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# **Iraqi Armed Forces on the Edge of War**

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## Iraq's Military Forces on the Edge of War

*Introductory Note: The reader should be aware that many of the details in this analysis are highly speculative because Iraq is preparing for war, its forces are in flux, and unclassified sources are often contradictory. The details provided represent the author's best guess, based on data from USCENTCOM, US and British experts, the International Institute of Strategic Studies, and Jane's Periscope plus his own books on Iraqi military forces. The data on Iraqi intelligence and security forces draw heavily on the work of Sean Boyne, Amatzia Baram, Toby Dodge, Faleh A. Jabar, the British report on Iraqi Deception of February 3, 2003, Ibrahim al-Marashi, and Ken Gause. The author is indebted to Ken Pollack for additional data on the Iraqi Republican Guards.*

Iraqi military forces are changing in response to the US and British military build-up, and Iraq is almost certainly filling in their manpower with added conscripts and reserves, and redeploying them in response to the US and British threat. They are building up a two ring defense of Baghdad and an extensive structure of barrier and other defenses in key cities and particularly in the Sunni area north of Baghdad. There are also indications that some elements of the Republican Guards may be training in urban warfare to fight in civilian dress, and that Iraq will deliberately mix such loyalist elements, the security services, and popular forces in civilian dress to fight urban battles under conditions where the US and Britain may find it impossible to distinguish combatants from civilians.

It is not possible to provide an exact estimate of Iraq's military strength, order of battle, or force locations under these conditions. Nevertheless, it is possible to provide considerable detail on Iraq's military capabilities using data from the IISS, Jane's and material provided informally by US, British, and other experts.

Although Iraq's forces have many serious defects, Iraq remains the most effective military power in the Gulf, despite the Gulf War, and the loss of some 40% of its army and air force order of battle. Iraq still has armed forces with around 389,000 full time actives. Its army had some 350,000 actives, including some 100,000 called-up reservists, before it began a serious build-up in reaction to US and British deployments, and an inventory of some 2,200-2,600 main battle tanks, 3,700 other armored vehicles, and 2,400 major artillery weapons.

The Air Force has 20,000 men and over 300 combat aircraft with potential operational status—although many have little, if any, sustainability or effective combat capability.<sup>1</sup> It had a 17,000 man air defense command with over 850 surface-to-air missile launchers and some 3,000 anti-aircraft guns, and a small 2,000 man navy with nine small combat ships and an unknown number of mines and Silkworm land-based anti-ship missiles.

As weak as many aspects of Iraq's forces may be, it is still a major military power by regional standards and has at least some chemical and biological weapons. Iraq must be taken seriously both in regional terms and in any military effort to overthrow the regime of Saddam Hussein.

### **Command Structure**

Saddam Hussein is the Supreme armed forces Commander. The Presidential Guard reports directly to him as does the President's Special Security Committee. He chairs a Defense Council of key loyalists, including the Minister of Defense, Minister of the Interior, and Armed Forces Commander. The Chief of the General Staff is head of the armed forces headquarters and combined service staff. Each of the four service headquarters are located in Baghdad, as is the headquarters of the military intelligence elements and each reports upwards through the Combined service Staff. Armed Forces Commander and Minister of Defense.

Iraqi forces are under the command of loyalists to the regime. These include General Sultan Hashim al-Ubaydi, the Minister of Defense, and General Ibrahim Abd Al-Satter Muhammad al-Tikriti, the Chief of Staff.

While this command structure is highly centralized, Saddam set up four regional commands at the time of Desert Fox in 1998, each of which was placed under one of his most dedicated supporters. These regional commands are likely to reappear in some form in the course of any US-British attack. They included:

- ***The Southern Region***, which included the governates of Basra, Dhikar, Misan, and Waset under Saddam's cousin General Ali Hassabn al Majid.
- ***The Northern Region***, which was under Qusay, and covered the three Kurdish governates of Sulaimaniya, Arbil, and Dohuk plus the northern governate of Mosul.
- ***The Central Euphrates Region***, which was largely Shi'ite and included Kerbala, Babylon, Najaf, Quadisiya, and Muthanna. It was commanded by Muhammed Hamza al Zubeidi, an RCC member and Deputy Prime Minister.
- ***The Central Region*** including Baghdad, Saladin, Anbar, and Diyala, under Defense Minister Ahmed Sultan.

Saddam not only is likely to create similar regional commands in the event of war, he is likely to use the civil intelligence and security forces to attempt to hold on to each major urban area and region. Saddam must know that even limited local resistance could help force the US to disperse its forces, while successful urban resistance in a number of areas could confront the US with much more serious problems in urban warfare. He also must know that large elements of the Iraqi Army might not be loyal if he did not maintain control over the key regions and towns and cities as long as possible.

### **The Iraqi Manpower Base**

Iraq has considerable potential for popular mobilization. Iraq has a reserve pool of some 650,000, and a large pool of annual conscripts. The CIA estimates Iraq's population at over 24 million, with over 5 million males of ages 14 years or less, and 6.1 million males between 15 and 49, of which 3.4 million are fit for military service. Some 274,000 males enter military service each year. It has the ability to include over 100,000 men from the security services and police forces in some military or paramilitary roles, and has at least lightly armored combat elements in each of its three main civilian security and intelligence services. It also has a popular force called Saddam's Fedayeen, and a youth corp that receives some form of military training.

Serious questions do exist, however, about the effectiveness of any such mobilization. Iraq has small arms enough to equip several hundred thousand men for light infantry warfare, and to play a limited role in urban warfare. It does not, however, have enough heavy weapons to properly equip its pre-build-up forces.

It is also far from clear how motivated any Iraqi reserve and popular forces will be. Saddam Hussein has spent the last decade dealing with repeated problems in his armed forces, and has had to become more selective in the recruitment and promotion of the men in the regular army heavy divisions and Republican Guard. Iraq also has deep ethnic divisions.

The CIA estimates that Iraq's current population has major ethnic divisions: Arab 75%-80%, Kurdish 15%-20%, Turkoman, Assyrian or other 5% . It also has major religious divisions: Muslim 97% (Shi'a 60%-65%, Sunni 32%-37%), Christian or other 3%. The fact that a relatively small Sunni Arab elite rules oppressively over a majority of Shi'ites and Kurds (58%-76% of the total population) has long led to ethnic clashes with hostile Kurdish and Shi'ite elements. Even the Sunni Arab part of the population is divided, and Saddam's main loyalists have a rural tribal rather than urban character, in a country where even "loyal" tribal elements have sometimes turned against Saddam.

It is important to note that Saddam Hussein's Popular Army was essentially worthless during the Iraq-Iraq War, as were units called up out of Ba'ath Cadres from the civilian elements of the government. Saddam has also faced serious Kurdish and Shi'ite uprisings after the Gulf War. Some 12%-15% of Iraq's population is now in the Kurdish security zone, and Saddam still has major problems in parts of the Shi'ite south. At the same time, no major Shi'ite or Kurdish conscript element of the regular army defected during the Iran-Iraq or Gulf Wars.

A number of experts have also suggested that Saddam will put large cadres of intelligence, security, and Republican Guard personnel into urban areas in civilian dress and intermingle them with popular forces to both ensure that the popular forces will fight and make it impossible for US and British forces

### **The Army and Key Security Elements**

The International Institute of Strategic Studies and Jane's estimate that the Iraqi army could still can deploy some 350,000 to 375,000 men, organized into seven corps, with two Republican Guards corps and five regular army corps in mid 2002. It since seems to have mobilized additional reservists, while removing some suspect manpower. Details, however, are not available.

#### ***Iraqi Major Combat Unit Strength***

These forces include:

- Six Republican Guards divisions (3 armored, 1 mechanized, and 2 infantry)
- Four Special Republican Guards brigades as part of a complex 14 battalion force structure designed to protect Saddam and the regime.
- A regular army with some 16 divisions, (while 11 are relatively low-grade infantry divisions, 3 are armored divisions and 3 are mechanized divisions.
- The regular army also has five commando and two special forces brigades.

- A five wing army aviation component with 2 fixed-wing and 21 helicopter squadrons.

Earlier estimates by US Central Command (USCENTCOM) indicate that the Iraqi land forces had a total mobilizable strength of 700,000 personnel, including reserves. These estimates indicate that Iraq's major combat formations included 17 regular army divisions (6 heavy and 11 light), and 6 Republican Guards Divisions (3 heavy and 3 light). USCENTCOM also estimated that the total Iraqi Army order of battle include six armored divisions, 4 mechanized divisions, 10 infantry divisions, 2 special forces divisions, 1 Special Republican Guards or Presidential Guard Division, 19 reserve brigades, 15 People's Army Brigades, and 25 helicopter squadrons.<sup>ii</sup>

While most units lack modern training, and the regular army units are heavily dependent on conscripts, over one third are full time regulars or long-service reservists. There are many reports of badly undermanned units, but Iraq has also carried out a number of reserve call ups in 2002 and seems to have done more in 2003.<sup>iii</sup> Estimates that most divisions have 50-75% manning, and substantial equipment shortages now seem to apply largely to the regular army infantry forces, although most Iraqi divisions are substantially smaller than at the beginning of the Gulf War.

### ***Iraqi Army Division Strength***

Iraqi combat units do not have standardized structures or levels of manning and equipment, and US experts estimate that Iraqi divisions differ significantly by unit. In broad terms:

- Iraq has a total force today, of approximately 20-23 division-equivalents, versus 35-40 division-equivalents in the summer of 1990, and 67-70 division-equivalents in January 1991 -- just before the Coalition offensives began in the Gulf War.<sup>iv</sup>
- Regular army divisions have an average authorized strength of about 10,000 men, and that about half of the 23 Iraqi divisions have manning levels of around 8,000 men, and "a fair state of readiness." Tank strength can vary, but heavier divisions have some 175-250 tanks.
- Republican Guards Divisions have an average authorized strength of around 8,000 to 10,000 men, and now average at least 80% of authorized strength. Brigades average around 2,500 men.<sup>v</sup> Tank strength can vary, but heavier divisions have some 175-300 tanks.
- The Special Republican Guards are organized into four brigades, but are more a force of specialized battalions than one of regular combat brigades.

### ***Iraqi Tank Strength***

The Iraqi Army relies on large numbers of combat-worn and obsolescent weapons, but it does have an inventory of 2,200 to 2,600 tanks, and somewhere between 1,800 and 2,000 are likely to be combat capable. The lower range of these estimates seem most likely to be correct, and much of Iraq's equipment is worn, and cannot be sustained or repaired after an initial period of combat. This is also substantially less than half of the 5,500-6,700 tanks it had before the war, and about half these tanks were obsolete T-54s, T-55s, T-59s and T-69s. Iraq also had about 600-700 M-48s, M-60s, AMX-30s, Centurions, and Chieftains captured from Iran or which it obtained in small numbers from other countries.

Iraqi has no modern tanks by US standards, but it does have some 700 relatively capable T-72 tanks, and large numbers of T-62s. These tanks have poor ergonomics, nightware, and long-range enegement sights and fire control systems. Efforts to upgrade their armor have have very limited success. Their ergonomics are poor and Iraqi armor has only limited functional capability to use overpressure and filiters to deal with CBW threats.

Iraq lost many of its best tanks during the Gulf War. US experts feel that only about 500-600 T-72s and 200-300 T-62s remained after the war, versus nearly 1,500 T-72s and T-62s before the war. According to some estimates, less than 2,200 of Iraq's tanks are fully operational. However, Iraq retained over 1,500 tank transporters and heavy vehicle trailers out of the several thousand it bought during the Iran-Iraq War, and continued to make effective use of them during exercises in late 1997.<sup>vi</sup> Iraq does, however, have a poor history of field repairs for tanks, and of aggressively attempting to recover and repair tanks in battle.

Iraq's current doctrine and tactics for using tanks are unclear. In the past, Iraqi Corps and division commanders often set personal standards for training and employing tanks, tailoring them to the specific battlefield conditions they encountered. This worked well during the Iran-Iraq War for selected, battle-experienced unit commanders who were given the time to withdraw from the front, retrain, and exert their own initiative. It also worked well when Iraq had the initiative against slow moving, infantry-dominated Iranian forces, and could attack using pre-planned and well rehearsed attack plans against a relatively static and slow-reacting enemy. These techniques also compensated for Iraq's poor performance and readiness in combined arms and joint operations.

Iraqi armor was almost totally unprepared for the kind of AirLand battle and rapidly moving US Army forces it encountered during the Gulf War. Iraqi tanks showed little ability to deal with anti-tank weapons like the TOW during the battle of Khafji. Iraq was never able to commit most of its best regular army armored and mechanized tank units effectively to the defense of the forward area and then had to rush the surviving elements out of the Kuwait Theater of Operations.

The Republican Guard tank units also either retreated or attempted to fight from ambush without adequate forward scouting and combined arms support. They were almost totally unprepared for the M-1A1's ability to locate Iraqi tanks at long-ranges and fire effectively using nothing more than the "hot spot" on their thermal vision devices, or the threat posed by similar systems on the AH-64. Even when Iraqi tanks did encounter US Army units at shorter ranges, they were not able to engage rapidly enough to avoid massive losses or inflict significant damage.

Iraq has made a number of claims to have improved the armor, fire control, and night vision capabilities of its tanks since the latter days of the Iran-Iraq War. A tour of the battlefield following the Gulf War revealed that some of these modifications had been deployed, including what seems to be crude reactive armor. There was little indication inside Iraqi tanks, however, that there had been any improvement in the fire control and night vision systems provided with the original tank.<sup>vii</sup>

Similarly, there are no confirmed reports of the widespread deployment of such improvements since the Gulf War, even in the tanks held by the Republican Guards. Such improvements might make a difference, but it would require a considerable engineering effort to solve the ergonomic problems involved. Older Soviet and Chinese tanks provide little operational workspace for such modifications. Further, Iraq would have to radically change its training methods to adopt many

of the techniques pioneered by the US Army at Fort Irwin, and give its unit commanders far more initiative. It is unclear that Saddam is able or willing to do this.

### ***Other Iraqi Armored Equipment Strength***

The Army's other major weapons include some 400 aging Soviet-bloc and French armored reconnaissance vehicles (AML-60/90s, BDRM-2s, EE-3s and EE-9s.). It has some 1,200 BMP-1/2 armored infantry fighting vehicles, of which some 900 BMP-series seem to be active. It has some 1,800 aging, worm armored personnel carriers with 10 major types. Iraq's strength in such vehicles was roughly twice as high at the beginning of the Gulf War, and its lack of standardization in spare parts, and lack of common weapons and operating features, creates major sustainability and cross-training/interoperability problems.

Iraq faces a logistic and maintenance nightmare in supporting and providing combat and field repairs for so many types of vehicles with such different firepower, mobility, and endurance. Many of these weapons are old or obsolete, and cannot keep up with tanks. Many are also deadlined due to lack of spares or have only limited operational capability. Furthermore, Iraq is forced to equip its heavy divisions with different mixes of armor, with different maneuver capabilities and often with different training requirements for both the weapons crew and maintenance and support teams. It also has difficulties in ensuring that its infantry can keep up with its tanks.

Iraq does, however, retain large numbers of special purpose armored vehicles like command centers that it had bought during the Iran-Iraq War. Iraqi holdings were also so diverse that they presented major problems in terms of standardization and field repairs, and the different configuration and armament of Iraq's other armored vehicles presented problems in training and tactical operations. Iraq has reduced such problems in the past, however, by attempting to standardize the other armored vehicles in its best Republican Guards and regular army heavy divisions, and by conducting unit training tailored around the equipment holdings of a particular unit.<sup>viii</sup>

Iraq's tactical doctrine for using other armored vehicles varies with the major combat unit using a given mix of equipment. Some heavy Republican Guards and regular army units use other armored vehicles much more effectively in supporting tanks than most of the Iraqi army. Iraq has generally over-relied on tanks, however, and had not used its other armored vehicles aggressively in scouting or combat support operations. The Iraqi forces in other armored vehicles often dismount to fight, and lack the training, equipment, and support to fight in their vehicles at night or at the long-ranges made necessary by modern Western tanks and anti-tank weapons. Training and doctrine have evidently improved since the Gulf War, but are still best suited to defensive operations against relatively slow-moving mechanized infantry at short to moderate ranges.

### ***Iraqi Artillery Strength***

Iraq has some 200-250 active self-propelled artillery weapons – with Soviet 122mm 2S1s, 152mm 2S3s, captured US 155mm M109A1/A2s, South African/Austrian G-6s, and French 155mm 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 122mm, 152mm, and 155mm. Iraq has some 200 multiple rocket launchers –

largely 122mm and 127mm systems but with some longer-range 400mm Ababeel-100 systems. Iraq also has large numbers of 81mm, 120mm, 160mm, and 240mm mortars.

Iraqi artillery can fire chemical and possibly biological shells and rockets and has relatively long range. 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 counter-battery fire. Targeting and observed fire is heavily dependent on forward observers, and is often slow and unresponsive. The ability to use RPVs 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.

#### ***Other Iraqi Major Land Force Weapons***

Iraq land-forces have extensive stocks of (2000+) relatively modern AT-3 (AM14), AT-4 (M136), Milan, and High-subsonic Optically Teleguided (HOT) anti-tank guided weapons. Iraq also has significant numbers of obsolescent 85mm and 100mm anti-tank guns, and 73mm, 82mm, and 107 mm rocket launchers and recoilless rifles. These weapons and mortars, as well as anti-tank guns are used in its urban warfare training.

Iraq has rarely employed these weapons well. Even during the Iran-Iraq War, it tended to rely on tanks and massed artillery. During the Gulf War, it showed little understanding of the range at which modern Western armored can engage, the rate of advance and scale of maneuver of modern well-led armor, the impact of night and poor weather warfare in limiting crew served weapons without night vision aids, the need to rapidly maneuver crew served weapons rather than rely on static positions, and the need to conduct constant actual training firings of such equipment to develop and maintain proficiency. Iraq also was unprepared for the rapidly moving precision of Coalition artillery and the ability of helicopters and tanks to bypass prepared defenses using such weapons.

### **Army Aviation**

The army aviation force has seven wings. The 1<sup>st</sup> Wing is located in Kirkuk with five squadrons, including one SA-316 attack squadron. The 2<sup>nd</sup> Wing is located in Baghdad and Taji and has five squadrons, including Mi-26 Hind and SA-342 attack squadrons. The 3<sup>rd</sup> Wing is at Basra with one SA-342 attack squadron. The 4<sup>th</sup> Wing in Amara and has three squadrons. The 5<sup>th</sup> Wing is at Al Swenia, and has three squadrons, including one SA-342 attack squadron. The 7<sup>th</sup> Wing is at Iskanderia (south of Baghdad) and has two squadrons. The 8<sup>th</sup> Wing is at Iskanderia and has one squadron. The Military Aviation school is at Al Suwaira, and has one regular and two training squadrons.

Iraqi Army Aviation has roughly 100 attack and 275 utility/transport helicopters, although many have little effectiveness or sustainability, and a number are not operational at all. The armed helicopters include 12 Mi-25s, 20 SA-319s with AS-12 air to surface missiles, 10 SA-316s with guns, and 20 SA-342s with HOT anti-tank missiles. The transport and support helicopters include 20 SA-330Fs, 30 BO-105s, 10 Mi-6s, 30 Mi-8s, and 12 Mi-17s. Iraq's combat helicopter performance has been consistently poor to bad, and the Iraqi opposition has grossly exaggerated the role of such helicopters in suppressing the uprisings in 1991 in order to shift the blame for their failure to the US. Training operational readiness, and sustainability are all believed to be poor.

Iraq has not demonstrated the ability to use these assets effectively. During the Iran-Iraq War, it used Vietnam-era tactics without anything approaching the effectiveness of US Army operations. Its sortie rates were dismally low and its reaction times very poor. Large-scale helicopter operations were poorly organized, often failed to exploit the potential tactical opportunity in time to be effective, and rarely pressed the attack home in the face of organized Iranian opposition.

Iraqi helicopter operations were most effective in the north, where they only faced limited air defenses. Even there, they were most effective against poorly armed Kurdish forces, Kurdish civilians, and Iranian infantry forces, and in exploiting terror tactics like the use of poison gas. Iraq never demonstrated the ability to conduct effective air assault operations or coherent long-range helicopter strikes against Iranian armored and mechanized forces.

Iraq acquired no experience in using its helicopters during the Gulf War, and its land forces showed they were almost totally unprepared for US and French operations using helicopters, particularly the kind of long-range strikes made possible by the AH-64 and long-range air assault operations into Iraqi rear areas. Iraq has conducted some large-scale training exercises involving helicopters since the Gulf War, but it is unclear that it has corrected any of these defects, and it is unclear that it will ever solve them in as rigid and stratified a command system until helicopter

operations are put under the command of the Iraqi Army, and tactical control is devolved down to the Corps or front level.

Further, Iraq is operating a fleet with some 12 different types of helicopters with very different ages, technologies, and sources of spare parts. The sensor and weapons mix on Iraqi attack helicopters is now nearly 15 years old. Even those helicopters equipped with HOT lack the sensors and fire control systems to effectively use the missile without closing to ranges that make the helicopter vulnerable and then remaining in position for longer than is safe. Much of the potential battlefield limits the effectiveness of the kind of “pop up” tactics and exploitation of terrain masking routinely used by Western, Russian, and Israeli forces and Iraq has not demonstrated the training and organizational capability to exploit such tactics on a time-sensitive basis or support them through the effective use of scout helicopters and forward observers. This makes advanced helicopter sensors, fire control systems, stand-off missile ranges, and “fire and forget” capabilities even more important.

### **Army Air Defenses**

The army and semi-mobile elements of Iraq’s 17,000 man Air Defense Command can deploy large numbers of manportable surface-to-air missiles like the SA-14 Strela 3, plus SA-7, SA-8, SA-9, and Roland vehicle mounted surface-to-air missiles. Iraq is believed to have an inventory of well over 1,000 such missiles, but the types are unclear. These systems have limited effective against high flying US-UK fighters with stand-off weapons but present a significant threat at low altitudes.

### ***The Deployment of Army and Security Elements***

Iraq is carrying out redeployments in response to the US and British build-up, but its divisions are normally arrayed north-to-south in, with a mix of regular and Republican Guards divisions. All of the divisions near the Kuwait border are regular, although some Republican Guard divisions could move to the border relatively rapidly.

US experts indicate that Iraqi land forces have a total of fourteen divisions in the north, three divisions in central Iraq, and six divisions south of An Najaf. There are also four independent brigades: the 65<sup>th</sup> Special Forces Brigade, the 66<sup>th</sup> Special Forces Brigade, the 68<sup>th</sup> Special Forces Brigade, the 440<sup>th</sup> Marine Brigade. The Republican Guards had a total of three armored divisions deployed in the vicinity of Baghdad—one near Taji, one near Baghdad, and one near As Suwayrah.<sup>ix</sup> All Republican Guards divisions are located above the 32-degree line. Several additional Republican Guards divisions are located around Baghdad to play a major role in internal security. Several more Republican Guards divisions were located north of Baghdad closer to the Kurdish area.<sup>x</sup>

Estimates by Jane’s indicate that the regular Army is organized into five major corps, with 17 main-force division equivalents and major bases at Baghdad, Basra, Kirkuk, and Mosul. There are major training areas west of Baghdad, near Mosul, and in the Marsh areas in the south. The training area southwest of Basra has had only limited use because of the “no fly zones.”<sup>xi</sup>

If one exempts the forces dedicated to the security of the regime and deployed near Baghdad, and similar internal security garrisons in Basra and Kirkuk, its land Army forces are normally deployed in three different deployment structures for the regular army, Republican Guards, and Special Republican Guards.

## The Regular Army

The Chief of Staff of the regular army is general Abd al Waheed Shenan al Robatt. The regular army has the following force structure and normal deployments. Iraq has shown that it often changes force structures to suit given missions, however, and has tank carriers and the mobility for relatively rapid redeployments. Many units retreated effectively during the Gulf War unless US airpower was able to cut them off from road access.

### *Regular Army Forces in Northern Iraq:*

- **The 1<sup>st</sup> Corps is headquartered at Kirkuk and the 5<sup>th</sup> Corps at Mosul.** They guard the Turkish border area and deploy on the edge of the Kurdish enclave, and guard the oilfields in the north. They have a total of 8 divisions, but only two are heavy mechanized divisions.
  - **The 1<sup>st</sup> Corps** has its headquarters at Khaleed Camp (al Rashid Command Center) in Kirkuk City. It includes the 2<sup>nd</sup> Infantry Division headquartered at Alrabee, the 5<sup>th</sup> Mechanized division headquartered at Shuwan, the 8th Infantry Division headquartered at Shuwan, and the 38<sup>th</sup> Infantry Division headquartered at Quader Karam.
  - **The 5<sup>th</sup> Corps** has its headquarters at Alsalamia Camp (Amouria Command Center) in Mosul. It has units defending the border area with Syria and Turkey as well as covering other parts of the north. It includes the 1<sup>st</sup> Mechanized Division headquartered at Makhmur, the 4th Infantry Division headquartered at Bashiqa Maonten, the 7<sup>th</sup> Infantry Division headquartered at Alton Kopri Castle, and the 16<sup>th</sup> Infantry Division headquartered near the Saddam Dam and Mosul.

### *Regular Army Forces in Eastern Iraq*

- **The 2<sup>nd</sup> Corps** is headquartered at the Mansouria Alabal Camp (Al Yarmouk Command Center) in Deyala, and is deployed east of Baghdad to defend against Iran or any attack by Iranian-backed Iraqi opposition forces. It includes the 3<sup>rd</sup> Armored Division headquartered at Jalawia, the 15th Infantry Division headquartered at Amerli, and the 34<sup>th</sup> Infantry Division headquartered near Khanaqin

### *Regular Army Forces in Southern Iraq*

The Army has two corps that play a major role in securing Shi'ite areas and suppressing Shi'ite dissidents. They have a total of six divisions and two are heavy armored divisions:

- **The 3<sup>rd</sup> Corps** is headquartered in the Nasseria area, and is positioned near the Kuwaiti border. It includes the 6<sup>th</sup> Armored Division headquartered near Majnoon and Al Nashwa, the 11th Infantry Division headquartered at Al Naserria, and the 51<sup>st</sup> Mechanized Division headquartered at Zubair. These forces might retreat into the so-called Sunni triangle in the Baghdad area in the event of a US-British attack
- **The 4<sup>th</sup> Corps** is headquartered at Al Amara, and defends the border with Iran. It includes the 10<sup>th</sup> Armored Division headquartered near Al Teab and Al Amarra, the 14th Infantry Division headquartered south of Al Amara, and the 18<sup>th</sup> Infantry Division headquartered near Al Amara and Al Musharah.

### ***The Republican Guards***

The Republican Guard has some 60,000 to 70,000 men. It is under the supervision of Qusay Hussein and is commanded by Staff General Ibrahim Abdel Satter Muhammed al Tikriti. It adds two more corps, with seven divisions, to this list:

- ***The Northern or 1<sup>st</sup> Corps of the Republican Guards*** can act to defend against Iran and Turkey, operate against the Kurds, and defend the greater Baghdad area and Tikrit. It is headquartered in Tikrit and in the Al Rashedia area of Baghdad (allah Akbar Command Center).
- The Northern Corps includes the 1<sup>st</sup> Adnan Mechanized Division at Mosul, the Al Nida (Al Nedaa) Armored Division near Bagubah, the 2<sup>nd</sup> Baghdad Infantry Division at Maqloob Maontin-Mosul, and the Al Abed (Al Abid) Infantry Division at Kirkuk-Khalid Camp.
- ***The Southern or 2<sup>nd</sup> Corps of the Republican Guards*** is headquartered at Al Hafreia (Alsuwera Camp) and the Al Fateh al Mubin Command Center. It helps defend against Iran in the south, as well as any US-led attack, and acts as a deterrent force to suppress any Shi'ite uprising. It is commanded by Major General Mahmoud Ali al Lihaihy.
- The al Madina al Munawara Armored Division is located at as-Suwayrah and plays a key role in defending the outer Baghdad area. It has three brigades: 2<sup>nd</sup> and 10<sup>th</sup> Armored and 14<sup>th</sup> Mechanized. It is the Special Republican Guards, however, that provide protection and defense within the city.
- Its other forces include the Nebuchadnezzar (Nabu Khuth Nusser) Infantry Division at Al Husseinia-al Kutt, the Hamurabi Mechanized Division in the al-Taji area.

### ***The Special Republican Guards or Al-Haris al-Jamhuri al-Khas***

The Special Republican Guards add four brigades, which are located largely within the Baghdad area and are organized to defend the regime. The Special Republican Guard has four infantry/motorized brigades with 14 battalions, an armored brigade, and an air defense command with elements to secure Baghdad's ground-based air defenses against any coup attempt.

It is headed by Qusay Hussein, and its formal commander is Major general Kheir-Allah Wahees Omar al-Nassiri. Major General Namig Hassan coordinates operations between the special Republican Guards and Republican Guards. The main headquarters is at Al-Nisoor square in Baghdad.

It serves as a praetorian guard, protecting Presidential sites and escorting Saddam Hussein on travels within Iraq. It has a total active strength of about 12,000 to 15,000, but some sources claim it can mobilize to 20,000 to 25,000. It is the only force stationed in central Baghdad and in the Republican Palace, although these are also brigades of the Special Security Service (SSO), the Iraqi Intelligence Service (IIS), and secret police in the city. British intelligence reports that it has played a role in securing WMD warheads and maintains control of a few launchers.

- ***The First Brigade*** is headquartered at Hayy Al-Qadisiyeh in Baghdad and has five battalions, including ones stationed in the Republican palace and at Saddam

International Airport. Additional battalions, including plain-clothes units, are assigned to protect Saddam while he is in transit, and are assigned to guard other palaces and facilities. According to Jane's:

- The First Battalion protects Saddam in movement.
- The Second Battalion deploys men on foot to guard Saddam's farms and places near Baghdad's Saddam International Airport.
- The Fifth Battalion is based inside the Republican Palace and guards it and the National Assembly. It guards the Presidential House in the palace compound and has training from the SSO. Elements travel with Saddam at all times and is commanded by friends and relatives of Saddam.
- The Seventh Battalion provides plain cloths bodyguards and protects Saddam's private residences in Baghdad, Basra, Mosul. Falojua, Jebel Makhool, and other locations.
- The Eighth Battalion protects Baghdad's Saddam International Airport.
- **The Second Brigade** is headquartered at the Al Rashid military base, and has combat-experience elements outside Baghdad and in the Mosul area.
  - The Fourth Battalion is a significant combat unit that protects Saddam's Saddam's palace in Makhool in the Beiji area that is north of Baghdad.
  - The Sixth Battalion protects the palaces in the Mosul area.
  - The Eleventh Battalion guards the approaches to Baghdad from the direction of Taji.
  - The Fourteenth Battalion guards the approaches to Baghdad from the direction of Salam Pak and Kut.
  - The Fifteenth Battalion is part of the western defenses of Baghdad.
- The **Third Brigade** is headquartered at Taji and has four combat battalions to defend Taji and the approaches to Baghdad.
  - The Third Battalion is a rapid reaction combat force.
  - The Ninth Battalion protects the palaces and road approaches in the Tharthar area.
  - The Tenth Battalion is a combat unit in Taji that protects Baghdad from the direction of the north and northwest.
  - The Twelfth Battalion reinforces the defense of Baghdad in the direction of Taji.
- The **Fourth Brigade** is motorized and is located at Al Harithiyeh and Al Quadisiyeh, and defends the southern outskirts of Baghdad. It has two regiments with T-72 tanks and BMP-1 and BMP-2 armored fighting vehicles.
- The **Armor Command** (Fourth Armored Brigade) has T-72s, BMP-1 and BMP-2s, and has two armored regiments. The First (Adnan) Regiment is located at the Abu-

Ghraib Camp, and the Second Regiment is located near the Al-Makasib village. They provide armored forces to defend the major entrance points to the city.

- There is also an intelligence bureau and a,
- ***Air Defense Command*** with two regiments and three independent batteries, The First Regiment defends the International Airport and has elements near Tharthar Lake and Radwanayah. The Second Regiment defends key locations in Baghdad. The batteries cover key locations near Door, Tikrit, and Kirkuk.

### ***Military Intelligence and Special Security Forces***

Iraq has extensive military intelligence and internal security forces. They include”

- ***The Military Intelligence Service (MIS), or Al Estikhbarat al Askariyya***, has a 3,000-6,000-man element with a major complex in the Aladhamia area of Baghdad. It also has a base at the Al Rashid Camp, and sectoral commands in Kirkuk, Mosul, and Basra, plus a special regional command for Baghdad.
  - The Special Branch of the MIS is organized to carry out covert operations, infiltrate opposition movements, and provide internal security operations within the military. Its Unit 999 penetrates deeply into the Kurdish enclave.
  - There is an Opposition Battalion organized to operate in various elements of the Iraqi opposition. The First Battalion covers Iran, the Second covers Saudi Arabia, the Third covers Israel, the Fourth covers Turkey, and the Fifth is a specialized unit for riverine and mine operations.

British intelligence reports that its main functions are ensuring the loyalty of the army's officer corps and gathering military intelligence from abroad. But it is also involved in foreign operations, including assassinations.

The heads of Al-Istikhbarat al-Askariyya have not been immediate relatives of Saddam. Saddam appointed, Sabir 'Abd al-'Aziz al-Duri as head during the 1991 Gulf War. After the Gulf War he was replaced by Wafiq Jasim al-Samarrai. After Samarrai, Muhammad Nimah al-Tikriti headed Al-Istikhbarat al-Askariyya in early 1992 then in late 1992 Fanar Zibin Hassan al-Tikriti was appointed to this post.

These shifting appointments are part of Saddam's policy of balancing security positions. By constantly shifting the directors of these agencies, no one can establish a base in a security organization for a substantial period of time. No one becomes powerful enough to challenge the President

- ***The Military Security Service, or al Amn al Askariyya (Askari)*** is a 6,000 man force that operates throughout the armed forces and, reports directly to the Presidential Palace, and deals with subversion within the military forces. The MIS runs parallel internal security operations. British intelligence reports that it was established as an independent entity in 1992, its function is to detect disturbances in the military. The *Amn* was initially headquartered in the Bataween district of Baghdad. In 1990 *Amn* moved to a new headquarters in the Al Baladiat area of the city, with the Bataween building becoming the agency's main prison.

The Secret Police also has a number of additional facilities and office buildings. *Amn* maintains a presence in every town and village, with personnel stationed in civilian police stations across Iraq -- normally the "ordinary" police are on the ground floor and the Secret Police on the second floor. The Security branch is responsible for monitoring and countering dissent within *Amn*, and the Military Brigade provides rapid intervention para-military capabilities - the Brigade commander was executed in August 1996 for alleged involvement in a coup attempt. *Amn* is currently headed by Staff Major General Taha al Ahbabi, who previously headed the Military Security Service and served as the head of the secret service section of the *Mukhabarat*. As with many other senior Iraqi leaders, he is a native of Saddam's home town of Tikrit.

### **Iraq's Capability for Popular Mobilization**

It is unlikely that Iraq can mobilize the Iraqi people in mass, even in "loyal" areas, but Iraq probably can mobilize significant elements to supplement its military forces, and it may be able to use them to create serious problems in terms of urban warfare.

These popular forces include an unknown number of Ba'ath Party loyalists. Almost all of these loyalists and officials are required to receive reserve military training, and many have had annual field training for some time.

Saddam has a significant tribal base, including his own al-Bu Nasser tribe, and citizens from the towns of Tikrit, Dur, Sharqat, Huwayja, Bayji, Samarra and Ramadi. They are located in what Ibrahim al-Marashi calls the Sunni Arab Triangle. Other major Sunni tribes and families that have a record of loyalty to the regime, and which play a key role in the intelligence and security forces, include the Dulaym, the Jubur (mixed Shi'a/Sunni) and the 'Ubayd tribes. There are also loyalist factions in the Duri and Samarra families. Some tribes, like the Jubur (Juburi) seem to have received arms and there are convincing reports of rising gun sales. Many of these tribal elements now live in Iraqi cities.

In addition, there are a number of popular forces that the regime might use:

- ***Fedayeen Saddam (Saddam's Men of Sacrifice)***: A force of up to 30,000-40,000 men, which was formed by Uday in 1995. Most are young men who border on a youth gang, with thugs of age 16 and up, but they are placed under a real Lt. General. All are urban and the force is centered in Baghdad. British intelligence reports that Saddam's Martyrs are composed of young militia press ganged from regions known to be loyal to Saddam.

It was founded by Saddam's son Uday in 1995, and started out as a force of some 10,000-15,000. In September 1996 Uday was removed from command of the *Fedayeen*. Uday's removal may have stemmed from an incident in March 1996 when Uday transferred sophisticated weapons from Republican Guards to the *Saddam Fedayeen* without Saddam's knowledge. Control passed to Qusay, further consolidating his responsibility for the Iraqi security apparatus. According to reports, control of Saddam Hussein's personal militia was later passed back to his eldest son, Uday.

The deputy commander is Staff Lieutenant General Mezahem Saab Al Hassan Al-Tikriti. The unit reports directly to the Presidential Palace, rather than through the army command, and is responsible for patrol of borders and controlling or facilitating smuggling. They are supposed to help protect the President and Uday, and carry out much of the police's dirty work. The *Fedayeen Saddam* include a special unit known as

the death squadron, whose masked members perform certain executions, including in victims' homes. The *Fedayeen* operate completely outside the law, above and outside political and legal structures.

- ***Lions of Saddam (Eshbal or Ashbal Saddam)***: A Hitler Youth-like paramilitary training structure for ages 10-16. No one knows how real this force is, or what role it might play in combat, but it cannot be totally dismissed. Young men are often loyal and all have Saddam as the leader during their entire lives.
- ***National Defense Battalions***: (Kurdish Jash or Militia Forces): Although it is scarcely the most loyal force, there are still elements of what used to be a massive force of some 100,000 men in 250 battalions. There are still 1,000 man elements from two tribes with ties to Saddam, and which may have much to fear if the other Kurds take over: the Zibar and Herki.
- ***Jerusalem or Al Quds Brigades***: This is intended to be a mass volunteer force, and has female as well as male units. Iraq claims as many as 7 million members, but even a nominal 1 million may be unrealistic. It is usually dismissed as a showpiece force used for propaganda purposes, but may have youth and other elements that would be loyal to Saddam in some areas. At least some of its members have been given rifles, mortars, RPGs, and light automatic weapons in largely Sunni areas.
- ***Youth (Civil Defense) Force***: There are reports that a so-called youth army was formed in 1999 to defend the cities, supposedly out of youths ages 12-17. It is unclear that such a force exists, but some Iraqi media coverage does show youths and adults being training and possibly armed for such a role.
- ***Great Retaliation Force***: Once again, this force may be more a matter of propaganda than real. It was supposedly formed in November 1999 under Qusay to deal with the problem of the Kurdish threat and to limit any entry into non-Kurdish areas, but many reports indicate that this is a military contingency force using regular army units and Republican Guards, and has only limited armed popular forces – including some Christian Arabs.

There are other popular forces like the various tribal militias. These are less disciplined and well-structured, but they cannot be ignored, both in terms of urban warfare and rear area security.

### **Security Services that Might Support the Armed Forces and Help to Ensure Their Loyalty**

It is dangerous to assume that US and British forces can count on uprisings, defections, and being treated as liberators. This may well happen in some areas, but Iraq has a 100,000-man security service and a 40,000-man police force which can help maintain loyalty and be used both to fight on their own and compel Iraqi civilians to do so.

- ***The Presidential Secretariat***: The Presidential Secretariat has around 100 staff, who are drawn from the security agencies. The Secretariat is responsible for Saddam's personal security, as well as defense, security and intelligence issues. It is overseen by Saddam's personal secretary, Lieutenant General Abid Hamid Mahmud. Mahmud is Saddam's distant cousin and is the sheikh of both the Al-Bu-Nasir and Al-Khattab tribes. Mahmud is regarded by some as the real number two figure in the Iraqi leadership. He controls all

access to Saddam - possibly with the exception of Qusay and Uday Hussein - and has the ability to override government decisions.

- **The National Security Council (*Al-Majlis Al-Amn Al-Qawni*):** Is headed by Saddam Hussein but usually chaired by his son Qusay Hussein, it oversees the work of all other security agencies. Membership in Majlis Al-Amn Al-Qawni includes chosen people from the;
  - Iraqi Army
  - Special Security Service
  - General Intelligence Directorate
  - Military Intelligence
  - General Security Service
  - Office of the Presidential Palace

The Majlis Al-Amn Al-Qawni, is headquartered at the Presidential Palace in Baghdad, and meets on a weekly basis. It has a Special Operations Room in the Presidential Palace, and some reports indicate it controls a small brigade that works closely with the Special Republican Guard or has direct control over an element of the Special Republican Guard.

- **Special Security Committee:** Qusay Hussein is the deputy chairman of the Special Security Committee of the Iraqi National Security Council that was created in 1996 as part of the President's office. The Committee membership includes:
  - Tahir Jalil Habbush al-Tikriti, the director of the Public Security Directorate
  - Dahham al-Tikriti, Director of the Iraqi Intelligence Service –Al Mukhabarat
  - Abid Hamid Mahmud, the president's personal secretary.
  - Faris 'Abd-al-Hamid al-'Ani, the director general of the Presidential office

This special body also includes representatives of the Republican Guard. The Committee is supported by over 2,000 staff. The staff is drawn from the Republican Guard, or the Special Guard, and the intelligence services. Their main task is preventing the United Nations inspectors from uncovering information, documents, and equipment connected with weapons of mass destruction. They are recruited for this specific mission and chosen from the most efficient and loyal units.

The work is divided between two sections, each of which has a staff of about 1,000:

- The first section focuses on the daily work of the UN monitoring commission, including sites to be visit and inspected, escorting UN inspectors, preventing them from carrying out their mission effectively.
- The second section conceals documents, equipment, and materials and moves them about from one location to another. Several facilities have been especially built for collecting and hiding such selected material. This section is responsible for material that is imported through "special channels" as part of the program of rebuilding the strategic military arsenal, including chemical and biological weapons as well as missiles and associated technology.

- **The Special Protection Apparatus or *Jihaz al-Hamaya al-Khas*:** (*Himaya*) This is a small unit charged with protecting Presidential Offices, Council of Ministers and the Regional and National Commands of the Ba'ath Party. It is the only organization responsible for providing bodyguards to the very top of the regime. Approximately 40 personal bodyguards are responsible for Saddam's immediate security. It is commanded by 2-5 men who are "companions" of Saddam or "murafiqin." One element protects Saddam's palaces and homes another protects Saddam's movements. Most are Tikritis or from Saddam's tribe.
- **Higher Committee for Monitoring the Inspection Teams:** Secretary Powell stated on February 5, 2003 that Iraq had has a high-level committee to monitor the inspectors who were sent in to monitor Iraq's disarmament -- not to cooperate with them, not to assist them, but to spy on them and keep them from doing their jobs. The committee reports directly to Saddam Hussein. It is headed by Iraq's Vice President, Taha Yasin Ramadan. Its members include Saddam Hussein's son, Qusay.

This committee also includes Lieutenant General Amir al-Sadi, an advisor to Saddam. General Sadi has been the Iraqi regime's primary point of contact for Dr. Blix and Dr. ElBaradei. General Sadi publicly pledged in the fall of 2001 that Iraq was prepared to cooperate unconditionally with inspectors. However, Iraq's security organizations, as well as to Saddam Hussein's own office, have been directed to hide all correspondence with the Organization of Military Industrialization. This is the organization that oversees Iraq's weapons of mass destruction activities. Saddam's son, Qusay, is known to have ordered the removal of all prohibited weapons from Saddam's numerous palace complexes. Iraqi government officials, members of the ruling Baath Party and scientists have since hidden prohibited items in their homes. Other key files from military and scientific establishments have been placed in cars that are being driven around the countryside by Iraqi intelligence agents to avoid detection. Secretary Powell has stated that, "Sadi's job is not to cooperate; it is to deceive, not to disarm, but to undermine the inspectors; not to support them, but to frustrate them and to make sure they learn nothing. This committee must also have the function of trying to manage concealment from the UN and the world in any transition to war."

- **National Police:** Some 40,000 personnel that have elements of paramilitary forces with light weapons and light armored vehicles.
- **Frontier Guard:** 30,000-man mobile force, largely equipped with cross-country trucks.
- **Special Security Service (SSS), Special Security Organization (SSO) or Amn al Khass:** Controlled by Saddam's son, Qusay, who supervises the Special Bureau, the Political Bureau and the Administration Bureau, the agency's own military brigade, and the Special Republican Guard.

It is an ultra loyal force that has grown from a cadre of around 500 to a force of about 2,000-5,000 men which was established in the mid-1980s. It is recruited from loyal tribes around Tikrit, Hawuija, and Samarra, such as Saddam's own tribe, the Abu Nasr. It is headquartered in Palestine Street in Baghdad. According to most reports, it is the key security force and plays a major role in controlling the actions of the Republican Guard

and particularly the Special Republican Guard. It is also reported to be in charge of the surveillance of General Intelligence, Military Intelligence, Military Security, and General Security. It is the most critical and powerful security agency.

Its Security Bureau has a Special Office, to assure loyalty in the SSS, and there is an Office of Presidential Facilities that guards such facilities through the Jihaz al-Hamaya al-Khas (The Special Protection Apparatus). It is responsible for guarding the Presidential Offices, Council of Ministers, National Council, and Ba'ath Party Regional and National Command of the Ba'ath Party, and provides bodyguards for Iraq's leaders.

The British White Paper of February 3, 2000 stated that the SSO is responsible for

- the security of the President and of presidential facilities;
- supervising and checking the loyalty of other security services;
- monitoring government ministries;
- supervising operations against Iraqi Kurds and Shias; and
- securing Iraq's most important military industries, including WMD.

It also stated that the Al-Amn al-Khas is nebulous and highly secretive and operates on a functional, rather than a geographical basis. Its military brigade serves as a rapid response unit independent of the military establishment or Special Republican Guard. In the event of a coup attempt from within the regular military or Republican Guard, Special Security can easily call up the Special Republican Guard for reinforcements as this unit is also under its control. There are two key bureaus:

- **The Security Bureau:** The Security Bureau is divided into a Special Office, which monitors the Special Security agency itself to assure loyalty among its members. If necessary, it conducts operations against suspect members. The Office of Presidential Facilities, another unit of the Security Bureau, guards these places through Jihaz al-Hamaya al-Khas (The Special Protection Apparatus). It is charged with protecting the Presidential Offices, Council of Ministers, National Council, and the Regional and National Command of the Ba'ath Party, and is the only unit responsible for providing bodyguards to leaders.
- **The Political Bureau:** The Political Bureau collects and analyses intelligence and prepares operations against "enemies of the state." This unit keeps an extensive file on all Iraqi dissidents or subversives. Under the Political Bureau, the Operations Office implements operations against these "enemies," including arrests, interrogations and executions. Another division is the Public Opinion Office, responsible for collecting and disseminating rumours on behalf of the state.

The operations of Special Security are numerous, particularly in suppressing domestic opposition to the regime. After its creation in 1984, Special Security thwarted a plot of disgruntled army officers, who objected to Saddam's management of the Iran-Iraq War. It

pre-empted other coups such as the January 1990 attempt by members of the Jubur tribe to assassinate him.

It played an active role in crushing the March 1991 Shi'a rebellion in the south of Iraq. Along with General Intelligence, Special Security agents infiltrated the Kurdish enclave in the north of Iraq in August 1996, to hunt down operatives of the Iraqi opposition.

It serves as the central co-coordinating body between Military-Industrial Commission, Military Intelligence, General Intelligence, and the military in the covert procurement of the necessary components for Iraq's weapons of mass destruction.

During the 1991 Gulf War, it was put in charge of concealing SCUD missiles and afterwards in moving and hiding documents from UNSCOM inspections, relating to Iraq's weapons programmes.

It is also thought that Special Security is responsible for commercial trade conducted covertly in violation of UN sanctions. It seems to be responsible for arms and WMD component smuggling from abroad and for concealing Iraq's WMD efforts. It was a key target in Desert Fox, is believed to control the weapons of the Chemical Corps, manages recruiting for the Republican Guard, and manages key secure aspects of Iraq's military industries..

It staffs and runs the *National Security Council or al-Majlis al-Amn al-Qawmi*.

- ***General Intelligence Directorate (GID) or Iraqi Intelligence Service (IID) or Mukhabarat***: This is the unit Saddam used to take control over the Ba'ath Party and eventually the Iraqi state. It is currently directed by Tahir 'Abd al-Jalil al-Habbush. It provides security in the Ba'ath Party, monitors all organizations, monitors foreign embassies and studies, has counter-espionage elements, and has heavily infiltrated most Iraqi opposition groups. It also conducts operations against Syria, Iran, Kuwait, Jordan, and other states, and could be a key source of operations against US and British forces or direct or proxy covert attacks on the US and Britain.

It has some 4,000 to 8,000 men, according to source. They are carefully screened to be ultra-loyalists, and now with strong ties to Qusay and a series of internal security Directorates plus Directorate 14 which is in charge of covert operations overseas and might organize any CBRN or "terrorist" attack outside Iraq.

British intelligence reports that Al-Mukhabarat is roughly divided into a department responsible for internal operations, co-ordinated through provincial offices, and another responsible for international operations, conducted from various Iraqi embassies.

Its internal activities include:

- Spying within the Ba'th Party, as well as other political parties;
- suppressing Shi'a, Kurdish and other opposition;
- counter-espionage;
- targeting threatening individuals and groups inside Iraq;
- spying on foreign embassies in Iraq and foreigners in Iraq;
- maintaining an internal network of informants.

Its external activities include

- spying on Iraqi diplomats abroad;
- collecting overseas intelligence;
- supporting terrorist organisations in hostile regimes;
- conducting sabotage, subversion, and terrorist operations against neighbouring countries such as Syria and Iran;
- murder of opposition elements outside of Iraq;
- infiltrating Iraqi opposition groups abroad;
- providing dis-information and exploitation of Arab and other media;
- maintaining an international network of informants, using popular organisations as well such as the Union of Iraqi Students.

British intelligence reports that Al-Mukhabarat uses intelligence to target Iraqis .It forces Iraqis living abroad to work for Saddam by threatening dire consequences for relatives still inside Iraq. It is reported that an Iraqi cannot work for a foreign firm inside Iraq without also working for Al-Mukhabarat directly or as an informant. This includes those allowed to work with foreign media organisations.All Iraqis working with foreigners have to have a special permit which is not granted unless they work for Al-Mukhabarat. They carry out tests which include approaches to Iraqi officials with false information to see whether they report it to Baghdad or foreigners

Al-Mukhabarat manages Iraqi support of the coordinating operations with the Iranian opposition group, the Mojahedin-e Khalq and National Liberation Army elements based in Iraq. It was the key service to infiltrate the INA and defeat CIA efforts to use it in a coup, and worked with Mas'ud Barzani's Kurdish Democratic Party in planning the Iraqi Army advance into the Kurdish areas in 1996 and its purge of the PUK and INC elements in the Kurdish security zone.

It tracks and sometimes kills students and exiles abroad, and manipulates journalists. It is blamed for the April 1993 Iraqi attempt on President George Bush's life. Its role in assassinations is the reason its headquarters were struck by US cruise missiles in June 1993.

There are district commands in Basra (South), Mosul (north), Ramadi (West), Karbala (East). It has a light brigade with light armor and heavy weapons. The details of the internal structure of the GID are uncertain. According to work by Ibrahim al-Marashi and Jane's Periscope, it is organized so that the following directorates might have an impact in ensuring popular loyalty or play some role in wartime:

- Directorate 3: Surveillance directs the surveillance of suspected traitors and key personnel.
- Directorate 4: Secret Service: Places agents throughout the government in various agencies and is present in virtually every Iraqi embassy and many cover firms overseas. Has offices deal with each major country in the world. Analyzes signal intelligence from the Al Hadi Project (See below).

- Directorate 5: Counterintelligence: Focuses on foreign intelligence operations like the US and Israel, but also on neighboring countries like Syria.
- Directorate 6: GID security: Handles internal security in the GID.
- Directorate 7: Detention and interrogation.
- Directorate 8: Forensics.
- Directorate 14: Special Operations: The unit is located near Salman Pak, about 20 kilometers south of Baghdad. It is responsible for covert operations abroad and is one of the largest elements of the GID. Agents are highly trained, with language and cultural training, and given training in cover attacks ranging from the use of bombs to assassination. Is believed to carry out joint operations against Iran with elements of the People's Mujahideen.
- Directorate 18: Iranian Affairs.
- Directorates 21 through 26 are responsible for monitoring various regional districts in Iraq.
- Directorate 21, the residency located in Baghdad, is in charge of security issues in the capital as well as issuing residence permits to foreigners in Iraq.
- Directorate 23, the Southern District based in Basra, conducts operations in the south of Iraq.
- Directorate 24, the Northern District, does the same in northern Iraq and Iraqi Kurdistan. Based in Mosul, with an office in Kirkuk, it is responsible for infiltrating the opposition in Iraqi Kurdistan.
- Directorate 25, the Western District, is located in Ramadi and maintains a network of informants in Syria and Jordan.
- Directorate 26, the Eastern District, operates in the Karbala Governate.
- Directorate 28: MIO Security: Located at Palestine Street and responsible for the security of the Military Industrial Organization, and overseas security for both the overt operations of the MIO and individuals involved in covert purchasing and probable some aspects of Iraq's WMD programmes.

It has shown it can enforce loyalty in various urban areas with consummate ruthlessness.

- ***The General Security Services (GSS) or General Security Directorate (GSD) or al-Amn al-Amm:*** It is the oldest security service in the country and used to be part of the Ministry of Interior but now is an independent agency that reports directly to the Presidential Palace. It has about 8,000 men who monitor daily life in every town and village and has elements in every police station. It is headquartered in the al Baladiat area of Baghdad, and seems to be under the command of Major Mu'tamad Nima al-Tikriti.

It is the key force monitoring the day-to-day activities and loyalty of ordinary Iraqis. It is also a key force in terms of wiretapping, surveillance, tracking families and foreigners, and watching UN inspectors and virtually all press movements. It hires countless informants, and any media in Iraq will become acquainted with the GSS, either under the

cloak of the Ministry of Information, as a helper, or often as a translator or apparent dissident. Many hotels used by foreigners have both GID and GSS staff.

It has, however, played an active paramilitary and covert role in helping to enforce security and run intelligence operations in Kurdish areas, and seems to have played a role in hiding WMD and missile components.

The Al-Amn Al-Aam supports the domestic counter-intelligence work of other agencies. As a policy, Saddam staffs key positions in Al-Amn Al-Aam with his relatives or other close members of his regime. In 1980, Saddam appointed 'Ali Hassan al-Majid, who would later be the architect of the regime's anti-Kurdish campaign, as its director to instill the ideology of the Ba'ath Party into the agency.

Al-Amn al-Aam was given more political intelligence responsibilities during the Iran-Iraq War. When Majid was put in charge of repressing the Kurdish insurrection in 1987, General 'Abdul Rahman al-Duri replaced him until 1991 when Saddam Hussein's half-brother, Sabawi Ibrahim al-Tikriti, (who had served as its deputy director prior to 1991) then became head of this agency.

In 1991, Saddam Hussein provided it with a paramilitary wing, *Quwat al-Tawari*, to reinforce law and order, although these units are ultimately under Al Amn al-Khas control. After the 1991 Gulf War, *Quwat al-Tawari* units were believed to be responsible for hiding Iraqi ballistic missile components. It also operates the notorious Abu Ghuraib prison outside of Baghdad, where many of Iraq's political prisoners are held.

Each neighbourhood, every office and school every hotel and coffee shop has an officer assigned to cover it and one or more agents in it who report what is said and what is seen. Al-Amn Al-Aam runs a programme of provocation where their agent in a coffee house or work place will voice dissident views and report on anyone who agrees with those views. An Al-Amn Al-Aam agent or officer will sometimes approach an Iraqi official pretending to recruit him for some opposition or espionage purpose and then arrest him if he does not report it. They also look for foreigners who might be breaking Iraqi law or seeking to stir up anti-regime feelings among native Iraqis.

Technically, it is illegal for an Iraqi official or military officer to talk to a foreigner without permission from a security officer.

- ***Al Hadi Project or Project 858***: The *Al Hadi Project* is the organization responsible for collecting, processing, exploiting and disseminating signals, communications and electronic intelligence. It is a small agency of about 800 that is unlikely to be actively involved in military operations, but which will monitor cell phones, and particularly any signals activity throughout Iraq. Though it reports directly to the Office of the Presidential Palace, *Al Hadi* is not represented on the National Security Council, and the intelligence it collects is passed on to other agencies for their use
- ***Murafaqin or Companions of Saddam (also called the Special Protection Apparatus (Jihaz al-Himaya al-Khasa in other sources)***: A small, tribal, elite group of bodyguards at the Presidential Palace, most of whom have some kind of family relationship. Most are members of Saddam's tribe, the al-Bu Nasir. The Special Location Group protects Saddam in all of his homes and his family. The Salih or Mobile Group protects him while moving.

- ***The Ministry of Information***: Its operations are fully integrated into Iraqi intelligence operations, including all contacts with the foreign media and press. It has many trained agents that appear in front of TV cameras or are trained to act like independent or semi-opposition voices in dealing with foreign reporters.
- ***The Ba'ath Party or Socialist Arab Resurrection Party or Hizb al-Ba'th al-'Arab al-Ishiraki***: It is not a security service as such but uses its large group of members who hold positions in government, the military, virtually every profession and throughout the legal profession, and in communities and most educational institutions to monitor Iraqis, carry out propaganda activities, and use various benefits to tie Iraqis to the regime. It has a security element called the Amn al-Hizb (Party Security), to maintain party loyalty.
- ***Emergency Force*** of the governates: Each of the 15 governates still under Saddam's control is reported to have its own light brigade of roughly 1,000 men for internal security missions.
- ***National Liberation Army or Mojahedin-e Khalq (MKO or MEK)***: A force of Iranians based in Iraq under the command of the People's Mujahideen, which in the past was a violent left-wing Marxist movement in Iran and assassinated US personnel and officers. Its strength is unclear, but it has some 4,000-8,000 personnel, and Iraq has trained and equipped it to use some 250 T-54/T-55, and Chieftain tanks, other armored vehicles, and artillery.
- ***The Tribal Chief's Bureau or Maktab al-Shuyukh***: British intelligence reports that this bureau was created after the Gulf war as a vehicle for paying tribal leaders to control their people, spy on possible dissidents and provide arms to loyal tribesmen to suppress opposition.

#### ***The Loyalty of the Iraqi Armed Forces and Security Services***

All of these forces have significant limitations. The army and internal security forces have lost many of their personnel with combat experience, in the decade since the gulf war, Iraqi forces have had limited exercise training, and have never mastered combined arms and joint operations by Western standards.

Saddam Hussein's regime has always given internal security against coup's a much higher priority than military effectiveness per se. There were exceptions during the most threatening periods in the Iran-Iraq war, but many of the best officers were the retired or shoved aside into positions of limited importance, and some suffered suspicious fatal accidents. Political control has not only affected independence and initiative, but has extended to the point of limiting or preventing the use of ammunition in live fire exercises, the scale of maneuver exercises, and forward stockage of ammunition and supplies that might be used in a coup.

Iraqi forces have, however, had ongoing low-level combat experience against the Shi'ite opposition in southern Iraq, and deploy to positions opposite Iran and the Kurdish security zone. They do conduct static fire training and limited maneuver training, and the Special Republican Guards, Republican Guards, and security forces are trained for urban warfare and to put down uprisings. The Republican Guards units never broke during the Gulf War, and the army's regular armored, mechanized, and commando/special forces units have generally fought with considerable determination when ordered to do so.

Iraq has other problems. Saddam exercises tight central control in his self-appointed role as field marshal, and innovation and initiative are often discouraged. Saddam's rotation, and sometimes violent purges of commanders to ensure their loyalty, promotion for loyalty or because of tribal origin, the ruthlessness of the security services, and tensions between the regular forces, Republican Guards, Special Republican Guards, and various security services create additional problems.

While a number of seemingly convincing reports of security, problems, defections, and coup attempts have proved false, at least some seem to be correct and it is far from clear that the situation has improved in spite of Iraq's increasing oil income and the regime's ability to manipulate oil-for-food deliveries. Professional security services cannot challenge regular armed forces and rarely succeed in suppressing large-scale popular revolts. Large unprofessional security services have limited value.

Saddam has tried on several occasions in the past, to create a parallel popular force that would act as a further check upon the regular forces. Such forces failed dismally during the Iran-Iraq War. The latest such effort is the so-called Jerusalem Army, which has been created since the start of the Second Intifada and is under General Iyad Futayyih Khalifa al-Rawi, a former Republican Guards commander. This force is reported to have a goal of 21-divisions, but Iraq lacks the experienced cadres, equipment, supplies, and manpower input to build up anything like such a force except at the cost of its other land-force units.<sup>xii</sup>

### **The Iraqi Air Force**

The Iraqi Air force has around 20,000 men. It still has some 316 combat aircraft, although only about 50-60% are servicable. Senior pilots still fly 60-120 hours a year depending on the aircraft, but junior pilots fly as few as 20.

The IISS estimates that the air force has 6 obsolete H-6D and Tu-22 bombers, and 130 attack aircraft. These include Mirage F-1EQs, Su-20s, 40 Su-22s, 2 Su-24s, and 2 Su-25s. Iraq still has extensive stocks of short-range air-to-ground missiles and cluster bombs. It also has 180 air defense fighters, including 12 MiG-25s, 50 Mirage F-1EQs, and 10 MiG-29s, plus 5 MiG-25 reconnaissance aircraft. Additionally, the air force has extensive stocks of MiG-21s, training aircraft, and drones, and has experimented with using them as unmanned aerial vehicles (UAVs) and unmanned combat aerial vehicles (UCAVs). It still has 2 IL-76 tankers and large numbers of transport aircraft.

Jane's provides a different estimate with the following key combat types; the number estimated to be in service are shown in parenthesis: 40(0) F-7, 30 (13) Mirage F-1EQ, 36 (15-25) Mig-21, 35 (15-20) Mig-23, 6 (3-6) MiG-25, 17 (1) Mig-29, 33 (15-18) Su-20/22, 21 (6-11) Su-25, 2 T-22, and 3 Tu-16.<sup>xiii</sup>

The Iraqi Air Force's key operational holdings now seem to include a total of 255 fighters and fighter bombers, and some 80 trainers -- some of which are combat capable.<sup>xiv</sup> Iraq's total holdings seem to include a total of 130 J-6, MiG-23BN, MiG-27, Mirage F-1EQ5, Su-7, Su-20, and Su-25 attack fighters; 180 J-7, MiG-21, MiG-25, Mirage F-1EQ, and MiG-29 air defense fighters; MiG-21 and MiG-25 reconnaissance fighters, 15 old Hawker Hunters, a surviving Il-76 Adnan AEW aircraft, 2 Il-76 tankers, and large numbers of transports and helicopters. Estimates of its total surviving inventory by aircraft type vary by source, but Iraq probably retained about

30 Mirage F-1s, 15 MiG-29s, 50-60 MiG-23s, 15 MiG-25s, 150 MiG-21s, 25-30 Su-25s, and 60 Su-17s, Su-20s, and Su-22s.

Although it is unclear how many air munitions Iraq retained after the Gulf War, some estimates put this figure below 50% of the pre-war total. Iraq, however, retains significant numbers of modern air-to-air and air-to-ground munitions. These stocks include AA-6, AA-7, AA-8, AA-10, Matra 530, Matra 550, and Matra Super 530 air-to-air missiles, and AM-39 Exocet, HOT, AS-11, AS-12, AS-6, AS-14, AS-301, AS-37, C-601 Silkworm; air-to-surface missiles; laser-guided bombs, and Cluster bombs.

Iraq has deployed Matra Magic 2 “dogfight” air-to-air missiles on its Mirage F-1s since the war. This is virtually its only major improvement in air force equipment since 1990. It is not clear whether these missiles were delivered before the war, were stolen from Kuwait, or have been smuggled in since. They are an advanced type similar to the more advanced export versions of the US AIM-9, with high energy of maneuver and a maximum range of three nautical miles.<sup>xv</sup>

Iraq retained large numbers of combat-capable trainers, transport aircraft and helicopters, and remotely piloted vehicles. The trainers included some Mirage F-1BQs, 25 PC-7s, 30 PC-9s, 50-60 Tucanos (EMB-312s), 40 L-29s and 40 L-39s. Transport assets included a mix of Soviet An-2, An-12, An-24, An-26, and Il-76 jets and propeller aircraft, and some Il-76s modified to act as tankers. The remotely piloted vehicles (RPVs) included some Iraqi-made designs, Italian designs, and Soviet designs. It is unclear how effective Iraq was in using any of these RPV systems, but it did make use of them during the Gulf War.<sup>xvi</sup>

Iraqi Air Force air-to-air and air-to-ground training is limited and unrealistic. In the past, command and control has been over-centralized and mission planning has often set impossible goals. The two No Fly zones have further limited air training and combat experience. There are no modern airborne sensor, command and control, or intelligence capabilities, other than a small number of UAVs. Air control and warning is still heavily dependent on outdated ground-based intercept capabilities. The Air Force has, however, practiced penetration raids by single low-flying aircraft, and has shown that it can conduct independent offensive operations at the small formation level.

Iraq has, however, repaired many of the bases and air facilities that were destroyed or damaged during the Gulf War. It has 16-20 major air bases, with H-3, H-2, and Al Asad in the West; Mosul, Qayarah, and Kirkuk in the north, Al Jarah, Talil, and Shaybah in the South, and 5-7 more bases within a 150-kilometer radius of Baghdad. Many of these bases have surface-to-air missile defenses.

### **The Iraqi Air Defense Command**

The heavy surface-to-air missile forces of the Air Defense Command are still organized into one of the most dense defensive networks in the world. There are four regional air defense centers at Kirkuk (north), Kut al Hayy (east), Al Basra (south), and Ramadia (west). Major command facilities are underground and hardened. Additionally, there is a network of redundant radars and optical fibre command links.

Iraq's mix of SA-2s, SA-3s, and SA-6s is badly outdated, but some modifications have been made. Reports differ over the extent to which China has helped Iraq create a modern and highly survivable optical fibre command net. There are unconfirmed reports of more modern radars being smuggled in from the Ukraine.

The heavy surface-to-air missile forces are backed by extensive low-altitude anti-aircraft (AA) guns, and SA-8b, SA-11, and SA-13 short and medium range missiles. The Sterla 2 and 10 (SA-7 and SA-10) are used for terminal defense of key buildings. Iraq has learned to rapidly move its fire units and sensors, use urban cover and decoys, use “pop-on radar” guidance techniques, and optical tracking.

Since Iraq’s surface-based air defenses are its only major counter to US and British airpower, it is important to understand their history and strengths and weaknesses. Iraq had a large land-based air defense system before the Gulf War, which had been extensively reorganized after Israel's Osirak raid in 1981. A network of radars, surface-to-air missiles, and anti-aircraft guns surrounded strategic and industrial areas, particularly in the Baghdad area. A French-supplied C<sup>4</sup>/BM system called the KARI (Iraq spelled backwards in French) became operational on a country-wide level in 1986-1987, but it was never really tested during the Iran-Iraq War.

The National Air Defense Operations Center (ADOC) in Baghdad controlled Iraq's air defenses. The ADOC maintained the overall air picture and provided Baghdad with information on the course of the air battle. There were five Sector Operations Centers (SOCs) covering the north, west, center-east, southeast and far south which established priorities for air defense engagements. Each was subordinate to the ADOC, and controlled air defense operations in a specific geographic area. The SOCs controlled large numbers of ground-based weapons systems and extensive BM/C<sup>4</sup>I/SR assets.

There were also a large number of Intercept Operations Centers (IOCs) to provide local air defense control. These had headquarters at Ar-Rutbah, H-1, and H-3 in the West; Mosul and Qayyarah in the north, Al-Taqqaddum, Salman Pak, Al-Jarrah, An-Najf, and An-Nukhayb in the center-east; and Al-Amrah, As-Salman and Az-Zubayr in the southeast; and Al-Jahrah in the far south. These systems were linked through an extensive optical fiber communications net, and used a TFH 647 radio relay system, a TFH tropospheric communications system, and a large mix of radars supplied by the Soviet Union

The KARI system, however, was a mix of technologies from different nations with uncertain integration. Although part of Iraq's air defense system was French-supplied, Iraq patterned its overall air defense network and operations on Soviet models. It also concentrated its coverage around Baghdad, Basra, and key military and strategic targets. This left many areas uncovered, particularly in southern Iraq, and along air corridors striking north across the Saudi and Kuwait borders.

Iraq’s air defenses were fundamentally flawed because the SOCs could not communicate effectively once the ADOC was destroyed or deactivated. This meant that the Coalition could attack and/or overwhelm each sector in isolation from the others. Moreover, the destruction of a given SOC effectively opened up a corridor that could be used to attack the entire country. While it may not be a general lesson of the war, such design defects and vulnerabilities are common in Third World air defense systems, and almost universal in systems dependent on Soviet or PRC surface-to-air missiles, sensors, and electronics.

There were other problems. Iraq had created a strongly inter-netted, redundant, and layered air defense system that included a wide variety of radars, hardened and buried command- and-control sites, interceptors, surface-to-air missiles, and anti-aircraft artillery. In practice, however, much of the communications, data processing, and software were inferior.<sup>xvii</sup>

Even so, Iraq's air defense forces were formidable in some respects at the start of the Gulf War. According to one US estimate, Iraq had a total of 16,000 radar-guided and heat seeking surface-to-air missiles, including missiles for the large numbers of lighter army systems described earlier, and smaller numbers of missiles for the heavier SA-2s (S-75 Divina), SA-3s, and SA-6s (2K12). These heavier surface-to-air defense missiles were operated by an air defense force, organized into air defense units that were part of the Iraqi Army, but operationally tied to the Air Force.

Iraq had approximately 137-154 medium surface-to-air missile sites and complexes in Iraq 20-21 in Kuwait, and 18 major surface-to-air missile support facilities.<sup>xviii</sup> These included 20-30 operational SA-2 batteries with 160 launch units, 25-50 SA-3 batteries with 140 launch units, and 36-55 SA-6 batteries with well over 100 fire units. Iraq claimed to have modified the SA-2 missile to use an infra-red terminal seeker to supplement the SA-2's normal radio command guidance system, but it is unclear that such systems were actually deployed.

All of these systems could still be fired on a target of opportunity basis. Iraq's medium surface-to-air defense sites in Iraq were also a threat to a modern air force. They were widely dispersed, often did not require the use of radar, and could be fired on a target of opportunity basis. The missiles on the sites in Iraq included at least 20 SA-8b (9K33) batteries with 30-40 fire units, 60-100 SA-9 fire units, and some SA-13s (9k25 Strela 10), and 50 to 66 Rolands.<sup>xix</sup>

To put this level of air defense strength in perspective, Baghdad had more dense air defenses at the start of the Gulf War than any city in Eastern Europe, and had more than seven times the total surface-to-air missile launcher strength deployed in Hanoi during the height of the Vietnam War. The US Department of Defense released a highly detailed post-war estimate of Iraq's land-based air defense at the outset of the Gulf War that credited Iraq with 3,679 major surface-to-air missiles—not including 6,500 SA-7s, 400 SA-9s, 192 SA-13s, and 288 SA-14s. This report indicated that Iraq had 972 anti-aircraft artillery sites, 2,404 fixed anti-aircraft guns, and 6,100 mobile anti-aircraft guns.

There is no expert consensus on how much of Iraq's land-based air defense assets and air defense system survived the Gulf War, or on Iraq's holdings of surface-to-air missiles in late 1995. Many facilities survived because the Coalition concentrated more on the suppression of air defense activity than the physical destruction of land-based facilities and trying to hunt down and kill individual air defense weapons.

In late 1998, Iraq retained 130-180 SA-2 launchers, 100-125 SA-3 launchers, 100-125 SA-6s, 20-35 SA-8s, 30-45 SA-9s, some SA-13s, and around 30 Roland VI and 5 Crotale surface-to-air missile fire units. Some of these systems were operated by the army. In addition, Iraq had some 2,000 man-portable SA-7s and SA-14s, and some SA-16s.<sup>xx</sup> (It is unclear whether Iraq learned enough from the Jordanian officers who assisted it during the war, and during the initial period after the war to operate its Hawks. Iraq may also be avoiding any use of the weapons because it fears the US would attack any captured Hawks that showed signs of becoming operational.<sup>xxi</sup>)

Iraq was able to restore much of its battle control and management system, and many of its sheltered air defense and air force command and control centers remained operational. Iraq's French-supplied KARI air defense communications and data-link system is not particularly effective, but it uses fiber optics and many of the links between its command elements either have survived the bombing or are now repaired.<sup>xxii</sup>

The air defense forces are commanded by Lt. General Yassin Mohammed Shahan. They have a Headquarters Center, Air Defense Operations Center, and Air Defense Military Intelligence facilities in the Baghdad area, plus four Sector Operations Centers (SOCs) and an independent SOC to protect Saddam's palaces and key Republican Guards and security operations.

**The 1<sup>st</sup> Sector Operations Center** is at Taji Military Camp in Northern Baghdad and covers central and eastern Iraq and the greater Baghdad area. While locations change, Jane's reports that it has two missile brigades near al Dorah and at al Habaniah with a total of 10 SA-2 batteries and 6-9 SA-3 batteries, plus a range of independent batteries with SA-2s, SA-3s, SA-6s, Rolands, and possibly captured IHawks. It has four early warning radar regiments and an ECM unit.

**The 2<sup>nd</sup> Sector Operations Center** covers western Iraq and is located near H-3 (al Waleed) air base near the Jordan border. It covers the Syria border, the Mosul area, and northern Iranian border. It has a brigade with 4 SA-2, 6 SA-3, and some SA-6 batteries, a Roland battalion, ZSU-23-4 and other AA gun units, and an early warning radar unit.

**The 3<sup>rd</sup> Sector Operations Center** covers southern Iraq and is located in Imam Ali Airbase near Nasseria. It covers the Saudi, Kuwaiti, and Jordanian borders and the southern Iranian border. It has at least one missile brigade and AA gun units, plus an early warning radar and control unit.

**The 4<sup>th</sup> Sector Operations Center** is headquartered at al-Hurriya Airbase near Kirkuk. It defends Mosul to the north, the Iranian border to the east and the al Jazirah area in the west. It has at least 4 SA-2 battalions.

Iraq also has an independent SOC based in Baghdad to defend the palaces, Republican Guards, and key security facilities. It has SA-2, SA-3, SA-8, SA-9, SA-11, and Roland batteries, plus SA-7s and SA-14s. The SRG and Republican Guards have independent batteries.

Most of its surface-to-air missile units were operational before the US and UK began extensive operations against such forces in 1998, and there is evidence that Iraq had improved their readiness and training in 1996-1998. Many radars and elements of Iraq's air defense C<sup>4</sup>I system were also operating, including such pre-war systems as the Soviet Spoon Rest, Squat Eye, Flat Face, Tall King, Bar lock, Cross Slot, and Thin Skin radars. Iraq also had Soviet, Italian, and French jamming and electronic intelligence equipment. There is no way to know how many of Iraq's underground command and personnel shelters survived the Gulf War, but it seems likely that at least 50- 66% survived the Coalition bombing campaign or have been rebuilt since the war.

Iraq's ground-based defenses remain concentrated around Baghdad, Basra, and Kirkuk, as they were during the pre-war period. Iraqi territory is too large to attempt territorial defense, and Iraq has always concentrated on defending strategic targets, and deploying air defense zones to cover critical land force deployments. However, Iraq redeployed some missiles during 1992 and 1993 to create surface-to-air missile "traps" near the "no-fly zones" that the Coalition established after the war. These traps were designed to attack aircraft with overlapping missile coverage when they attacked launchers deployed near the no-fly zones. While the Iraqi efforts failed -- and led to the destruction of a number of the missile launchers involved -- it is not clear what portion survived or what other detailed redeployments Iraq has made in recent years.<sup>xxiii</sup>

Iraq has since lost a substantial amount of its post-Gulf War holdings as a result of the struggle in the No Fly Zones. The US has claimed it has destroyed some 20-33% of the launchers and major radars Iraq still had in 1998. It has, however, learned a great deal about land-based air defense

operations from the Gulf War and more than ten years of operations against the US and British aircraft enforcing the “No Fly Zones”. Iraq provided significant aid to Serbia in air defense tactics during the fighting in Kosovo, and helped Serbia make effective use of decoys, “pop-on” and remotely linked radar activity, various ambush tactics, and the use of deployments in civilian areas to limit NATO’s ability to strike at such targets,.

Iraq has developed some crude countermeasures to US AGM-88 HARM anti-radiation missiles since the Gulf War, and has recently begun to get significant equipment through Syria. This may include more advanced radar guidance kits for the 2K12 (SA-6 missile). There have been dubious claims it has acquired equipment to jam the GPS guidance systems. In US aircraft and munitions, there are more credible claims Iraq has mounted some of its SA-3s on rotating launchers on trucks to give them some mobility. Reports of more advanced Czech and Ukrainian radar deliveries are possible but the details are unclear.

Iraq is certain to have developed contingency plans to move and disperse its land-based air defenses in the event of a major US-led attempt to overthrow the regime, and to try to concentrate such defenses to protect the regime and try to use them to partially compensate for the lack of an effective Iraqi Air Force.

### **The Iraqi Navy**

The 2,000 man Iraqi Navy has never been an effective force and was devastated during the Gulf War. It now has only 1 obsolete Osa guided missile patrol craft, 5 small inshore patrol craft, some 80 boats, and three obsolete Soviet inshore minesweepers.

Iraq does, however, retain all of the shore-based Silkworm and other anti-ship missiles it had at the time of the Gulf War, and extensive stocks of mines -- some of them relatively modern and sophisticated. (The US never succeeded in targeting land-based Iraqi anti-ship missiles during the Gulf War, and the US and British Navies entered Iraqi mine fields without detecting their presence.)

### **Iraqi Overall Operational Military Capabilities**

It is difficult to generalize about Iraqi forces where each land and air unit has such different levels of effectiveness and where political and internal security considerations are so important however, Iraq has demonstrated that it can still carry out significant ground force exercises and fly relatively high sortie rates.

Iraq has not, however, demonstrated training patterns that show its army has consistent levels of training, can make effective use of combined arms above the level of some individual brigades, or has much capability for joint land-air operations. It also has not demonstrated that it can use surface-to-air missiles in a well-organized way as a maneuvering force to cover its deployed land forces.

Iraq does retain the ability to rapidly move heavy armored forces by tank transporter if it can use its road net and does not face major air opposition. Republican Guard and regular army armored and mechanized divisions probably can fight well from defensive positions, although such tactics did little to ensure their survivability in the Gulf War because of US superiority in air power, attack helicopters, thermal sights, and range of engagement.

Iraqi artillery outranges US tube artillery, but the advantage is of little or no operational meaning because Iraq has very limited targeting capability beyond visual range, has not developed the capability to rapid shift fires, and has limited artillery maneuverability.

Iraq conscript forces receive comparatively limited training, reserve training is largely in-unit training or no training at all, the Iraqi NCO corps is weak, junior officers receive rote training and are given limited initiative, and combined arms and manpower management focuses on loyalty rather than effectiveness.

Iraq made poor use of fixed and rotary wing combat aircraft in close support and interdiction missions throughout the Iran-Iraq War, and never had the chance to conduct such operations during the Gulf War. Contrary to Iraqi opposition reports – which seek to transfer the blame for the failure of their post-war uprisings to the US – Iraq never needed to make extensive use of attack helicopters to suppress their uprisings. It was able to rely on its virtual monopoly of armor and artillery,

Iraq's infrastructure and combat engineering is now better than its combat forces. Iraq has been able to rebuild many of the shelters and facilities it lost during the Gulf War, and much of the Air Force combat, command, control, communications and intelligence/battlefield management (C<sup>4</sup>I/BM) system. This C<sup>4</sup>I/BM system included an extensive net of optical fiber communications net, a TFH 647 radio relay system, a TFH tropospheric communications system, and a large mix of radars supplied by the Soviet Union. Iraq has rebuilt most of the air bases damaged during the Gulf War, and a number of bases received only limited damage. This gives Iraq a network of some 25 major operating bases, many with extensive shelters and hardened facilities.<sup>xxiv</sup>

Iraq retains chemical and biological weapons, and is believed to have anywhere from 12-25 (maximum of 80) Scud missile assemblies of various types, But there is no way to know how lethal these weapons really are, how Iraq would deploy them, its plans to use them, or the regimes command and control arrangements.

Most experts do not believe Iraq has nuclear weapons or has any significant domestic ability to produce fissile materials. Ex-IAEA inspectors do believe, however, that Iraq retains all of the technology needed to make moderately sized implosion weapons if it can obtain fissile material. It has developed its own initiators, HE lenses, and switching devices.

### **The Problem of Sanctions and Equipment Modernization**

Sanctions and the impact of the Gulf War have had a major impact on Iraqi war fighting capabilities. Iraq has not been able to fund and/or import any major new conventional warfare technology to react to the lessons of the Gulf War, or to produce any major equipment -- with the possible exception of limited numbers of Magic "dogfight" air-to-air missiles.

About two-thirds of its remaining inventory of armor and its aircraft is obsolete by Western standards. Iraq has lacked the funds, spare parts, and production capabilities to sustain the quality of its consolidated forces. While it has domestic military production facilities, it is limited to the production of guns and ammunition, and has never succeeded in mass-producing more advanced weapons. Many of its modernization efforts have shown some technical skill, but others have been little more than unintentional technical practical jokes.

Iraq's inability to recapitalize and modernize its forces means that much of its large order of battle is now obsolescent or obsolete, has uncertain combat readiness, and will be difficult to sustain in combat. It also raises serious questions about the ability of its forces to conduct long-range movements or maneuvers, and then sustain coherent operations.

Iraq has, however, maintained much of the clandestine arms purchasing network that it set up during the time of the Iran-Iraq War. It has prior experience in buying from some 500 companies in 43 countries, and has set up approximately 150 small purchasing companies or agents. Intelligence experts feel that Iraq also has an extensive network of intelligence agents and middlemen involved in arms purchases.

Iraq has probably obtained some air defense equipment from countries like the Ukraine and China, and may have been able to smuggle in some spare parts through Syria, Turkey, and Jordan. Deliveries through Syria has become significant since mid-2001, and include parts and weapons assemblies for MIG and Shukoi aircraft, armor, and land-based air defenses.

Nevertheless, Iraq has not been able to restructure its overall force restructure to compensate for its prior dependence on an average of \$3 billion a year in arms deliveries. It has not visibly deployed any major new weapon system since 1991, or been able to recapitalize any aspect of its force structure.

In contrast, Saudi Arabia alone has taken delivery on over \$66 billion worth of new arms since 1991. Kuwait has received \$7.6 billion, Iran \$4.3 billion, Bahrain \$700 million, Oman \$1.4 billion, Qatar \$1.7 billion, and the UAE \$7.9 billion. Equally important, the US has made major upgrades in virtually every aspect of its fighter avionics, attack munitions, cruise missile capabilities, and intelligence, reconnaissance, and targeting capabilities.

## Trends in the Gulf Military Balance - Overview

- Despite the Gulf War, and the loss of some 40% of its army and air force order of battle, Iraq remains the most effective military power in the Gulf.
  - It still has an army of around 375,000 men, and an inventory of some 2,200-2,600 main battle tanks, 3,700 other armored vehicles, and 2,400 major artillery weapons. It also has over 300 combat aircraft with potential operational status.
  - At the same time, Iraq has lacked the funds, spare parts, and production capabilities to sustain the quality of its consolidated forces.
  - Iraq has not been able to restructure its overall force structure to compensate as effectively as possible for its prior dependence on an average of \$3 billion a year in arms deliveries. It has not been able to recapitalize any aspect of its force structure, and about two-thirds of its remaining inventory of armor and aircraft is obsolescent by Western standards.
  - Iraq has not been able to fund and/or import any major new conventional warfare technology to react to the lessons of the Gulf War, or to produce any major equipment -- with the possible exception of limited numbers of Magic "dogfight" air-to-air missiles.
  - In contrast, Saudi Arabia has taken delivery on over \$66 billion worth of new arms since 1991, Kuwait has received \$7.6 billion, Iran \$4.3 billion, Bahrain \$700 million, Oman \$1.4 billion, Qatar \$1.7 billion, and the UAE \$7.9 billion.
  - Equally important, the US has made major upgrades in virtually every aspect of its fighter avionics, attack munitions, cruise missile capabilities, and intelligence, reconnaissance, and targeting capabilities.
  - Iraq's inability to recapitalize and modernize its forces means that much of its large order of battle is no obsolescent or obsolete, has uncertain combat readiness, and will be difficult to sustain in combat. It also raises serious questions about the ability of its forces to conduct long-range movements or maneuvers and then sustain coherent operations.
  - Iraq has demonstrated that it can still carry out significant ground force exercises and fly relatively high sortie rates. It has not, however, demonstrated training patterns that show its army has consistent levels of training, can make effective use of combined arms above the level of some individual brigades, or has much capability for joint land-air operations. It has not demonstrated that it can use surface-to-air missiles in a well-organized way as a maneuvering force to cover its deployed land forces.
- Iran remains a major threat to Iraq. Iran lost 40-60% of its major land force equipment during the climactic battles of the Iran-Iraq War in 1988. It has, however, largely recovered from its defeat by Iraq and now has comparatively large forces.
  - Iran now has an army of around 450,000 men – including roughly 125,000 Revolutionary Guards, and an inventory of some 1,600 main battle tanks, 1,500 other armored vehicles, and 3,200 major artillery weapons. It also has over 280 combat aircraft with potential operational status.
  - Iran has been able to make major improvements in its ability to threaten maritime traffic through the Gulf, and to conduct unconventional warfare.
  - Iran has also begun to acquire modern Soviet combat aircraft and has significant numbers of the export version of the T-72 and BMP.
  - Iran has not, however, been able to offset the obsolescence and wear of its overall inventory of armor, ships, and aircraft.
  - Iran has not been able to modernize key aspects of its military capabilities such as airborne sensors and C<sup>4</sup>I/BM, electronic warfare, land-based air defense integration, beyond-visual-range air-to-air combat, night warfare capabilities, stand-off attack capability, armored sensors and fire control systems, artillery mobility and battle management, combat ship systems integration, etc.
- In contrast, no Southern Gulf state has built up significant ground forces since the Gulf War, and only Saudi Arabia has built up a significant air force.
  - Only two Southern Gulf forces – those of Saudi Arabia and Kuwait – have a significant defense capability against Iraq.

- Iran now has an army of around 11,000 men, and an inventory of some 300 main battle tanks, 500 other armored vehicles, and 100 major artillery weapons. It also has some 80 combat aircraft. It can only effectively man and deploy about two-thirds of its land weapons and
- Saudi Arabia has made real progress in improving its 75,000 man National Guard. Its army, however, lacks effective leadership, training, and organization. It now has an army of around 75,000 men –, and an inventory of some 1,055 main battle tanks, 4,800 other armored vehicles, and 500 major artillery weapons. It also has around 350 combat aircraft with potential operational status. The army has made little overall progress in training since the Gulf War, can probably only fight about half of its equipment holdings in the Iraqi border area (and it would take 4-6 weeks to deploy and prepare this strength), and has declined in combined arms capability since the Gulf War. It has little capability for joint land-air operations. Its individual pilots and aircraft have experienced a growing readiness crisis since the mid-1990s. It has lacked cohesive leadership as a fighting force since that time and cannot fight as a coherent force without US support and battle management..
- Kuwait now has an army of only around 11,000 men, and an active inventory of some 293 main battle tanks, 466 other armored vehicles, and 17 major artillery weapons. It has only 82 combat aircraft with potential operational status. It is making progress in training, but has not shown it can make effective use of combined arms above the battalion level, and has little capability for joint land-air operations. Its individual pilots and aircraft have moderate readiness, but cannot fight as a coherent force without US support and battle management.
- There has been little progress in standardization and interoperability; advances in some areas like ammunition have been offset by the failure to integrate increasingly advanced weapons systems.
- Showpiece exercises and purchases disguise an essentially static approach to force improvement which is heavily weapons oriented, and usually shows little real-world appreciation of the lessons of the Gulf War, the “revolution in military affairs,” and the need for sustainability.
- Current arms deliveries are making only token progress in correcting the qualitative defects in Southern Gulf forces, and no meaningful progress in being made towards integrating the Southern Gulf countries under the Gulf Cooperation Council (GCC).

## Iraq vs. Neighboring Forces in 2003 - Part One

	<u>Iran</u>	<u>Iraq</u>	<u>Bahrain</u>	<u>Kuwait</u> <u>Arabia*</u>	<u>Saudi</u>	<u>Turkey</u>	<u>Jordan</u>	<u>Syria</u>
<b>Manpower</b>								
Total Active	520,000	389,000	10,700	15,500	199,500	514,850	100,240	319,000
Regular	395,000	375,000	10,700	15,500	124,500	514,850	100,240	319,000
National Guard & Other	125,000	0	0	0	75,000	0	0	0
Reserve	350,000	650,000	0	23,700	-	378,700	35,000	354,000
Paramilitary	40,000	44,000+	10,160	5,000	15,500+	152,200	10,000	108,000
<b>Army and Guard</b>								
Manpower	450,000*	350,000	8,500	11,000	150,000	402,000	84,700	215,000
Regular Army Manpower	325,000	-	8,500	11,000	75,000	402,000	84,700	215,000
Reserve	350,000	600,000	0	0	-	258,700	30,000	280,000
<b>Total Main Battle Tanks***</b>								
Active Main Battle Tanks	1,565	2,200-2,600	140	368	1,055	4,205	1,179	4,700 (1,200)
Active AIFV/Recce, Lt. Tanks	865	1,300-1,600	71	355	1,270+	3,600	45	3,285
Total APCs	590	2,400	235	151	3,440	3,643	1,500	1,600
Active APCs	550	1,800	205	111	2,630	3,480	1,100	1,200
ATGM Launchers	75	900+	15	118	480+	943	650	6,050
<b>Self Propelled Artillery</b>								
Towed Artillery	310	150-200	62	68 (18)	170	868	418	450
MRLs	2,085	1,900	22	0	238(58)	2,038	113	1,630
Mortars	889+	200	9	27	60	84	0	480
SSM Launchers	5,000	2,000+	21	78	400	2,021	700	658
Light SAM Launchers	51	56	0	-	10	1,288	-	72
Manportable SAM launchers	?	1,100	78	0	1,000	897	944	4,055
AA Guns	-	-	-	-	-	-	-	4,000
Air Force Manpower	1,700	6,000	27	0	10	1,664	416	2,060
Air Defense Manpower	37,000	20,000	1,200	2,500	18,000	60,100	15,000	40,000
Air Defense Manpower	15,000	17,000	0	0	16,000	0	0	60,000
<b>Total Combat Aircraft</b>								
Bombers	306	316	34	81	2948	485	101	611
Fighter/Attack	0	6	0	0	0	0	0	0
Fighter/Interceptor	179+	130	12	40	100	-	70	154-168
Recce/FGA Recce	74+	180	22	14	170	-	31	312
AEW C4I/BM	6	5	0	0	10	59	0	14
MR/MPA**	1	0	0	0	5	7	0	0
OCU/COIN/CCT	5	0	0	0	0	-	0	0
Other Combat Trainers	0	0	0	27	14	-	0	0
Transport Aircraft****	35	73	0	0	43	-	0	111
Tanker Aircraft	68	12	3	4	61	80	16	45
Other Helicopters*	4	2	0	0	16	7	0	0
Total Helicopters	195	375	47	28	137	329	73	200
Armed Helicopters	50	100	40	20	12	37	22	90
Other Helicopters*	145	275	7	12	55	292	53	110
Major SAM Launchers	250+	400	8	48	106	92	80	648
Light SAM Launchers	?	450	7	60	309	86	-	60
AA Guns	-	3,000	-	60	340	-	-	-

**Iraq vs. Neighboring Forces in 2003 - Part Two**

	<u>Iran</u>	<u>Iraq</u>	<u>Bahrain</u>	<u>Kuwait</u>	<u>Saudi Arabia*</u>	<u>Turkey</u>	<u>Jordan</u>	<u>Syria</u>
Total Naval Manpower	38,000*	2,000	1,000	2,000	15,500	52,750	540	4,000
Regular Navy	15,400	2,000	1,000	2,000	12,500	49,650	540	4,000
Naval Guards	20,000	0	0	0	0	0	0	0
Marines	2,600	-	-	-	3,000	3,100	0	0
Major Surface Combatants								
Missile	3	0	3	0	8	19	0	0
Other	0	0	0	0	0	0	0	2
Patrol Craft								
Missile	10	1	4	10	9	21	0	10
(Revolutionary Guards)	10	-	-	-	-	-	-	-
Other	41	5	4	0	17	28	3	8
Revolutionary Guards (Boats)	40	-	-	-	-	-	-	-
Submarines	3	0	0	0	0	13	0	0
Mine Vessels	7	3	0	0	7	24	0	5
Amphibious Ships	9	0	0	0	0	8	0	3
Landing Craft	9	-	4	2	8	59	0	4
Support Ships	232	2	5	4	7	27	0	4
Naval Air	2,000	-	-	-	-	-	0	0
Naval Aircraft								
Fixed Wing Combat	5	0	0	0	0	0	0	0
MR/MPA	10	0	0	0	0	0	0	0
Armed Helicopters	19	0	0	0	21	16	0	16
SAR Helicopters	-	0	0	0	4	0	0	0
Mine Warfare Helicopters	3	0	0	0	0	0	0	0
Other Helicopters	19	-	2	-	6	7	0	-

Note: Equipment in storage shown in the higher figure in parenthesis or in range. Air Force totals include all helicopters, including army operated weapons, and all heavy surface-to-air missile launchers.

\* Iranian total includes roughly 100,000 Revolutionary Guard actives in land forces and 20,000 in naval forces.

\*\* Saudi Totals for reserve include National Guard Tribal Levies. The total for land forces includes active National Guard equipment. These additions total 450 AIFVs, 730(1,540) APCs, and 70 towed artillery weapons.

\*\*\* Total tanks include tanks in storage or conversion.

\*\*\*\*\* Includes in Air Defense Command

Source: Adapted by Anthony H. Cordesman from interviews, International Institute for Strategic Studies, Military Balance (IISS, London); Jane's Sentinel, Periscope; and Jaffee Center for Strategic Studies, The Military Balance in the Middle East (JCSS, Tel Aviv)

## **Israeli Forces that Might Be Used Against Iraq**

- **Jericho missiles with up to 1000 warheads, ranges in excess of 500 kilometers.**
- **Unknown number of nuclear-armed bombs and air-launched guided weapons.**
- **Elements of special forces, and 1 air-mobile division with four paratroop brigades – three in reserve.**
- **Air capabilities that include:**
  - **61 F-15 dual capable strike aircraft.**
  - **125 F-16 C and D dual-capable strike aircraft.**
  - **13 RF-4E reconnaissance aircraft**
  - **5 KC-130H tankers**
  - **6 B-707 Phalcon AEW aircraft**
  - **3 B-707 ELINT-ECM aircraft.**
  - **10 Long-range transport Aircraft**
- **Arrow theater missile defense system.**
- **17 I-Hawk surface-to-air missile batteries.**
- **3 Patriot 2 batteries.**

## Iraq Before the Gulf War and Now

	<u>1990</u>	<u>2003</u>
Manpower		
Total Active	1,000,000	389,000
Regular	425,000	375,000
National Guard & Other	0	0
Reserve	850,000	650,000
Paramilitary	40,000	44,000+
Army and Guard		
Manpower	955,000*	350,000
Regular Army Manpower	-	375,000
Reserve	480,000(recalled)	650,000
Total Main Battle Tanks***	5,500-6,700	2,200-2,600
Active Main Battle Tanks	5,100	1,900-2,200
Active AIFV/Recce, Lt. Tanks	2,300	1,300-1,600
Total APCs	7,100	2,400
Active APCs	6,800	1,800
ATGM Launchers	1,500	900+
Self Propelled Artillery	500+	150-200
Towed Artillery	3,000+	1,900
MRLs	300+	200
Mortars	5,000	2,000+
SSM Launchers	?	56
Light SAM Launchers	1,700?	1,100
AA Guns	?	6,000
Air Force Manpower	40,000	20,000
Air Defense Manpower	10,000	17,000
Total Combat Aircraft	513	316
Bombers	20	6
Fighter/Attack	284+	130
Fighter/Interceptor	223+	180
Recce/FGA Recce	10	5
AEW C4I/BM	1	0
MR/MPA**	0	0
OCU/COIN/CCT	0	0
Other Combat Trainers	157	73
Transport Aircraft****	63	12
Tanker Aircraft	4?	2
Total Helicopters	584	375
Armed Helicopters****	160	100
Other Helicopters****	424	275
Major SAM Launchers	600+	400
Light SAM Launchers	?	450
AA Guns	-	3,000

## Iraq Before the Gulf War and Now

	<u>1990</u>	<u>2003</u>
Total Naval Manpower	5,000	2,000
Regular Navy	5,000	2,000
Naval Guards	0	0
Marines	-	-
Major Surface Combatants		
Missile	4	0
Other	1	0
Patrol Craft		
Missile	8	1
Other	6	5
Submarines	0	0
Mine Vessels	8	3
Amphibious Ships	6	0
Landing Craft	9	-
Support Ships	3	2

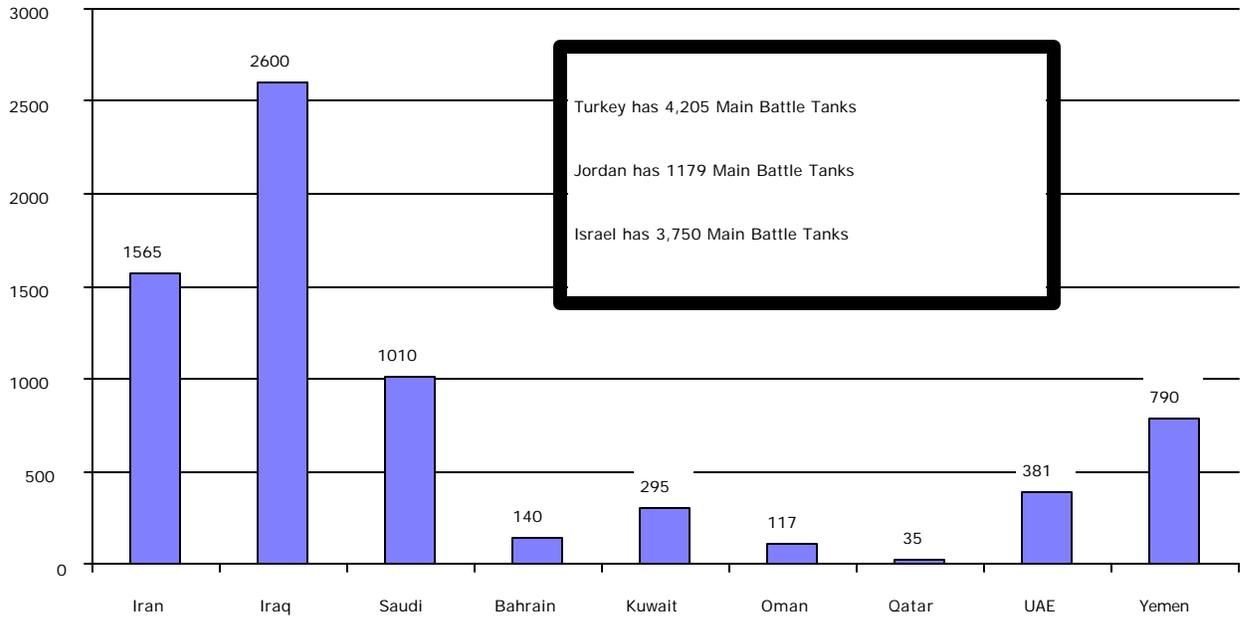
\*\*\*\* Includes navy, army, national guard, and royal flights, but not paramilitary.

\*\*\*\*\* Includes in Air Defense Command

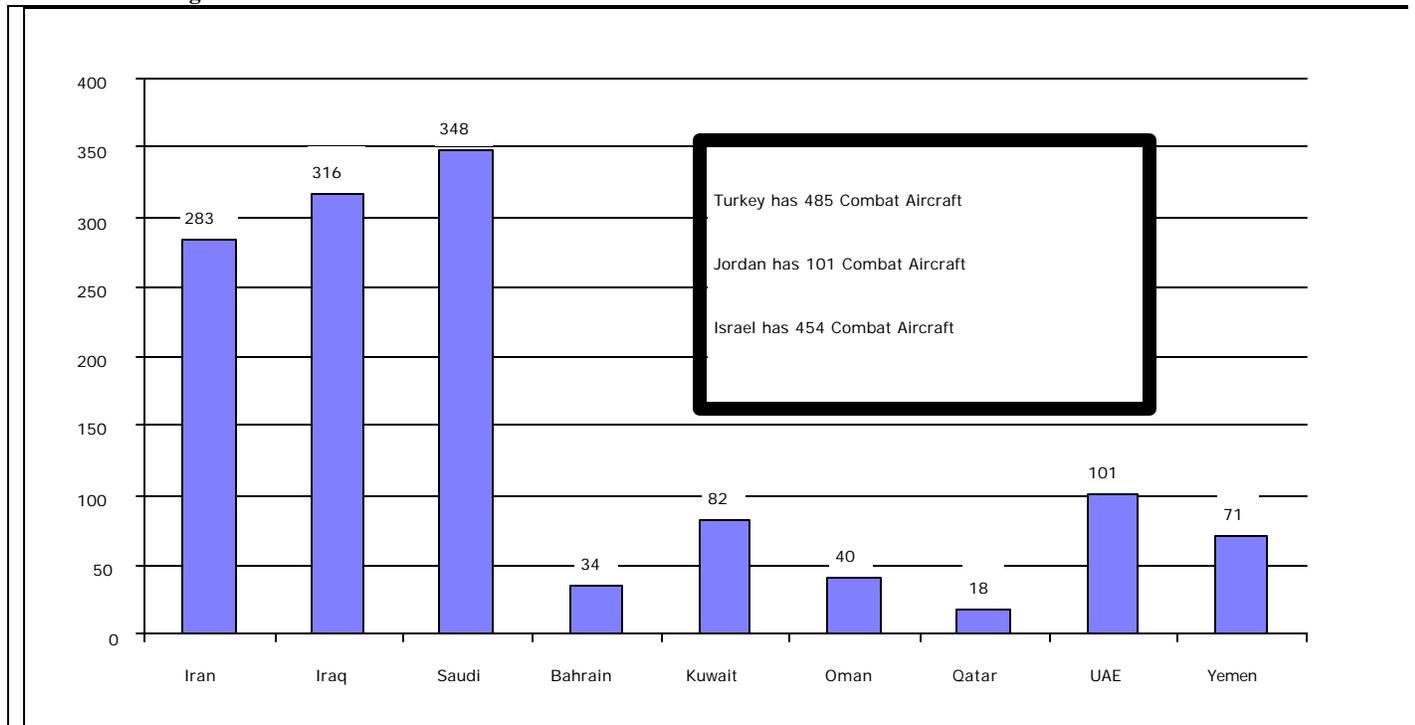
Source: Adapted by Anthony H. Cordesman from interviews, International Institute for Strategic Studies, Military Balance (IISS, London); Jane's Sentinel, Periscope; and Jaffee Center for Strategic Studies, The Military Balance in the Middle East (JCSS, Tel Aviv)

## Major Measures of Combat Equipment Strength - 2003

**Total Main Battle Tanks in Inventory**

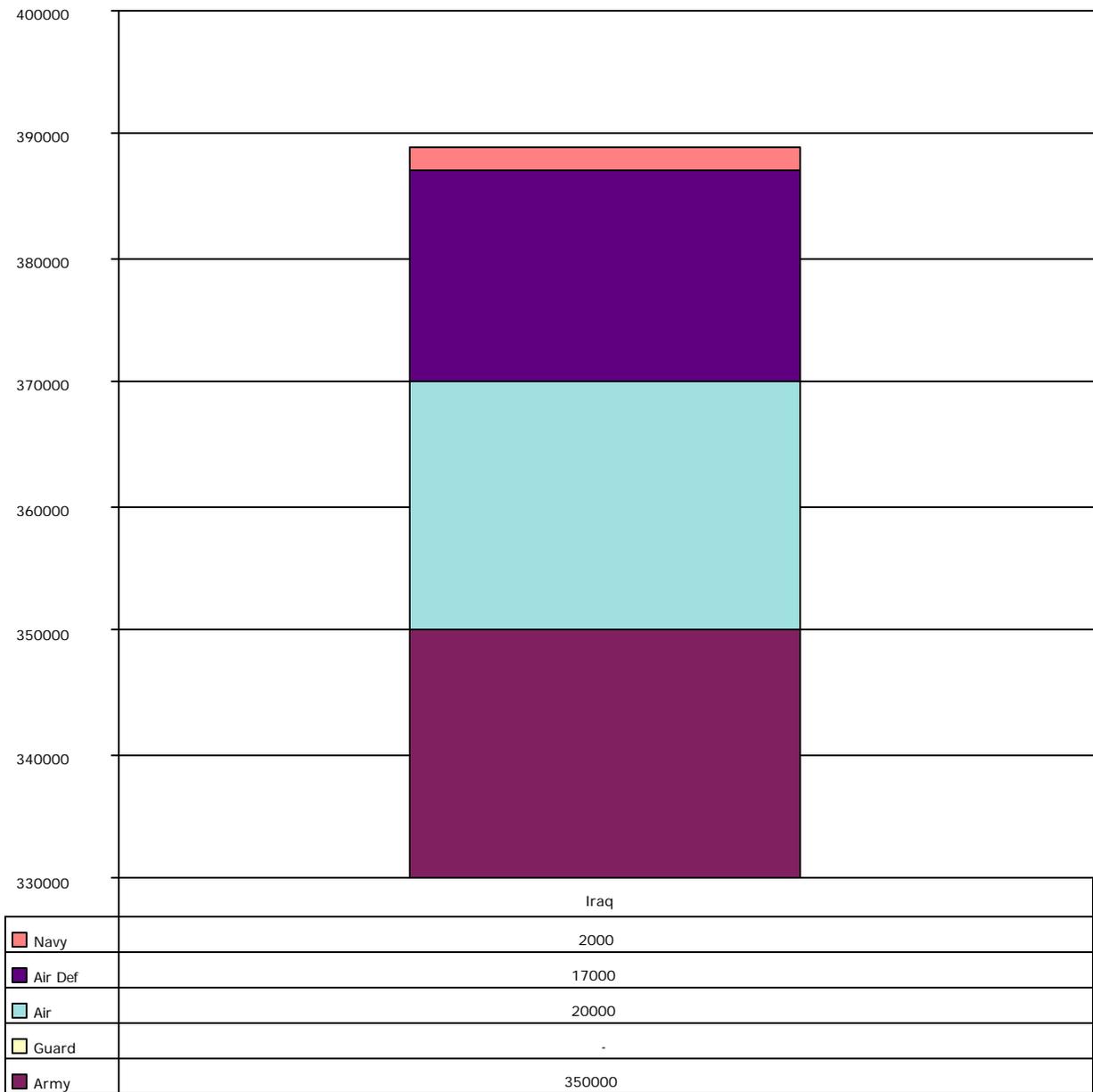


**Total Fixed Wing Combat Aircraft**



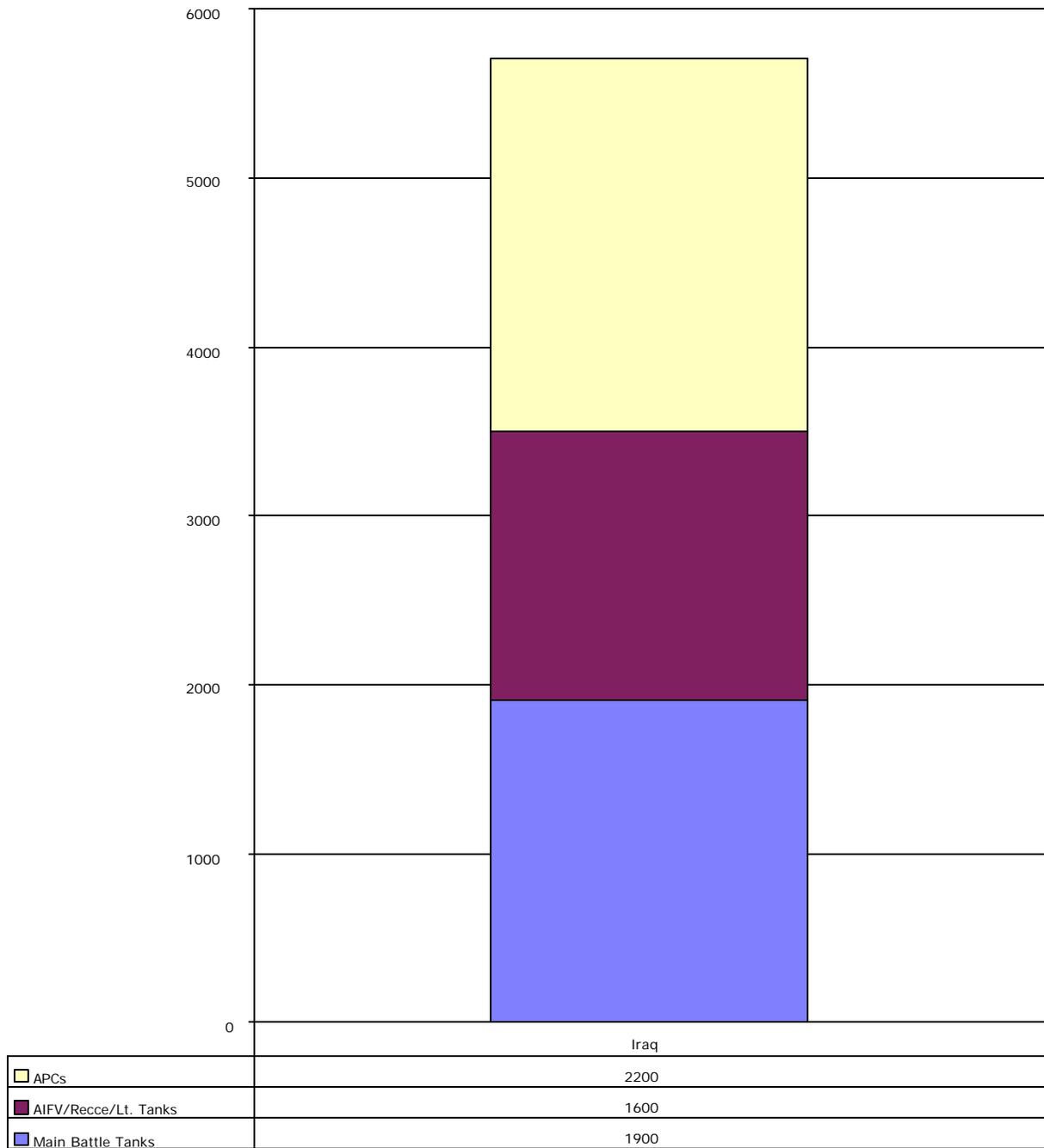
Source: Estimated by Anthony H. Cordesman using data from the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

### Iraqi Military Manpower By Service - 2003



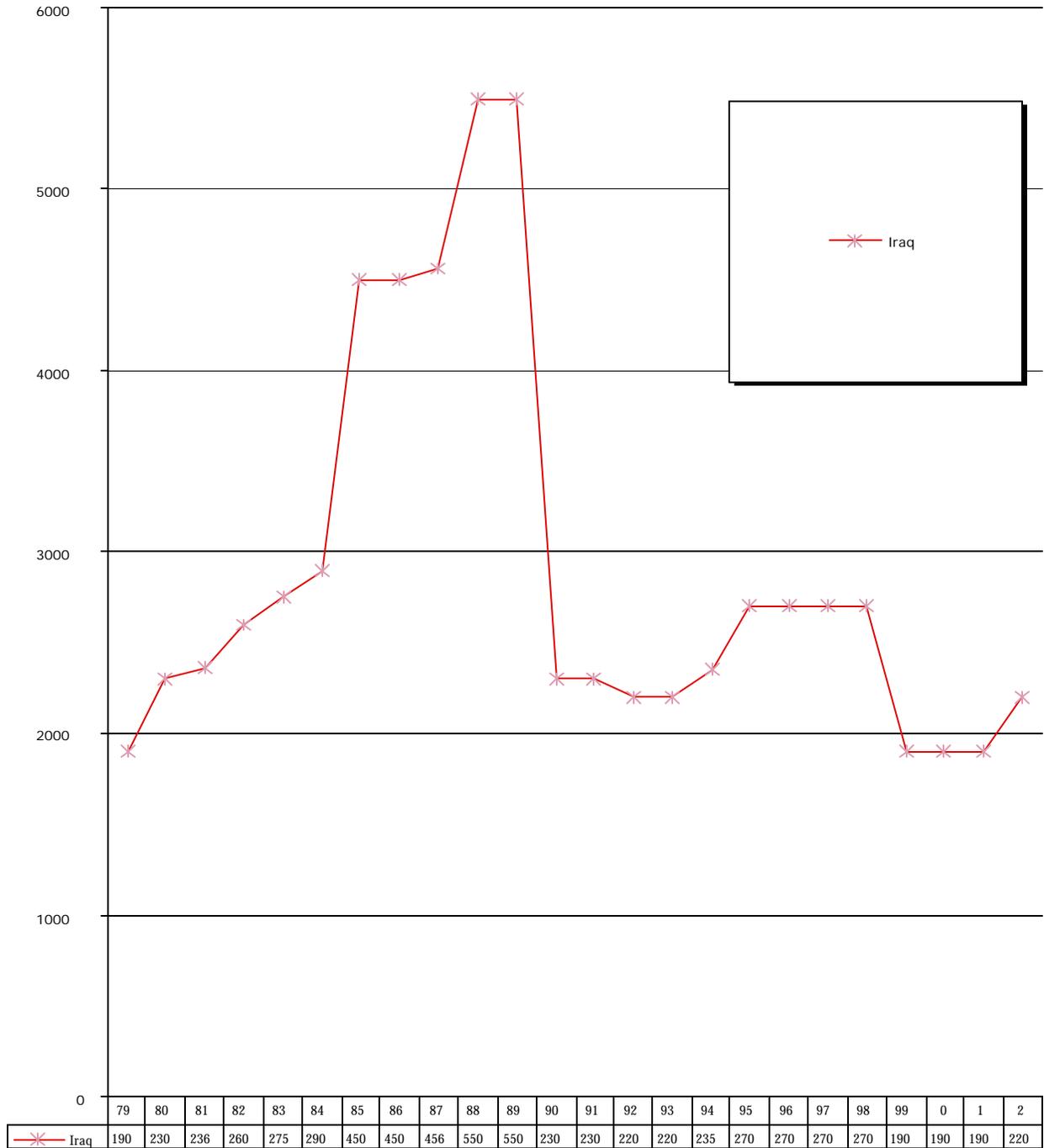
Source: Estimated by Anthony H. Cordesman using data from the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

### Total Operational Armored Fighting Vehicles - 2003



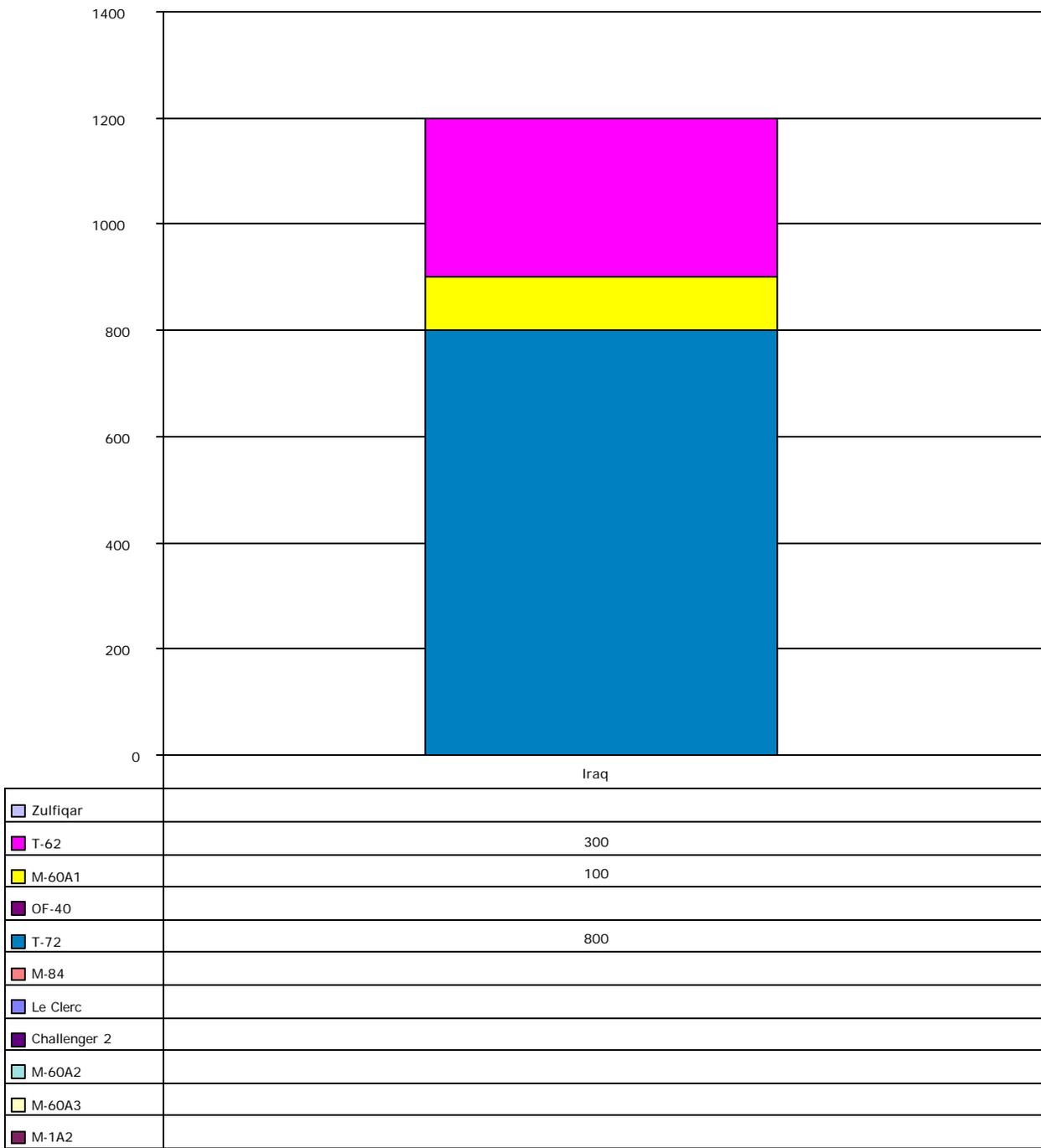
Source: Estimated by Anthony H. Cordesman using data from the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

### Total Operational Tanks: 1990-2003



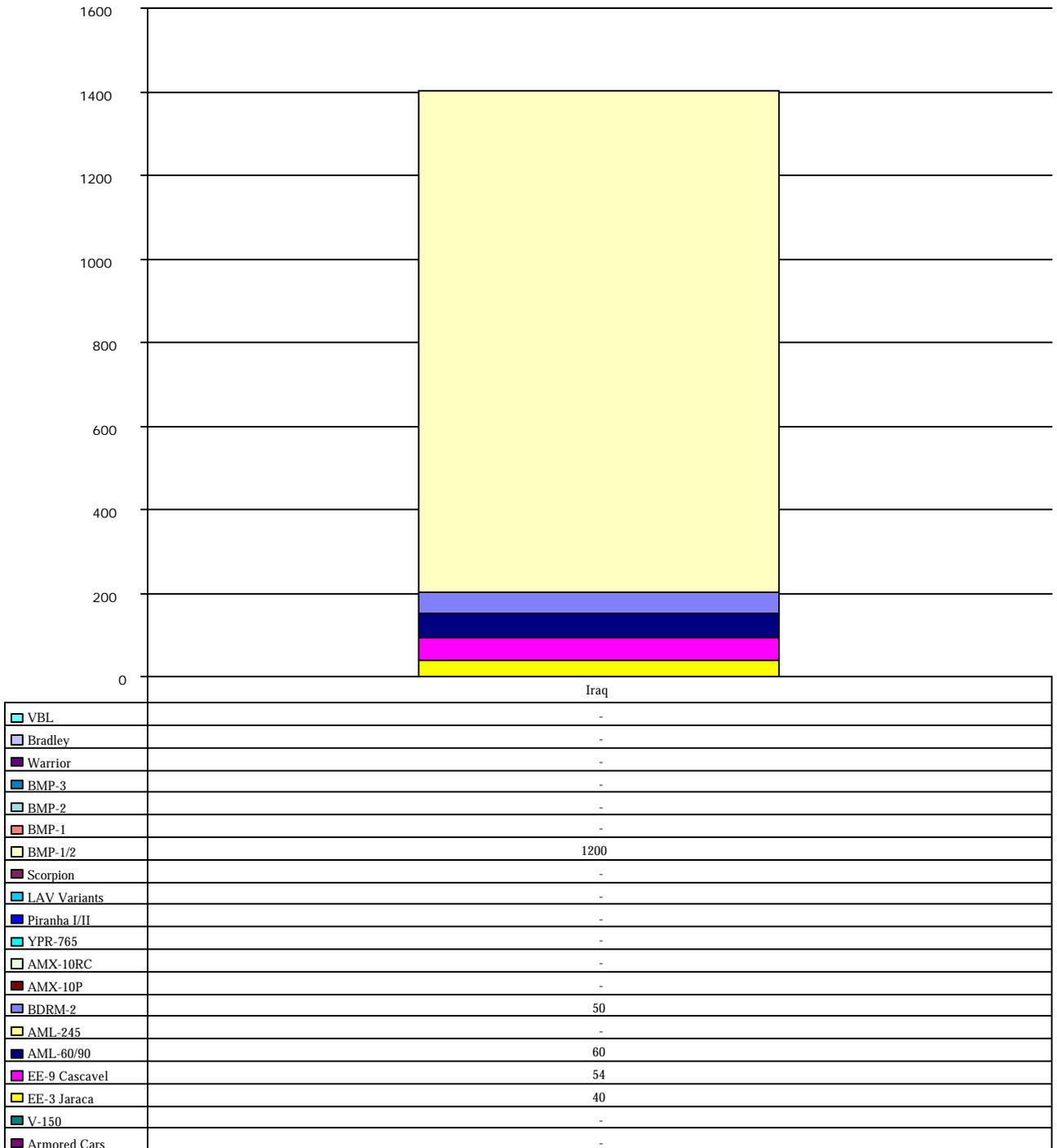
Adapted by Anthony H. Cordesman from various sources and the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

### Medium to High Quality Main Battle Tanks By Type in 2003



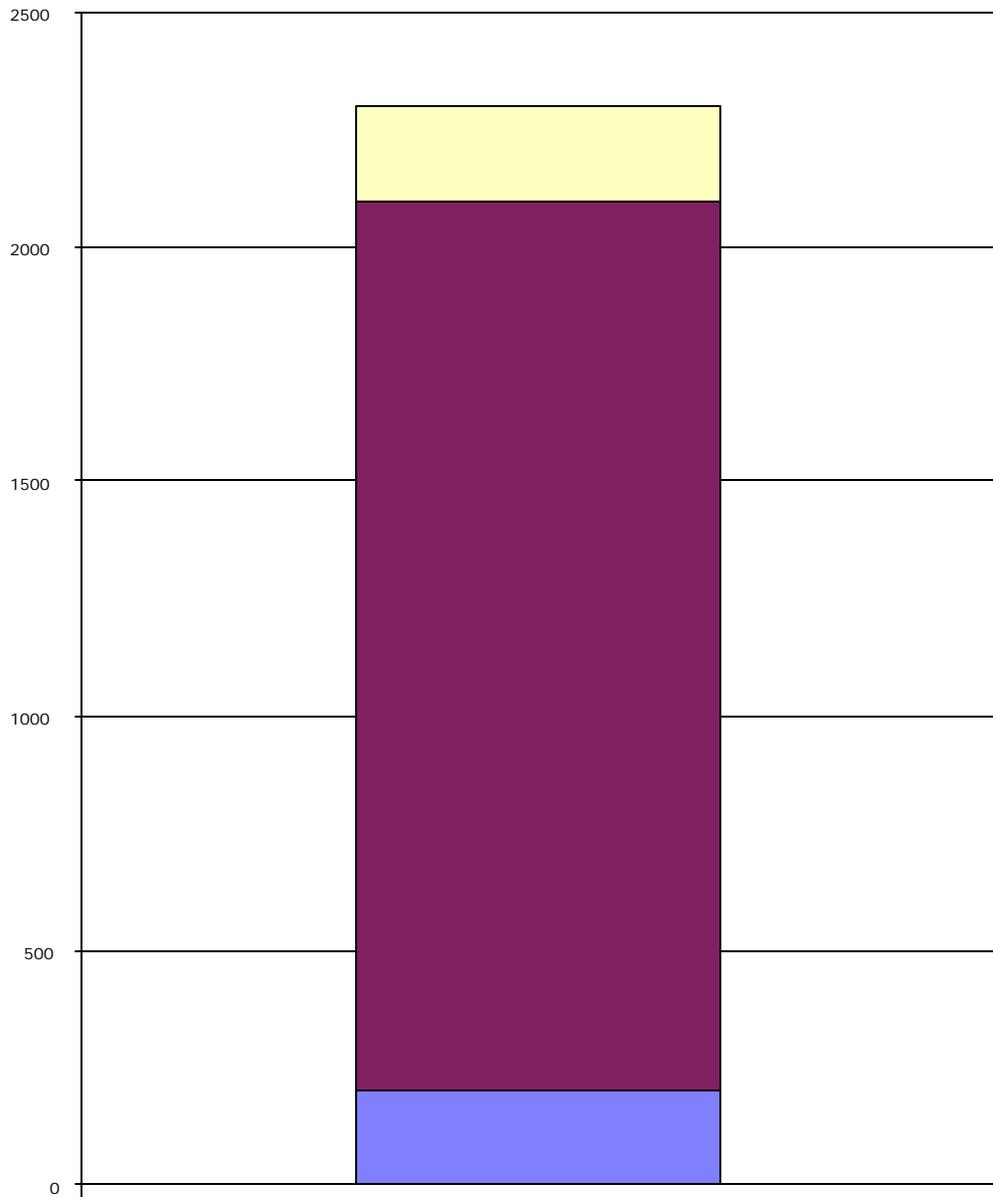
Note: Iran includes active forces in the Revolutionary Guards. Saudi Arabia includes active National Guard. Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, and Jane's Defense Weekly.

## Advanced Armored Infantry Fighting Vehicles, Reconnaissance Vehicles, Scout Vehicles and Light Tanks by Type in 2003



Source: Estimated by Anthony H. Cordesman using data from the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

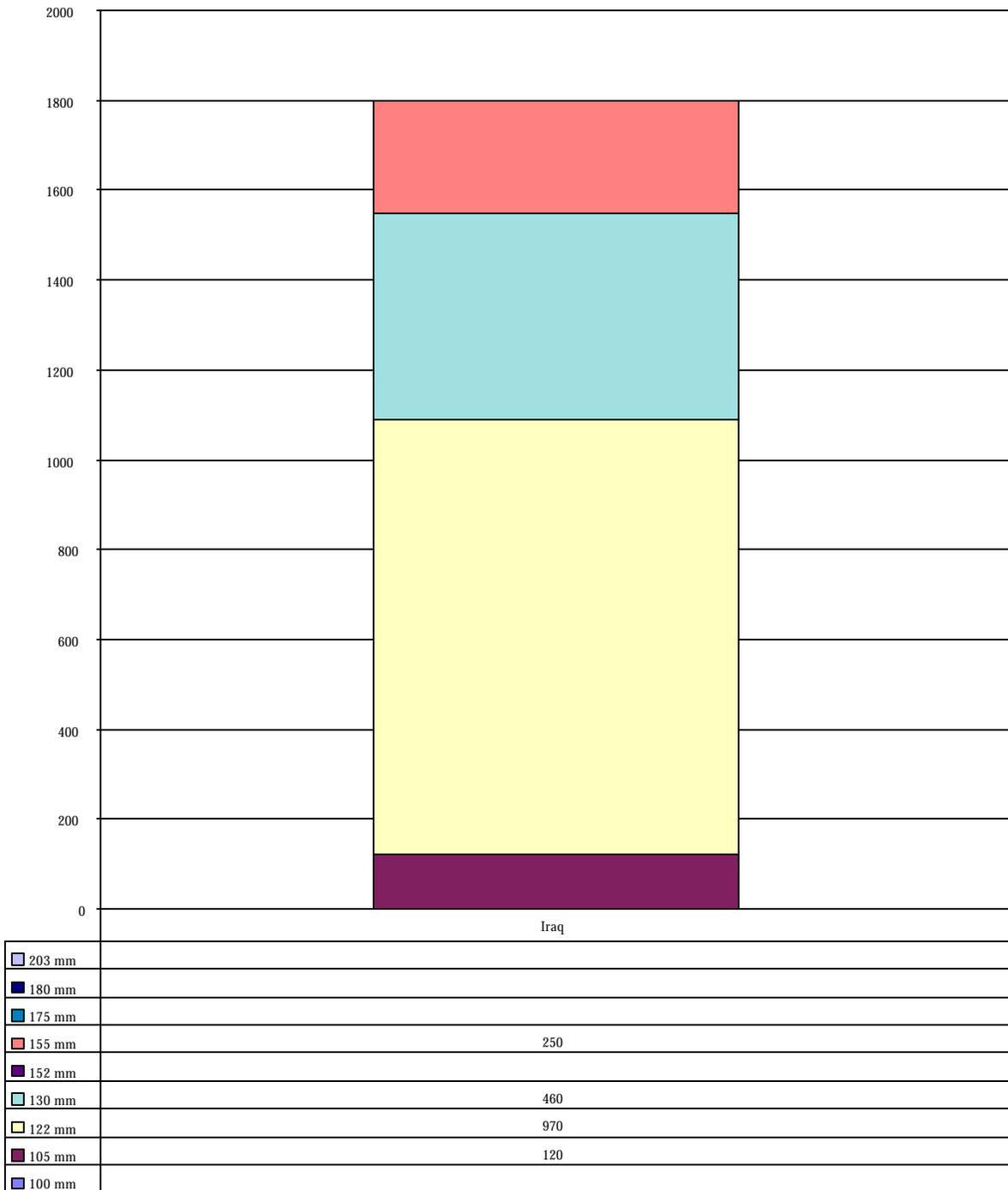
### Total Gulf Self-Propelled, Toward and Multiple Launcher Artillery By Category - 2003



	Iraq
Multiple Rocket Launcher	200
Towed Tube	1900
Self-Propelled Tube	200

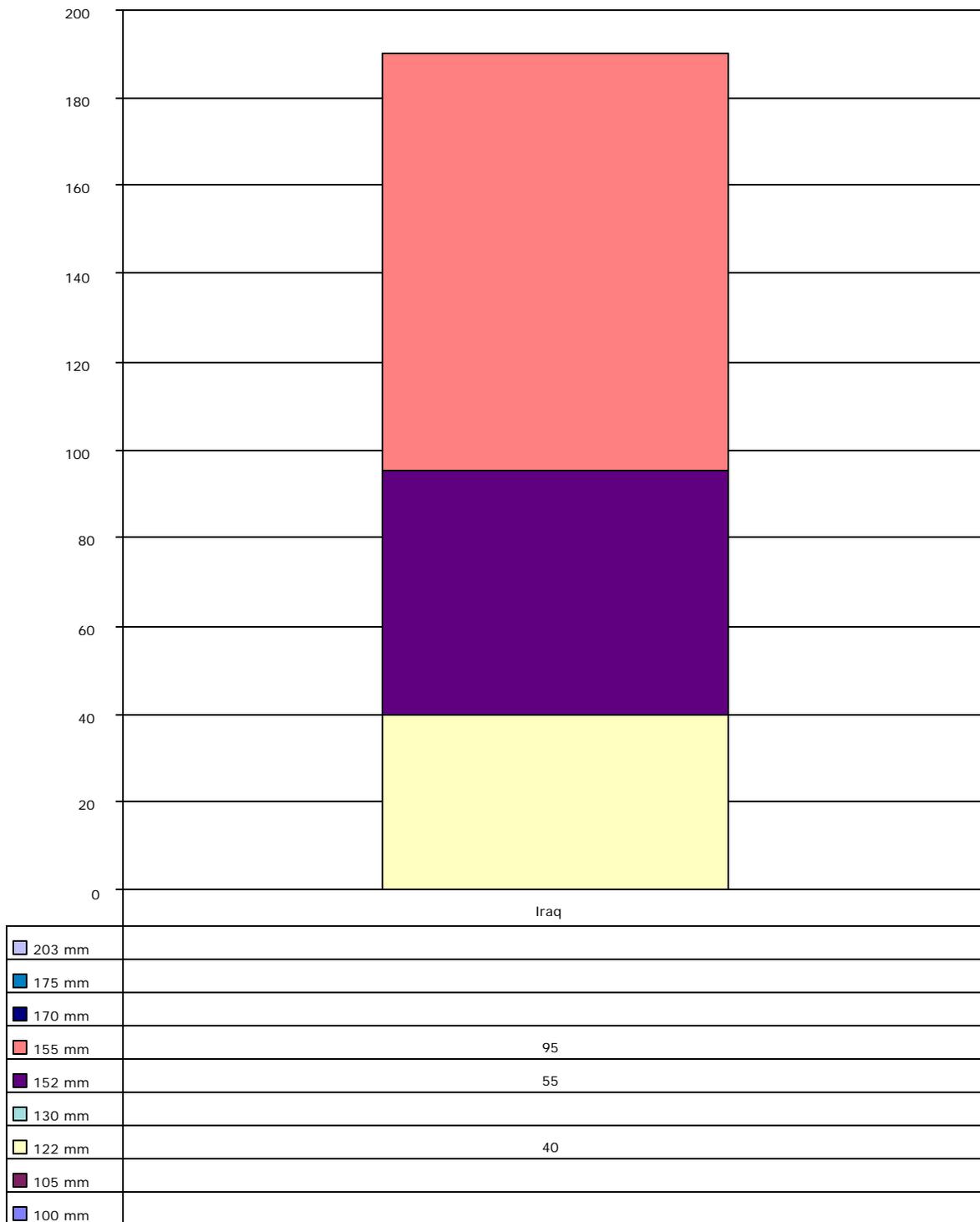
Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, Jane's Defense Weekly, and material provided by US experts.

### Inventory of Towed Artillery by Caliber in 2003



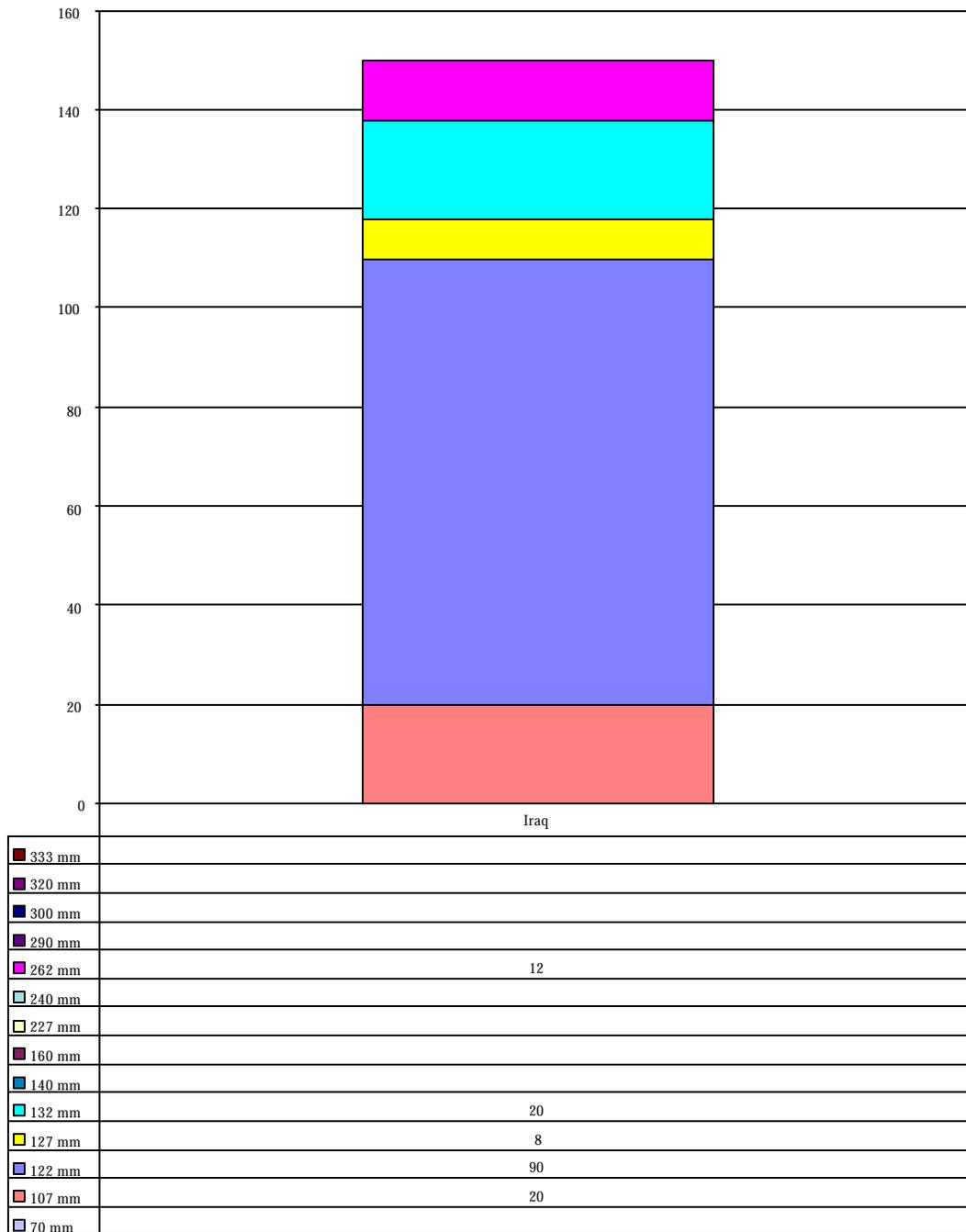
Source: Prepared by Anthony H. Cordesman, based upon discussions with US experts using data from the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

### Inventory of Self-Propelled Artillery by Caliber in 2003



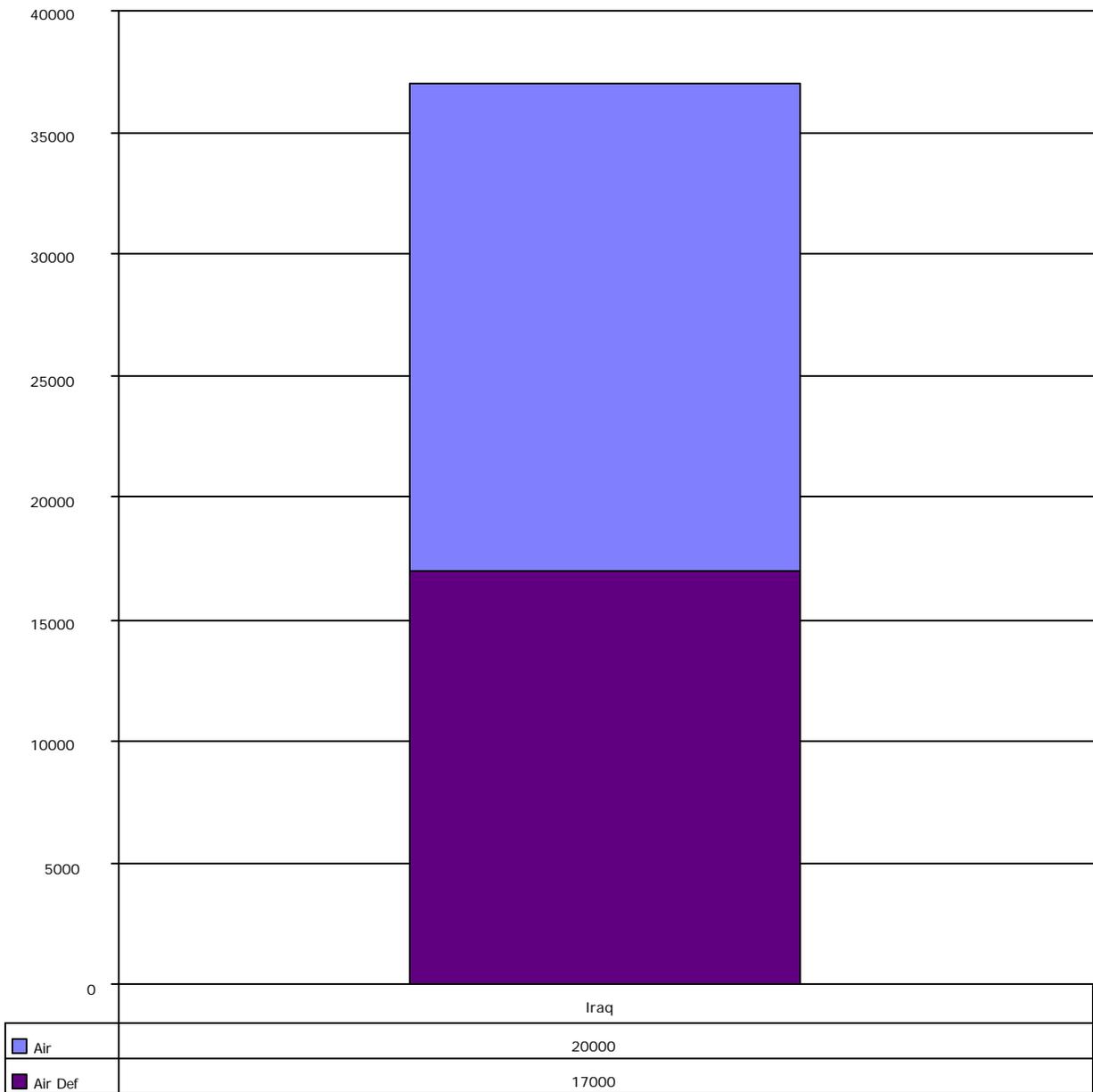
Note: Does not include weapons in full time storage, and does include Saudi National Guard and Iranian Revolutionary Guards.  
 Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, Jane's Sentinel, and Jane's Defense Weekly.

### Inventory of Multiple Rocket Launchers by Caliber in 2003



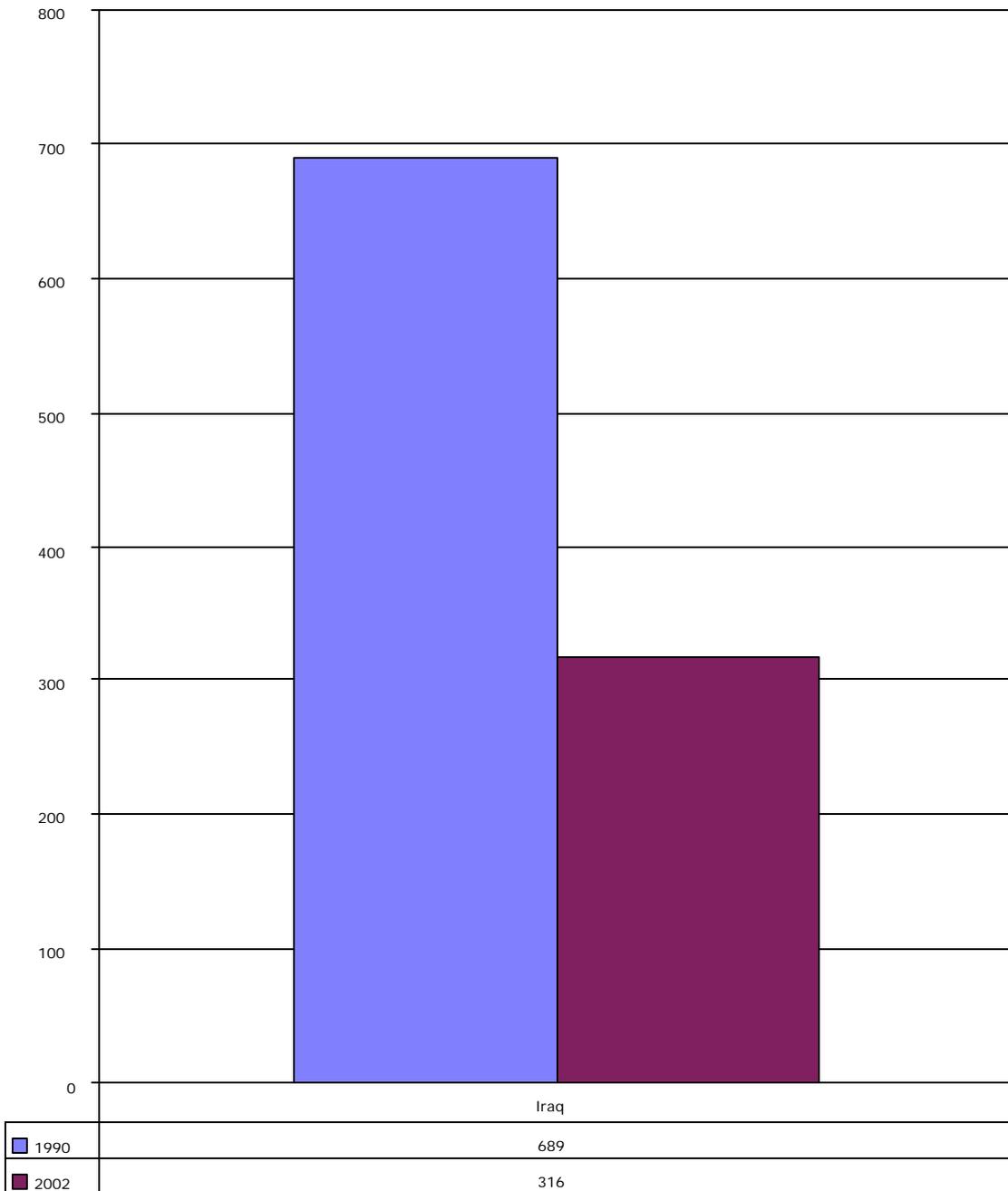
Note: Does not include weapons in full time storage, and does include Saudi National Guard and Iranian Revolutionary Guards.  
 Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, Jane's Sentinel, and Jane's Defense Weekly.

### Total Air Force and Air Defense Manpower – 2003



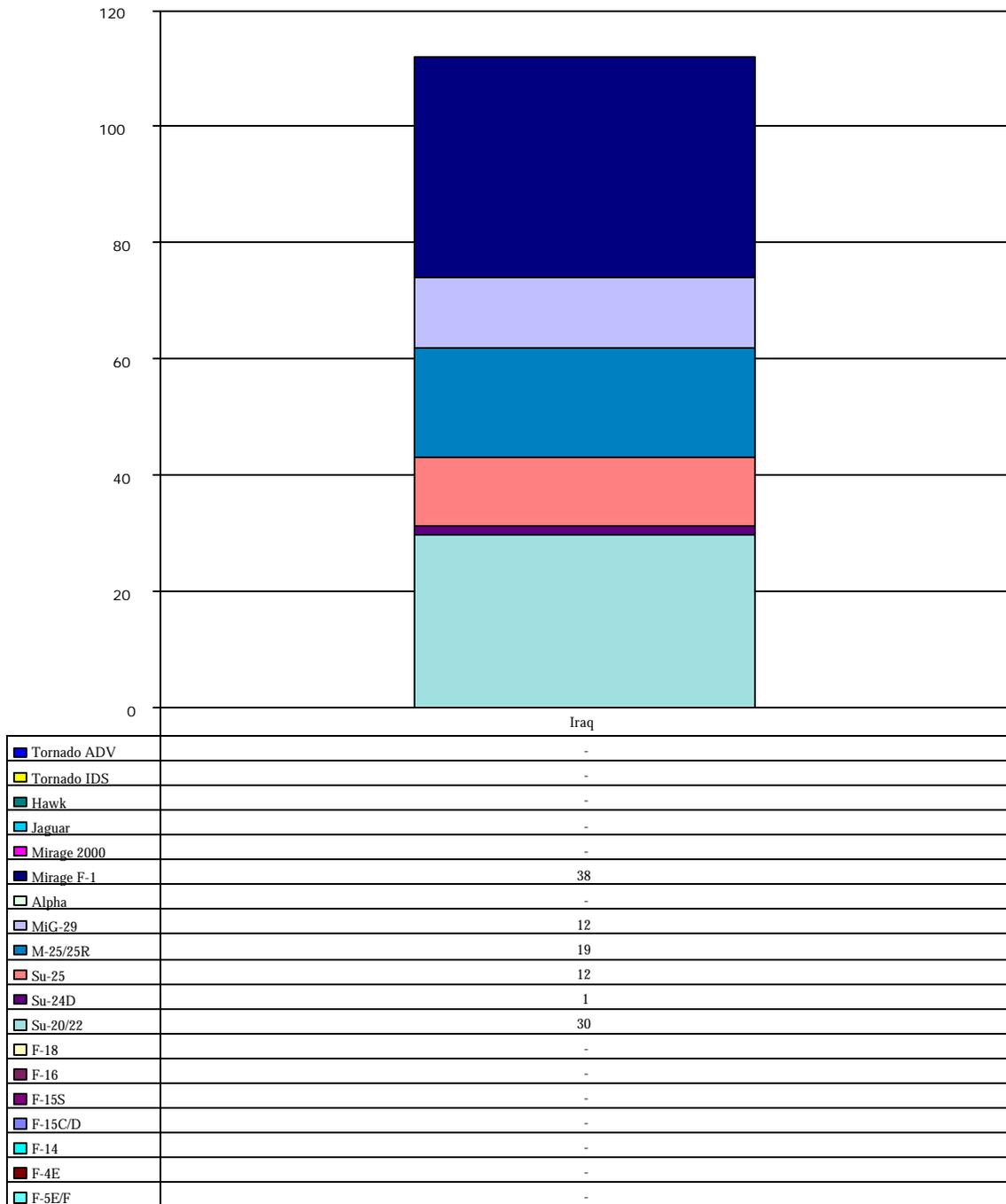
Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, and Jane's Defense Weekly, and material provided by US experts.

### Total Operational Combat Aircraft 1990-2003



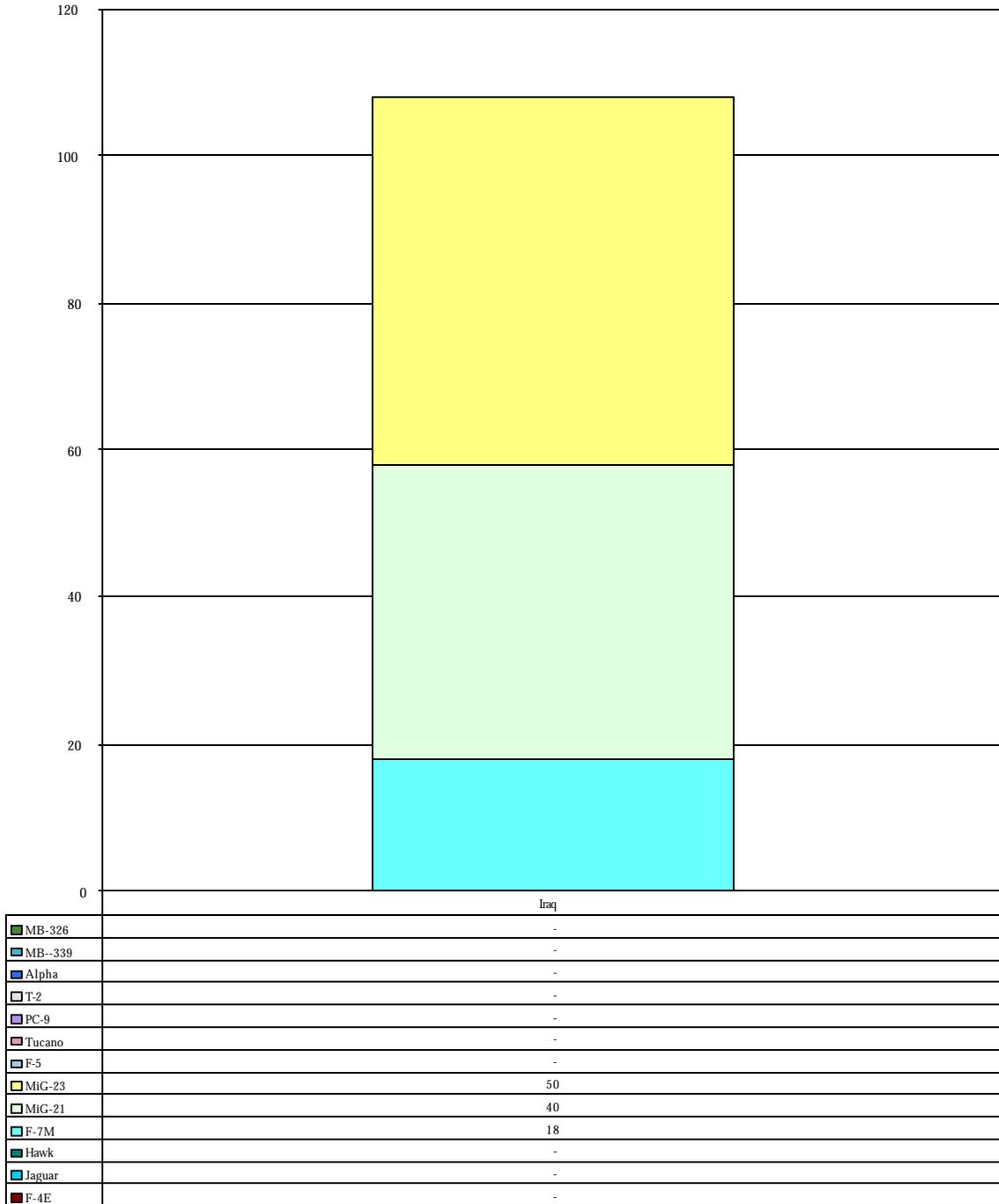
Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, and Jane's Defense Weekly, and material provided by US experts.

## High and Medium Quality Fixed Wing Fighter, Fighter Attack, Attack, Strike, and Multi-Role Combat Aircraft By Type - 2003



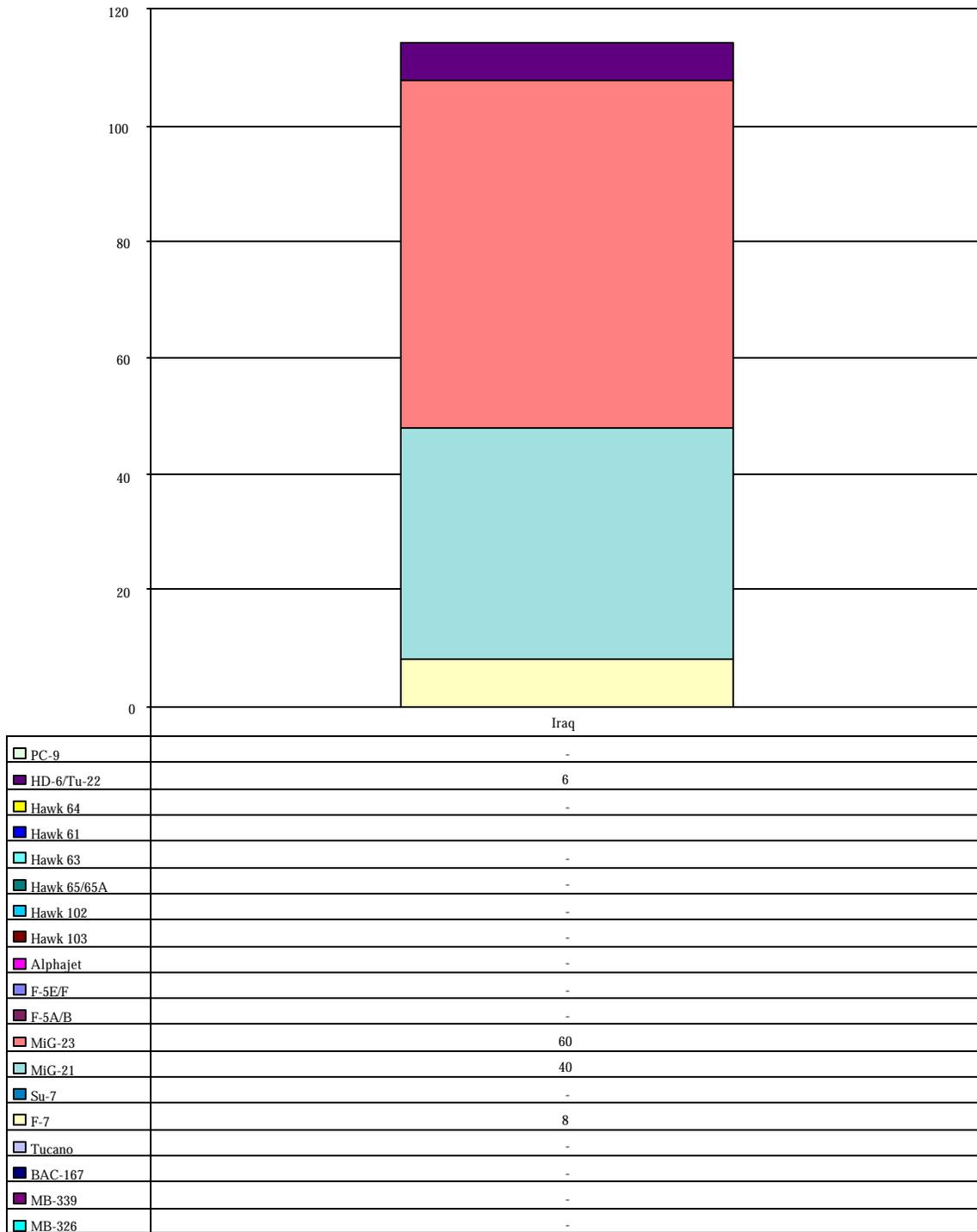
Source: Adapted by Anthony H. Cordesman from the IISS, [Military Balance](#), [Periscope](#), JCSS, [Middle East Military Balance](#), Jane's [Sentinel](#), and [Jane's Defense Weekly](#), and material provided by US experts.

### Medium Quality Fixed Wing Fighter, Fighter Attack, Attack, Strike, and Multi-Role Combat Aircraft By Type - 2003



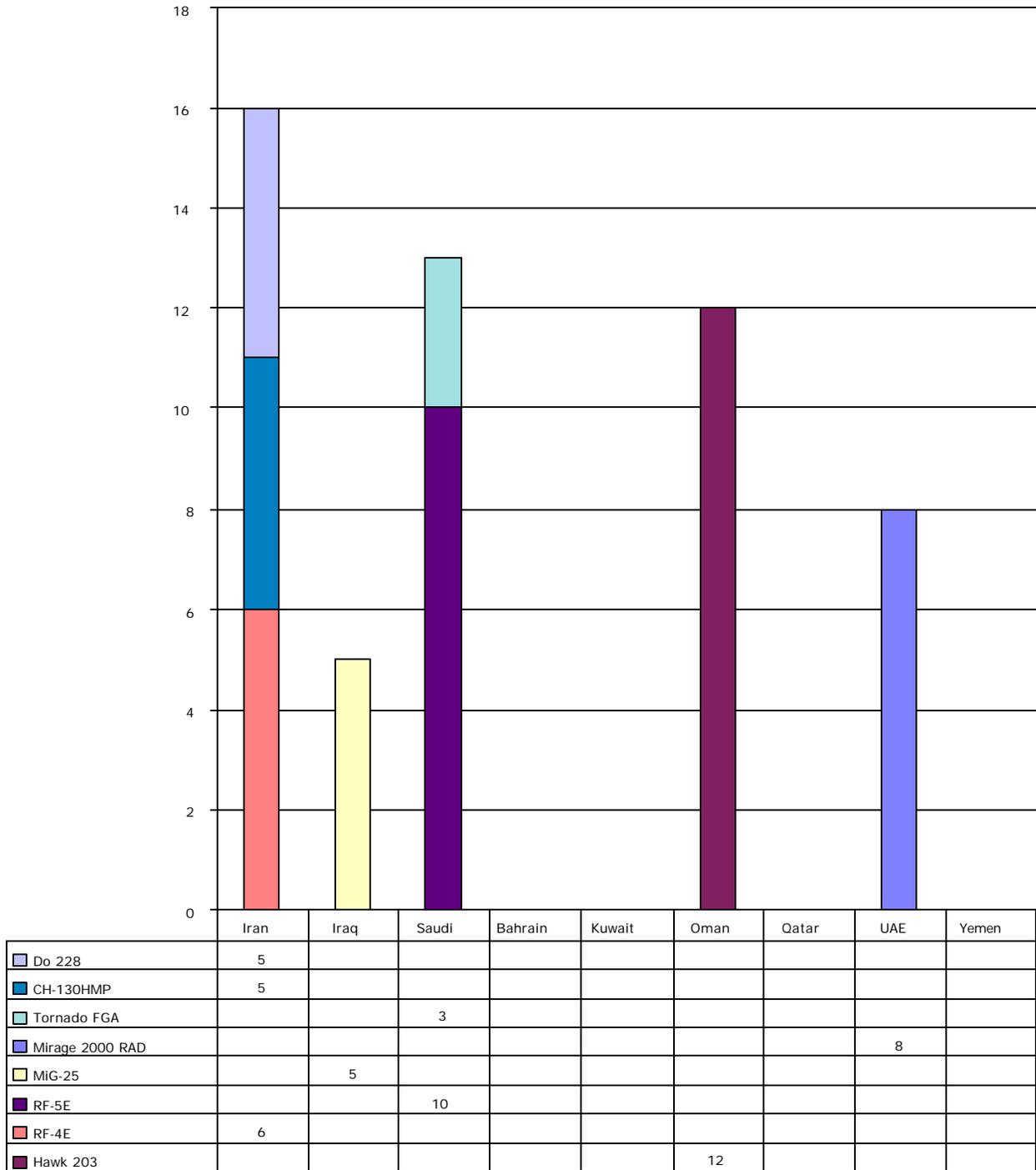
Source: Prepared by Anthony H. Cordesman, based upon discussions with US experts using data from the IISS Military Balance, the on-line edition of Jane's Sentinel Security Assessment, and the on-line edition of Periscope.

## Gulf Low Quality Fixed Wing Fighter, Fighter Attack, Attack, Strike, and Multi-Role Combat Aircraft By Type - 2003



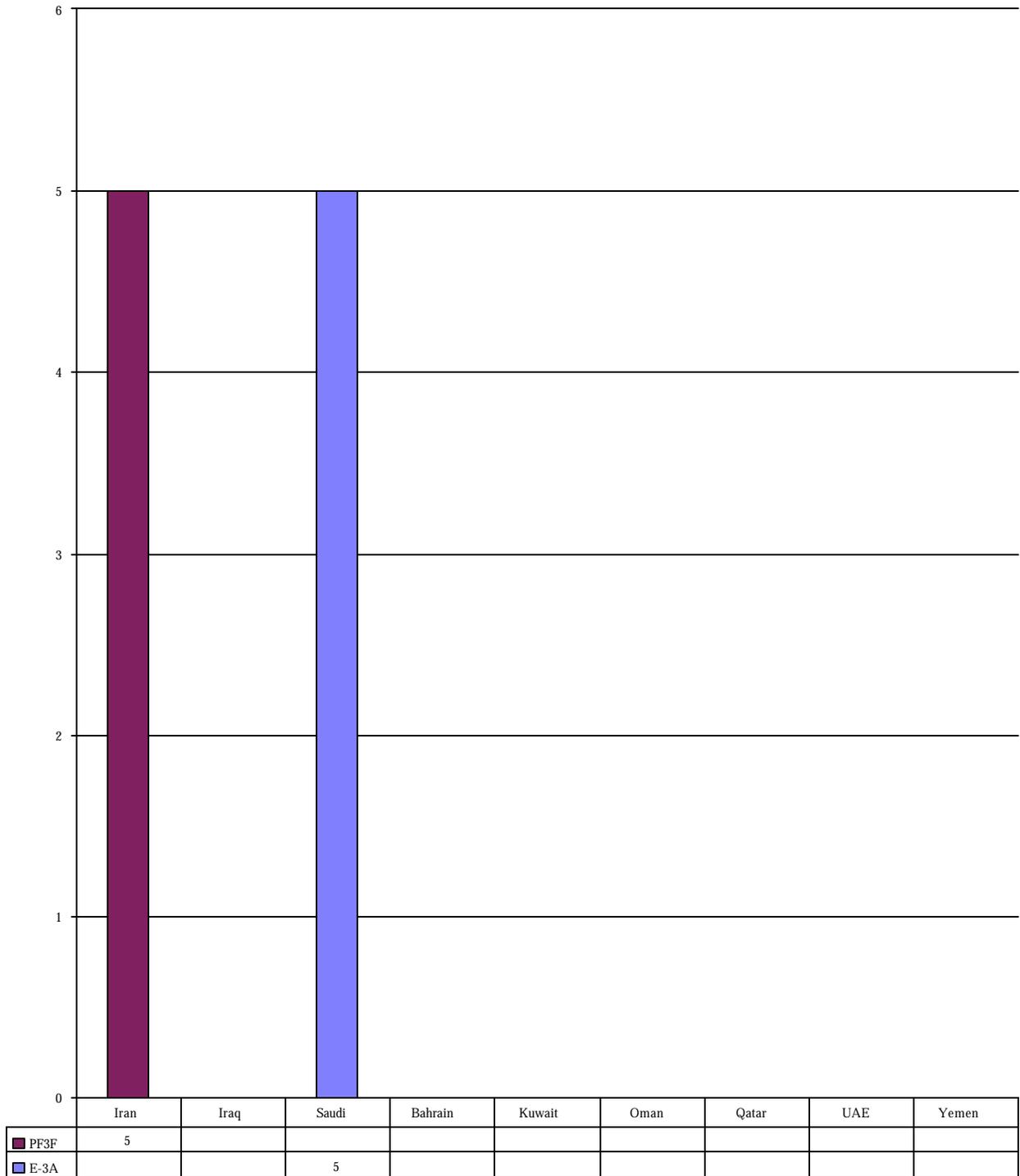
Source: Adapted by Anthony H. Cordesman from the IISS, [Military Balance](#), [Periscope](#), JCSS, [Middle East Military Balance](#), Jane's [Sentinel](#), and [Jane's Defense Weekly](#), and material provided by US experts.

### Gulf Reconnaissance Aircraft in 2003



Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, and Jane's Defense Weekly, and material provided by US experts.

### Sensor, AWACs, C4I, EW and Elint Aircraft in 2003



Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, and Jane's Defense Weekly, and material provided by US experts.

### Iraqi Attack Helicopters in 2003



	Iraq
TAH-1P	
AH-64	
AS-565 Panther	
SA-342K HOT	
AH-1E	
AH-1J	
S-342	15
Commando Exocet	
AS-332 Exocet	
SA-321 Exocet	15
S-70A1	
Mi-35	
Mi-24	24
AB-212	
SA-315 AS-12	15
SA-316/319 SS11/12	12
BO-105 AS-11/HOT	18

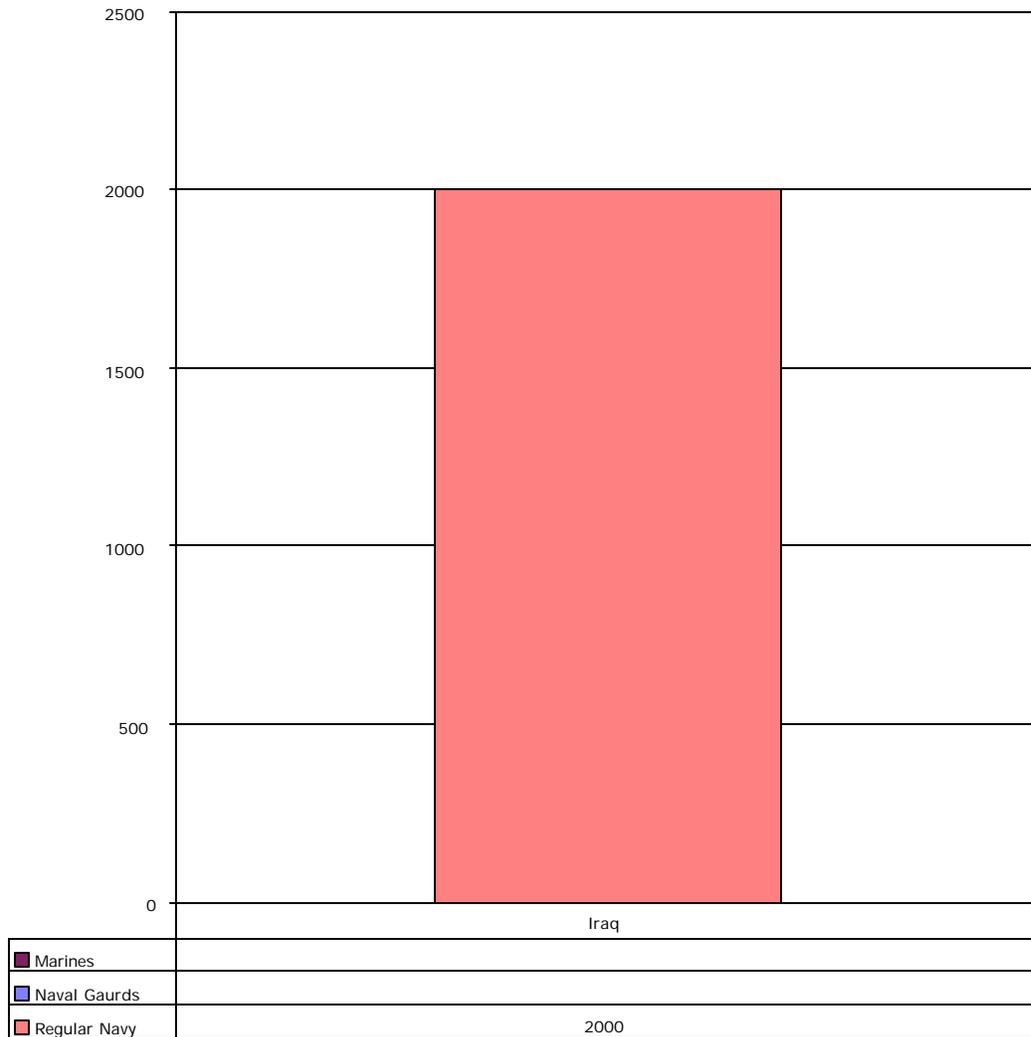
Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel, and Jane's Defense Weekly, and material provided by US experts.

## Gulf Land-Based Air Defense Systems in 2003

<u>Country</u>	<u>Major SAM</u>	<u>Light SAM</u>	<u>AA Guns</u>
<u>Bahrain</u>	8 IHawk	60 RBS-70 18 Stinger 7 Crotale	15 Oerlikon 35 mm 12 L/70 40 mm
<u>Iran</u>	16/150 I Hawk 3/10 SA-5 45 HQ-2J (SA-2) ? SA-2	SA-7/14/16, HQ-7 HN-5 5/30 Rapier FM-80 (Ch Crotale) 15 Tigercat SA-7 Stinger (?)	1,700 Guns ZU-23, ZSU-23-4, ZSU-57-2, KS-19 ZPU-2/4, M-1939, Type 55
<u>Iraq</u>	SA-2 SA-3 SA-6	Roland 1,500 SA-7 850 (SA-8 (SA-9 (SA-13 (SA-14, SA-16	6,000 Guns ZSU-23-4 23 mm, M-1939 37 mm, ZSU-57-2 SP, 57 mm 85 mm, 100 mm, 130 mm
<u>Kuwait</u>	4/24 I Hawk 4-5/16 Patriot	6/12 Aspede 48 Starburst	6/2X35mm Oerlikon
<u>Oman</u>	None	Blowpipe 2 Mistral SP 34 SA-7 <u>14 Javelin</u> 40 Rapier	10 GDF 35 mm/Skyguard 4 ZU-23-2 23 mm 12 L-60 40 mm
<u>Qatar</u>	None	10 Blowpipe <u>12 Stinger</u> 9 Roland 20 SA-7, 24 Mistral	?
<u>Saudi Arabia</u>	16/128 I Hawk 4-6 /16-24 Patriot 17/68 Shahine mobile	189 Crotale 400 Stinger 500 Mistral <u>500 Redeye</u>  40 Crotale 73-141 Shahine static	<hr/> 50-73 AMX-30SA 30 mm 92 M-163 Vulcan 150 L-70 40 mm (in store)
<u>UAE</u>	5/30 I Hawk Bty.	20+ Blowpipe <u>Mistral</u> 12 Rapier 9 Crotale 13 RBS-70 100 Mistral Javelin Igla (SA-16)	42 M-3VDA 20 mm SP 20 GCF-BM2 30 mm
<u>Yemen</u>	SA-2, SA3, SA-6	<u>SA-7, SA-9, SA13, SA-14</u> 800 SA-7/9/13/14	50 M-167 20mm 20 M-163 Vulcan 20mm 100 ZSU-23-4 23 mm 150 M-1939 23 mm 120 S-60 37 mm KS-12 85 mm

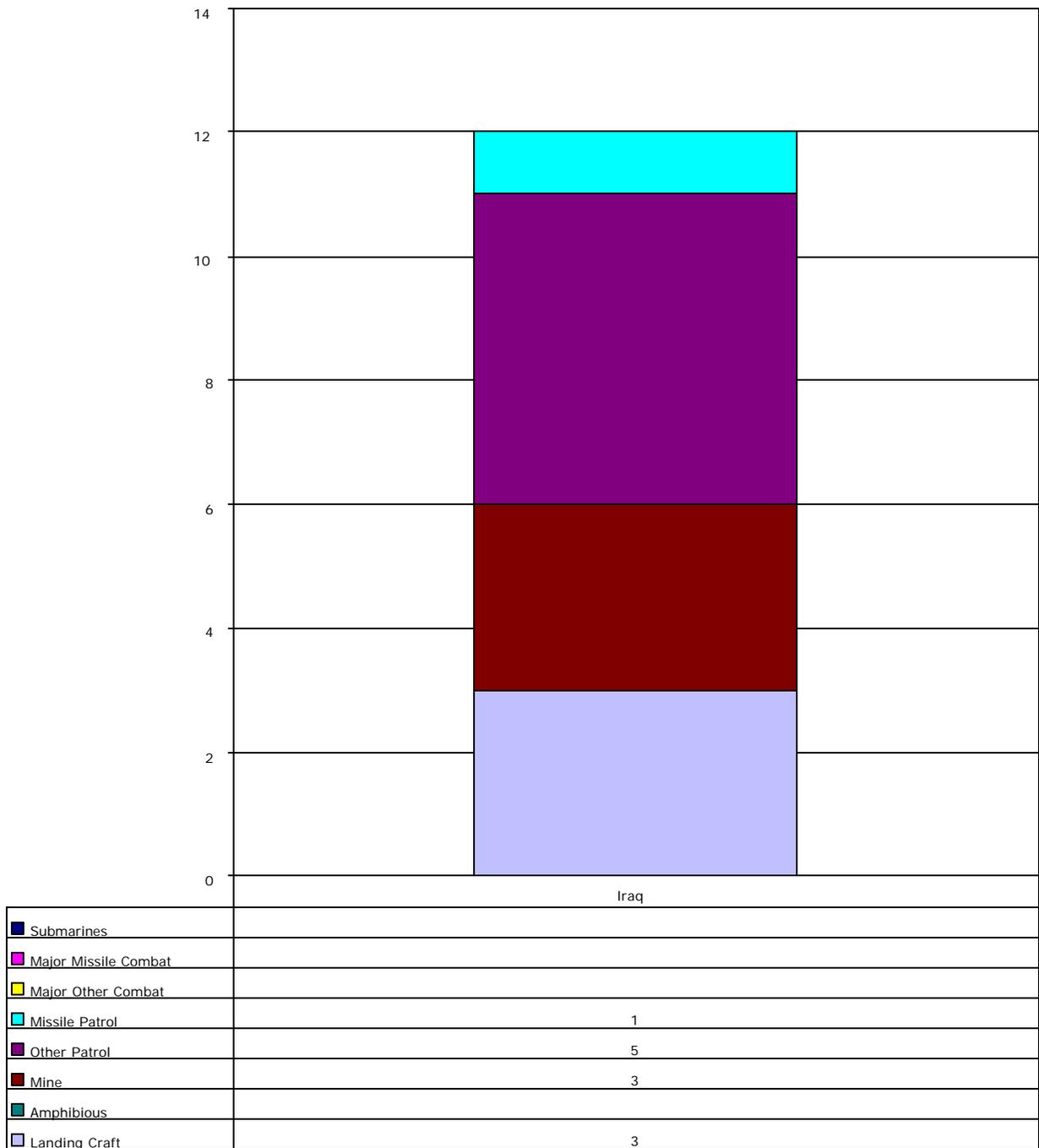
Source: Adapted by Anthony H. Cordesman from the IISS, [Military Balance](#), [Periscope](#), JCSS, [Middle East Military Balance](#), Jane's [Sentinel](#), and [Jane's Defense Weekly](#), and material provided by US experts.. Some data adjusted or estimated by the author.

### Total Iraqi Naval Manpower in 2003



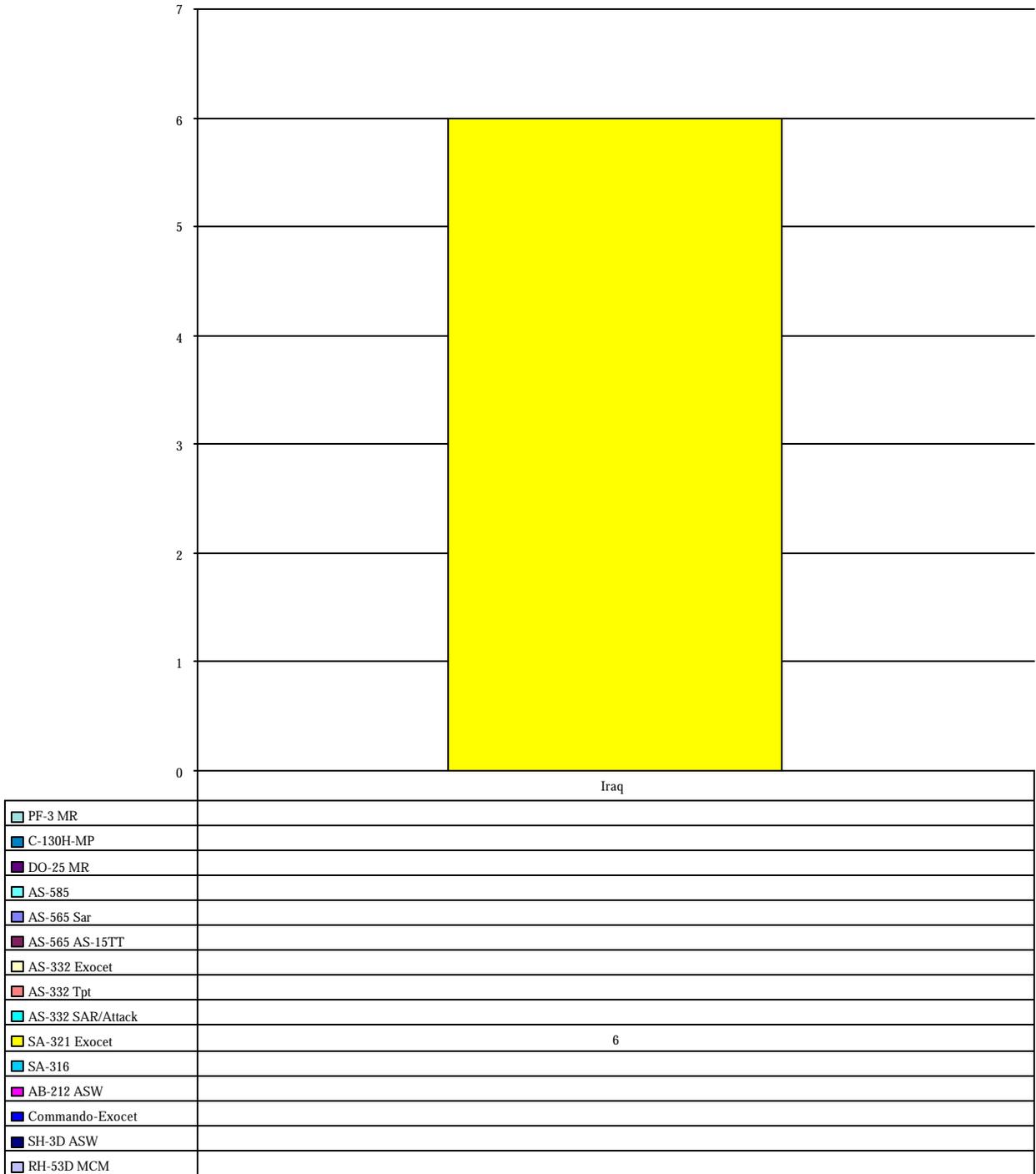
Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Fighting Ships, 2000-2001, Jane's Sentinel, and Jane's Defense Weekly., and material provided by US experts.

### Iraqi Naval Ships by Category in 2003



Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Fighting Ships, 2000-2001, Jane's Sentinel, and Jane's Defense Weekly, and material provided by US experts.

## Iraqi Naval Aircraft and Helicopters Aircraft in 2003



Source: Adapted by Anthony H. Cordesman from the IISS, *Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, *Jane's Fighting Ships*, 2000-2001, *Jane's Sentinel*, and *Jane's Defense Weekly*, and material provided by US experts.

## Gulf Arms Buys by Supplier: 1987-2001

(New arms agreements in current US \$millions)

Buyer Country	Supplier Country						Total
	US	Russia	China	Major West European	Other European	All Others	
<b>Iran</b>							
1987-90	0	3,500	2,300	200	1,200	1,600	8,800
1991-94	0	200	200	100	100	600	1,200
1995-98	0	200	800	0	300	100	1,400
1997-2000	0	300	600	100	100	200	1,300
1998-2001	0	900	0	0	100	200	1,200
<b>Iraq</b>							
1987-90	0	300	700	500	500	1,000	3,000
1991-94	0	0	0	0	0	0	0
1995-98	0	0	0	0	0	0	0
1997-2000	0	0	0	0	0	0	0
1998-2001	0	0	0	0	0	0	0
<b>Bahrain</b>							
1987-90	300	0	0	0	0	0	300
1991-94	200	0	0	0	0	0	200
1995-98	500	0	0	0	0	0	500
1997-2000	700	0	0	0	0	0	700
1998-2001	100	0	0	0	0	0	0
<b>Kuwait</b>							
1987-90	2,500	200	0	200	200	200	3,300
1991-94	3,500	800	0	1,800	0	100	6,200
1995-98	900	0	200	700	100	0	1,900
1997-2000	500	0	200	0	0	0	700
1998-2001	300	100	0	0	0	200	600
<b>Oman</b>							
1987-90	100	0	0	600	0	0	700
1991-94	0	0	0	500	0	100	600
1995-98	0	0	0	300	100	100	500
1997-2000	0	0	0	300	100	0	400
1998-2001	0	0	0	0	100	0	100
<b>Qatar</b>							
1987-90	0	0	0	0	0	0	0
1991-94	0	0	0	2,000	0	0	2,000
1995-98	0	0	0	900	0	0	900
1997-2000	0	0	0	0	0	0	0
1998-2001	0	0	0	0	0	0	0
<b>Saudi Arabia</b>							
1987-90	18,800	200	300	23,000	2,300	200	44,800
1991-94	15,600	0	0	6,600	100	0	22,300
1995-98	5,100	0	0	1,700	800	300	7,900
1997-2000	4,300	0	0	0	1,100	300	5,700
1998-2001	600	0	0	300	800	0	1,700
<b>UAE</b>							
1987-90	300	0	0	300	0	400	1,000
1991-94	300	500	0	3,900	100	0	4,800
1995-98	100	400	0	6,000	800	100	7,400
1997-2000	6,800	800	-	6,000	200	200	14,000
1998-2001	6,600	1,000	0	2,600	300	300	10,800

0 = less than \$50 million or nil, and all data rounded to the nearest \$100 million.

Source: Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

## Iraqi Arms Buys - Overview

- Iraqi purchases matched Saudi purchases during the mid-1980s, but Iraqi deliveries in current US dollars dropped from \$11 billion annually during 1988-1991 to below \$200 million annually in 1992-1995.
- Comparisons of Iraqi new agreements and arms deliveries by supplier country reveal a drastic decline in new agreements before the Gulf War that would have seriously compromised Iraq's import-dependent forces even without the Gulf War.
  - New agreements with Russia dropped from \$11.8 billion in 1983-1986 to \$4.1 billion in 1987-1990, before dropping to zero after 1991.
  - New agreements with China dropped from \$1.7 billion in 1983-1986 to \$0.6 billion in 1987-1990, before dropping to zero after 1991.
  - New agreements with E. Europe dropped from \$4.0 billion in 1983-1986 to \$1.0 billion in 1987-1990, before dropping to zero after 1991.
  - In contrast, new agreements with the major West European states rose from \$1.0 billion in 1983-1986 to \$2.7 billion in 1987-1990, before dropping to "zero" for everything but minor deliveries of smuggled parts and equipment after 1991 -- reflecting Iraq's growing interest in advanced military technology before the cutoff of arms imports.
- In spite of various claims, Iraq's domestic production capability can only play a major role in allowing Iraq to sustain its modern weapons and ability to use advanced military technology. Iraq remains an import dependent country.
  - Iraq's past pattern of arms imports makes it highly dependent on access to a wide range of suppliers -- particularly Western Europe and Russia. Even if one nation should resume supply, Iraq could not rebuild its military machine without broad access to such suppliers and would be forced to convert a substantial amount of its order of battle to whatever supplier(s) were willing to sell.
  - In spite of some smuggling, Iraq has had negligible export earnings since 1990, and faces significant long term limits on its ability to import even when sanctions are lifted.
  - Iraq will encounter severe problems after UN sanctions are lifted because of the inability of the FSU to provide efficient deliveries of spares and cost-effective upgrade and modernization packages.
  - No accurate data are available on Iraqi military spending and arms imports since 1991, but estimates of trends in constant dollars, using adjusted US government data, strongly indicate that Iraq would need to spend sums approaching \$20 billion to recapitalize its force structure.
  - Major modernization efforts to counter US standards of capability could add \$10 billion each to key modernization efforts like land-based air defense, air defense, air and missile strike capabilities, armored modernization, modernization of other land weapons, and reconstitution of the Iraqi Navy. Modernization to match Saudi levels of capability would be about half these totals.

## Iraqi Dependence on Decaying, Obsolete, or Obsolescent Major Weapons

### Land Forces

- 600-700 M-48s, M-60s, AMX-30s, Centurions, and Chieftains captured from Iran or which it obtained in small numbers from other countries.
- 1,000 T-54, T-55, T-77 and Chinese T-59 and T-69 tanks
- 200 T-62s.
- 1,500-2,100 (BTR-50, BTR-60, BTR-152, OT-62, OT-64, etc
- 1,600 BDRM-2, EE-3, EE-9, AML-60, AML-90
- 800-1,200 towed artillery weapons (105 mm, 122 mm, 130 mm, and 155 mm).
- Unknown number of AS-11, AS-1, AT-1, crew-portable anti-tank-guided missiles.
- More than 1,000 heavy, low-quality anti-aircraft guns.
- Over 1,500 SA-7 and other low-quality surface-to-air guided missile launchers & fire units.
- 20 PAH-1 (Bo-105); attack helicopters with AS-11 and AS-12, 30 Mi-24s and Mi-25s with AT-2 missiles, SA-342s with AS-12s, Allouettes with AS-11s and AS-12s.
- 100-180 worn or obsolete transport helicopters.

### Air Force

- 6-7 HD-6 (BD-6), 1-2 Tu-16, and 6 Tu-22 bombers.
- 100 J-6, MiG-23BN, MiG-27, Su-7 and Su-20.
- 140 J-7, MiG-21, MiG-25 air defense fighters.
- MiG-21 and MiG-25 reconnaissance fighters.
- 15 Hawker Hunters.
- Il-76 Adnan AEW aircraft.
- AA-6, AA-7, Matra 530 air-to-air missiles.
- AS-11, AS-12, AS-6, AS-14; air-to-surface missiles.
- 25 PC-7, 30 PC-9, 40 L-29 trainers.
- An-2, An-12, and Il-76 transport aircraft.

### Air Defense

- 20-30 operational SA-2 batteries with 160 launch units.
- 25-50 SA-3 batteries with 140 launch units.
- 36-55 SA-6 batteries with over 100 fire units.
- 6,500 SA-7s.
- 400 SA-9s.
- 192 SA-13s

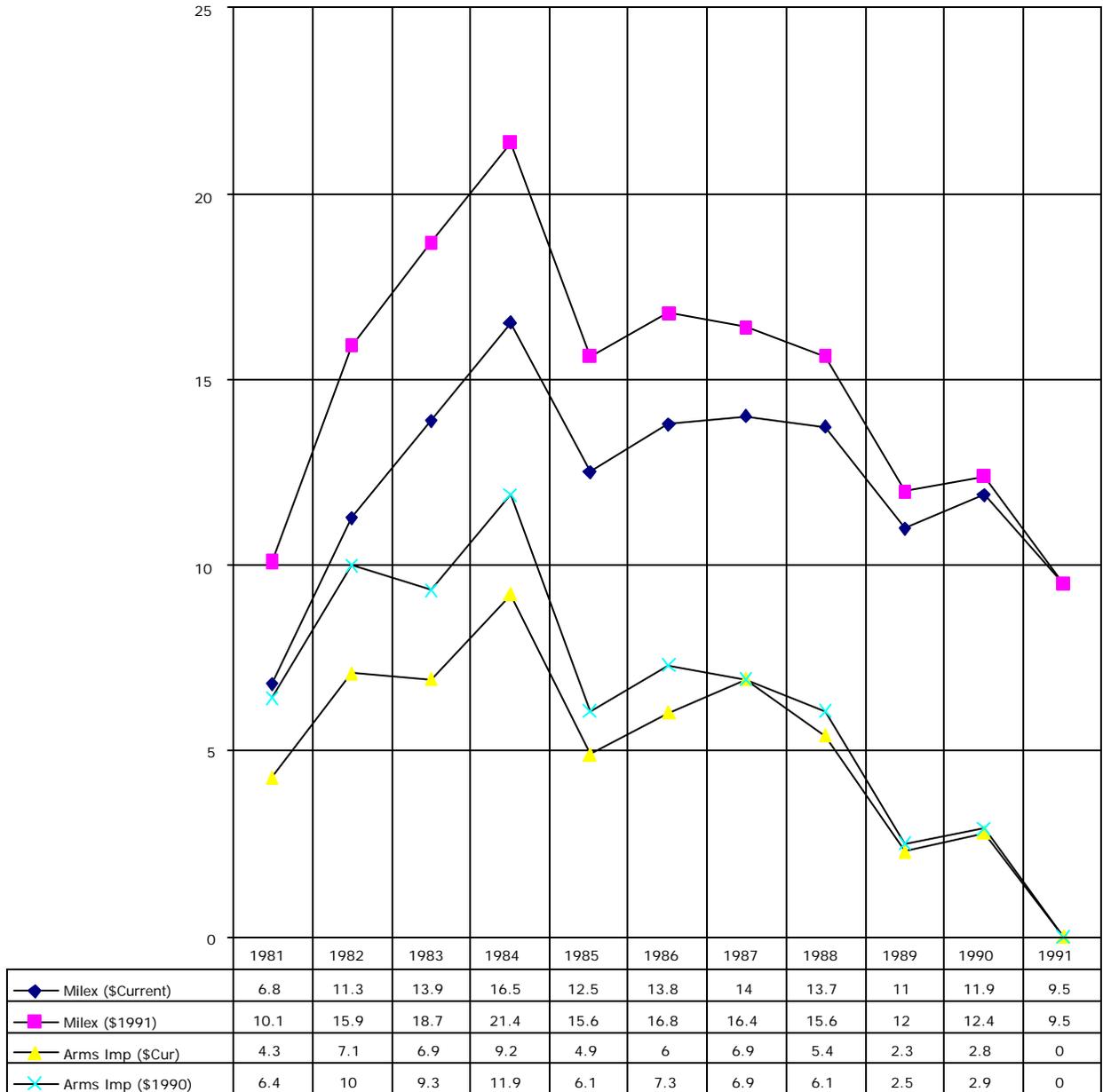
### Navy

- *Ibn Khaldun*.
- Osa-class missile boat.
- 13 light combat vessels.
- 5-8 landing craft.
- *Agnadeen*.
- 1 Yugoslav Spasilac-class transport.
- Polnocny-class LST.

Source: Estimate made by Anthony H. Cordesman based discussions with US experts.

## Iraq's Massive Military Effort Before the Gulf War

(\$US Millions)

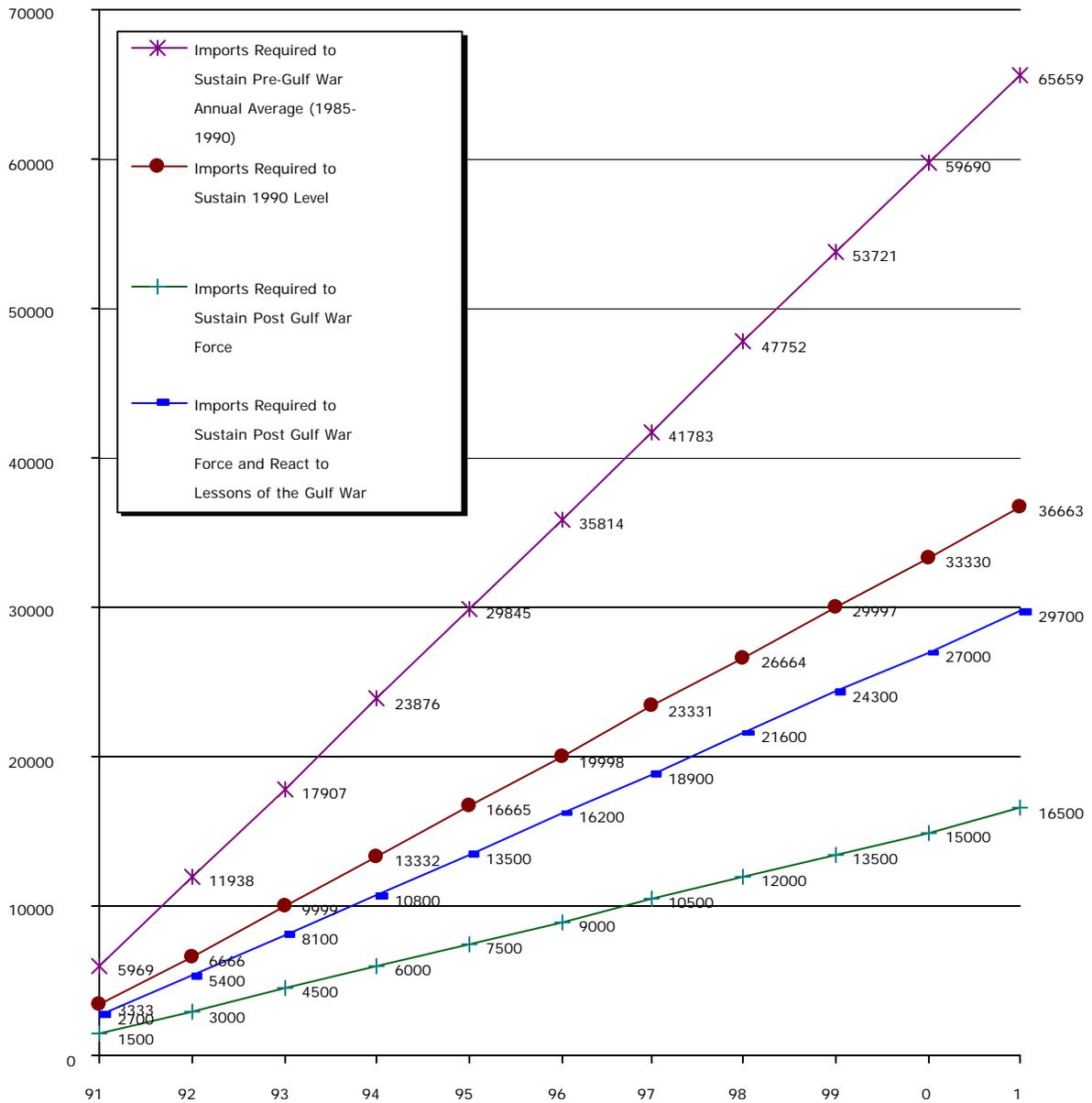


0 = less than \$50 million or nil, and all data rounded to the nearest \$100 million.

Source: Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

## The Iraqi Cumulative Arms Import Deficit Enforced by UN Sanctions

(Measured in \$US 01 Constant millions)



Source: Adapted by Anthony H. Cordesman from US Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers, various editions.

## The Problem of Iraqi Military Production

- Iraq developed significant ammunition, small and light arms, and gun barrel production facilities before the Gulf War, and many survive and function. However, focused most resources on weapons of mass destruction.
- Left even high tech service (e.g. French and Russian aircraft) to foreign technical support teams. Did not attempt to develop major in-house capabilities.
- Pre-1991 production was heavily prototype-oriented and largely prestige-oriented in nature.
- Did import T-72 kits, in theory as transition to production facilities. However, far from clear that Iraq has industrial base for such manufactures.
- Iraqi modifications sometimes succeeded, but many failed and had an “impress the maximum leader character.” E.g. T-72 upgrades.
- Historically, assembly of major weapons does not lead to technology transfer or effective reverse engineering capability without extensive foreign support. Net impact is to create over-specialized facilities, waste resources.
- No developing state, including India and China, has yet demonstrated that it can successfully mass manufacture an advanced fighter plane or tank, even on a turn-key basis.
- Few nations have made useful major equipment upgrades for armor and aircraft. Jordan and South Korea, Turkey are among few successes. Egypt, India, Pakistan are more typical.
- Iraq has effectively been cut off from all major imports of parts and specialized equipment since 1990s, although dual use items, civilian electronics and sensors, and computer gear are not effectively controlled.
- Black market imports, substitution, and local manufactures can only provide an erratic and inefficient substitute for large scale resources.
- Some indications that Iraq is giving priority to importing equipment for weapons of mass destruction.

## Major Iraqi Military Production Facilities

- Tank assembly plant operating under Polish and Czech licenses at Al-Amen.
- Major armor refitting center at Base West World (Samawa).
- Manufacture of proximity fuses for 155 mm and cluster munitions at April 7 (Narawan Fuse) Factory.
- Manufacture of 122 mm howitzers, Ababil rockets, tank optics and mortar sights at Sa'ad 5 (Sa'ad Engineering Complex).
- Manufacture of wheeled APCs under East European license, other armor, and artillery pieces at Al Taji).
- Manufacture and repair of artillery, vehicle parts, and cannon barrels at SEHEE heavy engineering complex (Al Dura).
- Aircraft assembly and manufacturing plant under construction at Sa'ad 38. (Fao)
- Manufacture of aerial bombs, artillery pieces, and tungsten-carbide machine tool bits at Badr (al Yusufiyah).
- Production of explosives, TNT, propellants, and some vehicle production capability at Al Hiteen (Al Iskandariyah).
- Production of cluster bombs and fuel-air explosives at Fao.
- Production of aerial bombs, TNT, and solid rocket propellants at Al Qaqaa.
- Manufacture of small naval boats at Sawary (Basra).
- Production and modification of defense electronics at Mansour (Baghdad).
- Production and modification of defense electronics, radars, and frequency-hopping radios at Sa'ad 13 (Salah al Din - Ad Dawr).
- Digital computer software, assembly of process line controllers for weapons plants, and plastic castings at Diglia (Zaafarniyah).
- Precision machining at Al Rabiya.
- Manufacture of non-ferrous ammunition cases at Sa'ad 21 (Mosul).
- Liquid nitrogen production at Al Amil.
- Production of ethylene oxide for fuel-air explosives at PCI.
- Production of HMX and RDX explosives at Fallujah chemical plant at Al Muthanna.
- Manufacture of gas masks at Sa'ad 24 (Mosul).

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<sup>i</sup> These Iraqi force estimates are based largely upon Anthony H. Cordesman, Iraq and the War of Sanctions, Westport, Praeger, 1999; the IISS, Military Balance, 2002-2003, and material in the Internet edition of Jane's Sentinel series, accessed in January 2003

<sup>1</sup> Estimates provided by USCENTCOM in June, 1996 and 1997, plus interviews.

<sup>iii</sup> London Daily Telegraph, July 19, 2002, p. 1.

<sup>iv</sup> Estimate first provided by USCENTCOM in June, 1996 plus interviews.

<sup>v</sup> USCENTCOM briefing by "senior military official."

<sup>vi</sup> These estimates are based primarily on interviews with various experts, and USCENTCOM briefing by "senior military official, Pentagon, January 28, 1997, pp. 2, 5-8 10; Washington Times, February 1, 1997, p. A-13; Reuters, September 4, 1996, 0911; Jane's Pointer, November 1994, p. 2; Associated Press September 9, 1996, 0129; Washington Times, January 30, 1997, p. A-3; February 1, 1997, p. A-13. The 1996/1997 IISS data show 2,700 tanks.

<sup>vii</sup> The author toured the battlefield extensively immediately after the cease-fire in 1991.

<sup>viii</sup> The author observed these techniques on several occasions during visits to the Iraqi front and rear areas during the Iran-Iraq War.

<sup>ix</sup> Based on interviews.

<sup>x</sup> USCENTCOM briefing by "senior military official".

<sup>xi</sup> Jane's Sentinel Security Assessment, Iraqi Army, on-line edition, accessed May 7, 2002.

<sup>xii</sup> Amatzia Baram, "The Iraqi Armed Forces and Security Apparatus," Conflict Security Development, Centre for Defense Studies, King's College London, 2001, pp. 113-123.

<sup>xiii</sup> Jane's Sentinel Security Assessment, Iraqi Air Force, on-line edition, accessed May 7, 2002

<sup>xiv</sup> US Central Command, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997, pp. 16-18.

<sup>xv</sup> Washington Times, September 5, 1996, p. A-1.

<sup>xvi</sup> In addition to the sources listed at the start of the Iraq section, see USCENTCOM briefing by "senior military official, Pentagon, January 28, 1997, pp. 2, 5-8 10; Washington Times, February 1, 1997, p. A-13; Reuters, September 4, 1996, 0911; Jane's Pointer, November 1994, p. 2; Associated Press September 9, 1996, 0129; Washington Times, January 30, 1997, p. A-3; February 1, 1997, p. A-13; The IISS, Military Balance, 1996/1997, and Jane's Sentinel: The Gulf States, "Iraq," London, Jane's Publishing, 1997; Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkinson, The Powder Keg, Falls Church, NOVA Publications, 1996; Geoffery Kemp and Robert E. Harkavy,

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Strategic Geography and the Changing Middle East, Washington, Carnegie Endowment/Brookings, 1997; and Michael Eisenstadt, Like a Phoenix from the Ashes? The Future of Iraqi Military Power, Washington, The Washington Institute, Policy Paper 36, 1993.

<sup>xvii</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 13-15; Slides to US Air Force presentation of the April 15, 1993 draft of the Gulf War Air Power study; Brigadier General Robert H. Scales, Certain Victory: The United States Army in the Gulf War, Washington, Office of the Chief of Staff, US Army, 1993, pp. 115-116.

<sup>xviii</sup> Some estimates show 129-130 sites in Iraq.

<sup>xix</sup> See Dr. Eliot A. Cohen, Director, Gulf War Air Power Survey, Volume V, Washington, GPO, 1993, pp. 218-219; Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 13-15; Slides to US Air Force presentation of the April 15, 1993 draft of the Gulf War Air Power study; Brigadier General Robert H. Scales, Certain Victory: The United States Army in the Gulf War, Washington, Office of the Chief of Staff, US Army, 1993, pp. 115-116. These estimates were projected by different sources and the launcher or fire unit counts seem to be either rounded or based on standard Soviet battery holdings. According to Palowski, Iraq had the following radar order of battle:

#### Early Warning & Surveillance

- Spoon Rest D/ P-12M	USSR(147-161 MHz)
- Flat Face A/ P-15	USSR(800-900 HHZ)
- Squat Eye/ P-15M	USSR(800-900 HMZ)
- Bar Lock/ P-35/37	USSR(2695-3125 MHz)
- Tall King/ P-14	USSR(160-180 MHz)
- TRS-2215 (mobile)	FR (E/F)
- TRS-2230	FR (E/F)
- AN/TPS-32 (3D)	US (2905-3080)
- AWACS (IL-76)	FR

#### Surface-to-Air Missile Systems

- SA-2	Fansong/Guideline
- SA-3	Low Blow/Goa
- SA-5	Square Pair/Gammon

- 
- SA-6 Straight Flush/Gainful
  - SA-7 Grail (IR Hand Held)
  - SA-8 Land Roll/Gecko
  - SA-9 Gaskin (IR Vehicle Mounted)
  - SA-13 Gopher (IR Vehicle Mounted)
  - SA-14 Gremlin (IR Hand Held)
  - SA-15 Track with Tube Launched Missiles (not confirmed)
  - SA-16 (not confirmed)
  - SA-19 Mounted on 2S6 Gun-Track (not confirmed)
  - ROLAND
  - HAWK
  - ASPEDITE

London Financial Times, April 29, 1989, p. 11, July 26, 1989, p. 20; Jane's Defense Weekly, May 13, 1989, p. 837; April 22, 1989, p. 687, August 12, 1989, p. 255, September 30, 1989, p. 674, Defense News, May 8, 1989, p. 6; International Defense Review, 6/189, pp. 835-841.

<sup>xx</sup> The reader should be aware that these estimates are extremely uncertain and are based largely on expert estimates of the losses during the Gulf War. There is a sharp difference of opinion among some US experts as to the size of Iraq's losses during the conflict. The US Central Command lists 150 SA-2 launchers, 110 SA-3 launchers, 150 SA-6/SA-8 launchers, 30 Roland VII launchers, and 5 Crotales launchers in Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997, pp. 16-18. Also see USCENTCOM briefing by "senior military official, Pentagon, January 28, 1997, pp. 2, 5-8 10; Washington Times, February 1, 1997, p. A13; Reuters, September 4, 1996, 0911; Jane's Pointer, November 1994, p. 2; Associated Press September 9, 1996, 0129; Washington Times, January 30, 1997, p. A-3; February 1, 1997, p. A-13; The IISS, Military Balance, 1996/1997; and Jane's Sentinel: The Gulf States, "Iraq," London, Jane's Publishing, 1997. Other sources include Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkenson, The Powder Keg Falls Church, NOVA Publications, 1996; Geoffery Kemp and Robert E. Harkavy, Strategic Geography and the Changing Middle East, Washington, Carnegie Endowment/Brookings, 1997, and Michael Eisenstadt, Like a Phoenix from the Ashes? The Future of Iraqi Military Power, Washington, The Washington Institute, Policy Paper 36, 1993.

<sup>xxi</sup> The SAM launcher estimates are based on discussions with US and Israeli experts and are highly uncertain.

<sup>xxii</sup> Michael Eisenstadt, "The Iraqi Armed Forces Two Years On," Jane's Intelligence Review, pp. 121-127. March, 1993; Jane's Sentinel: The Gulf States, "Iraq," London, Jane's Publishing, 1997.

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<sup>xxiii</sup> USCENTCOM briefing by “senior military official, Pentagon, January 28, 1997, pp. 2, 5-8 10; Washington Times, February 1, 1997, p. A-13; Reuters, September 4, 1996, 0911; Jane’s Pointer, November 1994, p. 2; Associated Press September 9, 1996, 0129; Washington Times, January 30, 1997, p. A-3; February 1, 1997, p. A-13; The IISS, Military Balance, 1996/1997, and the Jane’s Sentinel series.

<sup>xxiv</sup> Many different lists exist of the names of such bases. Jane’s lists Al Amarah, Al Asad, Al Bakr, Al Basrah - West Maqal, Al Khalid, Al Kut, Al Qayyarah, Al Rashid, Al Taqaddum, Al Walid, Artawi, As Salman, As Samara, As Zubair, Baghdad-Muthenna, Balada, Bashur, Erbil, Jalibah, Karbala, Radif al Khafi, Kirkuk, Mosul, Mudaysis, Nejef, Qal’at Sikar, Qurna, Rumaylah, Safwan, Shibah, Shyaka Mayhar, Sulyamaniya, Tal Afar, Tallil-As Nasiryah, Tammuz, Tikrit, Ubdayah bin al Jarrah, and Wadi Al Khirr. Many of the bases on this list are of limited size or are largely dispersal facilities. See Jane’s Sentinel: The Gulf States, “Iraq,” London, Jane’s Publishing, various editions.