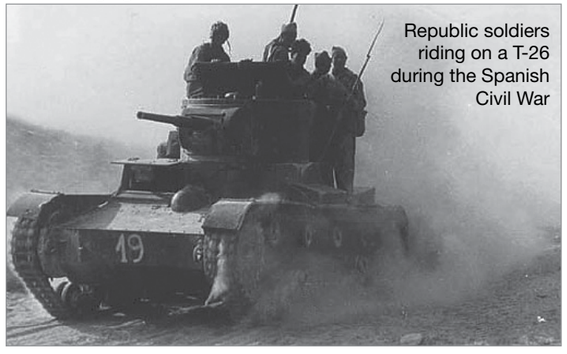

A pair of T-18 light tanks

Another Soviet light tank based on a foreign design was the T-26, one of the most formidable tanks of the 1930s and the most highly produced one with over 11,000 units. It was based on the British Vickers 6-Ton tank that was designed for export to technologically less advanced countries. But rather than adopting the 6-Ton, the Russians made an improved version of it. Its 45mm anti-tank gun made it better armed than most, maybe any European tank at the time.

Like the 6-Ton, the T-26 also had a peculiar twin-turret version, with two small turrets located side by side holding a machine gun each, which could concentrate their fire forward or behind, but not to any single side. Some of these twin-turret T-26s were given hybrid equipment with a machine gun in one turret and a small, 37mm cannon in the other. Other, less common T-26 variants included flamethrower tanks, engineering vehicles and remotely controlled teletanks.


A twin-turret version of the T-26

The T-26 saw use against Finland in the Winter War, Imperial Japan in the Far East and also served on the Republican side in the Spanish Civil War. Though a formidable weapon in its time, its armor proved too thin by the end of the 1930s. In fact, even early versions had problems against mediocre guns and even Molotov cocktails, whose flaming gasoline could get inside through gaps in the hull.


Republic soldiers riding on a T-26 during the Spanish Civil War

The T-26 was an infantry tank, designed for infantry support. Its counterpart was the "BT" series of tanks, the letters


The 1933 modification of the T-26


A unit of BT-7s

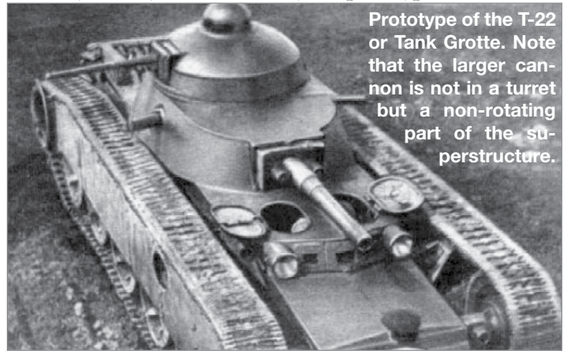
meaning Bystrokhodny (fast-moving) tank, i.e. a cavalry tank. Their 44.7 mph top speed made them superbly mobile and their

45mm cannons proved highly accurate. On the downside, their engines could easily catch on fire from Molotov cocktails when operating in warm climates. One unique feature of the BT line was that they were "convertible." With about 30 minutes of work, the tracks could be removed and the vehicle converted for use on hard roads. This feature was underutilized by the Soviets, since the country's road network was woefully underdeveloped and the opportunity for road use only arose rarely.

The Soviets didn't have much luck with medium tanks in the interwar era. The T-28 had three turrets. It was designed to engage enemy pillboxes with its howitzer while its two smaller turrets could independently attack infantry with machine guns. While it had anti-aircraft machine gun mounts and radios in every vehicle, it was generally lackluster. During World War II, the Finns nicknamed it "postal wagon" after a captured lone T-28 was found to carry the monthly salary and personal mail of an entire Soviet tank battalion.


A T-28, note the two smaller turrets in front of the main one

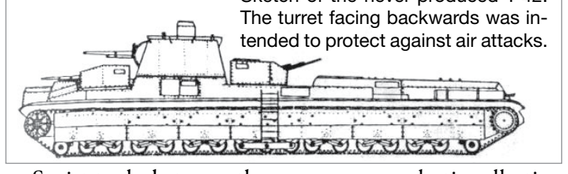
The bizarre-looking T-22 or Tank Grotte (TG) was the brainchild of German tank engineer Edward Grotte (spelled Grote in some sources), who worked for the Soviets prior to the Second World War. It had a 76.2mm main gun housed inside the superstructure, and therefore unable to move, a 37mm gun in a rotating turret above and five additional machine guns. The general concept was somewhat similar to the American M3 Lee, only more symmetrical. Only one prototype was ever built.


Prototype of the T-22 or Tank Grotte. Note that the larger cannon is not in a turret but a non-rotating part of the superstructure.

The T-35 heavy tank, sometimes called a land battleship, only had around 60 units built but can still claim to be the only five-turret tank to reach production. Arranged like the pips on the 5 side of a die, the central turret rose above the others and held a 76.2mm cannon, while the other four were armed with two 45mm guns and several machine guns. While it looked spectacular, it didn't work very well. It was slow, prone to breakdowns, extremely cramped, (with 11 crewmen inside, and separated fighting compartments for the turrets) and the turrets could easily block the exit hatches.


T-35 heavy tank bristling with turrets, captured by the Germans during Operation Barbarossa

Plans for an even more imposing tank, though one that never reached the prototype stage, were drawn up by the above-mentioned German engineer Grotte. With a weight of a full 100 tons, the T-42 was to be even larger than the 45-ton T-35. Like the other tank, it was to have five turrets: one for a massive 107mm field gun, two for 45mm guns and two for machine guns. The design was rejected, since it would be extremely expensive, slow and the engine needed to power it didn't actually exist yet. During World War II, however, Grotte, back in Germany, proposed plans for an even grander (and similarly unproduced) vehicle, the ludicrous, 1,100 ton Ratte "land cruiser," which would have dwarfed even the legendary Maus.


Sketch of the never-produced T-42. The turret facing backwards was intended to protect against air attacks.

Soviet tanks between the wars were an eclectic collection of designs, some very competent for their time, many others generally considered failures. They were, however, all useful lessons for Soviet tank designers, who finally found their footing during the war and produced the T-34, which not only


Tank desant troops riding a T-34, the iconic culmination of Soviet Russia's tank design efforts

played a key role in stopping the German invasion but also influenced tank design worldwide. ■

Tank Quiz Answers

1. Networks of trenches made territorial gains extremely difficult on World War I battlefields. Tanks were developed as a way to drive over them while protecting infantry.

2. A Mark I tank needed a crew of eight.

3. A trio of German A7V tanks blundered into three British Mark IV tanks, sparking a slow and inconclusive battle, the first in which tanks battled tanks.

4. The rotating turret of the Renault FT established the basic design of modern tanks.

5. While the T-34 was eventually outclassed by some German tanks late in the war, the Soviets could produce it quickly, making it relatively easy to replace battlefield losses. They made over 80,000 during the course of the war.

6. Like the T-34, the M4 Sherman was a good tank that achieved much of its advantage by being produced in large numbers.

7. Most British, German and Russian tank destroyers had no turrets, while U.S. tank destroyers had open tops and light armor. These tradeoffs made them cheaper and faster to produce and often allowed the mounting of heavier guns that could penetrate tank armor.

8. Angled armor tends to deflect incoming rounds away instead of being penetrated, so sloped or angled armor has a greater effective thickness than the same amount of armor mounted squarely facing attacks.

9. The primary German tanks early in the war were light Panzer I and II tanks, with a small percentage of IIIs and IVs.

10. Jagdpanzer translates as "hunting tank."

11. As many as 5,000 Russian and German tanks took part in Kursk, a concentration of armored firepower that hasn't been matched since.

12. The earlier tank classifications were the result of necessary tradeoffs between armor, mobility, and firepower. Modern tank technology allowed one tank to accomplish everything needed of armor on the battlefield, a concept known as main battle tank.

13. Centurion wasn't referred to as a main battle tank in 1945, but it accomplished so much more than prior medium tanks that it was called "the universal tank," and established the idea that one tank could combine mobility and firepower with decent armor.

14. While the M-60 was the most commonly used tank in the 1960's, the tanks used in Vietnam were the M-48 Patton.

15. HEAT rounds focused a hot jet of explosive gas which melts a hole in the armor and does unpleasant things to whatever is on the other side.

16. Reactive armor uses a controlled explosive charge to disrupt a HEAT round's ability to penetrate the underlying armor.

17. Modern tanks are equipped with "spall liners" to prevent this kind of crew injury.

18. The T-28 had four sets of tracks, primarily because the outer set needed to be removable for transport.

19. The T-90 went into production in 1992 and remains in production today. It's also the primary tank used by India.

20. The Merkava and its upgraded versions have seen action in every Israeli conflict since the early 1980's.

21. The Strisdsvagn 103 adjusted side-to-side like a WW2-era tank destroyer. The fixed gun was raised or lowered by a computer-controlled suspension system that responded to the gunner's controls by lifting or lowering the front of the tank.

22. Panzerkampfwagen is usually shortened to "Panzer." Fun fact, since Panzer just means armor in German, bulletproof glass is called Panzerglas.

23. The Tiger II, sometimes known as the King Tiger, weighed 75 tons.

24. The Cromwell tank was named for Oliver Cromwell.

25. Many tanks are designed with heavy turret armor, making a hull down position tactically wise.

26. Because a tank can throw or break a track due to combat damage, rough terrain or even taking a hard turn, every crew has to be able to fix it themselves.

27. All Japanese medium tanks in World War II used the "Chi" designation. The Chi-Ri, which only existed as a prototype, was their most advanced design based on the earlier Chi-Nu and Chi-To.

28. M3s were sent to England by the U.S, where some were fitted with British guns and other components — these were known as M3 Grants, as opposed to fully American M3 Lees (one senses a certain amount of British humor in the choice of nickname).

29. The Detroit Tank Arsenal was the first manufacturing plant ever built specifically for tanks, which had previously been built in repurposed car, truck or airplane plants.

30. Turbine engines enabled the kind of power-to-weight ratio that lets the 60-plus ton Abrams move up to 45 MPH. ■

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