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**The Iraq Crisis: The Balance
of Forces in the Gulf, Iraqi
Capabilities, Key Targets, and
Iraqi Weapons of Mass
Destruction**

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Possible Targets: 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).

Possible Targets: Key Facilities of the Intelligence and Security Forces:

- *The Special Security Service (also known as Amn al-Khass, Hijaz Amn al-Khass, Presidential Affairs Department, Special Security Organization, or the SSS).* The Special Security Service is the most powerful of Iraq's security services. Some reports indicate that it controls a Joint Operations Room in the palace that is charged with coordinating the efforts of Iraq's various services to protect Saddam, and which has computer data links to each of the various paramilitary units in the other intelligence services and records section of the General Intelligence Directorate.i

It was established in the mid-1980s, after an attempt to assassinate Saddam Hussein highlighted gaps or failures in the already extensive cloak of security around the Iraqi leader. Its top leadership is manned by men personally selected by Saddam Hussein. It was headed by Major General Fanar Zibin Hassan al-Tikriti during the Gulf War, and then by Hussein Kamel, Saddam's ex son-in-law. It is now headed by Saddam's younger son, Qusay.

Recruiting is extremely selective. Personnel are generally from Saddam's hometown of Tikrit, or from Hawiija and Samarra -- two neighboring cities loyal to Saddam. Many members are recruited from loyal tribes. These tribes included the Dulaim tribe in Western Iraq in the past, but is unclear that this tribe is still regarded as loyal. Many recruits are brought in at ages 16-18, are suitably indoctrinated, and then grow up in the service. There are unconfirmed reports of a major new recruiting drive after the coup attempts against Saddam in 1995. It is reported to have grown from around 1,000 personnel before the Gulf War to some 5,000 personnel, but any such numbers are speculative.

The main function of the Special Security Service is to protect Saddam from assassination attempts emanating from within the Army, his family, or the government at large. The tasks of the Special Security Service include

- ⇒ Guaranteeing the security of the president and providing protection for him during travel and at public meetings,
- ⇒ Ensuring the security of all presidential facilities such as palaces, guest-houses, supervision of the other security and intelligence services,
- ⇒ Surveillance of government ministries and agencies and leadership of the armed forces, and,
- ⇒ Supervision of key internal security operations against the Kurds and Shi'ites.

Some experts feel it manages Saddam Hussein's secret foreign accounts, intelligence operations involving the purchase of foreign arms and technology, and security within Iraq's most critical military industries. It evidently provides some of the liaison staff working with UNSCOM, and closely supervises programs involving missiles and weapons of mass destruction.

The organization operates within the presidential palace, and is headquartered on Palestine Street in Baghdad. It also has a much larger building near the Al Rashid Hotel, and has small offices in Basra and Mosul. It has a large prison and interrogation complex at Al Ranighwania, near the Baghdad International Airport.

The Special Security Service has a Political Branch headed by Major Nawfal Mahjoom Al-Tikriti that monitors surveillance on all suspect citizens. It has links to the data bases maintained by the Ministry of Interior and elements in the Foreign Ministry. It has an operations unit under Haji Zuhair Al-Tikriti that can arrest, interrogate, and execute suspects. The Special Branch essentially acts as a watch dog that ensures the loyalty of the members of the Special Security Service and top intelligence and security officials. It also has a paramilitary security force called the Amn Al-Khass Brigade, and cooperates closely with (and monitors) the Special Republican Guards. The Special Republican Guards would evidently provide the Special Security Service with heavy units in the event of a serious military coup.

- *The General Intelligence Service (Also known as the Mukhabaret, Da'irat al Mukhabaret, Mukhabarat al-Amma, or GIS).* The General Intelligence Service is the intelligence and security service of the Ba'ath party. It grew directly out of the clandestine Ba'ath party security organization

built up by Saddam Hussein in the 1960s and known as the *Jihaz Haneen* (Instrument of Yearning). It was expanded when the Ba'ath took power in July, 1968, and became the General Intelligence Service in the early 1970s. Its first head was Sadoon Shaker, and then by Saddam's half brother Barzan Al-Tikriti. One director, Fadhil al Barak, was arrested in 1989 for spying for Russia, and was executed in 1991. Its present head is Lt. General Manee Abd al Rashid, but Qusay plays a major role in its control.

Its tasks include:

- ⇒ Conducting counterespionage and monitoring subversive activities.
- ⇒ Supervising of the Ba'ath party and other political organizations.
- ⇒ Maintaining a watch over internal minorities such as the Kurds and Assyrians.
- ⇒ Suppressing opposition activities emanating from Shi'ites and other minorities.
- ⇒ Maintaining a watch over foreigners in Iraq, including those from Arab countries.
- ⇒ Conducting sabotage, subversion, and terrorist operations against neighboring countries such as Syria and Iran.
- ⇒ Providing financial and military aid, including logistical assistance, to opposition.
- ⇒ Seizure or murder of opposition elements outside Iraq.
- ⇒ Training of key personnel for other intelligence and security agencies.
- ⇒ Technical research into covert operations and procurement of equipment for such operations.
- ⇒ Providing disinformation and attempts to exploit or use Arab and other media.
- ⇒ Targeting threatening individual and groups in countries hostile to Iraq.

The GIS is divided into units or bureaus that are spread throughout the country, and are attached to Iraqi embassies and the offices of Iraqi Airways. The GIS has a massive walled headquarters in the Mansour District of Baghdad. It was this headquarters that the US attacked with cruise missiles on June 27, 1993 after the GIS had been identified as the agency that had sponsored an assassination attempt on President George Bush.

Like all Iraqi intelligence agencies, personnel are chosen carefully from the groups most loyal to Saddam. The GIS provides excellent career opportunities by Iraqi standards, and its senior personnel are well trained. It runs the National Security College located in Abughreib on the outskirts of Baghdad. This College trains high school graduates for three years, and college graduates for eighteen months. The strength of the GIS is estimated at around 4,000 personnel.

The key elements of the GIS include the Political Bureau which is organized into a Planning Office for intelligence and covert operations, a Propaganda Office for psychological warfare and disinformation, a Secret Service for the collection of foreign intelligence, a training directorate, and a Directorate of Technical Affairs.

There is also a Special Bureau (Office One) which has a number of different subordinate offices that have highly compartmented functions. Office Five ensures the loyalty of other members of the GIS. Office Seven handles special arrests, interrogations, and sometimes executions. It has a special prison and interrogation center in Baghdad, a major prison and interrogation center at Khandair, west of Baghdad, and holds some prisoners at Abugereib. Office Sixteen trains Iraqis and foreigners for covert operations, including terrorism, and may supervise the execution of some operations. Other offices provide foreign counterintelligence with a special focus on Syria, Iran, and Jordan. The GIS also has a paramilitary Mukhabarat Brigade, which is the only part of the GIS that does not normally dress in civilian clothes.

- *Military Intelligence (also known as Estikhabarat, Al-Istikhbarat al-Askariyya)*. Military Intelligence traces its origins back to the time of the monarchy. It is still manned largely by army officers,

although it was brought under the direct control of the Presidential Palace in the 1980s. It focuses on foreign military threats, but also is responsible for internal security within the Iraqi military. It has ties to some foreign radical movements and has conducted intelligence operations overseas.

During the Gulf War, Military Intelligence was headed by Major General Sabir Abd al-Aziz Hussein al-Duri -- a Sunni Arab from Dur, the hometown of Izzat Ibrahim, the Deputy Chairman of the Revolutionary Command Council. Duri was a traditional, long-serving Ba'athist with ties to the army and senior party leaders. He was replaced after the Gulf War by Major General Wafiq Jassim Sammara'i. Sammara'i was later arrested and fled to Syria, and was replaced by Major General Khalid Salih al-Juburi. His deputy is Major General Saad al Ghani. Major General Abd al-Khadir Salman Khamis (a Tikriti related to Saddam) also plays a role in the organization.ⁱⁱ

Military Intelligence has the following tasks:

- ⇒ Ensuring loyalty of the armed forces to the regime.
- ⇒ Supervision of security and counterintelligence in the armed forces.
- ⇒ Collection of intelligence and tactical and strategic research on countries deemed hostile or threatening to Iraq.
- ⇒ Waging of psychological war against military enemies.
- ⇒ Implementation of deception plans during wartime.
- ⇒ Cooperation with foreign intelligence services.
- ⇒ Managing a large network of informants, including foreign personnel, and military human intelligence. This network includes operatives in Jordan, Israel, Gaza and the West Bank, the Gulf states, Egypt, Syria, the Sudan, Turkey, and Yemen.
- ⇒ Managing a large human intelligence network in Iran, with secure covert communications.
- ⇒ Conducting terrorist operations abroad against hostile countries, groups (Kurds), and opponents of Saddam Hussein. During the 1980s military intelligence operatives in the offices of military attaches in Iraqi embassies in Western Europe were involved in such activities. Reportedly agents of the Istikhbarat were responsible for the assassination of Saddam's opponents in Beirut, London, and Paris. Among the victims was Abdul Razzaq al-Nayef, a former senior Ba'athist official in the early days, who was murdered in London in 1978.
- ⇒ Conducting research and studies on technological issues.

Military Intelligence is based in a large complex in the Aladhamia section of Baghdad. This complex has a large base with its own support structure and can operate without the support of any other branch of the military. It includes a large prison and interrogation center. There are other bases at the Al Rashid Camp in Baghdad, and a facility in Baghdad that handles military intelligence on other Arab countries, Iran, opposition movements, and Western threats.

Work by Sean Boyne indicates that it has regional offices in Kirkuk, Mosul, and Basra. The Kirkuk office deals with intelligence on Iran and the Kurds, the Mosul office handles Turkey, Syria, and Jordan, and the Basra office covers Iran, Kuwait, Saudi Arabia, and the other Gulf states. Military Intelligence is reported to have around 4,000-6,000 personnel. It has three main branches: Political, Special, and Administrative. The Political Branch concentrates on the collection of foreign military intelligence.ⁱⁱⁱ

The Special Branch includes a security unit to ensure the loyalty of other members of Military Intelligence, and a paramilitary "brigade" with a "battalion" to counter internal security threats in the Baghdad area. It has a covert collection office (possibly known as Unit 999) headquartered at Salman Pak. This organization has "battalions" with special area expertise for infiltrating foreign governments and movements and trains both Iraqi and foreign personnel for such missions. It is

reported to have battalions for Iran, Saudi Arabia, Israel, Turkey, maritime operations against Iran or Kuwait, the Kurdish Security Zone, and Shi'ite dissidents.

- *Military Security Service (also known as the Amn Al-Askariya or MSS)*. The Military Security Service emerged out of Military Intelligence following the growing signs of unrest within the military forces during 1992. It now has officers in virtually every Iraqi military unit and performs both an internal security and anti-corruption function. Like many Iraqi intelligence and security services, it has its own paramilitary unit and a special internal security unit to watch over the operations of the Military Security Service.

The current head of the Military Security Service is Mu'tamad Ni'mah al-Takriti who replaced Khalid al-Juburi.^{iv} Some experts feel that Colonel Abd Hassan al-Majid, Ali Hassan al-Majid's younger brother, was the true power in military intelligence before his defection. The Military Security Service is headquartered in Aladhamia in Baghdad, and is near the headquarters of the Military Intelligence Service. It reports directly to the Presidential Palace and has grown to a strength as high as 5,000 personnel.

- *General Security Service (also known as the Secret Police, State Internal Security Service, Al-Amn al-Amm, or GSS)*. Along with Military Intelligence, this organization traces its routes back to the time Iraq was a monarchy and was part of the police forces controlled by the Ministry of the Interior.

Until the Ba'ath came to power in 1968, it was manned by professional policemen and army officers. It was subsequently purged and "Ba'athized" by Saddam's paternal cousin, `Ali Hasan al-Majid, who ran the service from 1980 to 1987. Its headquarters was moved from the Bataween district of Baghdad to the Al Baladiat district in 1990, and the new headquarters area includes yet another special prison.

The General Security Service focuses largely on internal security, but occasionally becomes involved in small foreign operations. It has elements in virtually every major police station in Iraq, and usually has its own floor or building. It deals with both economic and political crimes.

Major General Abd al-Rahman al-Duri headed the GSS before the Gulf War, but Saddam appointed his half brother, Siba'awi Ibrahim, as the head after the Gulf War. In July 1996 Siba'awi Ibrahim was replaced as director of internal security by General Taha Abbas al-Ahbab. Al-Ahbab had previously served in the GID and Military Security Service and comes from Tikrit.

Siba'awi Ibrahim's removal reflected a sharp deterioration in Saddam's relations with his half-brothers. The Ibrahims could no longer trust their half-brother. Uday shot Watban shot in the leg and the leg had to be removed. This incident was followed by the defection of Hussein Kamel, and then his murder following his return to Baghdad. Barzan responded by publicly attacking Uday. Watban and Sib'awi are reported to have indicated they wanted to leave Iraq and to have been placed under house arrest in July 1996.^v

The GSS seems to have lost influence in spite of the appointment of a new director. This may be the result of the fact that members were involved in the coup attempt against Saddam in 1996, and were arrested and executed. It still, however, is a powerful element of the security structure.

- *Ba'ath Party Security (Amn al Hizb)*. This security office develops intelligence on party members, and has security cells throughout the Ba'ath Party.
- *The Military Bureau of the Ba'ath Party*. The Military Bureau was also strengthened and reorganized after the Gulf War. It is headed by Saddam, and his deputy is his cousin and brother-in-law, Kamel Rashid Yassin. It acts as a commissar system to indoctrinate the armed forces, and check on their political loyalty.
- *The Tribal Chief's Bureau (Maktab al-Shuyukh)*. This is a new bureau that was created after the Gulf War. This service pays tribal leaders to control their tribes, spy on possible tribal dissidents, and provide arms to loyal tribesmen to suppress any dissidents. It was headed by Major Saddam Kamel, a cousin and son-in-law of Saddam Hussein and Hussein Kamel's younger brother. Saddam Kamel defected with his brother to Jordan.

- *Saddam's Fedayeen.* Saddam's Fedayeen are led by Saddam's eldest son, Uday. They were formed after the defection of Hussein and Saddam Kamel. They are largely composed of young Takritis and are trained by the Republican Guard. They dress in black and often keep their faces covered. They have limited military capability, but are equipped with some heavy weapons, including PT-76 light tanks and BTR-70 armored personnel carriers. ^{vi}
- *The Ministry of Information.* Most Middle Eastern governments control their media and the press, and use it as an intelligence and propaganda service. Iraq's Ministry of Information has served as both a particularly strong and ruthless instrument of control. It tolerates some kinds of criticism -- many of which seem to be manipulated to give the image that it is safe to make Saddam Hussein aware of the faults of government or give outsiders the impression of a free press. At the same time, it controls virtually every word written or spoken in the Iraqi media, uses "journalists" to propagandize internally and abroad, and has a long list of "writers," "academics", and "artists" it can use to influence both domestic and foreign opinion. The Ministry also has close links to other intelligence services so that it can control or spy on foreign visitors and journalists, and manipulate crowds and media events in Iraq. For example, it maintains a long list of seemingly private Iraqis who are fluent in foreign languages and who it ensures appear in front of cameras. Some of these Iraqis are allowed to give private interviews that support Iraqi propaganda -- even when the spokesperson appears to be somewhat critical. The Ministry of Information also attempts to manipulate foreign scholars and international bodies visiting Iraq. It also has a list of quasi-academic institutions it can use to hold and manipulate meetings and conferences and use to develop contacts between foreigners and seeming "moderates" and "opponents" of the regime.
- *The Foreign Ministry.* This ministry mixes legitimate diplomats with members of the intelligence and security services. Like the Soviet diplomatic service during the Cold War, it is so closely linked to intelligence operations that it is impossible to distinguish between diplomats and the Iraqi equivalents of the KGB.
- *The Iraqi telecommunications services and major academic and research institutions.* All of these institutions have intelligence and security cells designed to improve state control. Many have special sections for military and intelligence efforts, for purchasing equipment to be used for military purposes, and supporting governmental propaganda and outreach efforts in dealing with foreigners.
- *The Iraqi signals and electronic intelligence (SIGINT/ELINT) system.* Iraq received considerable Western and Eastern-bloc technical assistance in developing its SIGINT/ELINT capabilities during the Iran-Iraq War. One source indicates that the intelligence and internal security aspects of Iraqi SIGINT and ELINT operations are unified as part of the Al Hadi Project (Project 858). According to this source, the Iraqi SIGINT/ELINT system has about 800 personnel and is headquartered at Al Rashedia, and which has at least five ground stations in various parts of Iraq. This system collects and translates SIGINT and ELINT, and distributes it to both military and intelligence users. It monitors internal communications as well as foreign political and military communications, and seems to have a highly accurate and rapidly responding direction-finding capability. It uses Japanese and French-supplied computers and communications gear.

Possible Targets: Key Facilities of the Intelligence and Security Forces:

- “Special” or “Presidential” Republican Guards force, under a military command structure reporting directly to Saddam, that acts as a palace guard.
- This force is deployed in a number of battalions whose mission is to protect Saddam Hussein.
- It is largely infantry, but has some T-72s, BMPs, D-30s and 122 mm artillery weapons.
- Reports of its strength are uncertain, but one report claims a strength of some 13 battalions and 26,000 men.
- It is deployed in units which guard Saddam’s palaces, guard his movements, and provide emergency response forces. These emergency response forces may include a brigade-sized unit to provide Saddam with personal protection if he is threatened by some element of Iraq’s military forces.
- The "Special Republican Guard" is quite different from the regular Baghdad-based Republican Guard division. The former has three brigades which guard the southern, northern and western arteries into the city.
- Major General Namiq Mohammed is the senior military officer in charge of the Special Republican Guards, but Qusay is the effective commander of the force, just as he is of the regular Republican Guards.
- If the regular Republican Guards act as the “ring” of forces that defends Baghdad and Saddam Hussein, the Special Republican Guards act as Saddam’s last line of defense. According to one report,
- Qusay has also set up a Joint Operations Room in the Presidential Palace, under the Iraqi National Security Council, to coordinate the operations of the Special Republican Guards with the Republican Guards and the key paramilitary elements of Iraq’s security forces.
- These paramilitary units include the Amn Al-Khass Brigade in the General Security Service, a “brigade” in the General Intelligence Directorate, a paramilitary formation in the Military Security Service, and a “battalion” in military intelligence.

Possible Targets: Key Republican Guards and Regular Army Units:

- Iraq has consolidated its Republican Guards forces down from a total of 12 divisions to a current total of six divisions since the Gulf War, and has eliminated a number of smaller formations. In the process, it has given the Republican Guards units priority in terms of equipment, resupply, training, and operational funding. This has increased the gap between the Republican Guards units and regular army units in material terms, although the warfighting results are untested.
- In 1997, the Republican Guards divisions included three heavily armored divisions (the Al Nida division, the Hammurabi division, and the Al Medina al Munawwarrah division), and two lighter divisions (the Nebuchadnezzar division and the Baghdad division.) Two special forces brigades seem to have survived from the pre-war special forces division. There are a number of other independent infantry formations. ^{vii}
 - According to US and Israeli experts, the surviving Republican Guards have a total of between 60,000 and 80,000 men, and 26-30 brigade equivalents (7 armored, 4 mechanized, and the rest infantry). This total manning indicates that Republican Guards have about 65-75% of the total manning needed for their combat units, and about half the total manpower needed to deploy and sustain a force of seven full divisions.^{viii} This is an indication that Iraq continues to have some manpower problems with even its most prestigious force.
- The Iraqi Army has as total of 2,200-2,700 tanks, 3,000-3,500 APCs and AFVs, 1,900-2,100 major artillery weapons and 1,100 other armored vehicles, including recovery, NBC, command and other vehicles. The most probable figures is 2,700 tanks, 3,800 APCs and AFVs, and 2,005 major artillery weapons
- Most estimates of Iraq's tank strength credit it with around 2,700 tanks in early 1998, although it is not clear what portion of this total was fully operational. An estimate by other US experts indicates that Iraqi Army's major equipment holdings in late 1997 included about 2,200-2,700 tanks, substantially less than half of the 6,700 tanks it had before the war. About half these tanks were 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.
- One thing is certain. Iraq lost much of its pre-war T-72 strength during the Gulf War. 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.^{ix} Iraq does, however, have a poor history of field repairs for tanks, and of aggressively attempting to recover and repair tanks in battle.

The Iraqi Army Order of Battle

<u>Formation</u>	<u>Command Center</u>	<u>Headquarters Location</u>	<u>Component Brigades</u>
Regular Army			
<u>1st Corps</u>	Al Rashid	Kirkuk, Khaled Camp	-
2nd Infantry Division	Khalid ben Al Walid	Airabee area	-
* 5th Mechanized Division	Mohammed Alwuasem	Shuwan area	15, 20, 26
8th Infantry Division	Almuthana	Shuwan area	22, 44, 48
38th Infantry Division	Amru Ben Abd Alaziz	Quader Karam area	130, 847, 848
<u>2nd Corps</u>	Al Yarmouk	Deyala, Mansouria Alijabal Camp	
* 3rd Armored Division	Salah Aldin	Jalawla	6, 8, 12
15th Infantry Division	Al Farouq	Amerili	76, 104, 436
34th Infantry Division	Alhareth	Khanqin/Alsadia areas	90, 502, 504, 6
<u>3rd Corps</u>	-	-	-
11th Infantry Division	-	Al Naserria	23, 45, 47, 82
* 51st Mechanized Division	Sariat Al Jabal	Zubair	41, 31, 25
* 6th Armored Division	-	Al Nashwa, Shalamcha, Majnon	11, 30, 70
<u>4th Corps</u>	Almajar	Al Amara	
* 10th Armored Division	-	Al Teab, Al Amara	17, 24, 42
14th Infantry Division	-	S/SE Al Amara	420, 18, 14
18th Infantry Division	-	Al Musharah & Al Kahla	95, 422, 774
<u>5th Corps</u>	-	Alsalamia Camp, Mosul	
* 1st Mechanized Division	Abu Aubaida	Makhmur area	1, 27, 34
4th Infantry Division	Al Qaaqaa	Bashiq Maoten	29, 5, 96
7th Infantry Division	Al Mansour	Alton Kopri Castle	38, 39, 116
16th Infantry Division	Thu Al Feqar	Saddam Dam, Mosul area	108, 505, 606
Republican Guard			
<u>Northern Corps</u>	Allah Akbar	Al Rashedia (Baghdad region) & Takrit	
* Adnan Mechanized Division	-	Mosul	11, 12, 21
Baghdad Infantry Division	-	Maqloob Maoten	4, 5, 6
* Al Madina Al Munawara Armored Division	-	Al Rasedia & Al Taji Camps	10, 2, 17, 14
Al Abed Infantry Division	-	Kirkuk, Khaleed Camp	38, 39, 40
<u>Southern Corps</u>	Al Fateh Al Mubin	Al Hafreia, Alsuwera Camp	
Nabu Khuth Nussar Infantry Division	-	Alhussainia, Al Khut Governate	19, 22, 23
* Hamurabi Mechanized Division	-	Al Wahda area, Alsuwaira	17, 8, 14
* Anedaa Armored Division	-	Baaquba, Deyala Governate	27, 28, 29

Possible Targets: Key Air Force Targets

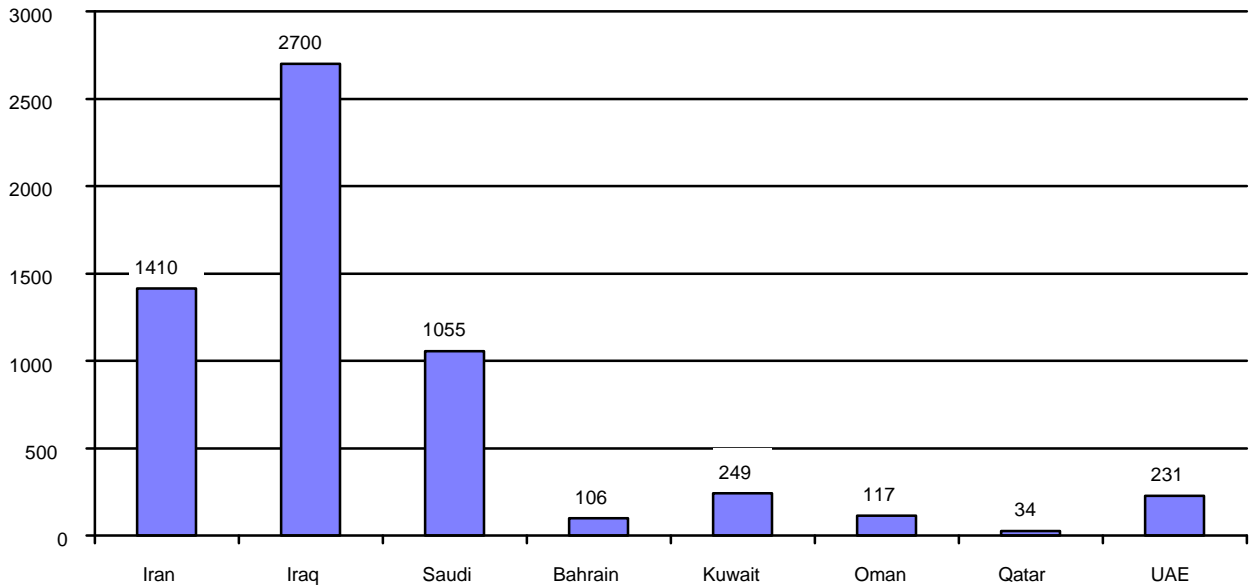
- Despite its wartime losses, the Iraqi Air Force's total surviving inventory of combat aircraft includes 6-7 HD-6 (BD-6), 1-2 Tu-16, and 6 Tu-22 bombers. Roughly 6 of these bombers still seem to be operational. None of the bombers have ever been equipped with advanced air munitions for striking land targets, or were used effectively against Iranian forces and land targets during the Iran-Iraq War. None of these aircraft flew a single sortie during the Gulf War, and there are no reports of any bomber training or flight activity after the war. The HD-6 bombers do, however, have the technical capability to deliver the CS-601 anti-ship missile and played a limited role in attacking shipping to Iran in 1988. At this point, such aircraft are of interest only because a few might be made operational and used in "one-way" sorties in a desperate effort to deliver weapons of mass destruction.
- The Iraqi Air Force's key operational holdings seem to include a total of 255 fighters and fighter bombers, and some 80 trainers -- some of which are combat capable. 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 as low as 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.^{xi}
- 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

Possible Targets: Key Land-Based Air Defense Capabilities

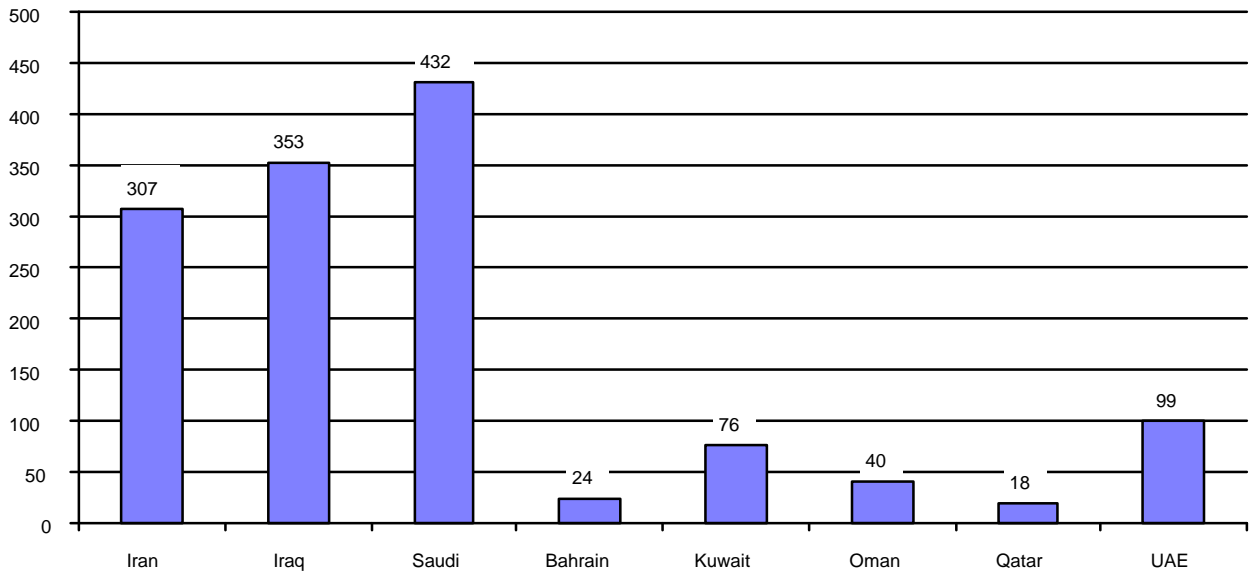
- Iraq retains 130-180 SA-2 launchers, 100-125 SA-3 launchers, 100-125 SA-6s, 20-35 SA-8s, 30-45 SA-9s, some SA-13s, and around 30 Roland VI and 5 Crotale surface-to-air missile fire units. Some of these systems were operated by the army. In addition, Iraq has some 2,000 man-portable SA-7s and SA-14s, and some SA-16s.
- Most of these surface-to-air missile units are operational, and there was evidence that Iraq had improved their readiness and training in 1996 and 1997. 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.
- 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.
- A network of radars, surface-to-air missiles, and anti-aircraft guns surrounds strategic and industrial areas, particularly in the Baghdad area. A French-supplied C4I/BM system called the KARI (Iraq spelled backwards in French) became operational on a country-wide level in 1986-1987.
- The National Air Defense Operations Center (ADOC) in Baghdad controls Iraq's air defenses. The ADOC maintains the overall air picture and provided Baghdad with information on the course of the air battle. There are five Sector Operations Centers (SOCs) covering the north, west, center-east, southeast and far south which established priorities for air defense engagements. Each is subordinate to the ADOC, and controls air defense operations in a specific geographic area. The SOC controls large numbers of ground-based weapons systems and extensive BM/C4I/SR assets.
- There are 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-Taqaddum, 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 are 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 are fundamentally flawed because the SOC cannot communicate effectively once the ADOC was destroyed or deactivated. This means the US 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.

Major Measures of Combat Equipment Strength - 1999

Total Main Battle Tanks in Inventory



Total Fixed Wing Combat Aircraft



Source: Adapted by Anthony H. Cordesman from various sources and the IISS, Military Balance.

Gulf Military Forces in 1999 - Part One

	<u>Iran</u>	<u>Iraq</u>	<u>Bahrain</u>	<u>Kuwait</u>	<u>Oman</u>	<u>Qatar</u>	<u>Saudi Arabia*</u>	<u>UAE</u>	<u>Yemen</u>
Manpower									
Total Active	545,600	429,000	11,000	15,300	43,500	11,800	161,500	64,500	66,300
Regular	420,600	429,000	11,000	15,300	37,000	11,800	105,500	64,500	66,300
National Guard & Other	125,000	0	0	0	6,500	0	57,000	0	0
Reserve	350,000	650,000	0	23,700	0	0	20,000	0	40,000
Paramilitary	40,000	55,400	9,850	5,000	4,400	0	15,500	2,700	70,000
Army and Guard									
Manpower	450,000*	375,000	8,500	11,000	31,500	8,500	127,000	59,000	61,000
Regular Army Manpower	350,000	375,000	8,500	11,000	25,000	8,500	70,000	59,000	61,000
Reserve	350,000	450,000	0	0	0	0	20,000	0	40,000
Active Main Battle Tanks	1,390	1,900	106	249	117	34	710	231	1,030
Total Main Battle Tanks***	1,410	2,700	106	341	141	34	1,055	231	1,320
Active AIFV/Recce, Lt. Tanks	555	1,600	71	355	46	84	1,655	558-578	650
Active APCs	550	1,800	340	100	96	172	2,580	570	540
Total APCs	550	2,200	340	140	96	172	3,380	570	540
ATGM Launchers	420+	480+	15	118	68	124+	480+	275	71
Self Propelled Artillery	290	150	13	41 (59)	18	28	200	175	30
Towed Artillery	2,170	1,800	36	0	91	12	260-338	46	452
MRLs	764+	150	9	27	0	4	60	42-66	220
Mortars	6,500	2,000+	18	50+	89	39	510+	135	600
SSM Launchers	46	36?	0	0	0	0	10	6	30
Light SAM Launchers	700	1,100	70+	48?	62	58	650	100	700
AA Guns	1,700	5,500	24	0	16	12	10	72	362
Air Force Manpower	28,000	35,000	1,500	2,500	4,100	1,500	18,000	4,000	3,500
Air Defense Manpower	18,000	17,000	0	0	0	0	4,000	0	0
Total Combat Aircraft	307	353	24	76	40	18	432	99	49-89
Bombers	0	6?	0	0	0	0	0	0	0
Fighter/Attack	150	130	12	40	12	18	160	43	27
Fighter/Interceptor	114	180	12	8	0	0	191	22	16
Recce/FGA Recce	8	8	0	0	12	0	10	8	0
AEW C4I/BM	0	0	0	0	0	0	5	0	0
MR/MPA**	5	0	0	0	0	0	0	0	0
OCU/COIN/CCT	0	18	0	28	16	0	21	26	0
Other Combat Trainers	25	155	0	0	0	0	50	0	6
Transport Aircraft****	74	34	3	4	21	6	72	22	16
Tanker Aircraft	5	2	0	0	0	0	15	0	0
Total Helicopters	602	500	33	28	31	24	157	97	25
Armed Helicopters****	100	120	24	16	0	18	12	49	8
Other Helicopters****	502	380	7	12	31	6	145	47	17
Major SAM Launchers	204	340	8	40	0	0	128	36	87
Light SAM Launchers	45	200	0	12	28	9	181	31	200
AA Guns	-	-	-	60	-	-	270-420)	-	-

Gulf Military Forces in 1999 - Part Two

	<u>Iran</u>	<u>Iraq</u>	<u>Bahrain</u>	<u>Kuwait</u>	<u>Oman</u>	<u>Qatar</u>	<u>Saudi Arabia*</u>	<u>UAE</u>	<u>Yemen</u>
Total Naval Manpower	20,600*	2,000	1,000	1,800	4,200	1,800	13,500	1,500	1,800
Major Surface Combatants									
Missile	3	0	3	0	2	0	8	4	0
Other	2	1-2	0	0	0	0	0	0	0
Patrol Craft									
Missile	21	1	4	6	4	3	9	8	7
(Revolutionary Guards)	5	-	-	-	-	-	-	-	-
Other	42	5	6	5	7	4	21	9	8
Revolutionary Guards (Boats)	40	-	-	-	-	-	-	-	-
Submarines	3	0	0	0	0	0	0	0	0
Mine Vessels	7	4	0	0	0	0	6	0	6
Amphibious Ships	9	0	1	0	2	0	0	0	3
Landing Craft	17	-	4	2	4	1	8	5	-
Support Ships	25	3	5	4	5	-	7	3	-
Marines	(5,000)	0	0	0	0	0	(3,000)	0	0
Naval Guards	18,000	0	0	0	0	0	0	0	0
Naval Air	2,000	-	-	-	-	-	-	-	-
Naval Aircraft									
Fixed Wing Combat	0	0	0	0	0	0	0	0	0
MR/MPA	8	0	0	0	(7)	0	0	0	0
Armed Helicopters	9	(6)	0	0	0	0	21	(5)	0
SAR Helicopters	-	0	0	0	0	0	4	(6)	0
Mine Warfare Helicopters	2	0	0	0	0	0	0	0	0
Other Helicopters	-	-	2	-	-	-	6	-	-

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 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); various data available from Jane's, Military Technology, World Defense Almanac; and Jaffee Center for Strategic Studies, The Military Balance in the Middle East (JCSS, Tel Aviv)

Iraq's Search for Weapons of Mass Destruction

Delivery Systems

- Prior to the Gulf War Iraq had extensive delivery systems incorporating long-range strike aircraft with refueling capabilities and several hundred regular and improved, longer-range Scud missiles, some with chemical warheads. These systems included:
 - Tu-16 and Tu-22 bombers.
 - MiG-29 fighters.
 - Mirage F-1, MiG-23BM, and Su-22 fighter attack aircraft.
 - A Scud force with a minimum of 819 missiles.
 - Extended range Al Husayn Scud variants (600 kilometer range) extensively deployed throughout Iraq, and at three fixed sites in northern, western, and southern Iraq.
 - Developing Al-Abbas missiles (900 kilometer range), which could reach targets in Iran, the Persian Gulf, Israel, Turkey, and Cyprus.
 - Long-range super guns with ranges of up to 600 kilometers.
- Iraq also engaged in efforts aimed at developing the Tamuz liquid fueled missile with a range of over 2,000 kilometers, and a solid fueled missile with a similar range. Clear evidence indicates that at least one design was to have a nuclear warhead.
- Iraq attempted to conceal a plant making missile engines from the UN inspectors. It only admitted this plant existed in 1995, raising new questions about how many of its missiles have been destroyed.
- Iraq had design work underway for a nuclear warhead for its long-range missiles.
- The Gulf War deprived Iraq of some of its MiG-29s, Mirage F-1s, MiG-23BMs, and Su-22s.
- Since the end of the war, the UN inspection regime has also destroyed many of Iraq's long-range missiles:
 - UNSCOM has directly supervised the destruction of 48 Scud-type missiles.
 - It has verified the Iraqi unilateral destruction of 83 more missiles and 9 mobile launchers.
- The UN still estimates, however, that it is able to account for 817 of the 819 long-range missiles that Iraq imported in the period ending in 1988:

• Pre-1980 expenditures, such as training	8
• Expenditures during the Iran-Iraq War (1980-1981), including the war	
• of the cities in February-April 1988	516
• Testing activities for the development of Iraq's modifications of	
• imported missiles and other experimental activities (1985-1990)	69
• Expenditures during the Gulf War (January-March 1991)	93
• Destruction under the supervision of UNSCOM	48
• Unilateral destruction by Iraq (mid-July and October 1991)	83
• UNSCOM's analysis has shown that Iraq had destroyed 83 of the 85 missiles it had claimed were destroyed. at the same time, it stated that Iraq had not given an adequate account of its proscribed missile assets, including launchers, warheads, and propellants.	
• UNSCOM also reports that it supervised the destruction of 10 mobile launchers, 30 chemical warheads, and 18 conventional warheads.	
- Iraq maintains a significant delivery capability consisting of:
 - HY-2, SS-N-2, and C-601 cruise missiles, which are unaffected by UN cease-fire terms.
 - FROG-7 rockets with 70 kilometer ranges, also allowed under UN resolutions.
 - Multiple rocket launchers and tube artillery.

- Experimental conversions such as the SA-2.
- Iraq claims to have manufactured only 80 missile assemblies, 53 of which were unusable. UNSCOM claims that 10 are unaccounted for.
 - US experts believe Iraq may still have components for several dozen extended-range Scud missiles.
- In addition, Iraq has admitted to:
 - Hiding its capability to manufacture its own Scuds.
 - Developing an extended range variant of the FROG-7 called the Laith. The UN claims to have tagged all existing FROG-7s to prevent any extension of their range beyond the UN imposed limit of 150 kilometers for Iraqi missiles.
 - Experimenting with cruise missile technology and ballistic missile designs with ranges up to 3,000 kilometers.
 - Flight testing Al Husayn missiles with chemical warheads in April 1990.
 - Developing biological warheads for the Al Husayn missile as part of Project 144 at Taji.
 - Initiating a research and development program for a nuclear warhead missile delivery system.
 - Successfully developing and testing a warhead separation system.
 - Indigenously developing, testing, and manufacturing advanced rocket engines to include liquid-propellant designs.
 - Conducting research into the development of Remotely Piloted Vehicles (RPVs) for the dissemination of biological agents.
 - Attempting to expand its Ababil-100 program designed to build surface-to-surface missiles with ranges beyond the permitted 100-150 kilometers.
 - Importing parts from Britain, Switzerland, and other countries for a 350 mm "super gun," as well as starting an indigenous 600 mm supergun design effort.
- Iraq initially claimed that it had 45 missile warheads filled with chemical weapons in 1992. It then stated that it had 20 chemical and 25 biological warheads in 1995. UNSCOM established that it had a minimum of 75 operational warheads and 5 used for trials. It has evidence of the existence of additional warheads. It can only verify that 16 warheads were filled with Sarin, and 34 with chemical warfare binary components, and that 30 were destroyed under its supervision -- 16 with Sarin and 14 with binary components.
- US and UN officials conclude further that:
 - Iraq is trying to rebuild its ballistic missile program using a clandestine network of front companies to obtain the necessary materials and technology from European and Russian firms.
 - This equipment is then concealed and stockpiled for assembly concomitant with the end of the UN inspection regime.
 - The equipment clandestinely sought by Iraq includes advanced missile guidance components, such as accelerometers and gyroscopes, specialty metals, special machine tools, and a high-tech, French-made, million-dollar furnace designed to fabricate engine parts for missiles.
- Recent major violations and smuggling efforts:
 - In November, 1995, Iraq was found to have concealed an SS-21 missile it had smuggled in from Yemen.
 - Jordan found that Iraq was smuggling missile components through Jordan in early December, 1995. These included 115 gyroscopes in 10 crates, and material for making chemical weapons. The shipment was worth an estimated \$25 million. Iraq claimed the gyroscopes were for oil exploration but they are similar to those used in the Soviet SS-N-18 SLBM. UNSCOM also found some gyroscopes dumped in the Tigris.
- Iraq retains the technology it acquired before the war and evidence clearly indicates an ongoing research and development effort, in spite of the UN sanctions regime.
- The fact the agreement allows Iraq to continue producing and testing short-range missiles (less than 150 kilometers range) means it can retain significant missile development effort.
 - The SA-2 is a possible test bed, but UNSCOM has tagged all missiles and monitors all high apogee tests.

- Iraq’s Al-Samoud and Ababil-100 programs are similar test beds. The Al-Samoud is a scaled-down Scud which Iraq seems to have tested.
- Iraq continues to expand its missile production facility at Ibn Al Haytham, which has two new buildings large enough to make much longer-range missiles.
- US satellite photographs reveal that Iraq has rebuilt its Al-Kindi missile research facility.
- Ekeus reported on December 18, 1996 that Iraq retained missiles, rocket launchers, fuel, and command system to “make a missile force of significance”. UNSCOM reporting as of October, 1997 is more optimistic, but notes that Iraq, “continued to conceal documents describing its missile propellants, and the material evidence relating to its claims to have destroyed its indigenous missile production capabilities indicated in might has destroyed less than a tenth of what it claimed”

Chemical Weapons

- Iraq is the only major recent user of weapons of mass destruction. US intelligence sources report the following Iraqi uses of chemical weapons:

<u>Date</u>	<u>Area</u>	<u>Type of Gas</u>	<u>Approximate Casualties</u>	<u>Target</u>
August 1983	Hajj Umran	Mustard	Less than 100	Iranians/Kurds
October-November 1983	Panjwin	Mustard	3,0000	Iranians/Kurds
February-March 1984	Majnoon Island	Mustard	2,500	Iranians
March 1984	Al Basrah	Tabun	50- 100	Iranians
March 1985	Hawizah Marsh	Mustard/Tabun	3,000	Iranians
February 1996	Al Faw	Mustard/Tabun	8,000-10,000	Iranians
December 1986	Umm ar Rasas	Mustard	1,000s	Iranians
April 1987	Al Basrah	Mustard/Tabun	5,000	Iranians
October 1987	Sumar/Mehran	Mustard/Nerve Agents	3,000	Iranians
March 1988	Halabjah	Mustard/Nerve Agents	Hundreds	Iranians/Kurds

Note: Iranians also used posion gas at Halabjah and may have caused some of the casualties.

- In revelations to the UN, Iraq admitted that, prior to the Gulf War, it:
 - Procured more than 1,000 key pieces of specialized production and support equipment for its chemical warfare program.
 - Maintained large stockpiles of mustard gas, and the nerve agents Sarin and Tabun.
 - Produced binary Sarin filled artillery shells, 122 mm rockets, and aerial bombs.
 - Manufactured enough precursors to produce 70 tons (70,000 kilograms) of the nerve agent VX. These precursors included 65 tons of choline and 200 tons of phosphorous pentasulfide and di-isopropylamine
 - Tested Ricin, a deadly nerve agent, for use in artillery shells.
 - Had three flight tests of long-range Scuds with chemical warheads.
 - Had a large VX production effort underway at the time of the Gulf War. The destruction of the related weapons and feedstocks has been claimed by Iraq, but not verified by UNSCOM. Iraq seems to have had at least 3,800 kilograms of V-agents by time the of the Gulf War, and 12-16 missile warheads.

- The majority of Iraq's chemical agents were manufactured at a supposed pesticide plant located at Muthanna. Various other production facilities were also used, including those at Salman Pak, Samara, and Habbiniyah. Though severely damaged during the war, the physical plant for many of these facilities has been rebuilt.
- Iraq possessed the technology to produce a variety of other persistent and non-persistent agents.
- The Gulf War and the subsequent UN inspection regime may have largely eliminated some of stockpiles and reduced production capability.
- During 1991-1994, UNSCOM supervised the destruction of:
 - 38,537 filled and unfilled chemical munitions.
 - 690 tons of chemical warfare agents.
 - More than 3,000 tons of precursor chemicals.
 - Over 100 pieces of remaining production equipment at the Muthan State Establishment, Iraq's primary CW research, production, filling and storage site.
- Since that time, UNSCOM has forced new disclosures from Iraq that have led to:
 - The destruction of 325 newly identified production equipment, 120 of which were only disclosed in August, 1997.
 - The destruction of 275 tons of additional precursors.
 - The destruction of 125 analytic instruments.
 - The return of 91 analytic pieces of equipment to Kuwait.
- As of February, 1998, UNSCOM had supervised the destruction of a total of:
 - 40,000 munitions, 28,000 filled and 12,000 empty.
 - 480,000 liters of chemical munitions
 - 1,800,000 liters of chemical precursors.
 - eight types of delivery systems including missile warheads.
- US and UN experts believe Iraq has concealed significant stocks of precursors. Iraq also appears to retain significant amounts of production equipment dispersed before, or during, Desert Storm and not recovered by the UN.
- UNSCOM reports that Iraq has failed to account for
 - Special missile warheads intended for filling with chemical or biological warfare agent.
 - The material balance of some 550 155 mm mustard gas shells, the extent of VX programs, and the rationale for the acquisition of various types of chemical weapons
 - 130 tons of chemical warfare agents.
 - Some 4,000 tons of declared precursors for chemical weapons,
 - The production of several hundred tons of additional chemical warfare agents, the consumption of chemical precursors,
 - 107,500 empty casings for chemical weapons,
 - Whether several thousand additional chemical weapons were filled with agents,
 - The unilateral destruction of 15, 620 weapons, and the fate of 16,038 additional weapons Iraq claimed it had discarded. "The margin of error" in the accounting presented by Iraq is in the neighborhood of 200 munitions."
 - Iraq systematically lied about the existence of its production facilities for VX gas until 1995, and made "significant efforts" to conceal its production capabilities after that date. Uncertainties affecting the destruction of its VX gas still affect some 750 tons of imported precursor chemicals, and 55 tons of domestically produced precursors. Iraq has made unverifiable claims that 460 tons were destroyed by Coalition air attacks, and that it unilaterally destroyed 212 tons. UNSCOM has only been able to verify the destruction of 155 tons and destroy a further 36 tons on its own.
- Iraq has developed basic chemical warhead designs for Scud missiles, rockets, bombs, and shells. Iraq also has spray dispersal systems.

- Iraq maintains extensive stocks of defensive equipment.
- The UN feels that Iraq is not currently producing chemical agents, but Iraq has offered no evidence that it has destroyed its VX production capability and/or stockpile. Further, Iraq retains the technology it acquired before the war and evidence clearly indicates an ongoing research and development effort, in spite of the UN sanctions regime.
- Recent UNSCOM work confirms that Iraq did deploy gas-filled 155 mm artillery and 122 mm multiple rocket rounds into the rear areas of the KTO during the Gulf War.
- Iraq's chemical weapons had no special visible markings, and were often stored in the same area as conventional weapons.
- Iraq has the technology to produce stable, highly lethal VX gas with long storage times.
- May have developed improved binary and more stable weapons since the Gulf War.
- Since 1992, Iraq attempted to covertly import precursors and production equipment for chemical weapons through Qatar, Saudi Arabia, and Jordan since the Gulf War.
- The current status of the Iraqi program is as follows (according to US intelligence as of February 19, 1998):

<u>Agent</u>	<u>Declared</u>	Potential Unaccounted For	<u>Comments</u>
<u>Chemical Agents</u>	(Metric Tons)	(Metric Tons)	
VX Nerve Gas	3	300	Iraq lied about the program until 1995
G Agents (Sarin)	100-150	200	Figures include weaponized and bulk agents
Mustard Gas	500-600	200	Figures include weaponized and bulk agents
<u>Delivery Systems</u>	(Number)	(Number)	
Missile Warheads		75-100	45-70
Rockets	100,000		15,000-25,000
Aerial Bombs	16,000		2,000
Artillery shells	30,000		15,000
Aerial Spray Tanks	?		?

Biological Weapons

- Had highly compartmented "black" program with far tighter security regulations than chemical program.
- Had 18 major sites for some aspect of biological weapons effort before the Gulf War. Most were non-descript and had no guards or visible indications they were a military facility.
- The US targeted only one site during the Gulf War. It struck two sites, one for other reasons. It also struck at least two targets with no biological facilities that it misidentified.
- Systematically lied about biological weapons effort until 1995. First stated that had small defensive efforts, but no offensive effort. In July, 1995, admitted had a major defensive effort. In October, 1995, finally admitted major weaponization effort.
- Iraq has continued to lie about its biological weapons effort since October, 1995. It has claimed the effort was headed by Dr. Taha, a woman who only headed a subordinate effort. It has not admitted to any help by foreign personnel or contractors. It has claimed to have destroyed its weapons, but the one site UNSCOM inspectors visited showed no signs of such destruction and was later said to be the wrong site. It has claimed only 50 people were employed full time, but the scale of the effort would have required several hundred.
- Since July 1995, Iraq has presented three versions of FFCDs and four "drafts."
 - The most recent FFCD was presented by Iraq on 11 September 1997. This submission followed the UNSCOM's rejection, of the FFCD of June 1996. In the period since receiving that report, UNSCOM conducted eight inspections in an attempt to investigate critical areas of Iraq's proscribed activities such as warfare agent production and destruction, biological munitions manufacturing, filling and destruction, and military involvement in and support to the proscribed program. Those investigations, confirmed the assessment that the June 1996 declaration was deeply deficient. The UNSCOM concluded that the new FFCD, it received on 11 September 1997, contains no significant changes from the June 1996 FFCD

- Iraq has not admitted to the production of 8,500 liters of anthrax, 19,000 liters of botulinum toxin, 2,200 liters of aflatoxin,
- Reports indicate that Iraq tested at least 7 principal biological agents for use against humans.
 - Anthrax, Botulinum, and Aflatoxin are known to be weaponized.
 - Looked at viruses, bacteria, and fungi. Examined the possibility of weaponizing gas gangrene and Mycotoxins. Some field trials were held of these agents.
 - Examined foot and mouth disease, haemorrhagic conjunctivitis virus, rotavirus, and camel pox virus.
 - Conducted research on a “wheat pathogen” and a Mycotoxin similar to “yellow rain” defoliant.
 - The “wheat smut” was first produced at Al Salman, and then put in major production during 1987-1988 at a plant near Mosul. Iraq claims the program was abandoned.
- The August 1995 defection of Lieutenant general Husayn Kamel Majid, formerly in charge of Iraq’s weapons of mass destruction, revealed the extent of this biological weapons program. Lt. General Kamel’s defection prompted Iraq to admit that it:
 - Imported 39 tons of growth media (31,000 kilograms or 68,200 pounds) for biological agents obtained from three European firms. According to UNSCOM, 3,500 kilograms or 7,700 pounds) remains unaccounted for. Some estimates go as high as 17 tons. Each ton can be used to produce 10 tons of bacteriological weapons.
 - Imported type cultures from the US which can be modified to develop biological weapons.
 - Had a laboratory- and industrial-scale capability to manufacture various biological agents including the bacteria which cause Anthrax and botulism; Aflatoxin, a naturally occurring carcinogen; clostridium perfringens, a gangrene-causing agent; the protein toxin Ricin; tricothecene Mycotoxins, such as T-2 and DAS; and an anti-wheat fungus known as wheat cover smut. Iraq also conducted research into the rotavirus, the camel pox virus and the virus which causes haemorrhagic conjunctivitis.
 - Created at least seven primary production facilities including the Sepp Institute at Muthanna, the Ghazi Research Institute at Amaria, the Daura Foot and Mouth Disease Institute, and facilities at Al-Hakim, Salman Pak Taji, and Fudaliyah. According to UNSCOM, weaponization occurred primarily at Muthanna through May, 1987 (largely Botulinum), and then moved to Al Salman. (Anthrax). In March, 1988 a plant was open at Al Hakim, and in 1989 an Aflatoxin plant was set up at Fudaliyah.
 - Had test site about 200 kilometers west of Baghdad, used animals in cages and tested artillery and rocket rounds against live targets at ranges up to 16 kilometers.
 - Took fermenters and other equipment from Kuwait to improve effort during the Gulf War.
 - Iraq had least 79 civilian facilities capable of playing some role in biological weapons production still in existence in 1997.
- The Iraqi program involving Aflatoxin leaves many questions unanswered.
 - Iraqi research on Aflatoxin began in May 1988 at Al Salman, where the toxin was produced by the growth of fungus aspergillus in 5.3 quart flasks.
 - The motives behind Iraq’s research on Aflatoxin remain one of the most speculative aspects of its program. Aflatoxin is associated with fungal-contaminated food grains, and is considered non-lethal. It normally can produce liver cancer, but only after a period of months to years and in intense concentrations. There is speculation, however, that a weaponized form might cause death within days and some speculation that it can be used as an incapacitating agent.
 - Iraq moved its production of Aflatoxin to Fudaliyah in 1989, and produced 481 gallons of toxin in solution between November, 1988 and May, 1990.
 - It developed 16 R-400 Aflatoxin bombs and two Scud warheads. Conducted trials with Aflatoxin in 122 mm rockets and R-400 bombs in November 1989 and May and August 1990. Produced a total of 572 gallons of toxin and loaded 410.8 gallons into munitions.
 - UNSCOM concluded in October, 1997, that Iraq’s accounting for its Aflatoxin production was not credible.
- Total Iraqi production of more orthodox biological weapons reached at least 19,000 liters of concentrated Botulinum (10,000 liters filled into munitions); 8,500 liters of concentrated Anthrax (6,500 liters filled into munitions); and 2,500 liters of concentrated Aflatoxin (1,850 liters filled into munitions).

- It manufactured 6,000 liters of concentrated Botulinum toxin and 8,425 liters of Anthrax at Al-Hakim during 1990; 5400 liters of concentrated Botulinum toxin at the Daura Foot and Mouth Disease Institute from November 1990 to January 15, 1991; 400 liters of concentrated Botulinum toxin at Taji; and 150 liters of concentrated Anthrax at Salman Pak.
- Iraq is also known to have produced at least:
 - 1,850 liters of Aflatoxin in solution at Fudaliyah.
 - 340 liters of concentrated clostridium perfringens, a gangrene-causing biological agent, beginning in August 1990.
 - 10 liters of concentrated Ricin at Al Salam. Claim abandoned work after tests failed.
- Iraq weaponized at least three biological agents for use in the Gulf War. The weaponization consisted of at least:
 - 100 bombs and 16 missile warheads loaded with Botulinum.
 - 50 R-400 air-delivered bombs and 5 missile warheads loaded with anthrax; and
 - 4 missile warheads and 7 R-400 bombs loaded with Aflatoxin, a natural carcinogen.
 - The warheads were designed for operability with the Al Husayn Scud variant.
- Iraq had other weaponization activities:
 - Armed 155 mm artillery shells and 122 mm rockets with biological agents.
 - Conducted field trials, weaponization tests, and live firings of 122 mm rockets armed with Anthrax and Botulinum toxin from March 1988 to May 1990.
 - Tested Ricin, a deadly protein toxin, for use in artillery shells.
 - Iraq produced at least 191 bombs and 25 missile warheads with biological agents.
 - Developed and deployed 250 pound aluminum bombs coverage in fiberglass. Bombs were designed so they could be mounted on both Soviet and French-made aircraft. They were rigged with parachutes for low altitudes drops to allow efficient slow delivery and aircraft to fly under radar coverage. Some debate over whether bombs had cluster munitions or simply dispersed agent like LD-400 chemical bomb.
 - Deployed at least 166 R-400 bombs with 85 liters of biological agents each during the Gulf War. Deployed them at two sites. One was near an abandoned runway where it could fly in aircraft, arm them quickly, and disperse with no prior indication of activity and no reason for the UN to target the runway.
 - Filled at least 25 Scud missile warheads, and 157 bombs and aerial dispensers, with biological agents during the Gulf War.
- Developed and stored drop tanks ready for use for three aircraft or RPV s with the capability of dispersing 2,000 liters of anthrax. Development took place in December 1990. Claimed later that tests showed the systems were ineffective.
 - The UN found, however, that Iraq equipped crop spraying helicopters for biological warfare and held exercises and tests simulating the spraying of Anthrax spores.
 - Iraqi Mirages were given spray tanks to disperse biological agents.
 - Held trials as late as January 13, 1991.
 - The Mirages were chosen because they have large 2,200 liter belly tanks and could be refueled by air, giving them a longer endurance and greater strike range.
 - The tanks had electric valves to allow the agent to be released and the system was tested by releasing simulated agent into desert areas with scattered petri dishes to detect the biological agent. UNSCOM has video tapes of the aircraft.
- Project 144 at Taji produced at least 25 operational Al Husayn warheads. Ten of these were hidden deep in a railway tunnel, and 15 in holes dug in an unmanned hide site along the Tigris.
- Biological weapons were only distinguished from regular weapons by a black stripe.
- The UN claims that Iraq has offered no evidence to corroborate its claims that it destroyed its stockpile of biological agents after the Gulf War. Further, Iraq retains the technology it acquired before the war and evidence clearly indicates an ongoing research and development effort, in spite of the UN sanctions regime.
- UNSCOM reported in October 1997 that:

- Iraq has never provided a clear picture of the role of its military in its biological warfare program, and has claimed it only played a token role.
- It has never accounted for its disposal of growth media. The unaccounted for media is sufficient, in quantity, for the production of over three times more of the biological agent -- Anthrax -- Iraq claims to have been produced.
- Bulk warfare agent production appears to be vastly understated by Iraq. Expert calculations of possible agent production quantities, either by equipment capacity or growth media amounts, far exceed Iraq's stated results
- Significant periods when Iraq claims its fermenters were not utilized are unexplained
- Biological warfare field trials are underreported and inadequately described.
- Claims regarding field trials of chemical and biological weapons using R400 bombs are contradictory and indicate that, "more munitions were destroyed than were produced.
- The Commission is unable to verify that the unilateral destruction of the BW-filled Al Hussein warheads has taken place."
- There is no way to confirm whether Iraq destroyed 157 bombs of the R400 type, some of which were filled with Botulin or anthrax spores.
- "The September 1997 FFCD fails to give a remotely credible account of Iraq's biological program. This opinion has been endorsed by an international panel of experts."
- The current status of the Iraqi program is as follows (according to US intelligence as of February 19, 1998):

<u>Agent</u>	<u>Declared Concentrated Amount</u>		<u>Declared Total Amount</u>		<u>Uncertainty</u>
	<u>Liters</u>	<u>Gallons</u>	<u>Liters</u>	<u>Gallons</u>	
Anthrax	8500	12,245	85000	22457	Could be 3-4 times declared amount
Botulinum toxin	19,400	NA	380,000	NA	Probably twice declared amount. Some extremely concentrated.
Gas Gangrene Clostridium Perfringens	340	90	3,400	900	Amounts could be higher
Aflatoxin	NA	NA	2,200	581	Major uncertainties
Ricin	NA	NA	10	2.7	Major uncertainties

- UNSCOM cannot confirm the unilateral destruction of 25 warheads. It can confirm the destruction of 23 of at least 157 bombs. Iraq may have more aerosol tanks.
- UN currently inspects 79 sites -- 5 used to make weapons before war; 5 vaccine or pharmaceutical sites; 35 research and university sites; thirteen breweries, distilleries, and dairies with dual-purpose capabilities; eight diagnostic laboratories.
- Iraq retains laboratory capability to manufacture various biological agents including the bacteria which cause anthrax, botulism, tularemia and typhoid.
- Many additional civilian facilities are capable of playing some role in biological weapons production.

Nuclear Weapons

- Inspections by UN teams have found evidence of two successful weapons designs, a neutron initiator, explosives and triggering technology needed for production of bombs, plutonium processing technology, centrifuge technology, Calutron enrichment technology, and experiments with chemical separation technology. Iraq had some expert technical support, including at least one German scientist who provided the technical plans for the URENCO TC-11 centrifuge.
- Iraq's main nuclear weapons related facilities were:

- Al Atheer - center of nuclear weapons program. Uranium metallurgy; production of shaped charges for bombs, remote controlled facilities for high explosives manufacture.
- Al Tuwaiha - triggering systems, neutron initiators, uranium metallurgy, and hot cells for plutonium separation. Laboratory production of UO₂, UCL₄, UF₆, and fuel fabrication facility. Prototype-scale gas centrifuge, prototype EMIS facility, and testing of laser isotope separation technology.
- Al Qa Qa - high explosives storage, testing of detonators for high explosive component of implosion nuclear weapons.
- Al Musaiyib/Al Hatteen - high explosive testing, hydrodynamic studies of bombs.
- Al Hadre - firing range for high explosive devices, including FAE.
- Ash Sharqat - designed for mass production of weapons grade material using EMIS.
- Al Furat - designed for mass production of weapons grade material using centrifuge method.
- Al Jesira (Mosul) - mass production of UCL₄.
- Al Qaim - phosphate plant for production of U308.
- Akashat uranium mine.
- Iraq had three reactor programs:
 - Osiraq/Tammuz I 40 megawatt light-water reactor destroyed by Israeli air attack in 1981.
 - Isis/Tammuz II 800 kilowatt light water reactor destroyed by Coalition air attack in 1991.
 - IRT-5000 5 megawatt light water reactor damaged by Coalition air attack in 1991.
- Iraq used Calutron (EMIS), centrifuges, plutonium processing, chemical defusion and foreign purchases to create new production capability after Israel destroyed most of Osiraq.
- Iraq established a centrifuge enrichment system in Rashidya and conducted research into the nuclear fuel cycle to facilitate development of a nuclear device.
- After invading Kuwait, Iraq attempted to accelerate its program to develop a nuclear weapon by using radioactive fuel from French and Russian-built reactors. It made a crash effort in September, 1990 to recover enriched fuel from its supposedly safe-guarded French and Russian reactors, with the goal of producing a nuclear weapon by April, 1991. The program was only halted after Coalition air raids destroyed key facilities on January 17, 1991.
- Iraq conducted research into the production of a radiological weapon, which disperses lethal radioactive material without initiating a nuclear explosion.
 - Orders were given in 1987 to explore the use of radiological weapons for area denial in the Iran-Iraq War.
 - Three prototype bombs were detonated at test sites -- one as a ground level static test and two others were dropped from aircraft.
 - Iraq claims the results were disappointing and the project was shelved but has no records or evidence to prove this.
- UN teams have found and destroyed, or secured, new stockpiles of illegal enriched material, major production and R&D facilities, and equipment-- including Calutron enriching equipment.
- UNSCOM believes that Iraq's nuclear program has been largely disabled and remains incapacitated, but warns that Iraq retains substantial technology and established a clandestine purchasing system in 1990 that it has used to import forbidden components since the Gulf War.
- The major remaining uncertainties are:
 - Iraq still retains the technology developed before the Gulf War and US experts believe an ongoing research and development effort continues, in spite of the UN sanctions regime.
 - Did Iraq conceal an effective high speed centrifuge program.
 - Are there elements for radiological weapons.
 - Is it actively seeking to clandestinely buy components for nuclear weapons and examining the purchase of fissile material from outside Iraq.

- Is it continuing with the development of a missile warhead suited to the use of a nuclear device.
- A substantial number of declared nuclear weapons components and research equipment has never been recovered. There is no reason to assume that Iraqi declarations were comprehensive.

Source: Prepared by Anthony H. Cordesman, Co-Director, Middle East Program, CSIS.

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-25air defense fighters.
- MiG-21 and MiG-25 reconnaissance fighters.
- 15 Hawker Hunters.
- Il-76 Adnan AEW aircraft.
- AA-6, AA-7Matra 530air-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

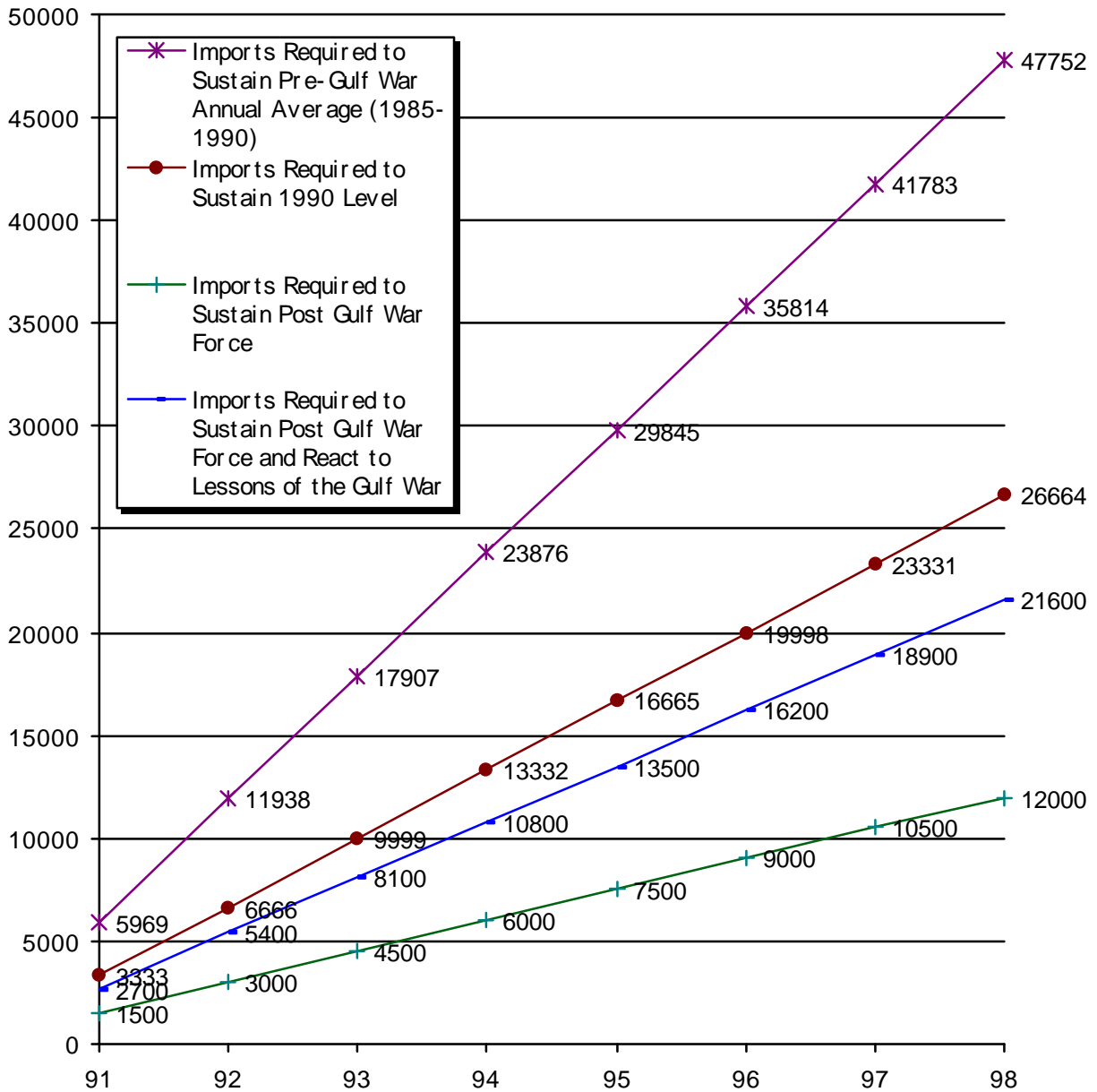
- 20-30 operational SA-2 batteries with 160 launch units.
- 25-50 SA-3 batteries with 140 launch units.
- 36-55 SA-6 batteries with over 100 fire units.
- 6,500 SA-7s.
- 400 SA-9s.
- 192 SA-13s

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.

The Iraqi Cumulative Arms Import Deficit Enforced by UN Sanctions
 (Measured in \$US 97 Constant millions)



Source: Adapted by Anthony H. Cordesman from US Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers, 1995, GPO, Washington, 1996.

Iraqi Covert Break Out Capabilities

- UNSCOM and the IAEA's success have created new priorities for Iraqi proliferation. The UN's success in destroying the large facilities Iraq needs to produce fissile materials already may well have led Iraq to focus on covert cell-like activities to manufacture highly lethal biological weapons as a substitute for nuclear weapons.
- All of the biological agents Iraq had at the time of the Gulf War seem to have been "wet" agents with limited storage life and limited operational lethality. Iraq may have clandestinely carried out all of the research necessarily to develop a production capability for dry, storage micro-power weapons which would be far easier to clandestinely stockpile, and have much more operational lethality.
- Iraq did not have advanced binary chemical weapons and most of its chemical weapons used unstable ingredients. Iraq has illegally imported specialized glassware since the Gulf War, and may well have developed advanced binary weapons and tested them in small numbers. It may be able to use a wider range of precursors and have developed plans to produce precursors in Iraq. It may have improved its technology for the production of VX gas.
- Iraq is likely to covertly exploit Western analyses and critiques of its pre-war proliferation efforts to correct many of the problems in the organization of its proliferation efforts, its weapons design, and its organization for their use.
- Iraq bombs and warheads were relatively crude designs which did not store chemical and biological agents well and which did a poor job of dispersing them. Fusing and detonation systems did a poor job of ensuring detonation at the right height and Iraq made little use of remote sensors and weather models for long-range targeting and strike planning. Iraq could clandestinely design and test greatly improve shells, bombs, and warheads. The key tests could be conducted using towers, simulated agents, and even indoors. Improved targeting, weather sensors, and other aids to strike planning are dual-use or civil technologies that are not controlled by UNSCOM. The net impact would be weapons that could be 5-10 times more effective than the relatively crude designs Iraq had rushed into service under the pressure of the Iran-Iraq War.
- UNSCOM and the IAEA's success give Iraq an equally high priority to explore ways of obtaining fissile material from the FSU or other potential supplier country and prepare for a major purchase effort the moment sanctions and inspections are lifted and Iraq has the hard currency to buy its way into the nuclear club. Iraq could probably clandestinely assemble all of the components of a large nuclear device except the fissile material, hoping to find some illegal source of such material.
- The components for cruise missiles are becoming steadily more available on the commercial market, and Iraq has every incentive to create a covert program to examine the possibility of manufacturing or assembling cruise missiles in Iraq.
- UN inspections and sanctions may also drive Iraq to adopt new delivery methods ranging from clandestine delivery and the use of proxies to sheltered launch-on-warning capabilities designed to counter the US advantage in airpower.
- Iraq can legally maintain and test missiles with ranges up to 150 kilometers. This allows for exoatmospheric reentry testing and some testing of improved guidance systems. Computer simulation, wind tunnel models, and production engineering tests can all be carried out clandestinely under the present inspection regime. It is possible that Iraq could develop dummy or operational high explosive warheads with shapes and weight distribution of a kind that would allow it to test concepts for improving its warheads for weapons of mass destruction. The testing of improved bombs using simulated agents would be almost impossible to detect as would the testing of improved spray systems for biological warfare.
- Iraq has had half a decade in which to improve its decoys, dispersal concepts, dedicated command and control links, targeting methods, and strike plans. This kind of passive warfare planning is impossible to forbid and monitor, but ultimately is as important and lethal as any improvement in hardware.
- There is no evidence that Iraq made an effort to develop specialized chemical and biological devices for covert operations, proxy warfare, or terrorist use. It would be simple to do so clandestinely and they would be simple to manufacture.

**What is At Stake in Terms of the UNSCOM Crisis in Iraq:
Summary of the Iraqi Threat Reported in the Note by the Secretary General, "Report of
the Secretary-General on the Activities of the Special Commission,"
S/1997/774, October 6, 1997**

- Analysis had shown that Iraq had destroyed 83 of the 85 missiles it had claimed were destroyed. at the same time, it stated that Iraq had not given an adequate account of its proscribed missile assets, including launchers, warheads, and propellants. It also stated that Tariq Aziz, Iraq's Deputy Prime Minister, "gave an explicit order in the presence of the Executive Chairman, to the Iraqi experts not to discuss such issues with the Chairman."
- Iraq had continued to lie regarding the way in which it has destroyed its pre-war inventory of missile launchers, and major uncertainties remained over its holdings of biological and chemical missile warheads. Iraq initially claimed that it had 45 missile warheads filled with chemical weapons in 1992. It then stated that it had 20 chemical and 25 biological warheads in 1995. UNSCOM established that it had a minimum of 75 operational warheads and 5 used for trials. It has evidence of the existence of additional warheads. It can only verify that 16 warheads were filled with Sarin, and 34 with chemical warfare binary components, and that 30 were destroyed under its supervision -- 16 with Sarin and 14 with binary components. Iraq again failed to provide documentation on this issue in September, 1997.
- It continued to conceal documents describing its missile propellants, and the material evidence relating to its claims to have destroyed its indigenous missile production capabilities indicated in might has destroyed less than a tenth of what it claimed.
- "The Commission identified some other areas of concern related to Iraq's chemical weapons program. The most important among them are the accounting for special missile warheads intended for filling with chemical or biological warfare agent, the material balance of some 550 155 mm mustard gas shells, the extent of VX programs, and the rationale for the acquisition of various types of chemical weapons."
- UNSCOM stated that it had been able to destroy 120 pieces of additional equipment for the production of chemical weapons that Iraq had only disclosed in August, 1997. Major uncertainties still existed regarding some 4,000 tons of declared precursors for chemical weapons, the production of several hundred tons of additional chemical warfare agents, the consumption of chemical precursors, and Iraq's claims to have unilaterally destroyed some 130 tons of chemical warfare agents. Major uncertainties existing regarding 107,500 empty casings for chemical weapons, whether several thousand additional chemical weapons were filled with agents, the unilateral destruction of 15, 620 weapons, and the fate of 16,038 additional weapons Iraq claimed it had discarded. "The margin of error" in the accounting presented by Iraq is in the neighborhood of 200 munitions."
- The uncertainties affecting the destruction of VX gas affect some 750 tons of imported precursor chemicals, and 55 tons of domestically produced precursors. Iraq has made unverifiable claims that 460 tons were destroyed by Coalition air attacks, and that it unilaterally destroyed 212 tons. UNSCOM has only been able to verify the destruction of 155 tons out of this latter total, and destroy a further 36 tons on its own. Iraq systematically lied about the existence of its production facilities for VX gas until 1995, and made "significant efforts" to conceal its production capabilities after that date.
- "Iraq has not provided physical evidence (relating to) binary artillery munitions and aerial bombs, chemical warheads for short range missiles, cluster aerial bombs, and spray tanks." Iraq has claimed these were only prototype programs, but there is no current way to know how many were deployed as weapons.
- "Until July, 1995, Iraq totally denied it had any offensive biological warfare program. Since then, Iraq has presented three versions of FFCDs and four "drafts." The most recent FFCD was presented by Iraq on 11 September 1997. This latest submission followed the Commission's rejection, in April 1997, of the previous FFCD of June 1996...In the period since that report, the Commission conducted eight inspections in an attempt to investigate critical areas of Iraq's proscribed activities such as warfare agent production and destruction, biological munitions manufacturing, filling and destruction, and military involvement in and support to the proscribed program. Those investigations, along with documents and other evidence available to the Commission, confirmed the assessment that the June 1996 declaration was deeply deficient....The new FFCD, received on 11 September 1997, contains fewer errata and is more coherent. However, with regard to the important issues...the report contains no significant changes from the June 1996 FFCD. ..the Commission's questions are rephrased to in order to avoid having to produce direct answers, or are answer incompletely, or are ignored completely...Little of the information the Commission has gathered since June 1996 has been incorporated into the new document."
- Iraq has never provided a clear picture of the role of its military in its biological warfare program, and has claimed it only played a token role. It has never accounted for its disposal of growth media. "Media unaccounted for is sufficient, in quantity, for the production of over three times more of the biological agent -- Anthrax -- stated by Iraq to have been produced...Bulk warfare agent production appears to be vastly understated by Iraq...Experts calculations of possible agent

production quantities, either by equipment capacity or growth media amounts, far exceed Iraq's stated results....Significant periods when the fermenters were claimed not to be utilized are unexplained."

- Iraq's accounting for its Aflatoxin production is not credible. Biological warfare field trials are underreported and inadequately described. Claims regarding field trials of chemical and biological weapons using R400 bombs are contradictory and indicate that, "more munitions were destroyed than were produced." No documentation has been provided on munitions filling. The account of Iraq's unilateral destruction of bulk biological agents is "incompatible with the facts...The Commission is unable to verify that the unilateral destruction of the BW-filled Al Hussein warheads has taken place."
- There is no way to confirm whether Iraq destroyed 157 bombs of the R400 type, some of which were filled with Botulin or anthrax spores.
- "The September 1997 FFCD fails to give a remotely credible account of Iraq's biological program. This opinion has been endorsed by an international panel of experts."

Iraqi Ballistic Missile Program in 1998

Item	Initial Inventory	Comments
Soviet supplied Scud Missiles (includes Iraqi Modifications of the Al-Husayn with a range of 650 km and the Al-Abbas with a range of 950 km)	819	UNSCOM accepts Iraqi accounting for all but two of the original 819 Scud missiles acquired from the Soviet Union. Iraq hasn't explained the disposition of major components that it may have stripped from operational missiles before their destruction, and some Iraqi claims-- such as the use of 14 Scuds in ATBM tests-- are not believable. Gaps in Iraqi declarations and Baghdad's failure to fully account for indigenous missile programs strongly suggest that Iraq retains a small missile force.
Iraqi-Produced Scud Missiles	Unknown	Iraq denied producing a completed Scud missile, but it produced/procured and tested all major subcomponents.
Iraqi-Produced Scud Warheads	120	Iraq claims all 120 were used or destroyed. UNSCOM supervised the destruction of 15. Recent UNSCOM inspections found additional CW/BW warheads beyond those currently admitted.
Iraqi-Produced Scud Airframes	2	Iraq claims testing 2 indigenous airframes in 1990. It is unlikely that Iraq produced only 2 Scud airframes.
Iraqi-Produced Scud Engines	80	Iraq's claim that it melted 63 engines following acceptance tests--53 of which failed quality controls-- are unverifiable and not believable. UNSCOM is holding this as an open issue.
Soviet-Supplied Missile Launchers	11	UNSCOM doubts Iraq's claim that it unilaterally destroyed 5 launchers. The Soviet Union may have sold more than the declared 11 launchers.
Iraqi-Produced Missile Launchers	8	Iraq has the capability to produce additional launchers.

Adapted by Anthony H. Cordesman from material provided by the NSC on February 19, 1998.

Iraqi Chemical Warfare Program in 1998

CW Agent Stockpiles (In Metric tons)

CW Agent	Chemical Agents Declared by Iraq	Potential CW Agents based on Unaccounted Precursors ^{1.)}	Comments
VX	At least 4	200	Iraq denied producing VX until Husayn Kamil's defection in 1995
G-agents (sarin)	100-150	200	Figures include both weaponized and bulk agents
Mustard	500-600	200	Figures include both weaponized and bulk agents.

CW Delivery Systems (In Numbers of Weapons Systems)

Delivery System	Estimated Numbers Before the Gulf War	Munitions Unaccounted for ^{2.)}	Comments
Missile Warheads Al-Husayn (Modified Scud B)	75-100	45-70	UNSCOM supervised the destruction of 30 warheads
Rockets	100,000	15,000-25,000 (bombs) 28,000 of which were fired.	UNSCOM supervised the destruction of
Aerial bombs	16,000	2,000	
Artillery Shells	30,000	15,000	
Aerial Spray Tanks	Unknown	Unknown	

1.) These estimates are very rough. They are derived from reports provided by UNSCOM to the Security Council and to UNSCOM plenary meetings. Gaps in Iraqi disclosures strongly suggest that Baghdad is concealing chemical munitions and precursors. Iraq may also retain a small stockpile of filled munitions. Baghdad has the capability to quickly resume CW production at known dual-use facilities that currently produce legitimate items, such as pharmaceuticals and pesticides. UNSCOM has supervised the destruction of some 45 different types of CW precursors (1,800,000 liters of liquid and 1,000,000 kg of solid).

2.) All these munitions could be used to deliver CW or BW agents. The numbers for missile warheads include 25 that Iraq claims to have unilaterally destroyed after having filled them with biological agents during the Gulf war. UNSCOM has been unable to verify the destruction of these warheads.

Adapted by Anthony H. Cordesman from material provided by the NSC on February 19, 1998.

Iraq's Major Uses of Chemical Weapons 1983-1988

<u>Date</u>	<u>Area</u>	<u>Type of Gas</u>	<u>Approximate Casualties</u>	<u>Target</u>
August 1983	Haij Umran	Mustard	Less than 100	Iranians/Kurds
October-November 1983	Panjwin	Mustard	3,0000	Iranians/Kurds
February-March 1984	Majnoon Island	Mustard	2,500	Iranians
March 1984	Al Basrah	Tabun	50- 100	Iranians
March 1985	Hawizah Marsh	Mustard/Tabun	3,000	Iranians
February 1996	Al Faw	Mustard/Tabun	8,000-10,000	Iranians
December 1986	Umm ar Rasas	Mustard	1,000s	Iranians
April 1987	Al Basrah	Mustard/Tabun	5,000	Iranians
October 1987	Sumar/Mehran Iranians	Mustard/Nerve Agents		3,000
March 1988	Halabjah Iranians/Kurds	Mustard/Nerve Agents		Hundreds

Note: Iranians also used posion gas at Halabjah and may have caused some of the casualties.

Source: Adapted from material provided by the NSC on February 19, 1998.

Iraqi Biological Warfare Program in 1998

BW Agent Production Amounts

BW Agent	Declared Concentrated Amounts	Declared Total Amounts	Comments
Anthrax (Bacillus anthracis)	8,500 liters (2,245 gallons) (22,557 gallons)	85,000 liters (225,000 gallons)	UNSCOM estimates production amounts were actually 3-4 times more than the
Botulinum toxin (Clostridium botulinum)	19,400 liters (10x and 20x concentrated) (5,125 gallons)	380,000 liters (1,000,000 gallons)	UNSCOM estimates production amounts were actually 2 times more than the Declared amounts, but is unable to confirm.
Gas Gangrene (Clostridium perfringens)	340 liters (90 gallons)	3,400 liters (900 gallons)	Production amounts could be higher, but UNSCOM is unable to confirm.
Aflatoxin (Aspergillus flavus and Aspergillus parasiticus)	N/A	2,200 liters (581 gallons)	Production amounts and time frame of production claimed by Iraq do not correlate.
Ricin (Castor Bean plant)	N/A	10 liters (2.7 gallons)	Production amounts could be higher, but UNSCOM is unable to confirm.

BW-Filled and Deployed Delivery Systems

Delivery System	Anthrax	Botulinum Toxin	Aflatoxin	Comments
Missile warheads Al-Husayn (modified Scud B)	5	16	4	UNSCOM cannot confirm the unilateral Destruction of these 25 warheads due to conflicting accounts provided by Iraq.
R-400 aerial bombs	50	100	7	Iraq claimed unilateral destruction of 157 Bombs, but UNSCOM is unable to confirm this number. UNSCOM has found the
Aircraft aerosol spray tanks F-1 Mirage modified fuel drop tank	4			Iraq claims to have produced 4, but may Have manufactured others.

BW Agent Growth Media

Media	Quantity Imported	Unaccounted For Amounts
BW Agent Growth Media	31,000 kg (68,200 lbs)	3,500 kg (7,700 lbs)

Total refers to the amount of material obtained from production process, while *concentrated* refers to the amount of concentrated .agent obtained after final filtration/purification. The *concentrated* number is the amount used to fill munitions.

Media refers to the substance used to provide nutrients for the growth and multiplication of micro-organisms.

Adapted by Anthony H. Cordesman from material provided by the NSC on February 19, 1998.

Iraqi Key Personalities in Proliferation

Husayn Kamil Hasan al-Majid, Saddam's son-in-law, was the pre-eminent military industries official and a fundamental player in Iraq's efforts to procure weapons of mass destruction before his defection to Jordan in August 1995. A strict and capable manager, Kamil took charge of Iraq's efforts to develop its WMD program around 1987. As the head of the Ministry of Industry and Military Industrialization until 1990, he oversaw Iraq's nuclear weapons research, continued Iraq's development of biological and chemical weapons, and supervised the successful development of the Al-Husayn missile -- an indigenous modification of the Scud. During this time, it is possible that Kamil directed Iraq's testing of its chemical and biological weapons on Iranian prisoners of war.

-- After the Gulf war, Kamil -- first from his position as Minister of Defense and then as the director of the Ministry of Industry and Minerals and the Organization of Military Industrialization -- led Iraq's efforts to conceal its WMD program from international inspectors.

-- Husayn Kamil's influence over the Iraqi weapons of mass destruction program did not end with his defection in 1995. For instance, he is largely responsible for using Saddam's security services - of which he was a member in the early 1980s -- to hide proscribed materials and documents from the United Nations.

Despite Kamil's influence, the Iraqi WMD program did not die with his defection and subsequent murder, as Iraq claims it did. Qusay Husayn -- Saddam's second son -- has assumed many of the responsibilities for concealing the proscribed programs. In addition, many of the leading scientists in Iraq's WMD programs during Husayn Kamil's tenure are still associated with the regime:

-- Lt. Gen. Amir Hamud Sadi -- who serves officially as a presidential adviser and is a leading official in Iraqi relations with UNSCOM -- was one of the principal engineers in the WMD program and essentially served as Husayn Kamil's deputy. With a doctorate in chemical engineering, Sadi has dedicated his entire career to conventional and non-conventional weapons development. In 1987, Sadi received rare public praise from Saddam for his role in the development of the Al-Husayn missile.

-- Humam Abd al-Khaliq Abd al-Ghafur -- currently Minister of Culture and Information -- is Iraq's leading nuclear official and the former head of its nuclear program. Abd al-Ghafur also was a close associate of Husayn Kamil, and he occasionally serves as an interlocutor with the IAEA, leading an Iraqi delegation to the IAEA annual conference in October 1997.

-- Jafar Dia Jafar is perhaps Iraq's foremost nuclear scientist and served as Abd al-Ghafur's deputy in the Iraqi Atomic Energy Organization. Jafar now officially serves as a presidential adviser, but his position -- unlike that of Sadi -- appears to be largely nominal.

-- Dr. Rihab Taha is the leading official in charge of Iraq's biological weapons program. She has overseen Iraqi efforts to develop anthrax and botulinum toxin and directed testing on animal

subjects. Taha is also politically well-connected -- she is married to the Minister of Oil, Amir Rashid Ubaydi, who helps direct Iraqi relations with UNSCOM.

Adapted by Anthony H. Cordesman from material provided by the NSC on February 19, 1998.

ⁱ Sean Boyne in “Inside Iraq’s Security Network,” Jane’s Intelligence Review, July, 1997, pp. 312-316 and August, 1997, pp. 365-367.

ⁱⁱ Source: Al-Sharq al-Awsat, July 4, 1996, p. 4.

ⁱⁱⁱ Sean Boyne, “Inside Iraq’s Security Network,” Jane’s Intelligence Review, July, 1997, pp. 312-316 and August, 1997, pp. 365-367.

^{iv} Source: Al-Sharq al-Awsat, July 4, 1996, p. 4.

^v The Times, July 4, 1996, p. 15.

^{vi} Jane’s Defense Weekly, October 7, 1995.

^{vii} See the detailed history of the attack on Republican Guards units and the resulting losses by name in Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 93-95, 104-113, 355, 401. Also references in the April 15, 1993 draft of the US Air Force Gulf War Air Power Survey, pp. 9-10.

^{viii} The author has drawn on interviews with various US and foreign experts; USCENCOM 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; AP September 9, 1996, 0129; Washington Times, January 30, 1997, p. A-3; February 1, 1997, p. A-13.

^{ix} These estimates are based primarily on interviews with various experts, and USCENCOM 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; AP 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.

^x US Central Command, Atlas, 1996, MacDill Air Force Base, USCENCOM, 1997, pp. 16-18.

^{xi} Washington Times, September 5, 1996, p. A-1.