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**The US-Iraqi Artillery Duel:
Precision Artillery vs. Chemical
Weapons?**

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The US-Iraqi Artillery Duel: Precision Artillery vs. Chemical Weapons?

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Iraq faces a remarkably one-sided battle in the air. The US and Britain are likely to win air supremacy almost immediately, and have a virtual monopoly of air and helicopter strike/attack capability, and helicopter mobility. Artillery, however, may be a different story. The moment the land battle begins, or even earlier along the Kuwaiti border, it could become a duel between US artillery capable of near-precision fire against an Iraq with massive artillery forces but either incapable of making effective use of that strength or firing chemical weapons.

In the last war, the US was deeply concerned about the superior range of Iraqi artillery. In practice, it proved to have little effect because (a) range doesn't matter unless you have long-range targeting systems and can use them effectively and Iraq had few UAVs and counterbattery radars and little skill in using them, (b) artillery only matters if you can maneuver it effectively and Iraq dug in and failed to maneuver its forces, (c) you can rapid shift aim points to concentrate on the actual target and Iraq relied on area fire, and (d) the lethality of conventional artillery fire is limited.

The US and "Precision Artillery?"

In contrast, the US army showed during the last Gulf War that it was on the edge of using artillery as precision weapons precisely because it had decisive advantages in all of these areas.

Since that time, the US Army and Marines have made massive advances in the use of UAVs, JSTARS, and other targeting systems to develop near real time targeting intelligence. Counterbattery radars have improved and the US ability to react immediately with accurate counterbattery fire is an amazing advance over the ability to react-target-fire in past wars.

Synchronicity in the use of artillery, helicopters, and strike fighters has improved, as has the ability to deconflict their operating zones (although Afghanistan showed the US still has a long way to go). New artillery shells have been developed for long-range fire. The MLRS (if deployed) has far more sophisticated rounds. The end result is a degree of precision in artillery that has never before existed.

All of these factors can be critical if there are significant artillery clashes on the way to Baghdad and in any battle of Baghdad. This is likely to happen and could begin the moment major US and British forces advance on Basra.

Iraqi Artillery Forces

At the same time, no one should ignore Iraqi artillery strength. Iraq has some 200-250 active self-propelled artillery weapons – with Soviet 122 mm 2S1s, 152 mm 2S3s,

captured US 155 mm M-109A1/A2s, South African/Austrian G-6s, and French 155 mm AUF-1(GCT)s. These self-propelled weapons are largely in Republican Guard and a few elite Regular army heavy divisions.

The bulk of Iraqi artillery consists of some 1,900 towed weapons. Mostly 122 mm, 152 mm, and 155 mm. Iraq has some 200 multiple rocket launchers – largely 122 mm and 127 mm systems but with some longer-range 400 mm Ababil-100 systems. Iraq also has large numbers of 81 mm, 120 mm, 160 mm, and 240 mm mortars.

Iraq has never demonstrated, however, that it can rapidly target moving forces and switch fires. It relies heavily on mass fires and area suppression. The ability to target beyond line of sight is limited, and sensor and command problems severely limit the ability to target maneuver forces at long ranges, although Iraq does have some RASIT artillery surveillance vehicles and French Cymbeline counter-mortar radars.

Iraq had over 350 self-propelled mortars mounted on armored vehicles before the Gulf War. These do not seem to have been heavily committed to the Kuwaiti Theater of Operations, and Iraq probably still held several hundred after the conflict. Iraq also retained large numbers of 81 mm and 120 mm Soviet mortars. It has a total of over 2,000 towed and crew-portable mortars.

It is obvious from Iraq's artillery holdings that most units rely heavily on towed weapons, and that Iraq can only equip a few of its heavy combat units with the self-propelled artillery necessary to keep up with Iraqi tanks and Iraq's most modern other armored vehicles. Iraq has tried to solve these problems in the past by mixing tactics and artillery organization borrowed from France, Russia and China, and tailoring the end result to a given front or campaign.

The end result, however, has rarely been impressive. Only a few Iraqi units have had the radars, training, and organization to allow them to conduct effective counterbattery fire. Targeting and observed fire is heavily dependent on forward observers, and is often slow and unresponsive. The ability to use UAVs and other techniques to acquire targets beyond visual range is very limited, and artillery support of mobile Iraqi armored units has been consistently poor -- even when the forward armored unit has called in targets and requested support.

Iraq has developed effective techniques for digging in towed weapons and massing tube and multiple rocket fire against slow-moving targets like Iranian infantry. It has not, however, demonstrated the ability to quickly shift fires and deal with rapidly moving armored forces. Its towed artillery has been relatively slow moving and has often been road bound, unless sufficient time existed to support rear areas.

During the Iran-Iraq War, Iraqi artillery units usually needed extensive time to deploy large amounts of ammunition into prepared rear areas in order to maintain high rates of fire, and had to pre-survey the battlefield to mass artillery fire effectively. Iraq also relies very heavily on the "feed forward" of large amounts of ammunition, without prior request

from the user unit, to make up for its slow-moving and unresponsive logistic and support system.

Iraqi self-propelled artillery units have often had problems extracting themselves from prepared positions, and moving rapidly under defensive conditions. Field repair and recovery of artillery systems has been poor.

The Chemical/Biological Wild Card

The wild card is Iraqi ability to use chemical and possibly biological rounds. We do not know Iraq's current stocks of chemical rounds, and reports such rounds have been distributed to Iraqi forces near Basra have not been confirmed. Iraqi artillery can, however, fire chemical and possibly biological shells and rockets and many weapons have a relatively long range.

The weapons known to have chemical rounds include the 122 mm and 155 mm artillery weapons. Iraq has over 100 122 mm multiple rocket launchers, and the Ababil 50 and longer-range 400 mm Ababil-100 systems. The Iraqi D-30 122 mm weapon has a range of about 15.3 kilometers. Some uncertainty exists about the range of 155 mm rounds. Estimates go up to 18-22 kilometers -- roughly the same maximum range as most US 155 mm artillery rounds. (The US M109A6 and some of the French/South African weapons in Iraqi hands have rounds that can go up to 30 kilometers. The Abibil-50 has a range of some 40-55 kilometers. The Abibil-100 has a range reported to be up to 130 kilometers.

The US and Britain have attacked Ababil-100 rocket moving south in recent weeks as part of their stepped up enforcement of the southern No Fly Zone. UNMOVIC has also discovered chemical cluster munitions that can be used in any Iraqi round from 122 mm or larger, but any stocks of such round have not been confirmed. Past Iraqi chemical artillery rounds were relative crude unitary rounds with uncertain variable time and proximity fusing and a high degree of waste or destructiveness of the chemical agent in bursting. A single multiple rocket launcher can, however, fire up to 12 chemical rounds in a single volley.

As a result, Iraq could begin firing chemical rounds into Kuwait the moment the war begins. It could wait until US and British forces advance on Basra and have to group for bridge crossings, or near water and other barriers. It could set up chemical ambushes on the road to Baghdad under any similar circumstances, and use chemical rounds in defending the approaches to any city and at the outer defenses of Baghdad.

US Counters to Iraqi Use of Chemical Artillery

The best way the US would have of suppressing such Iraqi fire would be a combination of UAV targeting systems, counter battery radars and precision artillery fire, fixed wing aircraft (possible attack helicopters, and rapid maneuver – bypassing Iraq concentrations when detected.

As for the artillery duel. The Army might also use the Multiple Launch Rocket System (MLRS) -- a system the Army has not discussed during the build-up.

if it is present, the MLRS performed extremely well in Operation Desert Storm (ODS) in which significant numbers of launchers were deployed. All operational requirements were met and, in most cases, exceeded levels for readiness, reliability and maintainability. MLRS units from the United Kingdom were also involved in ODS and proved the value of this multi-national system. The new upgrade MLRS (Deep Attack Launcher) also demonstrated its enormous capability during the first operational firings of the longer range ATACMS.

The Army has initiated an extensive improvements program to enhance MLRS's basic capability. The improvements are in three areas--an extended range rocket (from 32 kilometers to 50 kilometers), an improved fire control system, and an improved launcher mechanical system. The extended range rocket has a reduced payload of M77 submunitions and a longer rocket motor to enable attainment of the additional 18 kilometers of flight. The improved fire control system includes a meteorological sensor, a positioning navigation unit combined with global positioning system and a new launcher interface unit with increased throughput capacities in the main and communication processors. The improved launcher mechanical systems consists of non-developmental item improvements to the elevation transmission, elevation motor, azimuth motor and motor control. It can reload more quickly and react faster to moving targets. (Nominal load: 12 Rockets; 644 M-77 Shaped Charges per Rocket Reload Time 9 minutes Rocket Range 31.8 km.)

The US Army has also been quiet about the deployment of the longer range ATACMs, if it is present. The Army Tactical Missile System (Army TACMS) has ranges that are classified, but well in excess of 100 kilometers. It is a ground launched, deep fires missile system consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead consisting of approximately 950 M-74 bomblets. The missiles are fired from the Multiple Launch Rocket System (MLRS) modified M270 launcher. The missiles are deployed within the ammunition loads of corps MLRS battalions and/or division artillery batteries. The Army TACMS includes guided missile and launching assembly, test set, guided missile system, training set, guided missile system: M165, trainer, test device guided missile: M70, modified M270 launcher, and Army TACMS missiles facilities.

The Army TACMS Block I round is a semi-ballistic missile with an APAM warhead that contains approximately 930 M-74 bomblets. There is 1 missile per guided missile and launching assembly and 2 missiles per launcher load. The Block IA integrates an onboard Global Positioning System (GPS) with antenna and software into an inertial navigation system and reducing the Block I payload from 950 M-74 bomblets to approximately 300 M-74 bomblets to achieve the required accuracy and extended range. The Block II Army Tactical Missile System for the Army is a long range, all weather, day/night, tactical missile designed to defeat critical high pay-off targets in support of Corps level deep operations. The Block II variant is a pre-planned product improvement

(P3I) to the Army TACMS Block I and IA missile systems specifically designed to kill moving armored targets and surface-to-surface missile (SSM) transporter erector launchers (SCUD TELs). The Block II carries 13 BAT or P3I BAT brilliant submunitions.