

BOSNIA REPORT

Task Force Eagle's Armor and Cavalry Operations in Bosnia

by Colonel Charles Lehner, Ret.



LT Parnell and SFC Frederickson of B Troop, 1st Squadron, 4th Cav with newly acquired M973A1 SUSV. The Swedish articulated vehicle and the Russian BMD-2, both under 8 tons, are well suited to Bosnia's limited road net.

The purpose of this article is to examine the capabilities and limitations of armor and cavalry in Bosnia within the NATO alliance. This article is focused on Task Force Eagle, including attachments from other countries. In addition to the U.S. 1st Armored Division (minus the 3rd Bde), the task force includes a Swedish battalion (SWEBAT), a Russian airborne brigade, and a Turkish battalion.

Armored Vehicles Available

Armor within TF Eagle includes a wide variety of equipment, including U.S. M1A1 Abrams tanks, M2 and M3 Bradley infantry and cavalry fighting vehicles, M113 APCs, M-109A6 155mm (Paladin) howitzers; Russian BTR-80 8x8 wheeled troop carriers and BMD-2 airborne assault vehicles; Danish Leopard 1A3 tanks (attached to SWEBAT); Swedish BV-206S armored articulated all terrain APCs, Pbv-302 APCs; and Finnish SISU XA-180 6x6 APCs.

Terrain and Road Net

Fundamental to any discussion of armor and cavalry operations is a complete understanding of the terrain and road network in which they must operate. The former Yugoslavia is predominantly a mountainous and hilly country. Elevations range from almost 2,900 meters above sea level at the highest peak in the northwest to sea level on the Adriatic coast. The former Yugoslavia can be divided into the following three landform divisions: the northern

plains, the interior highlands, and the Adriatic coastal region.

The northern plains total about 20 percent of the land area. This landform comprises the river valleys of the middle and lower Drava, the lower and middle Sava, the lower Tisa, and the middle Danube. It is bordered in the south and west by the interior highlands and continues north into Hungary and Romania.

Terrain and Weather Effects

The mountains, steep hills, and rough karst topography that cover 70 to 80 percent of the country have a profound effect on military activities. Cross-country movement of wheeled and tracked vehicles is almost impossible in these areas. In the northern plains and in the valleys adjacent to dissected hills in the east, movement is feasible all or most of the year. Vehicular movement, in general, would be easier in summer and autumn than it would be in winter and early spring when the ground is soft and wet.

Most of the roads in the former Yugoslavia's highway system are asphalt surfaced, have numerous bridges, and traverse rough terrain. City streets, as well as more remote area roads, typically have uneven or broken surfaces of cobblestone, tar, or gravel. Current conditions of these roads are poor for the most part. By 1989, the highway system totaled 123,000 km of roads. Included are the 871 km major highway (Route 1), 73,527 km of asphalt-

surfaced roads, 33,663 km of macadam-surfaced roads, and 15,133 km of earthen roads. Most areas of the country are accessible via modern asphalted roads. All the primary routes have numerous bridges that cross small to large streams. In some of the mountainous areas, bridges are easily washed out. These significant obstacles are difficult or impossible to bypass because of rough terrain.

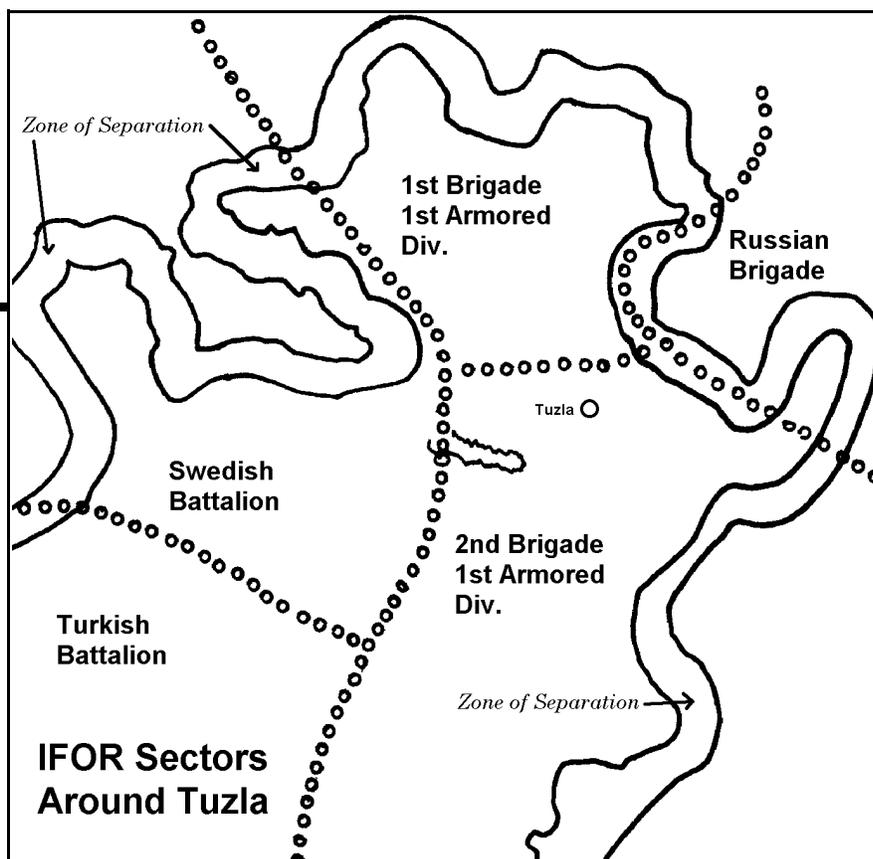
Preparation For Trip to Bosnia

In October 1995, I visited LTG John Abrams, CG, V Corps, in Heidelberg, Germany, and briefed him on recent events in Korea regarding the 2d Infantry Division, which he commanded prior to assuming command of V Corps. While in Korea, General Abrams directed a staff study on the limitations of High Mobility Multipurpose Wheeled Vehicles (HMMWVs) in mountainous terrain. The 2d ID staff concluded that it needed about 200 BV-206S (armored version of the U.S. Army's M973A1 small unit support vehicle) to replace HMMWVs in scout platoons of maneuver battalions, light infantry battalions, a signal battalion, an MI battalion, and an air defense battalion.

I suggested to General Abrams that BV-206S vehicles might also be useful in Bosnia's mountainous terrain. In November, I was asked by the V Corps Force Modernization Officer, LTC Ron Baynes, to formulate an organizational and operational (O&O) plan for employing BV-206S vehicles in the 1st

Armored Division for their upcoming deployment to Bosnia. I was told by the Swedish Embassy in Washington that only 17 BV-206S vehicles could be made available to meet the deployment of TF Eagle in December or January. I felt that all 17 BV-206S vehicles should be in one provisional cavalry troop so that a single commander would be responsible for training, maintenance, and logistic support. This did not preclude detaching scout squads or sections to other units as needed. I suggested that the cavalry troop be manned by the crews of some tanks left behind in Germany. The O&O concept was prepared and coordinated in December, with BG James P. (Pat) O'Neal, 1st AD ADC-Support in Bad Kreuznach; COL John Batiste, Cdr, 2d Bde in Baumholder; and LTC Tony Harriman, Cdr, 3d Squadron, 4th Cavalry in Schweinfurt, whose squadron was detached from the 3d Infantry Division and attached to the 2d Brigade of the 1st AD for TF Eagle. The O&O plan was well received and BG O'Neal said that all 17 BV-206S vehicles could be employed by the 2d Brigade, the unit assigned to cover the mountainous terrain south and east of Tuzla. However, when MG Nash, CG, 1st AD, reviewed the plan, he felt that he could not justify the expense of buying 17 BV-206S vehicles from Sweden; instead, he decided to requisition 20 M973A1 SUSVs (unarmored versions of the BV-206S) from U.S. Army stocks in Italy.

These visits with the 1st Armored Division enabled me to understand TF Eagle's upcoming mission in Bosnia and review the extensive training and preparation prior to deployment. I also conducted extensive research with the elements of the Swedish brigade, who have been operating in Bosnia and Macedonia for the past few years. Colonel Jan-G Isberg, former commander of the 1st Nordic Battalion, stated in his report dated February 15, 1994: "We were entirely dependent on the BV-206 to supply the positions, patrol the borders and to reconnoiter patrol tracks and locations for additional positions. All our BV-206 were ex-



posed to heavy strain, both in stony and very rocky terrain in valleys and along steep mountainsides, where other types of vehicles could not pass at any time of the year. The BV-206 came up to all expectations. Thanks to them we were able to keep the operation running, and at no time we had to decrease our ambitions with the mission in spite of the extremely difficult terrain."

Operations in Bosnia

The entire area of TF Eagle was previously the responsibility of the Swedish battalion, which now is responsible for only the NW sector of TF Eagle (see map, above). I stayed with the Swedes from 14 to 19 March 1996 and was accompanied in my travels by MAJ Claes Wolgast, Deputy Chief of Staff SWEBAT, and LT Christof Reychman, interpreter. I was impressed by the professional capabilities of the Swedes and their extensive knowledge of Bosnia.

As the Germans found out in World War II, TF Eagle also knows that Bosnia is not ideal "tank country." However, the decision to send the 1st Armored Division to Bosnia, rather than an infantry or mechanized infantry di-

vision, has had a profound effect. The awesome presence of a reinforced armored division can leave little doubt in the minds of the Serbians, Croatians, and Bosnians that the United States and its NATO allies mean business in implementing the Dayton Agreement. A platoon of Abrams tanks and Bradley fighting vehicles at a checkpoint is a strong reminder of the hundreds more that are also quite visible in the camps of the 1st Armored Division. There are some areas of Bosnia that are more like classic "tank country," such as the critical Posavina corridor in the 1st Brigade's sector. However, mud can be a real problem even in this relatively flat area.

M1A1 tanks with mine rollers have proved their worth in clearing roads of deadly antitank mines. Mine roller tanks could have prevented the serious accident which happened to the Danish tank company in the Swedish sector. This was a unique mine encounter in which three TMM-1 antitank mines, connected with detonating cord, went off simultaneously under a Leopard-1 tank. The bottom photo on Page 45 shows a road wheel arm sheared off by one of the mines.

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Bosnia (Continued from Page 10)

Another accident that could have been prevented with a mine roller tank involved a Swedish Pbv-302 APC which struck a single TMA-3 antitank mine (6.5kg explosive) in the zone of separation. Unfortunately, two Swedish infantrymen lost their legs in this accident.

However, mine rollers off-road are another story. SFC Michael A. Tucker, 2nd Platoon, B Troop, 1st Squadron, 4th Cavalry, reported that the mine rollers bog down in off-road areas where the soil is more likely to be soft or muddy.

The use of tanks and APCs in mountainous areas is very limited. M1 tanks and M2 or M3 Bradley fighting vehicles are simply too heavy and too wide to operate effectively in the mountain-



The author, with Swedish Army LT Christof Reyman, his interpreter, standing in front of a Finnish SISU 6x6 wheeled APC. The v-shape of the vehicle's hull bottom deflects mine blast effectively.

ous Bosnian terrain. LT Graehme Parnell and his lead scout, SFC Frederickson, 1st Platoon, B Troop, 1st Squadron (formerly 3d Squadron), 4th Cavalry, reported that much of the mountainous road net in the 2d Brigade sector is inadequate to support M1A1 tanks and M3 Bradley CFVs. Many of these mountainous roads are barely wide enough for the CFVs — SFC Frederickson noted that an M3 CFV collapsed the shoulder of the road at one location, which damaged the roadway, prohibiting further passage. LT Parnell also reported that most of the bridges on these mountain roads are constructed with local timber and are

barely strong enough or wide enough for passage by CFVs. Another example cited was an “S” turn which could only be traversed with a CFV going downhill. They also reported that on one narrow road a smoke grenade launcher was ripped off while the vehicle hugged the side of the cliff to avoid falling off the roadway.

LT Parnell reported another noteworthy incident in which some vehicles of the 501st MI Battalion were attempting to go to a snow-covered hilltop in the B Troop sector. They were unable to get some of their HMMWVs up the hill, despite equipping them with tire chains. Six of the HMMWVs had to be towed by LT Parnell's M3 CFVs to get to the top. MAJ MacFarland, XO 1/4 Cav, also reported an incident with a HMMWV descending Mt. Vis, east of Tuzla; the vehicle overturned on a snow-covered road and crushed the driver.

The mobility situation has improved by the mid-March arrival of M973A1 vehicles for use in the 2d Brigade's sector. Had M973A1 vehicles been issued earlier, the accident on Mt. Vis could probably have been avoided.

After conducting a patrol with an M973A1 SUSV, LT Parnell reported his findings in the letter dated March 21, 1996. In his summary, LT Parnell stated, “The BV-206S is an ideal vehicle for Operation Joint Endeavor. It provides adequate protection and firepower for the peace enforcement mission. However, it should be used in conjunction with tanks and Bradleys to convey the overwhelming firepower image. Most importantly, it provides the mobility needed to



Russian Army LT Alexander Woistinov, a BMD-2 platoon leader, with his vehicle, which at less than 8 tons effectively negotiates the Bosnian road network. The Russians also employ 8-wheeled BTR-80 APCs for patrols.

access secondary roads, cross MLC <30 bridges, and climb snow covered mountains...”

In spite of these problems, the job of patrolling the zone of separation is being accomplished remarkably well, especially with air cavalry in conjunction with ground cavalry. The two air cavalry troops in each cavalry squadron (1/1 Cav and 1/4 Cav) are performing very well in covering those areas of the zone of separation which are not easily reached by each squadron's three ground cavalry troops. LTC Greg Stone, CO, 1st squadron, 1st Cavalry, reported that both air cavalry and ground cavalry troops are doing a superb job in the 1st Brigade's sector. The OH-58D (Kiowa Warrior), with its mast-mounted thermal imaging system, can patrol the zone day and night. The firepower of the armed OH-58D, along with the awesome firepower of the 4th Brigade's AH-64 Apache helicopters, is also an effective deterrent.

Lighter combat vehicles in TF Eagle have been more successful in adapting to the limited mountainous road nets. For example, the Finnish SISU 6x6 wheeled APC being used by the SWE-



Mine damage to Danish Leopard I.

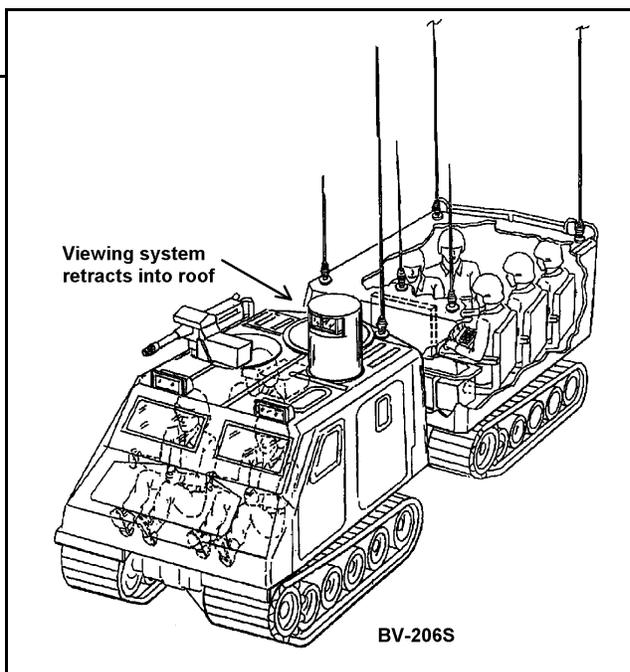
BAT, and the Russian BTR-80 are doing a good job in patrolling the roads in the zone of separation. The SISU has also demonstrated better survivability when striking an antitank mine. The SISU's "V" shaped bottom apparently deflects the blast toward the sides. In one mine encounter in SWEBAT's sector, the crewmen were not seriously injured. Moreover, these wheeled APCs are less likely to tear up the roads, compared to tracked APCs.

The lighter tracked vehicles of the SWEBAT and Russian airborne battalion are also well suited for Bosnia's limited road nets. The Russian BMD-2 and the Swedish BV-206S, weighing less than 8 tons each, are able to negotiate the narrow roads and small bridges and have better cross-country mobility. The demonstrated performance of these two lightweight tracked vehicles are worth remembering when considering the future scout vehicle (FSV), which has emerged as TRADOC's highest priority vehicle requirement. Lessons learned from Bosnia will undoubtedly have an impact on the development of the FSV.

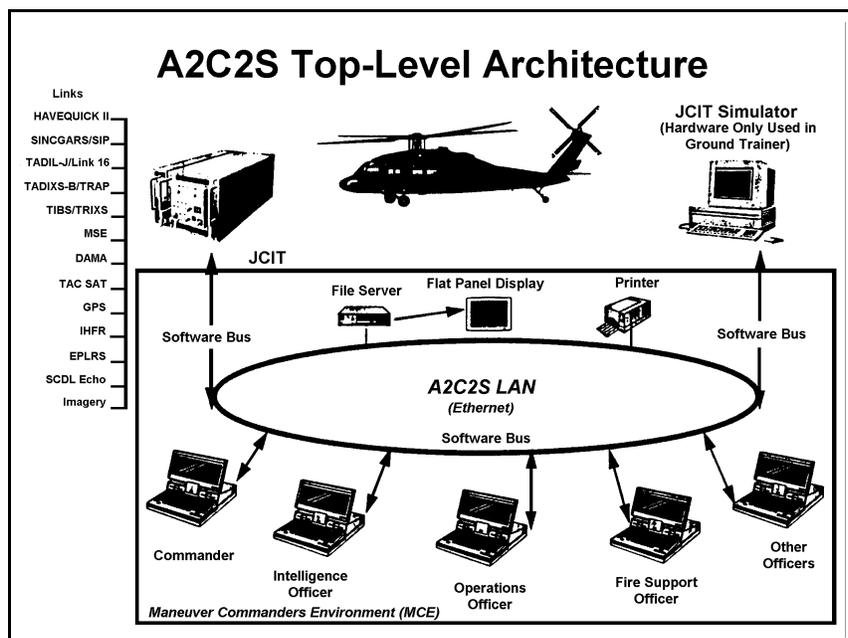
The Future

Based on what I saw in Bosnia, I am more convinced than ever that wheeled scout vehicles, such as HMMWVs, be replaced with light tracked vehicles in the scout platoons of the maneuver battalions. The same is true for the HMMWVs of the division MI, air defense, and signal battalions. As mentioned above, this same conclusion has been reached by the 2d Infantry Division in Korea, which also must operate in mountainous terrain. HMMWVs sometimes can't get to where they need to be — on high ground to perform their missions. Most would agree that having to tow HMMWVs to mountaintops to do their job is unacceptable.

As illustrated in my article in *ARMOR's* July-August 1994 issue, an articulated vehicle such as the BV-206S is the right way to go for a future scout vehicle. LTG Timmons, CG, Eighth Army and CofS USFK, has requested funds for the Naval Research Laboratory (NRL) to assemble scout and command and control variants of the BV-206S for assessment by the 2d ID in Korea, prior to acquiring the larger number of BV-206S vehicles that their staff study indicates they need.



Proposed battle command variant of the BV-206S, an armored version of the Army's M973A1. Schematic of command and control architecture is seen below.



The scout and battle command variants of the BV-206S envisioned have the same external configuration so that the command variant will not stand out as a "signature vehicle." NRL, developer of the U.S. Army's Airborne Command and Control System (A2C2S), intends to include the A2C2S C41 suite in the BV-206S, which will allow the commander to operate either from his UH-60 Blackhawk or from his BV-206S battle command vehicle, which can take him to a mountaintop to "see the battlefield" with the 2d-generation FLIR, and function with his command group from a single vehicle.

The scout version of the BV-206S will also have the same 2d-generation FLIR and abundant communications capability using the same Joint Combat Information Terminal (JCIT) as A2C2S. The BV-206S is capable of being carried internally in CH-47 and CH-53 helicopters, which will enable the scout to be employed deep (up to 100 km beyond the FLOT as required in the FSV mission need statement). The scout version would reduce the workstations in the rear car, from 5 to 1 or 2, to enable carrying up to three remote sentries, the imagery of which can be monitored from the remaining

workstation(s). JCIT can also receive imagery from OH-58D scout and AH-64 attack helicopters. Some of those operating in Bosnia are equipped with this feature and are operating in theater.

The U.S. Marine Corps also has a need for a helicopter-transportable future combat vehicle (FCV). LTG Zinni, CG, I Marine Expeditionary Force (MEF) recently sent a letter to LTG Timmons, CG, Eighth Army, stating that when the 2d ID validates their need for BV-206S vehicles, that the I MEF would also need the BV-206S for their reinforcing mission in Korea.

Summary

Task Force Eagle is doing an excellent job in its peacekeeping mission in Bosnia. I was very much impressed with the cooperative spirit and professionalism demonstrated by all U.S. and

allied units that I visited. The troops are highly motivated and their morale is high. GEN Joulwan, SACEUR, said in a recent article: "With Russia and others willing to participate in IFOR, we have a real opportunity to help achieve a lasting peace in the Balkans, and thereby take one step closer to a stable and democratic Europe."

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Colonel Charles Lehner, (USA Ret.) commanded tank and armored cavalry troops in Korea, Germany, and CONUS, and was operations officer of the 2d Armored Division's aviation battalion. He also served as Chief, Weapons Technology and Concepts Division, Tactical Technology Office, Defense Advanced Research Projects Agency. He holds a B.S in Mechanical Engineering from the USMA, and an M.S. in electronics engineering from Georgia Tech. After his retirement from the Army, he has been director of combat vehicle development for AAI Corporation, a consultant to Sandia National Laboratories and the Draper Laboratory, and is currently a consultant for the Naval Research Laboratory, working on C³I architecture and the Army Airborne Command and Control System contract for the Army's Project Manager, Advanced Engineering Concepts.