

TRAINING NOTES



Armor in DESERT SHIELD

MICHAEL R. JACOBSON

Since the beginning of Operation DESERT SHIELD in August 1990, the U.S. Army and its allies have been faced with a new threat, the Iraqi Army. To meet that threat effectively, combat arms soldiers, attack helicopter pilots, and close air support pilots need to become familiar with the armored organizations and vehicles of the Iraqi Army.

They also need to become familiar with the vehicles our allies use, because several of them have the same equipment the Iraqis have. In fact, so do we — the Iraqis have M113 armored personnel carriers (APCs) and M901 improved TOW vehicles (ITVs) that they captured from Kuwait. Obviously, then, identifying vehicles and determining the nationality of forces is vital if we are to prevent casualties among friendly forces.

The Iraqi Army has more than 5,500 tanks and more than 9,000 light armored vehicles, including Soviet, British, Brazilian, Chinese, French, and U.S. vehicles. A list of Iraqi armored vehicles is shown in Table 1 and the data on their capabilities in Tables 2 and 3.

The Iraqi ground forces are organized into regular army units and elite Republican Guards units, and there is a considerable difference in organization between the two. The army has ten armored and mechanized infantry divisions, and

the Republican Guards have at least three armored divisions.

Iraqi armored divisions are estimated to have between 10,000 and 12,000 soldiers, between 250 and 300 tanks, and about 250 infantry fighting vehicles (IFVs) or APCs. An armored division consists of two armored brigades and one mechanized infantry brigade, plus supporting artillery, air defense artillery and, in some divisions, surface-to-surface missile units. A mechanized infantry division has two mechanized infantry brigades and one armored brigade, plus similar supporting units.

ORGANIZATION

An Iraqi regular army armored brigade (Figure 1) is composed of three tank battalions of 40 to 45 tanks each and one mechanized infantry battalion of 45 to 50 IFVs and APCs. An army mechanized infantry brigade (Figure 2) has three mechanized infantry battalions and one tank battalion with 44 tanks. Each battalion is organized into three line companies.

A Republican Guard brigade has more tanks (55 to 60) in each armored battalion, which is organized into four line companies. Each of its mechanized in-

fantry battalions has three line companies. A Guard armored brigade (Figure 3) has two organic artillery battalions, each with 18 self-propelled 155mm pieces, while a Guard mechanized infantry brigade (Figure 4) has two organic artillery batteries, each with six 155mm pieces. The Republican Guard units that spearheaded the attack into Kuwait probably had the best equipment, including T-72 and T-72M1 tanks and BMP-1 and BMP-2 IFVs.

In addition to their own equipment, the Iraqis captured most of the Kuwaiti Army's armored vehicles, which included 165 Chieftain tanks, 90 Ferret reconnaissance vehicles, Scorpion reconnaissance vehicles, 50 BMP-2 IFVs, 130 Saracen APCs, 200 M113 APCs, Commando V-150 and V-300 armored vehicles, and 56 M901 improved TOW vehicles (ITVs).

The Iraqis have also modified some of their armored vehicles, and have upgraded their T-55 tanks and several other vehicles. For example, they have added applique armor on the hull sides of the BMP-1 that will protect it against 12.7mm and 14.5mm armor piercing (AP) rounds at 200 meters, and are replacing the 14.5mm machinegun on the BRDM-2 with a 23mm cannon. The Iraqis have modified MT-LBs for use as mortar plat-

forms; one version has a 120mm mortar mounted inside the carrier, and a second has four externally mounted 120mm mortars.

A short description of some of these armored vehicles follows:

T-72 Medium Tank. The T-72, including the T-72M1, is the most sophisticated tank Iraq has. It is armed with a 125mm smoothbore main gun, a 7.62mm coaxial machinegun, and a 12.7mm anti-aircraft machinegun. It has greater mobility, better armor protection, and greater firepower than the T-62. It has the same integral engine smoke-generating system as the earlier T-54, T-55, and T-62 tanks, and has a smoke grenade launcher. The T-72 is equipped with a collective NBC filtration and overpressure protection system. The advantage of these systems is that the crew members are not required to wear their protective masks or clothing when operating in a chemical environment. A T-72 tank is equipped with an integral laser rangefinder and an automatic loader, and it has a three-man crew.

Type 59-II. The Chinese Type 59-II tank, similar in appearance to the Soviet T-54 tank, is armed with a 105mm cannon, a 7.62mm coaxial machinegun, a 7.62mm bow machinegun, and a 12.7mm anti-aircraft machinegun, and it can be equipped with side skirts and an NBC protection system. It has a four-man crew.

Type 69-II. The Chinese Type 69-II tank, one of the most modern Chinese tanks, is fitted with an advanced fire control system including an integrated laser rangefinder and infrared night vision. It is armed with a 100mm cannon, a 7.62mm coaxial machinegun, a 7.62mm bow machinegun, and a 12.7mm anti-aircraft machinegun. The tank is equipped with side skirts and a complete NBC protection system. It has a four-man crew.

T-55 Modified Tank. Iraqi modifications to their T-55 tanks include installing a 125mm smoothbore cannon, a new passive night sight, add-on applique armor, four smoke grenade launchers on each side of the turret, and track skirts.

EE-3. The EE-3 *Jararaca* is a Brazilian four-wheeled scout vehicle. It is normally armed with a 12.7mm or .50 caliber machinegun, but it can be armed

with a 20mm cannon, a 60mm gun mortar, a 106mm recoilless rifle, or a Milan antitank guided missile (ATGM). It has a three-man crew.

EE-9. The EE-9 *Cascavel* (Rattlesnake) is a Brazilian six-wheeled armored car that mounts a 90mm cannon and a 7.62mm coaxial machinegun. Its basic ammunition load is 20 rounds of 90mm and 2,000 rounds of 7.62mm. It is protected in front against 12.7mm ammuni-

tion and on the side and rear against small arms fire and fragments. It has a three-man crew.

ERC-90. The ERC-90 is a French six-wheeled reconnaissance vehicle armed with a 90mm cannon and a 7.62mm coaxial machinegun. Its basic load of ammunition is 20 rounds of 90mm and 2,000 rounds of 7.62mm. The vehicle is equipped with a laser rangefinder and four 80mm smoke grenade launchers,

IRAQI ARMOR		ORIGIN	NUMBER
MAIN BATTLE TANKS			5,500-5,800
Type 59-II (T-54A)	China		500
Type 69-II (IMP Type 59)	China		1,000
T-72 (T-55)	Romania		50
Chieftain Mk 3/5	UK		30
T-54/55	USSR		1,400
T-52	USSR		1,500
T-72/T-72M1	USSR		1,000
INFANTRY FIGHTING VEHICLES			
PT-76	USSR		100
RECONNAISSANCE VEHICLES			2,000
EE-3 Jararaca	Brazil		300
EE-9 Cascavel	Brazil		200
ERC-90	France		
Panhard AML-60-7/AML-90	France		300
FUG-70 (D-944)	Hungary		
Ferret	UK		
Scorpion	UK		
BRDM-2	USSR		
INFANTRY FIGHTING VEHICLES			
BMP-1	Czechoslovakia		1,000
BMP-2	USSR		
ARMORED PERSONNEL CARRIERS			7,100
EE-3 Jararaca	Brazil		
Type 63	China		
OT-62	Czechoslovakia		
OT-64	Czechoslovakia		
Wald	Egypt		
Panhard M3	France		123
Saracen	UK		
MT13A1	USA		
MT1B	USSR		
BTR-40	USSR		
BTR-50	USSR		
BTR-60	USSR		
SELF-PROPELLED ANTITANK GUNS/ATGMs			
Steyr SK 105 (TD)	Austria		100
SU-100 (SPG)	USSR		90
VCR-TH (HOT)	France		100
BRDM-2 (Sagger)	USSR		
BRDM-2 (Spandrel)	USSR		

(Data compiled from *Jane's Armour and Artillery, 1989-1990, Military Balance, 1989-1990, and the Middle East Military Balance 1988-1989.*)

Table 1

and is protected against 7.62mm ball ammunition at point blank range. The optional subsystems available for this vehicle include NBC protection and air conditioning. Two variants have been produced: the ERC-90 *Sagaie* and the ERC-90 *Lynx*. The vehicle has a three-man crew.

AML. The AML series of French four-wheeled armored cars are protected against 7.62mm armor piercing (AP) ammunition frontally and against 7.62mm ball ammunition elsewhere at point blank range. Optional subsystems available for the vehicles include air conditioning. They have three-man crews.

The AML-69-7 is armed with a 60mm gun-mortar and two 7.62mm machine-guns. The gun-mortar has an effective direct fire range of 300 meters and an indirect fire range of 500 to 2,600 meters. The basic load is 43 mortar rounds and 3,800 7.62mm rounds.

The AML-90 is armed with a 90mm cannon, a 7.62mm coaxial machinegun, a 7.62mm pintle-mounted machinegun, and two 80mm smoke grenade launchers. The basic load consists of 20 rounds of 90mm and 2,000 rounds of 7.62mm ammunition.

Scorpion. The British Scorpion combat reconnaissance vehicle is tracked and equipped with a 76mm cannon and a 7.62mm machinegun. The basic load is 40 rounds of 76mm and 3,000 rounds of 7.62mm, and it is equipped with six or eight 66mm smoke grenade launchers. The vehicle is designed to protect against 14.5mm AP projectiles in front and 7.62mm rounds elsewhere. The vehicle's NBC collective protection system is connected to the individual's mask. The Scorpion has a three-man crew.

FUG-70. The FUG-70 is a Hungarian four-wheeled armored APC similar in appearance to a BRDM-2. It is armed with either a 14.5mm machinegun or 23mm cannon and a 7.62mm machinegun, and has an NBC protection system. It has a crew of two and can carry six or seven infantrymen or scouts.

Ferret. The Ferret is a British four-wheeled armored scout car. Dual 7.62mm machineguns are located in the turret and three smoke grenade launchers are mounted on each side of the hull. It has

TANK CAPABILITIES			
NOMENCLATURE	WEAPONS	WEAPON RANGE	BASIC LOAD
T-72/T-72M1	125mm	2,000m	40
	12.7mm	1,500m	300
	7.62mm	1,000m	2,000
Type 59-II (T-54A)	105mm	1,800m	34
	12.7mm	1,500m	500
	7.62mm	1,000m	3,500
Type 69-II	100mm	1,500m	34
	12.7mm	1,500m	500
	7.62mm	1,000m	3,400
M-77 (T-55)	100mm	1,500m	43
	12.7mm	1,500m	500
	7.62mm	1,000m	3,500
Chieftain-Mk 3/5	120mm	2,000m	53/64
	12.7mm	1,500m	300
	7.62mm	900m	6,000
T-54/55	100mm	1,500m	34/43
	12.7mm	1,500m	250/500
	7.62mm	1,000m	3,500
T-54/55 (Modified)	125mm	2,000m	Unknown
	12.7mm	1,500m	Unknown
	7.62mm	1,000m	Unknown
T-55	100mm	1,500m	40
	12.7mm	1,500m	250
	7.62mm	1,000m	2,000
PT-76	76mm	650m	40
	12.7mm	1,500m	250
	7.62mm	1,000m	1,000
SK-105	105mm	2,700m	42
	7.62mm	1,000m	2,000
SU-100	100mm	1,500m	34

Table 2

a two-man crew.

EE-11. The EE-11 *Urutu*, a Brazilian six-wheeled APC, is normally equipped with a 12.7mm or .50 caliber machinegun, but it can be armed with a variety of weapons including a 20mm or 90mm cannon or a 60mm gun mortar. It is protected against 12.7mm ammunition in front and against small arms fire and fragments in the sides and rear. It can be equipped with smoke grenade launchers on either side of the turret. It has a one-man crew (driver) and can carry 13 infantrymen. Iraq also has an armored recovery version of the EE-11 that is equipped with a front mounted winch, a hydraulic crane, and specialized tools and equipment.

Type 531. The Type 531, formally called the Type 63 or M-1967, is a Chinese tracked APC that is equipped with a 12.7mm machinegun and a basic load of 1,120 rounds. It has one firing port on each side and another in the rear

of the vehicle. It has a crew of four and can carry ten infantrymen.

OT-62. The OT-62 is a Czechoslovakian copy of the Soviet BTR-50PK tracked APC. It is armed with 14.5mm and 7.62mm machineguns and has firing ports on the sides and an NBC overpressure protection system. It has a two-man crew and can carry up to 18 infantrymen.

OT-64. The OT-64 is a Czechoslovakian eight-wheeled APC armed with 14.5mm and 7.62mm machineguns in the turret. It has firing ports on the sides, hatches, and rear of the vehicle. Some models have AT-3 Sagger antitank guided missiles (ATGMs) mounted on each side of the turret. The vehicle has an NBC overpressure protection system. It has a two-man crew and can carry between 15 and 18 infantrymen.

BTR-40. The BTR-40 is a Soviet four-wheeled APC normally armed with 7.62mm machineguns. An anti-aircraft version of this vehicle is armed with twin

OTHER ARMORED VEHICLES

NAME/ENCLATURE	ORIGIN	WEAPONS	RANGE
RECONNAISSANCE VEHICLES			
EE-3 (Jararaca)	Brazil	12.7mm 20mm 60mm	1,500m 1,500m 2,600m
EE-9 (Cascavel)	Brazil	40mm 12.7mm 7.62mm	1,500m 1,000m 1,000m
AML-90/7	France	60mm mortar 7.62mm	2,600m 900m
AML-90	France	90mm 7.62mm	1,000m 900m
ERC-90/1	France	90mm 7.62mm	1,000m 900m
FUG-70	Hungary	14.5mm or 23mm 7.62mm	2,000m 1,000m 1,000m
Scorpion	UK	7.62mm 76mm	900m 1,600m
BMD-2	USSR	14.5mm or 23mm 7.62mm	2,000m 1,000m 1,000m
INFANTRY FIGHTING VEHICLES			
BMP-1	USSR/ Czechoslovakia	76mm AT-3 7.62mm 30mm	1,000m 1,000m 1,000m 1,000m
BMP-2	USSR	7.62mm AT-3 AT-3	1,000m 2,000m 2,000m
WHEELED ARMORED PERSONNEL CARRIERS			
EE-9 (Walid)	Brazil	12.7mm	1,500m
OT-64	Czechoslovakia	14.5mm 7.62mm AT-3	2,000m 1,000m 1,000m
Walid	Egypt	7.62mm	900m
Panhard M3	France	20mm 7.62mm	1,500m 1,000m
BTR-40	USSR	7.62mm 14.5mm 7.62mm	900m 2,000m 1,000m
TRACKED ARMORED PERSONNEL CARRIERS			
MAZ-531 (Type 63)	China	12.7mm	1,500m
OT-82C	Czechoslovakia	14.5mm 7.62mm	2,000m 1,000m
M113	US	12.7mm	1,500m
BTR-50	USSR	14.5mm	2,000m
OT-16	USSR	7.62mm	1,000m

Table 3

14.5mm machineguns. It has a two-man crew and can carry eight infantrymen.

Walid. The *Walid* is an Egyptian four-wheeled APC similar in appearance to the Soviet BTR-40. The vehicle has an open-topped troop compartment and has three firing ports on each side of the vehicle and two in the rear. The basic model has a pintle mounted 7.62mm machine-

gun. It has a crew of two and can carry eight to ten infantrymen.

Panhard M3. The *Panhard* is a French four-wheeled APC with twin 7.62mm machineguns mounted in the turret. Optional subsystems for this vehicle include air conditioning and smoke grenade launchers. It has a two-man crew and can carry ten infantrymen.

Saracen. The *Saracen* is a British six-wheeled APC that has one 7.62mm machinegun mounted in the turret and another on a ring mount at the rear of the vehicle. There are three firing ports on each side of the vehicle and one in the rear door. Three smoke grenade launchers are mounted on each of the front fenders. It has a two-man crew and can carry ten infantrymen.

SK-105. The SK-105 is an Austrian tank destroyer, also referred to as the *Kuerassier*. The French AMX-13 turret was mounted to an Austrian-modified 4K4FA APC. The 105mm cannon is loaded from two revolving drum magazines in the turret bustle. The vehicle has a 42-round basic load and is equipped with a laser rangefinder, a 7.62mm coaxial machinegun, and six 80mm smoke grenade launchers. The vehicle is protected against 14.5mm AP rounds at 300 meters over the frontal 60-degree arc. It has a three-man crew.

VCR-TH. The VCR-TH is a French six-wheeled VCR antitank vehicle fitted with a HOT turret mount. The vehicle has four HOT ATGMs with a range of 4,000 meters ready to fire and another ten ATGMs in the hull. The vehicle has a remote control 7.62mm machinegun mounted in the rear and two smoke grenade launchers on each front fender. It has a four-man crew.

According to the *Middle East Military Balance, 1988-89*, Iraq has 2,800 armored vehicle truck transporters, also referred to as heavy equipment transporters (HETs). These transporters enable the Iraqis to move their armored forces around the battlefield. Some of the HETs are West German and others may include the Soviet MAZ-537G.

Additional information that units can use to improve their knowledge of Iraqi armor is available in the following sources:

- FM 1-402, *Aviator's Recognition Manual*, dated August 1984, provides a good selection of ground equipment and aircraft.
- *Identifying The Iraqi Threat and How They Fight*, dated August 1990, produced by the U.S. Army Intelligence Agency, Washington, D.C. 20310-1015, gives an excellent summary of Iraqi or-

OTHER ARMORED VEHICLES

NOMENCLATURE	ORIGIN	WEAPONS	WEAPON RANGE
RECONNAISSANCE VEHICLES			
EE-9 (Amraç)	Brazil	12.7mm	1,500m
EE-9 (Cacarej)	Brazil	20mm 60mm 90mm	1,500m 2,500m
AML-60/7	France	12.7mm 7.62mm	1,000m
AML-90	France	60mm mortar 7.62mm	2,800m 900m
ERC-90/1	France	90mm 7.62mm	1,000m 900m
FUG-70	Hungary	90mm 7.62mm	1,000m 900m
Ferret	UK	44.5mm or 23mm	2,000m
Scorpion	UK	7.62mm	1,000m
SDRM-2	USSR	7.62mm 14.5mm or 23mm	900m 2,000m
WHEELED ARMORED PERSONNEL CARRIERS			
EE-9 (Amraç)	Brazil	12.7mm	1,500m
EE-9 (Cacarej)	Brazil	20mm 60mm 90mm	1,500m 2,500m
Valid	Egypt	7.62mm	900m
Panhard M3	France	20mm 7.62mm	1,500m
BTR-40	USSR	7.62mm 14.5mm	1,000m 2,000m
TRACKED ARMORED PERSONNEL CARRIERS			
AV-53 (Type 63)	China	12.7mm	1,500m
OT-62C	Czechoslovakia	14.5mm 7.62mm	2,000m 1,000m
M113	US	12.7mm	1,500m
BTR-50	USSR	14.5mm	2,000m
MTLB	USSR	7.62mm	1,000m

Table 3

14.5mm machineguns. It has a two-man crew and can carry eight infantrymen.

Valid. The *Valid* is an Egyptian four-wheeled APC similar in appearance to the Soviet BTR-40. The vehicle has an open-topped troop compartment and has three firing ports on each side of the vehicle and two in the rear. The basic model has a pintle mounted 7.62mm machine-

gun. It has a crew of two and can carry eight to ten infantrymen.

Panhard M3. The *Panhard* is a French four-wheeled APC with twin 7.62mm machineguns mounted in the turret. Optional subsystems for this vehicle include air conditioning and smoke grenade launchers. It has a two-man crew and can carry ten infantrymen.

Saracen. The *Saracen* is a British six-wheeled APC that has one 7.62mm machinegun mounted in the turret and another on a ring mount at the rear of the vehicle. There are three firing ports on each side of the vehicle and one in the rear door. Three smoke grenade launchers are mounted on each of the front fenders. It has a two-man crew and can carry ten infantrymen.

SK-105. The SK-105 is an Austrian tank destroyer, also referred to as the *Kuerassier*. The French AMX-13 turret was mounted to an Austrian-modified 4K4FA APC. The 105mm cannon is loaded from two revolving drum magazines in the turret bustle. The vehicle has a 42-round basic load and is equipped with a laser rangefinder, a 7.62mm coaxial machinegun, and six 80mm smoke grenade launchers. The vehicle is protected against 14.5mm AP rounds at 300 meters over the frontal 60-degree arc. It has a three-man crew.

VCR-TH. The VCR-TH is a French six-wheeled VCR antitank vehicle fitted with a HOT turret mount. The vehicle has four HOT ATGMs with a range of 4,000 meters ready to fire and another ten ATGMs in the hull. The vehicle has a remote control 7.62mm machinegun mounted in the rear and two smoke grenade launchers on each front fender. It has a four-man crew.

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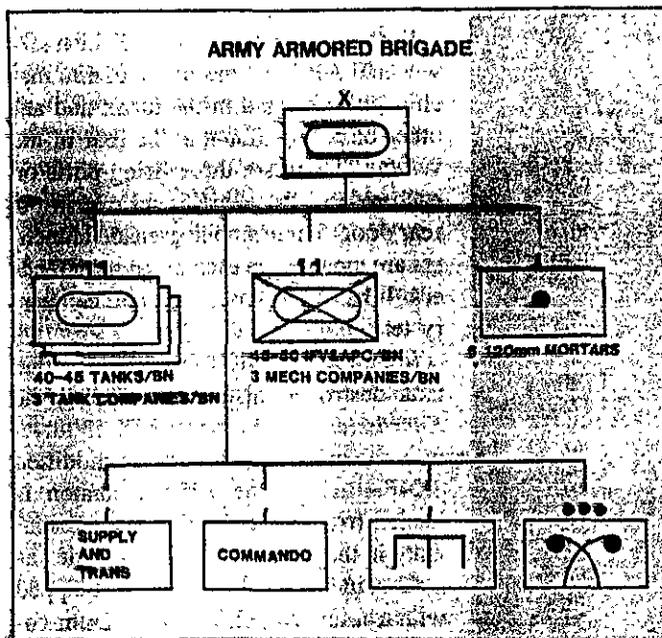


Figure 1

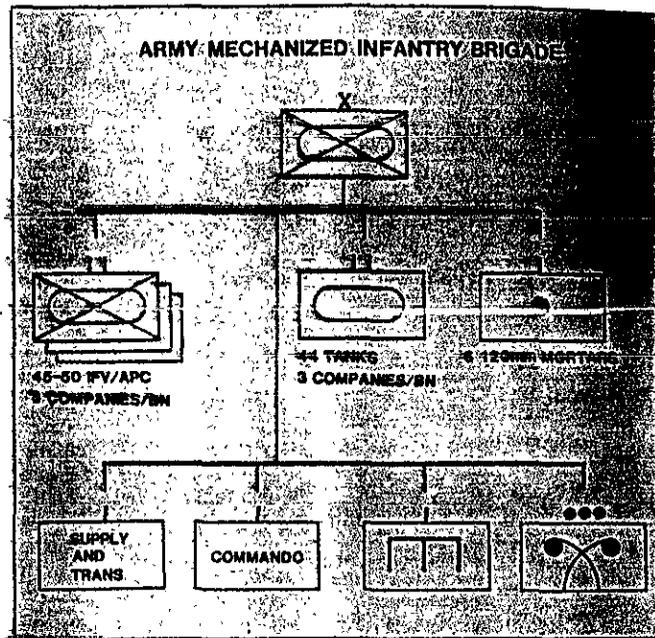


Figure 2

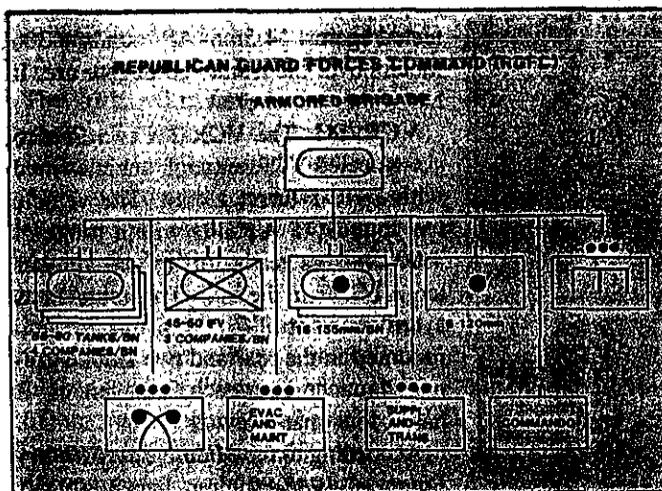


Figure 3

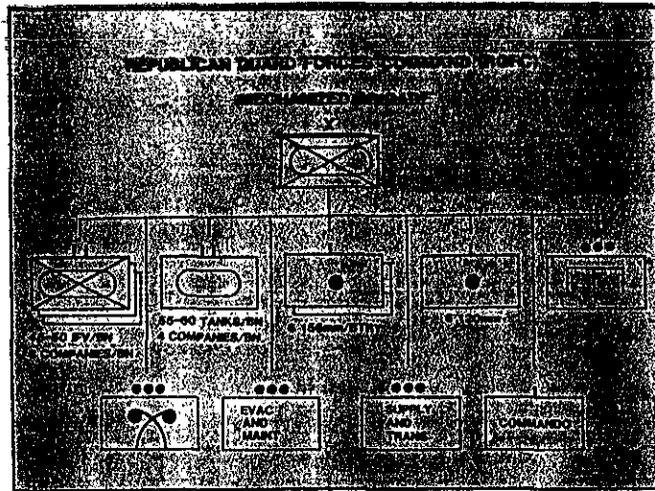


Figure 4

ganizations, tactics, and equipment.

- FM 34-72, Intelligence Training Module Middle East Environment (Coordinating Draft, August 1985, ATSO-SO, Fort Huachuca, Arizona 85613-7000) has a chapter on each Middle Eastern country including its army and its customs. Only the coordinating draft is available.

- FM 100-2-3, Soviet Army Operations, Organizations and Equipment (Approved Final Draft, dated March 1989, with changes dated August 1990), U.S. Combined Arms Center, ATTN: ATZL-CST-T, Fort Leavenworth, Kansas 66027-5000) gives up-to-date information on Soviet equipment.

- TC 90-16, Antiarmor Operations on

the Integrated Battlefield (Coordinating Draft, dated June 1988, written by U.S. Army Command and General Staff College, ATTN: ATZL-SWT-C, Fort Leavenworth, Kansas 66027-5000) is a single classified source for employing U.S. antiarmor weapons. Units should retain their copies of the coordinating draft, because there is no plan at the present time to publish it in final form.

- DA Pamphlet 550-31, Iraq: A Country Study (Fourth Edition, 1990) is a good source of information on Iraq.

- Posters produced by the Armor School's Threat Manager include one on Iraqi armor and one on Chinese armor. These posters can be ordered from the Fort Knox Army Wide Training Support

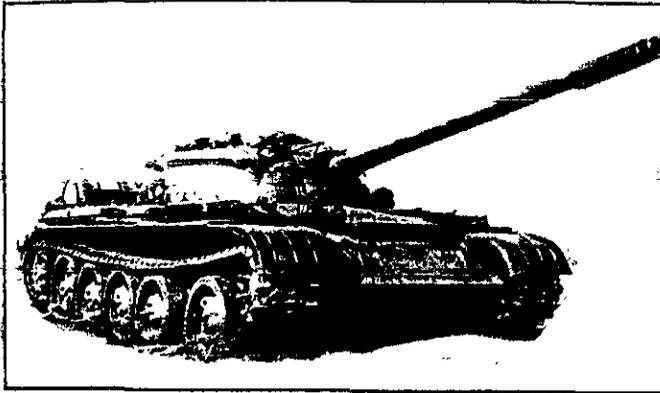
Center, AUTOVON 464-2987.

- GTA 17-2-13, Armored Vehicle Recognition Cards, and GTA 44-2-6, Aircraft Recognition Cards, are pocket-size decks of flash cards for vehicle and aircraft recognition. They are stocked by local Training Support Centers (TSCs).

- Posters called DESERT SHIELD, produced by FORSCOM should be available through local Training Support Centers (TSCs).

In addition to these sources, an excellent article, "Iraqi Modifications to Soviet Armoured Vehicles," by Christopher F. Foss, appears in the October 1989 issue of *Jane's Soviet Intelligence Review*.

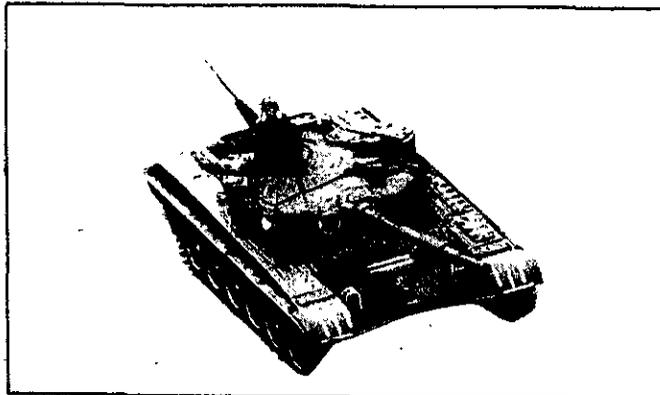
Aside from Iraqi vehicles, there are



T-54/T-55/Type 59 Tank



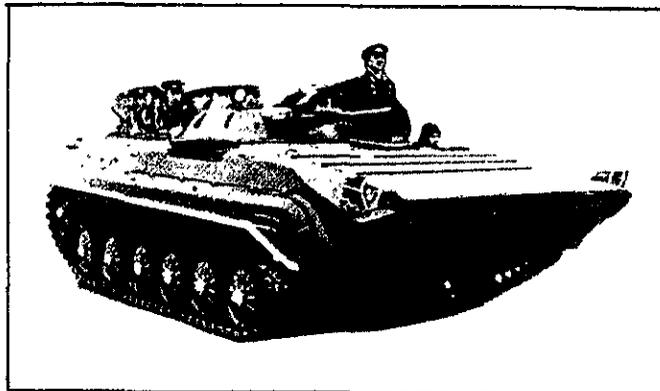
T-62 Tank



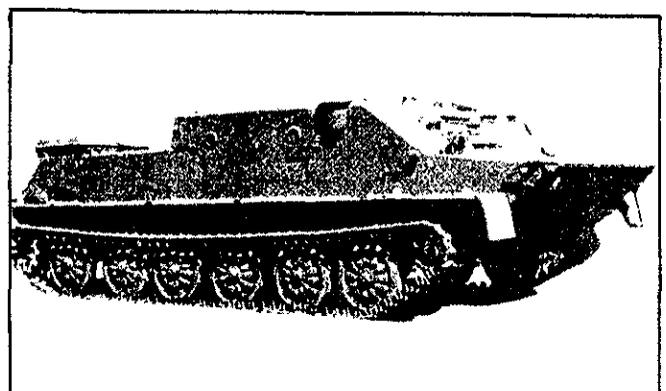
T-72M1 Tank



PT-76 Reconnaissance Tank



BMP Infantry Combat Vehicle



BTR-50 PK Armored Personnel Carrier

many other armored vehicles in the Middle East that our forces are not familiar with. Among our allies, for example, the Saudi Arabian Army has AMX-30S and M60A1 and A3 tanks, and their light armored vehicles include AMX-10P IFVs, M113 APCs, Commando V-150 armored cars, Scorpion reconnaissance vehicles, AML-60 and AML-90 armored cars, and Panhard M3 APCs.

Additionally, the U.S. Marine Corps units in DESERT SHIELD have several vehicles most U.S. Army soldiers have not had an opportunity to see. These in-

clude the light armored vehicle (LAV) and the AAV-TP7 tracked amphibious assault vehicle. The LAV comes in several versions, including a 25mm cannon version and an ITV version. The eight-wheeled LAV can easily be confused with the eight-wheeled Iraqi BTR-60 and the OT-64 vehicles.

Resources are available that will help improve the vehicle identification skills of our soldiers, and commanders need to make those resources available. It is vital that each soldier learn which armored vehicles the enemy units use and which

friendly units use. Our soldiers should also know that while the Iraqi ground forces have a large number of Soviet and East European vehicles, they are not organized like the Soviet ground forces, nor do they fight exactly like the Soviets.

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