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The Military Balance in the Gulf:

The Dynamics of Force Developments

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Please note that this document is a working draft and will be revised regularly. To comment, or to provide suggestions and corrections, please e-mail the author at acordesman@aol.com.

Table of Contents

List of Figures

I. The Gulf Military Balance: The "Four Cornered" Balancing Act

The Gulf military balance has long been a "four cornered" balancing act between Iran, Iraq, Saudi Arabia and the Southern Gulf states, and the power projection forces of the United Kingdom and the United States. Yemen has only limited military power, but is still a significant factor in regional security because of its large population, common borders with Oman and Saudi Arabia, and strategic position at the entrance to the Red Sea.

The Dynamics of the Gulf Military Balance

There have been many tests of this balance. Egypt attempted to dominate North Yemen by intervening in its civil war during the 1960s, and only left in 1967. South Yemen supported Marxists rebels in Oman in the 1970s in what came to be called the "Dhofar Rebellion." Iraq invaded Iran in 1980. The most serious tests, however, have come from two rival Northern Gulf powers – Iran and Iraq – have dominated both regional conflicts and the regional arms race since the 1960s. This rivalry led to a bloody war between them during 1980-1988, followed by an Iraqi victory.

Iraq's status as the dominant power, however, was very short lived. In 1990 Iraq invaded Kuwait, and triggered a war with a UN coalition which not only destroyed much of its military power, but which led to more than a decade of UN sanctions and confrontation with the US and its allies. In 2003, a US and British led coalition invaded Iraq, removed the regime of Saddam Hussein, and effectively destroyed Iraq's armed forces. The end result was to create a major power vacuum in the Gulf whose future impact and implications are now far from clear.

The military balance in the Gulf has always been shaped by players from outside the region. First Britain and then the US have effectively counterbalanced the power of both Iran and Iraq. Britain effectively guaranteed the security of the Southern Gulf states until abandoned its dominant military role in the region between 1966 and 1968. The US then turned to Iran as a "pillar" of regional security until the fall of the Shah in 1979 – which led to the Iranian seizure of US diplomats as hostages and a crisis in US-Iranian relations.

The US and Europe supported Iraq in the Iran-Iraq War after 1982, when Iranian counteroffensives threatened Iraq's survival. Kuwait pressured the US into "reflagging" its tankers in 1986, to protect them from Iranian attacks, which led to a brief "tanker war" between the US and Iran during 1987-1988 that crippled part of the Iranian Navy. This situation changed radically in the summer of 1990, when Iraq invaded Kuwait. The US, Britain, Saudi Arabia, and Egypt led a coalition that liberated Kuwait in 1991, and Iraq was placed under sanctions that continued until 2003 -- when the US led coalition invaded Iraq and overthrew the regime of Saddam Hussein.

The Southern Gulf states – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE – have built up their own military forces. This effort has been led by a massive military investment by Saudi Arabia, the only Southern Gulf state large and wealthy enough to play such a role. Unlike Iran and Iraq, however, the military efforts of the Southern Gulf states were carried out with the knowledge that the US and its allies could provide power projection forces to protect them, and that such protection would almost certainly be forthcoming because of the role the Gulf played in the world's oil exports and the fact it had more than 60% of the world proven oil reserves.

As a result, the military build-up in the Southern Gulf has lacked cooperation and cohesion. Although the Southern Gulf states created a Gulf Cooperation Council (GCC) in 1980 – largely as a reaction to the perceived threat from a revolutionary Iran--the GCC never resulted in more than token military cooperation. Each of the southern Gulf states pursued its own path in creating military forces, often emphasized the purchase of modern major weapons systems that were perceived to provide prestige and a "glitter factor" in terms of regional status. Rivalries and past tensions between the Southern Gulf states prevented serious efforts at developing joint capabilities and interoperability. At the same time, a number of states limited their military efforts because of the fear of coups. The end result was that the Southern Gulf states largely preferred de facto dependence on US and British power projection forces over effective regional and national military efforts.

Other changes are radically affecting this balance. These include the "revolution in military affairs," but the primary factors have been proliferation, asymmetric warfare, and terrorism – driven by Islamic extremism. Iraq's defeat and Iran's military weakness have sharply reduced the conventional threat from the Northern Gulf. Iraq is no longer able to proliferate, though a new insurgency since Saddam's fall has shown the ability of asymmetric warfare to challenge even the most effective conventional forces.

Iran has organized its Revolutionary Guards Corps to support asymmetric warfare and has supported violent non-state groups in the struggle against Israel such as the Hezbollah, Hamas, and Palestinian Islamic Jihad. Iran has also had more freedom to acquire weapons of mass destruction, although it has joined the Chemical Weapons Convention and has pledged to destroy its chemical weapons. In 2004 and 2005, Iran continued talks with the so called EU3, Britain, France, and Germany; however, it is uncertain whether Iran will end its pursuit of nuclear weapons or what kind of a nuclear power Iran might become.

Military Developments in the Southern Gulf

The Southern Gulf states generally have large inventories of military equipment for nations of their size, and a few have comparatively large military forces for nations their size. In practice, however, all of the Southern Gulf states have limited real-world war fighting capabilities, readiness and training are poor to mediocre, and there is far more emphasis on buying the most modern military equipment -- the "glitter factor" in military procurement -- than on creating effective and sustainable forces.

This emphasis on acquiring the shell of military capability, rather than the reality, is partly a result of de facto reliance on the power projection capabilities of the US and Britain, partly a result of a tendency to treat military forces as royal playgrounds or status symbols, partly a lack of expertise and effective military leadership, and partly a result of the fear that effective military forces might lead to a coup. The end result, however, is that Southern Gulf forces have far less national and collective military capability than their force strengths, and vast investment in arms imports, would otherwise imply.

The IISS has reported that defense spending in the Gulf for 2003 increased by 4% from 2002. Defense contractors have argued that in 2004, notwithstanding the high oil prices, denfese spending has not increased. "There is little evidence that oil revenues are trickling down into defense spending," says Mark Stroker, defense economist with the IISS. Furthermore, the focus of the Gulf states shifted from new orders and procurement to training and support. The CEO of Boeing, Harry Stonecipher, said in 2004, "Recently we haven't had any real orders."[i]

The shift from procurement to traning has been attributed to several developments in the region. First, the demise of Saddam Hussein's regime eliminated the conventional military threat from the Iraq. Second, the Gulf countries enjoy good relationship with Iran. While the regime in Tehran is not trusted by the souther Gulf states, they believe that the Iranians have given up on expanding their revolution southward. Third, the internal threats from extremists have compounded the public demands for reforms especially in the area of defense, since it has been perceived to involve corruption by officials. This has forced the governments to spend more money on social programs, economic development, and paying down the public debt. [ii] Saudi Arabia, for example, in the fiscal year of 2004, spent half of its budget surplus ($26.1 billion), as a result of the high oil prices, on new projects and the other half to reduce the public debt.[iii]

The Key Factors Shaping Southern Gulf Forces

Any analysis of the Southern Gulf military balance – and the real-world warfighting capabilities of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE -- reveals the following major trends:

- Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE are all members of the Gulf Cooperation Council (GCC), which has a large military headquarters in Riyadh. The GCC has proposed a wide range of useful projects to improve military interoperability and cooperation since its founding in 1980, but has made only token progress. The GCC is a myth in war fighting and force development terms:

- The one joint combat force the GCC has created – the GCC rapid deployment force – has always been a hollow, token force, and now has no clear mission with the fall of Saddam Hussein and the end of Iraq as a serious threat.

- Current member country arms orders and inventories preclude standardization and many aspects of standardization for a decade.

- There is little or no focus on developing effective, interoperable forces common missions.

- An air defense integration contract offers some hope for future, but has few of the features needed to actually integrate land-based and fighter aid defense operations in a real-world combat environment.

- Some cooperation has developed in naval exercises, but it would have little real-world effectiveness without US or British support.

- All Southern Gulf states now have closer real-world military cooperation with the US than with each other.

  - US and Saudi military cooperation was a key to the quick coalition victory in the Gulf War, and US and Saudi cooperation was much closer in the Iraq War than is generally apparent. This cooperation has, however, been sharply curtailed as a result of the events of "9-11," and tensions over the war on terrorism. Active US combat forces left Saudi Arabia in 2003, following the Iraq War.

  - The US has shifted the focus of its prepositioning. basing and command and control facilities to Bahrain, Qatar, and Oman, with some presence in the UAE.

- The Southern Gulf states have previously divided into those seeing Iran as a primary threat and those seeing Iraq as a primary threat:

  - The lower Gulf states focus on the naval, air, and subversion threats from Iran.

  - Kuwait and Saudi Arabia focused on Iraq, although Saudi Arabia saw Iran as a serious threat.

  - They now must redefine their strategy and threat perceptions, but so far have shown little practical effort to do so either on a national or GCC level.

- The Southern Gulf states have largely resolved their past border and territorial disputes, but some tensions remain. These include:

  - Lingering tensions between Bahrain and Qatar, although these seem to be rapidly diminishing.

  - A fear of Saudi "dominance" that still affects Qatar, Oman, and the UAE.

  - Internal divisions in the UAE and a lingering fear of Omani and Saudi ambitions to take UAE territory.

  - Kuwaiti concern over border issues with Saudi Arabia.

  - Saudi Arabia concern over smuggling of arms and explosives across the Yemeni border and the risk Yemen could become a future threat.

Key Issues in Force Development

It will take the Southern Gulf states several years to adjust their national force plans to take account of the disappearance of Iraq as a major regional threat. In the interim, improving political relations have already led several Southern Gulf states to limit or cut back on their military efforts, and it seems unlikely that Iraq will emerge as a

focusing threat that will lead to more effective military cooperation even in the lower Gulf. In order to understand the full range of military dynamics involved, it is necessary to understand that there are new priorities for military spending, as well as for effective force planning and development:

- "Oil wealth" in terms of per capita income is now 25-35% of peak in early 1980s in real terms.
- Internal stability and economic development are generally higher priorities than increased military strength.
- "Statism" is a major problem, compounded by poor overall budgeting and programming and continuing budget deficits.
- Force modernization must be accompanied by creating arms transfer and military assistance programs that support key missions against real threats is "help."
- Effective force planning must take probable Southern Gulf and joint coalitions with Western power projection forces into account and encourage interoperability and standardization.
- Modernization must be based on realistic force mixes, life cycle costs, attention to human factors, and sustainability.

The military mission has also shifted to the point when the Southern Gulf states need to focus more on dealing with internal divisions and stability, and particularly the threat of Islamic extremism and terrorism, than the creation of more or better military forces. This focus on internal security is already the new driving force behind Saudi security planning. At the same time, the Southern Gulf states also need to make much more effective and collective efforts to improve their conventional forces. They need to:

- Create an effective planning system for collective defense, and truly standardized and/or interoperable forces.
- Integrate C^4I and sensor nets for air and naval combat, including BVR and night warfare.
- Create joint air defense and air attack capabilities.
- Establish effective cross reinforcement and tactical mobility capabilities.
- Set up joint training, support, and infrastructure facilities.
- Create joint air and naval strike forces.
- Deploy joint land defenses of the Kuwaiti/Northwestern Saudi borders.
- Prepare for outside or over-the-horizon reinforcement.
- Create common advanced training systems.
- Create of improved urban and area security for unconventional warfare and low intensity combat.
- Emphasize both effective leadership and delegation.
- Place a steadily higher emphasis on officer initiative and truly competitive career selection. Increase reliance on NCOs and enlisted personnel.

- Balance forces to achieve proper readiness.

- Establish the ability limit and manage collateral damage.zz

The wild card in such planning is proliferation. While the fall of Saddam's regime had decreased the threat from Iraq's WMD program, Iran has not yet come clean with its nuclear weapons program, and it might be a matter of time before it acquires an atomic bomb.

Military Developments in the Northern Gulf

Figure 1.1 sets the stage by showing how Iranian and Iraqi forces compared with those of the Southern Gulf states in 2005; however, the Iraqi numbers are those before April 2003. The military build-up in the northern Gulf has long dominated both conflict and perceptions of risk in the Gulf region. This build-up began in the 1960s, and accelerated during the 1970s. It involved an arms race between Iran and Iraq that Iran largely dominated until the fall of the Shah in 1979. Most Western arms shipments halted as a result of both the turmoil that followed the Iranian revolution. The end result was to deprive Iran of major resupply of its large US and British forces from 1980 to the present – a development that forced Iran to turn to suppliers like Russia, China, North Korea, and Vietnam with limited success.

In 1980, war broke out between Iran and Iraq and continued until 1988 – a conflict which proved to be one of the bloodiest in the history of the Middle East and the first in which chemical weapons were used. The Iraqi victories in the spring and summer of 1988 destroyed or captured between 40% and 60% of the Iranian armor inventory and up to 50% of Iran's APC artillery.[iv] Despite the losses Iraq suffered during the war, it became the dominant military power in the Gulf. This helped trigger Iraq's invasion of Kuwait in 1990, and the Gulf War that followed. The UN imposed sanctions on any Iraqi import of arms in 1990 that lasted until 2003, and Iraq lost some 30-40% of its military inventory in the Gulf War.

Iraq's military development remained crippled from the end of the Gulf war in 1991 until the fall of Saddam Hussein in April 2003. While Iraq did smuggle in some arms during 1992-2003, such efforts were limited as were its efforts to create the means to deliver weapons of mass destruction.

Iran had a greater ability to import arms after the end of the Gulf War in 1990, but faced major financial problems and could not obtain resupply or new weapons from most Western states. It was able to rebuild some of its conventional capabilities during 1988-2003, and make progress towards acquiring weapons of mass destruction and long-range missiles. In practice, however, the Iranian armed forces have far less war fighting capabilities in 2004 than they did in in 1979.

As has been discussed earlier, the virtual destruction of Iraq's military forces and capability to deploy or acquire weapons of mass destruction in 2003 has fundamentally changed the Gulf military balance. Yet the longer-term trends described earlier have also had a major effect. While some Southern Gulf states have faced recent problems in recapitalizing their forces, these problems have been far more severe in the case of Iran and Iraq and have affected their military development far longer.

Figure 1.1

Gulf Military Forces in 2005

	Iran	Iraq[a]	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia**	UAE	Yemen
Manpower									
Total Active	540,000	424,000	11,200	15,500	41,700	12,400	124,500	50,500	66,700
Regular	350,000	375,000	11,200	15,500	25,000	12,400	124,500	50,000	66,700
National Guard & Other	120,000	0	0	0	6,400	0	75,000	0	0
Reserve	350,000	650,000	0	23,700	0	0	20,000	0	40,000
Paramilitary	40,000	42,000+	10,160	6,600	4,400	0	15,500+	1,100	70,000
Army and Guard									
Manpower	540,000*	375,000	8,500	11,000	31,400	8,500	150,000	50,500	60,000
Regular Army Manpower	350,000	375,000	8,500	11,000	25,000	8,500	75,000	50,500	60,000
Reserve	350,000	650,000	0	0	0	0	20,000	0	40,000
Total Main Battle Tanks***	1,613	2,200	180	385	117	30	1,055	461	790
Active Main Battle Tanks	1,300	1,900	120	293	100	25	710	330	650
Active AIFV/Recce, Lt. Tanks	724	1,300	71	355	167	80	1,270+	780(40)	330
Total APCs	640	2,400	235	321	204	190	3,190	730	710
Active APCs	540	1,800	205	281	185	162	2,630	570	240
ATGM Launchers	75	100+	15	118	48	148	2000+	305	71
Self Propelled Artillery	310	150	13	68 (18)	24	28	170	181	25
Towed Artillery	2,010	1,900	26	0	108	12	238(58)	93	310
MRLs	876+	200	9	27	?	4	60	72(48)	164
Mortars	5,000	2,000+	21	78	101	45	400	155	502
SSM Launchers	51	56	0	0	0	0	10	6	28
Light SAM Launchers	?	1,100	78	0	78	0	1,000+	100	800
AA Guns	1,700	6,000	27	1	26	0	0	62	530
Air Force Manpower	52,000	20,000	1,500	2,500	4,100	2,100	18,000	4,000	5,000
Air Defense Manpower	15,000	17,000	0	0	0	0	16,000	0	2,000
Total Combat Aircraft	306	316	33	80	40	18	291	106	72(40)
Bombers	0	6	0	0	0	0	0	0	0
Fighter/Attack	163+	130	12	39	12	18	171	48	40
Fighter/Interceptor	74+	180	22	14	0	0	106	22	26
Recce/FGA Recce	6	5	0	0	12	0	10	8	0
AEW C4I/BM	1	0	0	0	0	0	5	0	
MR/MPA**	5	0	0	0	0	0	0	0	0
OCU/COIN/CCT	0	0	0	28	16	0	14	28	0
Other Combat Trainers	35	157	0	0	0	0	50	0	6
Transport Aircraft****	68	12	4	4	16	6	45	22	18
Tanker Aircraft	4	2	0	0	0	0	15	0	0
Total Helicopters	628	375	47	28	30	23	178	115	25
Armed Helicopters*****	104	100	40	20	0	19	22	59	8
Other Helicopters*****	524	275	7	8	30	4	156	56	17
Major SAM Launchers	250+	400	15	84	40	9	106	39	57
Light SAM Launchers	95	1,100	-	60	28	90	1,709	134	120
AA Guns	2	6,000	-	60	-	-	340	-	-
Total Naval Manpower	38,000*	2,000	1,200	2,000	4,200	1,800	15,500	2,500	1,700
Regular Navy	15,400	2,000	1,200	2,000	4,200	1,800	12,500	2,500	1,700
Naval Guards	20,000	0	0	0	0	0	0	0	0
Marines	2,600	-	-	-	-	-	3,000	-	-
Major Surface Combattants									
Missile	3	0	3	0	0	0	8	4	0
Other	0	0	0	0	0	0	0	0	0
Patrol Craft									
Missile	10	1	6	10	6	7	9	8	6

(Revolutionary Guards)	10	-	-	-	-	-	-	-	-
Other	42	5	4	0	7	-	17	8	5
Revolutionary Guards (Boats)	40	-	-	-	-	-	-	-	-
Submarines	3	0	0	0	0	0	0	0	0
Mine Vessels	7	3	0	0	0	0	7	0	6
Amphibious Ships	10	0	0	0	1	0	0	0	1
Landing Craft	9	-	4	2	4	0	8	5	5
Support Ships	25	2	5	4	4	-	7	2	2
Naval Air	2,000	-	-	-	-	-	-	-	-
Naval Aircraft									
Fixed Wing Combat	5	0	0	0	0	0	0	0	0
MR/MPA	10	0	0	0	(7)	0	0	0	0
Armed Helicopters	19	0	0	0	0	0	21	7	0
SAR Helicopters	-	0	0	0	0	0	4	4	0
Mine Warfare Helicopters	3	0	0	0	0	0	0	0	0
Other Helicopters	19	-	2	-	-	-	19	-	-

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.
a The Figures for Iraq are for March 2003, before the Iraq War.
* Iranian total includes roughly 120,000 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. As for the National Guard, some estimates put the manpower at 95,000-100,000.
*** 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); Jane's Sentinel, Periscope; and Jaffee Center for Strategic Studies, The Military Balance in the Middle East (JCSS, Tel Aviv)

II. Trends in Gulf Conventional Military Forces

Later sections will show in depth why comparisons of Gulf conventional military forces disguise major problems in military capability. This does not, however, make such comparisons unimportant. The following figures describe very real military capabilities that history has shown may become involved in conflicts with little or no warning. At the same time, comparisons of the strength of the conventional forces, and the military build up of the various Gulf states, provide important insights into the military strengths and weaknesses of each state, and the problems they face in modernizing and restructuring their forces.

- **Figure 2.1** shows the radical shifts taking place in Gulf demographics, and that high population growth is greatly reducing the problems the Southern Gulf states have had in manning their forces. At the same time, it shows that Iranian, Iraqi, Saudi, and Yemeni population growth is so high that it is placing a massive strain on their respective economies and ability to fund military forces. In any case, the problem all the Gulf states face is manpower quality and not manpower quantity.

- **Figure 2.2** provides a count of comparative major equipment strength. The fact Iraq's 2,600 main battle tanks and 316 combat aircraft are no longer part of the count illustrates just how much the regional balance has changed as a result of the Iraq War. At the same time, it is clear that weapons strength is in no way proportionate to the comparative size of arms imports – reflecting the tendency to keep large amounts of obsolescent and low grade equipment in service even if it contributes little to military effectiveness.

- **Figure 2.3** shows the historical trend in military manpower. It is clear that Iran and Iraq long had far larger forces than those of the Southern Gulf states. Once again, the elimination of Iraq makes a critical difference. Iran continues to have far more military manpower than Saudi Arabia, but the effectiveness of this manpower is severely limited by the problems in Iran's pool of military equipment.

- **Figure 2.4** provides a similar comparison, but with the actual manpower numbers for each country. It is clear that Saudi manpower has increased sharply relative to that of Iran over time, and that the Southern Gulf states have the cumulative manpower to support effective collective defense. In practice, however, coordination and interoperability remains extremely limited, robbing the smaller Gulf states of much of their potential military effectiveness.

- **Figure 2.5** shows military manpower by service. It illustrates a relatively heavy emphasis on air force and air defense manpower for most countries, and naval manning too small to support effective navies without extensive foreign civilian support. If the data on land forces are compared to the later figures on land force equipment, it is also clear that the manpower pool of most smaller Southern Gulf countries is too small to properly crew and support the pool of weaponry in their land forces. .

- **Figures 2.6** through **2.15** display the trends in armor, tanks, and artillery. **Figure 2.6** again shows that Iran and Iraq had a far larger pool of equipment than their recent arms imports could possibly maintain and modernize. It is also again clear how much the destruction of Iraq's forces have affected the conventional balance.

- **Figure 2.7** shows the trends in main battle tanks and the impacts that the Iran-Iraq War and Gulf War had on the respective holding of Iran and Iraq. It also shows the cumulative growth in the holdings of the Southern Gulf states, although Saudi strength has been relatively static since the early 1990s.

- **Figure 2.8** shows that the trends in high quality tanks are radically different from those in the previous figure, and that Saudi numbers have near parity with Iran (whose tanks are generally still sharply inferior to those of Saudi Arabia and the tanks in most of the smaller Southern Gulf states.

- **Figure 2.9** shows that Iran does not have anything like the number of other armored fighting vehicles necessary to support its strength in main battle tanks, and how much the destruction of Iraq's land forces have changed this aspect of the balance. In general, the smaller Southern Gulf states have also developed a good balance of tanks and other armored vehicles.

- **Figure 2.10** shows the distribution of current holdings of other armored vehicles by kind. It reflects that lack of armored mobility in Iran's forces. At the same time, it is clear that each Southern Gulf state has developed a different force mix with little regard to interoperability.

- **Figure 2.11** provides a breakout of current holdings of other armored vehicles by specific type (although it does not attempt to show the submodels.) The lack of standardization is even more apparent. So is the tendency to retain and rely on older and obsolescent types in a number of Gulf armies.

- **Figure 2.12** compares total numbers of APCs – a measure of infantry mobility and maneuver capability. The lack of Iranian capability is particularly striking, although Saudi Arabia, Kuwait, and the UAE are the only Southern Gulf states with a proper balance of such mobility**.**

- **Figure 2.13** compares artillery strength. Iran's massive build up of such weapons during the Iran-Iraq War is still a major factor in the Gulf balance. This is the area where Iran has its greatest lead over the Southern Gulf states. It is also clear, however, that almost all of the Iranian lead is in towed weapons, and its artillery maneuver strength is severely limited.

- **Figures 2.14 and 2.15** show the comparative strength of multiple rocket launchers. Once again, Iran has a major lead. Yemen also has comparatively large numbers of such weapons. Multiple rocket launchers provide a partial substitute for air power and can deliver large amounts of area fire, although generally with limited accuracy.

- **Figures 2.15** through **2.20** display data on combat aircraft, armed helicopters, and electronic warfare aircraft.

- **Figure 2.15** shows total operational combat air strength. Iran has slowly built up much of the strength it lost after the fall of the Shah and in the Iran-Iraq War. The Iraqi Air Force lost roughly half of its strength during the Gulf War in 1991, and effectively ceased to exist in 2003. Saudi Arabia has good strength figures, but limited training, readiness, and sustainability. The UAE has good numbers for a country its size, but limited real-world effectiveness. The Yemeni air force lost much of its forces because of civil war and funding reasons,

- **Figure 2.16** compares total fixed wing and armed helicopter strength. The growing importance of armed helicopters in the Southern Gulf is apparent. The Iranian holdings are largely worn and obsolescent and the Iraqi armed helicopter forces no longer exist..

- **Figure 2.17** shows Saudi Arabia's advantage over Iran in terms of high quality aircraft. At the same time, it again shows the lack of standardization and the interoperability problems of the Southern Gulf states.

- **Figure 2.16** reflects the limited emphasis on reconnaissance aircraft capability in the Gulf region, and the limitations to situation awareness and targeting. The problems for the southern Gulf states will, however, be of limited importance if they operate in a coalition with the US.

- **Figure 2.19** shows that Saudi Arabia has a monopoly of airborne warning and control systems, and that its AWACS aircraft give it a major advantage in battle management, some forms of intelligence collect and air force maritime patrol capability – although Iran still operates aging US-supplied maritime patrol aircraft.

- **Figure 2.20** shows the balance of combat helicopters. Saudi Arabia has been relative slow to build up its forces, but those of Iran are worn and obsolescent and Iraq's forces have effectively ceased to exist.

- **Figure 2.21** shows that Saudi Arabia has the only modern mix of advanced land-based defenses in the Gulf, Iran has extensive assets, but many are obsolete or obsolescent, and they are poorly netted and vulnerable to electronic warfare. Iraq's assets have effectively ceased to exist. The smaller Southern Gulf states have a wide mix of assets, purchased with little attention to interoperability and which generally would have limited effectiveness because of a lack of effective long-range sensors, battle management systems training and readiness, and strategic depth.

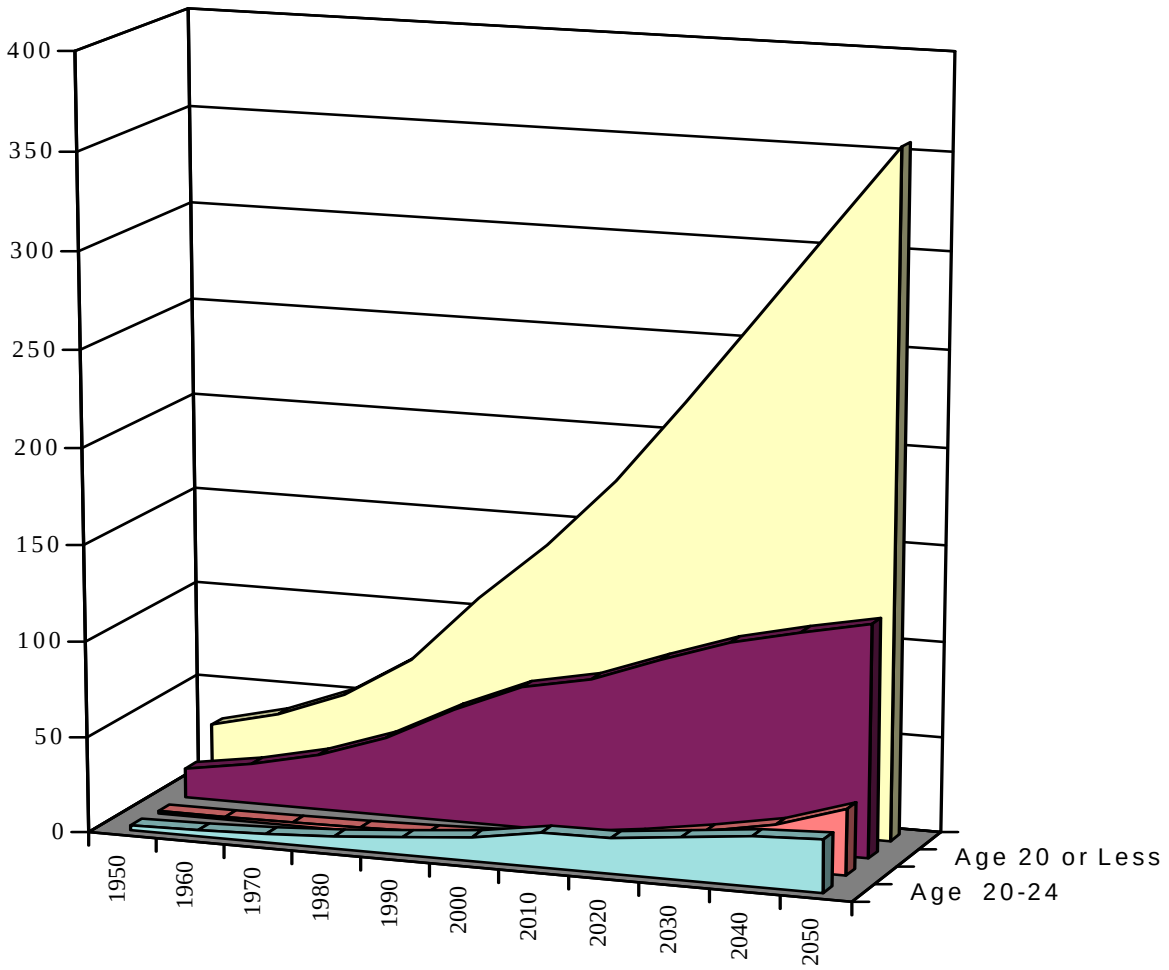
- **Figures 2.22** compares combat ship strength. The qualitative issues affecting the forces have been described earlier. Iran is the only significant Gulf Navy. Saudi Arabia has significant total ship strength, and better and more modern ships, but limited readiness and proficiency. The lack of interoperability, specialization, and orientation around key missions leaves most Southern Gulf navies with only limited ability to cooperate. So does a lack of effective airborne surveillance, modern minewarfare ships, and ASW capabilities.

Taken together, these figures and tables provide a good picture of the overall size of the forces in the region. At the same time, later it will become clear that total numbers usually disguise serious problems in actual warfighting capability, and that the Gulf states are even less able than those in other parts of the MENA region to make effective use of their total military assets, and provide suitable training, readiness, and sustainability.

Figure 2.1

Population Growth in the Gulf

(UN Estimate - Population in Millions)



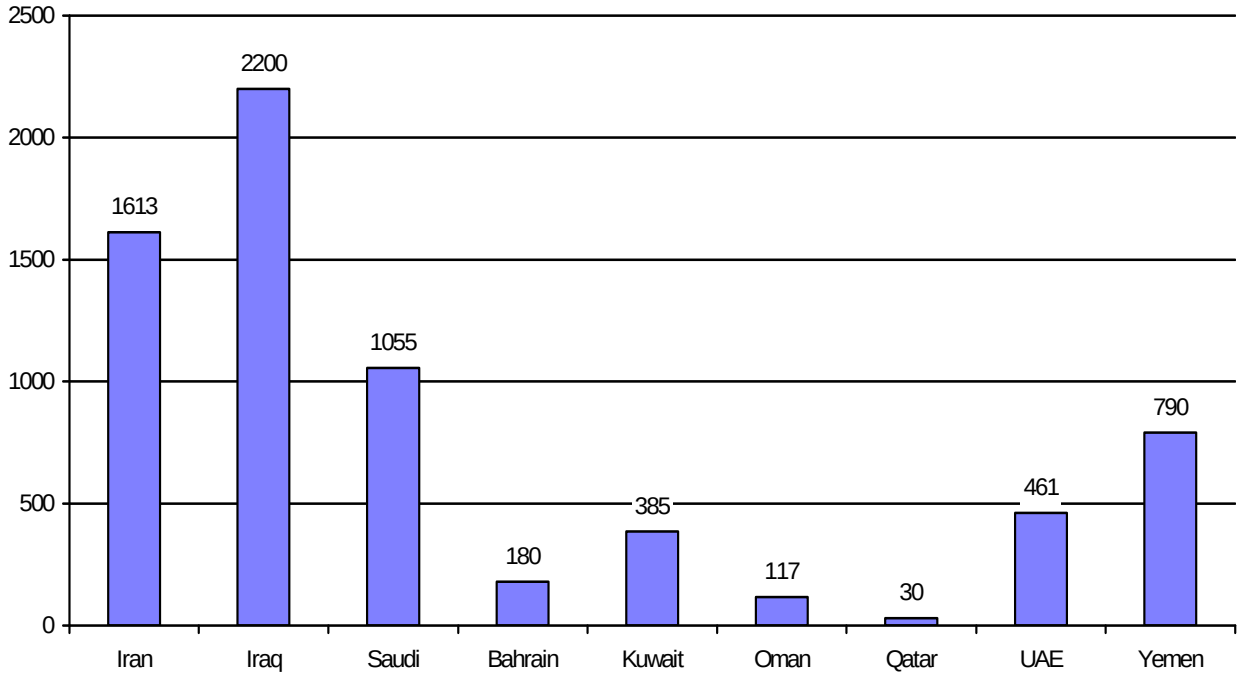
	1950	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
Age 20-24	2.5	3.2	4.5	6.5	9.4	12.6	18.2	18.7	22.4	26.2	27.8
Age 65+	1.3	1.4	1.7	2.2	3	4.3	6.5	10.9	16.5	23.1	34.5
Age 20 or Less	15.4	20.9	28.8	40.9	59	73.7	80.9	94	106	114.1	121.2
Total	30.4	39	52.3	74	109.6	140.2	176.1	219.4	264.6	310.3	355.4

Source: Adapted by Anthony H. Cordesman from data provided by the US Census Bureau

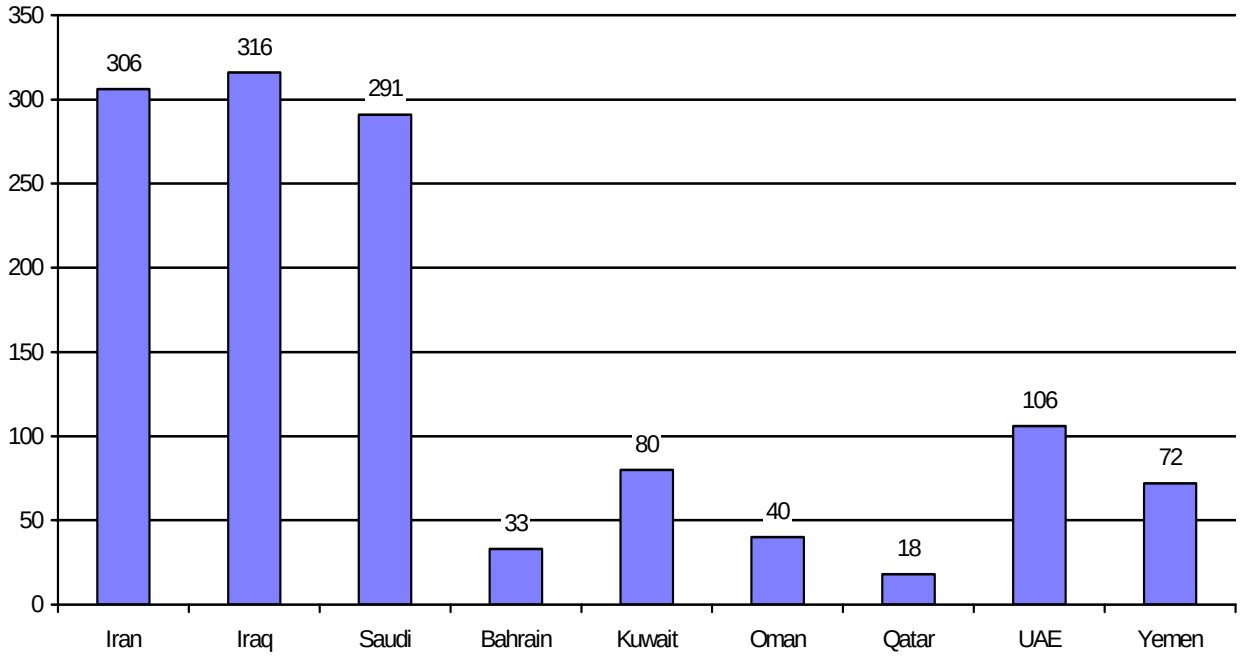
Figure 2.2

Major Measures of Key Combat Equipment Strength in 2005

Total Main Battle Tanks in Inventory

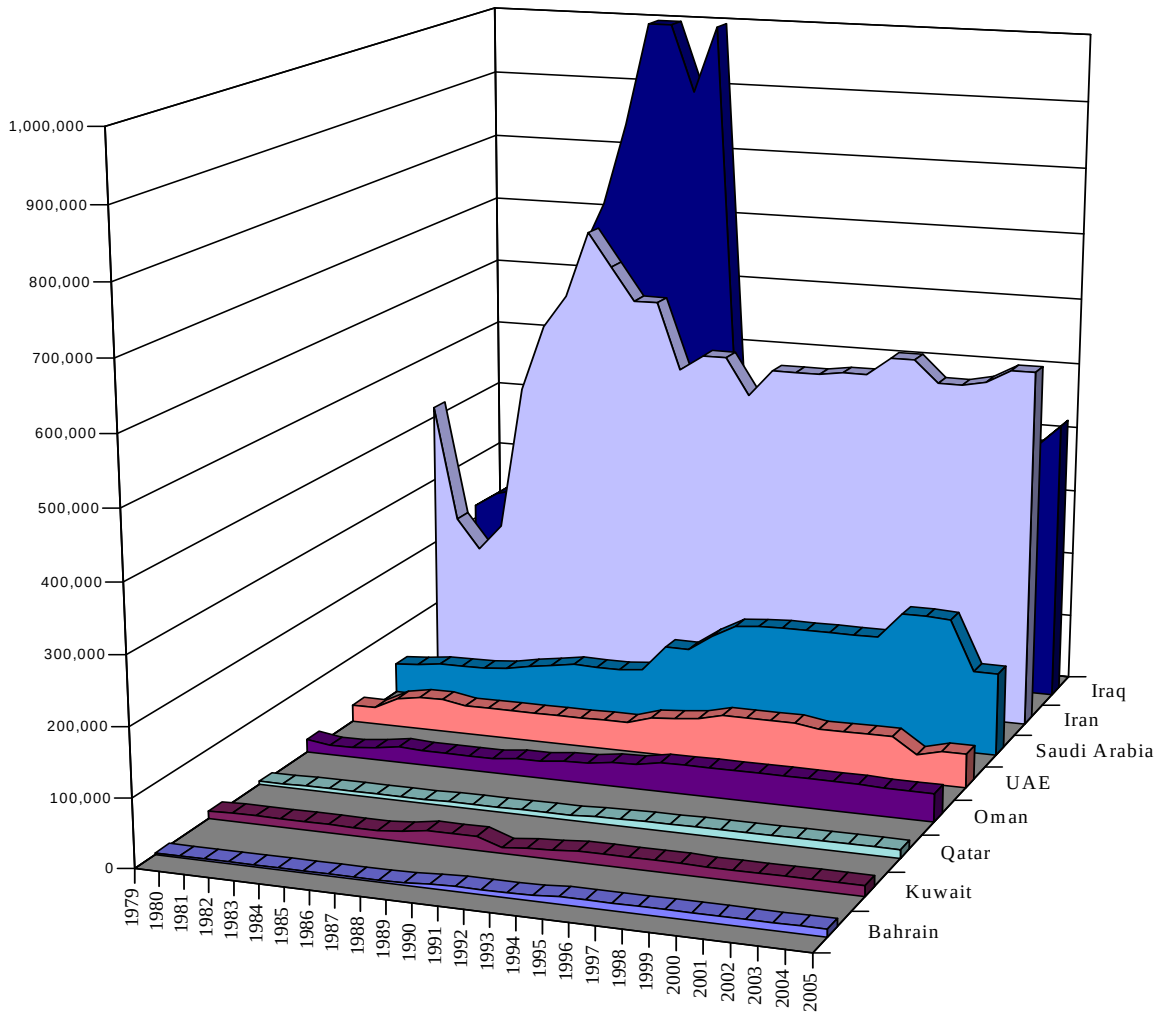


Total Fixed Wing Combat Aircraft



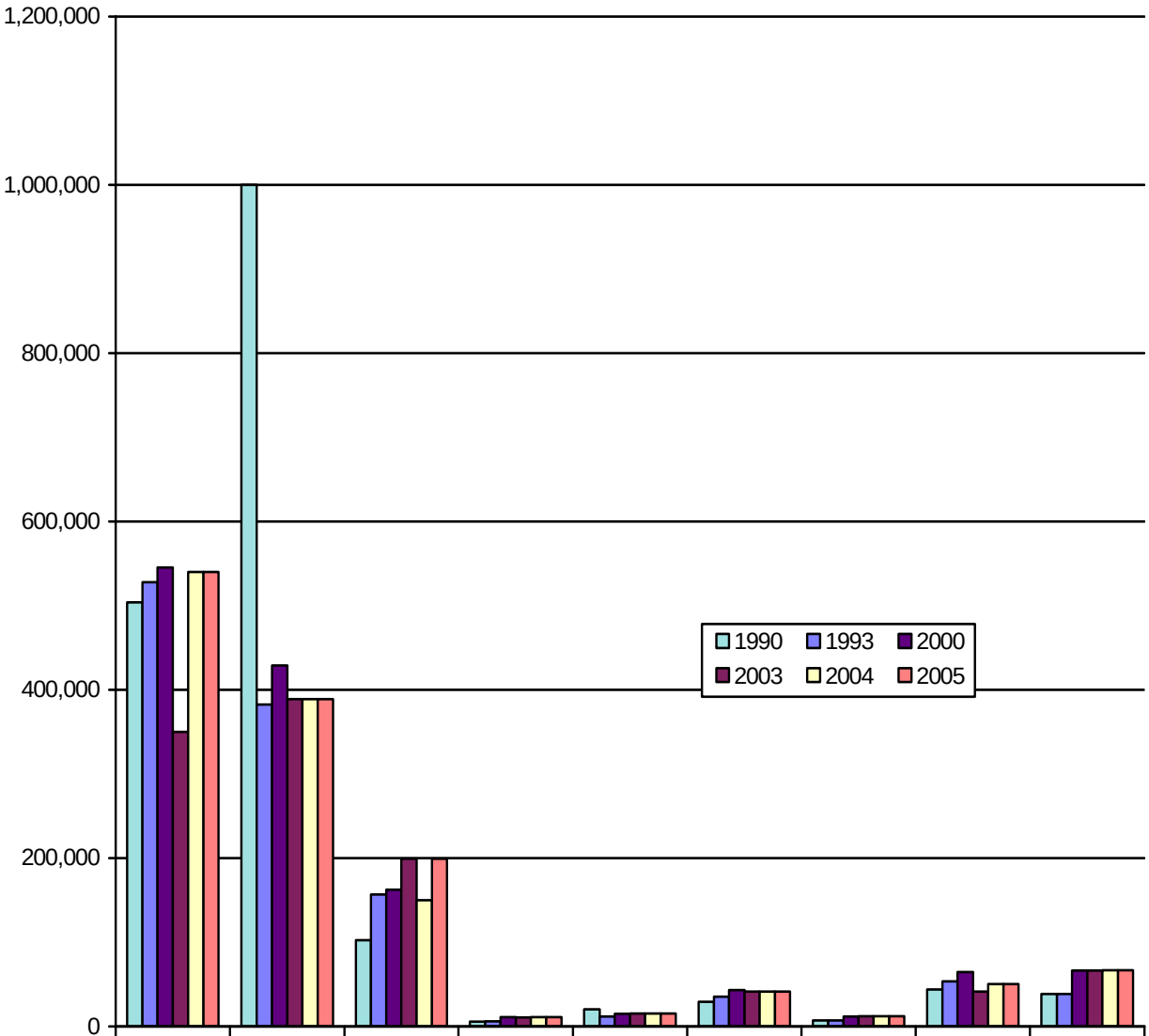
Source: Adapted by Anthony H. Cordesman from the IISS Military Balance, 2004-2005, and various sources.

Figure 2.3
Comparative Trends in Gulf Total Active Military Manpower 1979-2005



Note: Saudi totals include full-time active National Guard, Omani totals include Royal Guard, Iranian totals include Revolutionary Guards, and Iraqi totals include Republican Guards and Special Republican Guards.
Source: Estimated by Anthony H. Cordesman using data from various editions of the IISS The Military Balance, Jane's Sentinel, and Military Technology.

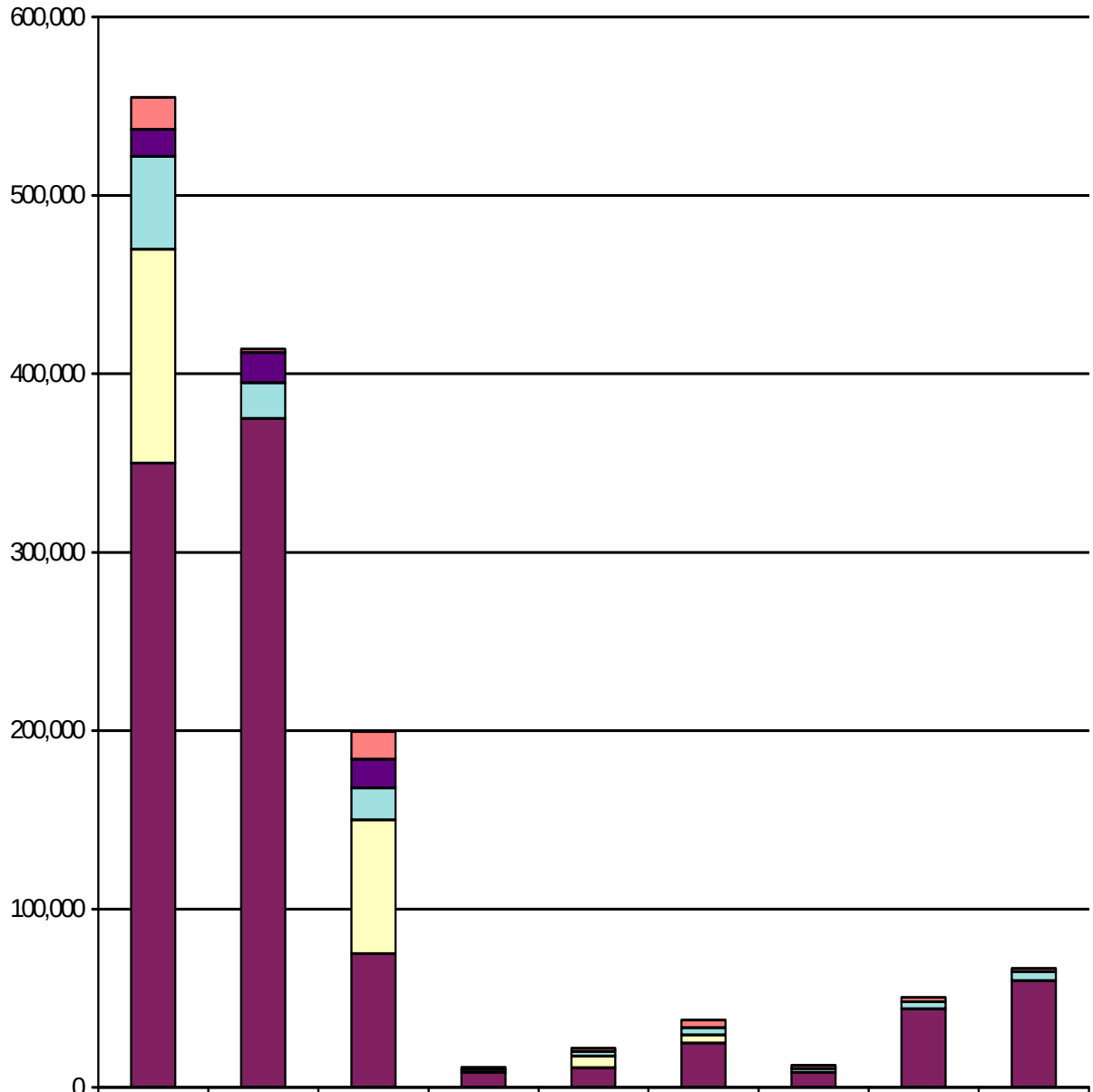
Figure 2.4
Total Active Military Manpower in All Gulf Forces 1990-2005



	Iran	Iraq	Saudi Arabia	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
1990	504,000	1,000,000	102,500	6,000	20,300	29,500	7,500	44,000	38,500
1993	528,000	382,500	157,000	6,150	11,700	35,700	7,500	54,000	38,500
2000	545,600	429,000	162,500	11,000	15,300	43,500	11,800	64,500	66,300
2003	350,000	389,000	199,500	10,700	15,500	41,700	12,400	41,500	66,500
2004	540,000	389,000	150,000	11,200	15,500	41,700	12,400	50,500	66,700
2005	540,000	389,000	199,500	11,200	15,500	41,700	12,400	50,500	66,700

Note: Saudi totals include full-time active National Guard, Omani totals include Royal Guard, Iranian totals include Revolutionary Guards, and Iraqi totals include Republican Guards and Special Republican Guards.
Source: Estimated by Anthony H. Cordesman using data from various editions of the IISS The Military Balance, Jane's Sentinel, and Military Technology.

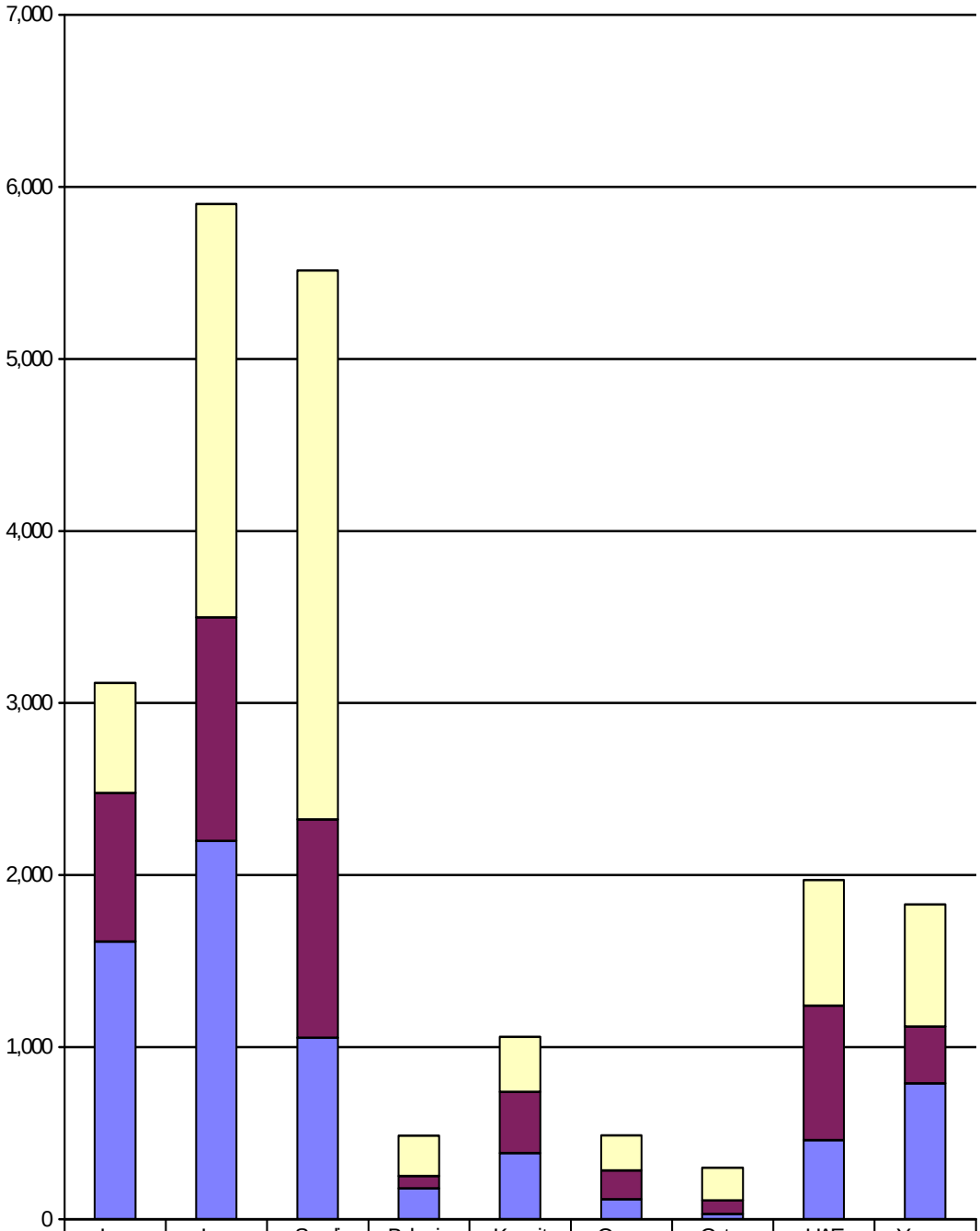
Figure 2.5
Total Gulf Military Manpower by Service in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Navy	18,000	2,000	15,500	1,200	2,000	4,200	1,800	2,500	1,700
Air Def	15,000	17,000	16,000	-	-	-	-	-	-
Air	52,000	20,000	18,000	1,500	2,500	4,100	2,100	4,000	5,000
Guard	120,000	0	75,000	-	6,600	4,400	-	-	-
Army	350,000	375,000	75,000	8,500	11,000	25,000	8,500	44,000	60,000

Source: Estimated by Anthony H. Cordesman using data from the IISS, The Military Balance, various editions. Some estimates put the Saudi National Guard numbers at 95,000-100,000.

Figure 2.6
Total Gulf Operational Armored Fighting Vehicles in 2005

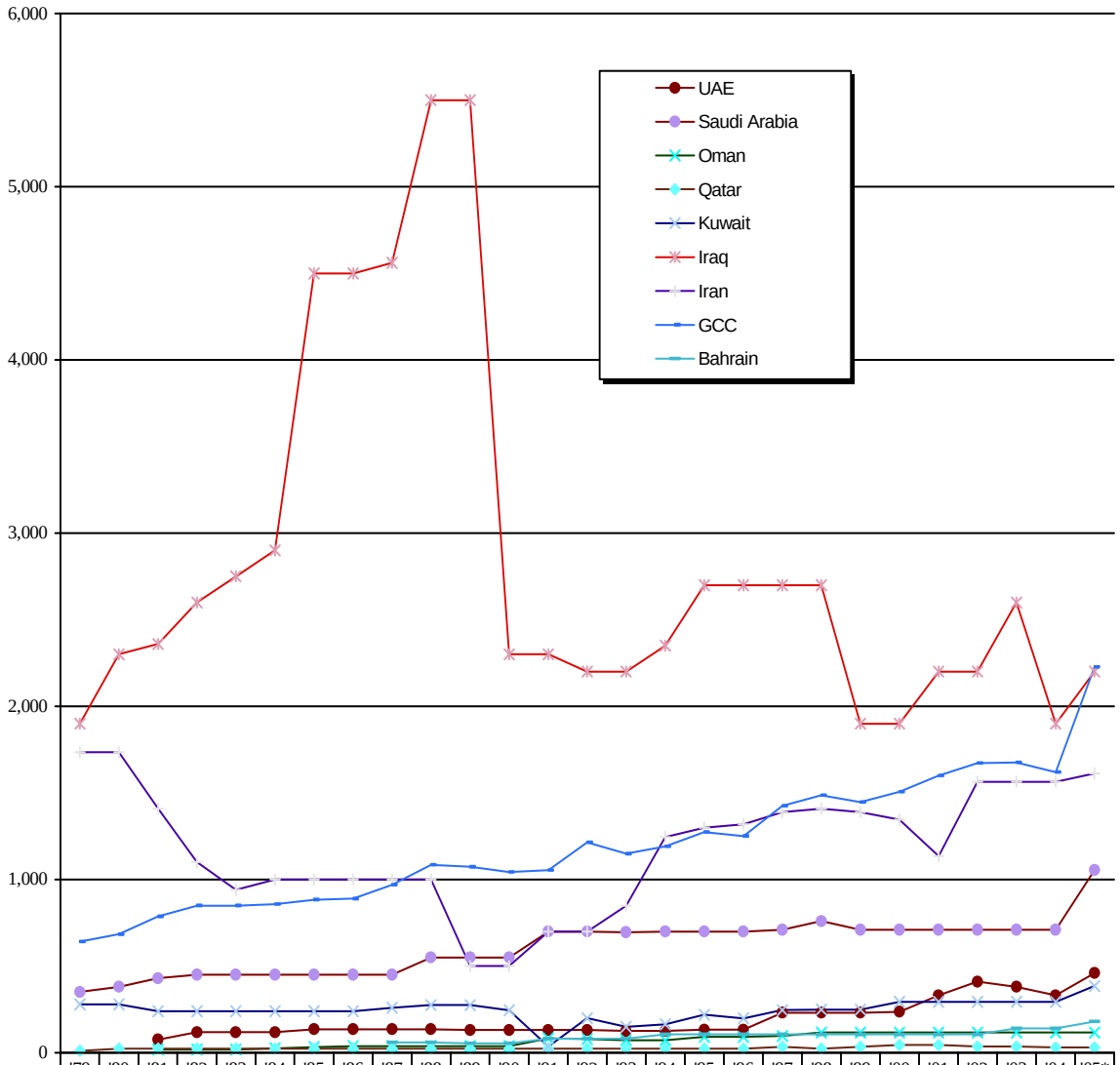


	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
APCs	640	2,400	3,190	235	321	204	190	730	710
AIFV/Recce/Lt. Tanks	865	1,300	1,270	71	355	167	80	780	330
Main Battle Tanks	1,613	2,200	1,055	180	385	117	30	461	790

Source: Estimated by Anthony H. Cordesman using data from various editions of the IISS The Military Balance and Jane's Sentinel.

Figure 2.7

Total Operational Main Battle Tanks in All Gulf Forces 1979 to 2005

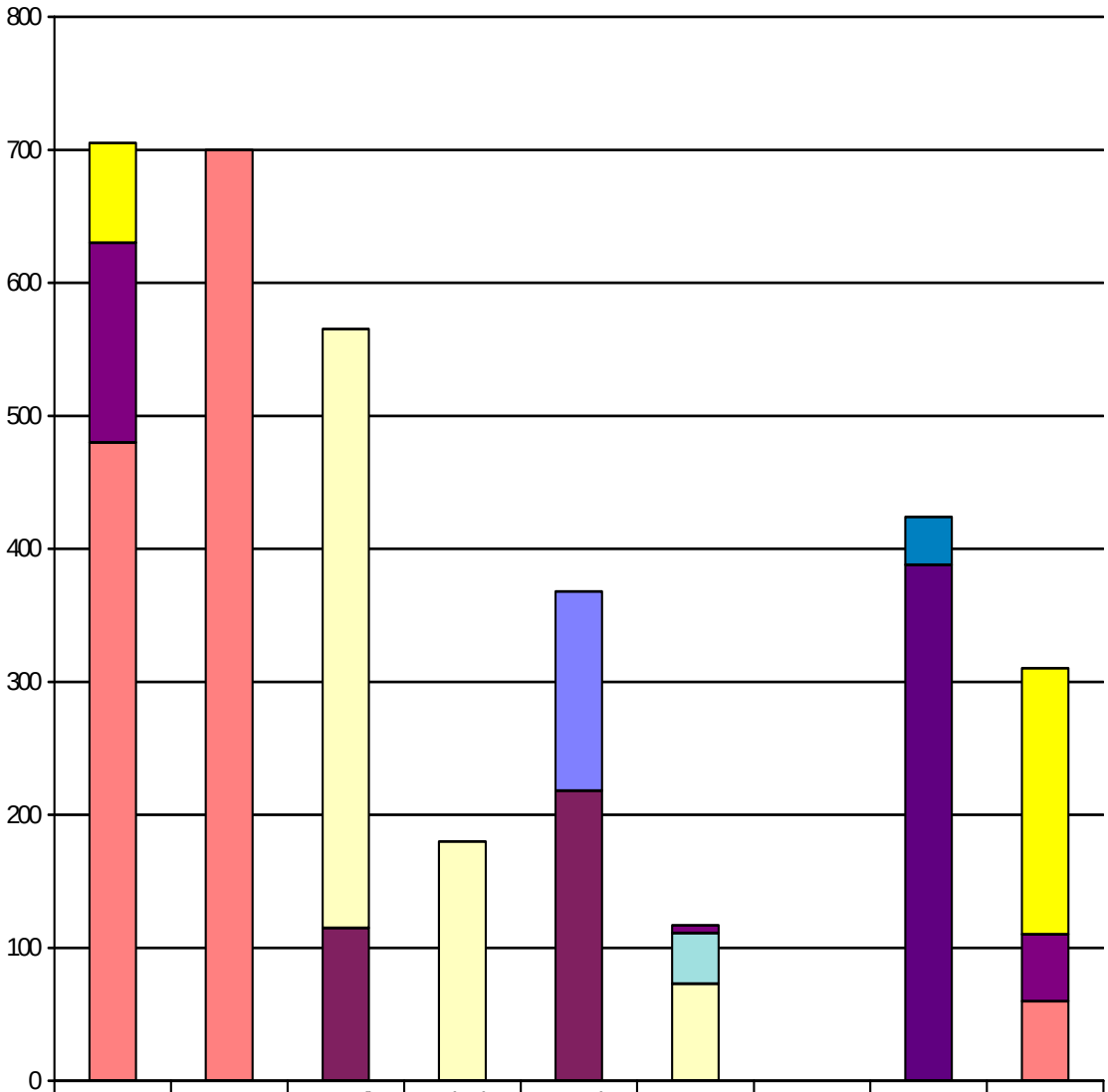


	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05*
UAE	-	-	75	118	118	118	136	136	136	136	131	131	131	131	125	125	133	133	231	231	231	237	331	411	381	330	461
Saudi Arabia	350	380	430	450	450	450	450	450	450	550	550	550	700	700	696	700	700	700	710	760	710	710	710	710	710	710	1,05
Oman	-	-	18	18	18	26	33	39	39	39	39	39	82	78	73	73	91	91	97	117	117	117	117	117	117	117	117
Qatar	12	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	34	44	44	35	35	30	30
Kuwait	280	280	240	240	240	240	240	240	260	275	275	245	36	200	150	164	220	198	247	249	249	293	293	293	293	293	385
Iraq	1,90	2,30	2,36	2,60	2,75	2,90	4,50	4,50	4,56	5,50	5,50	2,30	2,30	2,20	2,20	2,35	2,70	2,70	2,70	2,70	1,90	1,90	2,20	2,20	2,60	1,90	2,20
Iran	1,73	1,73	1,41	1,10	940	1,00	1,00	1,00	1,00	1,00	500	500	700	700	850	1,24	1,30	1,32	1,39	1,41	1,39	1,34	1,13	1,56	1,56	1,56	1,61
GCC	642	684	787	850	850	858	883	889	969	1,08	1,07	1,04	1,05	1,21	1,14	1,19	1,27	1,25	1,42	1,48	1,44	1,50	1,60	1,67	1,67	1,62	2,22
Bahrain	-	-	-	-	-	-	-	-	60	60	54	54	81	81	81	106	106	106	106	106	106	106	106	106	140	140	180

Note: Iranian totals include Revolutionary Guards, and Iraqi totals include Republican Guards and Special Republican Guards.
* The data for 2005 represent the total number of MBTs.

Source: Estimated by Anthony H. Cordesman using data from the IISS, The Military Balance, various editions.

Figure 2.8
Medium to High Quality Main Battle Tanks By Type in 2005

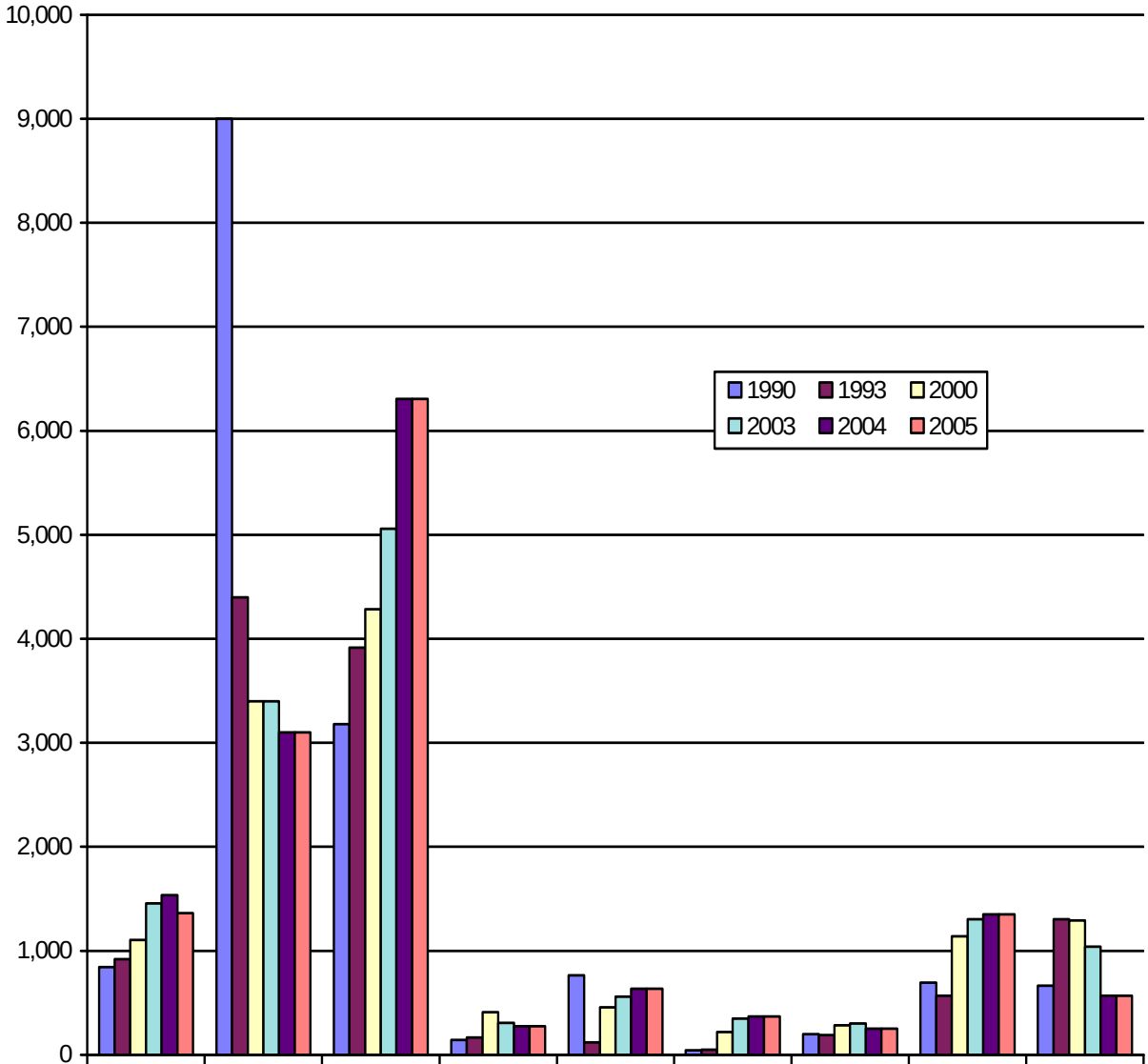


	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
T-62	75								200
M-60A1	150					6			50
OF-40								36	
T-72	480	700							60
M-84					150				
Le Clerc								388	
Challenger 2						38			
M-60A3			450	180		73			
M-1A2			115		218				

Source: Estimated by Anthony H. Cordesman using data from the IISS, The Military Balance, various editions.

Figure 2.9

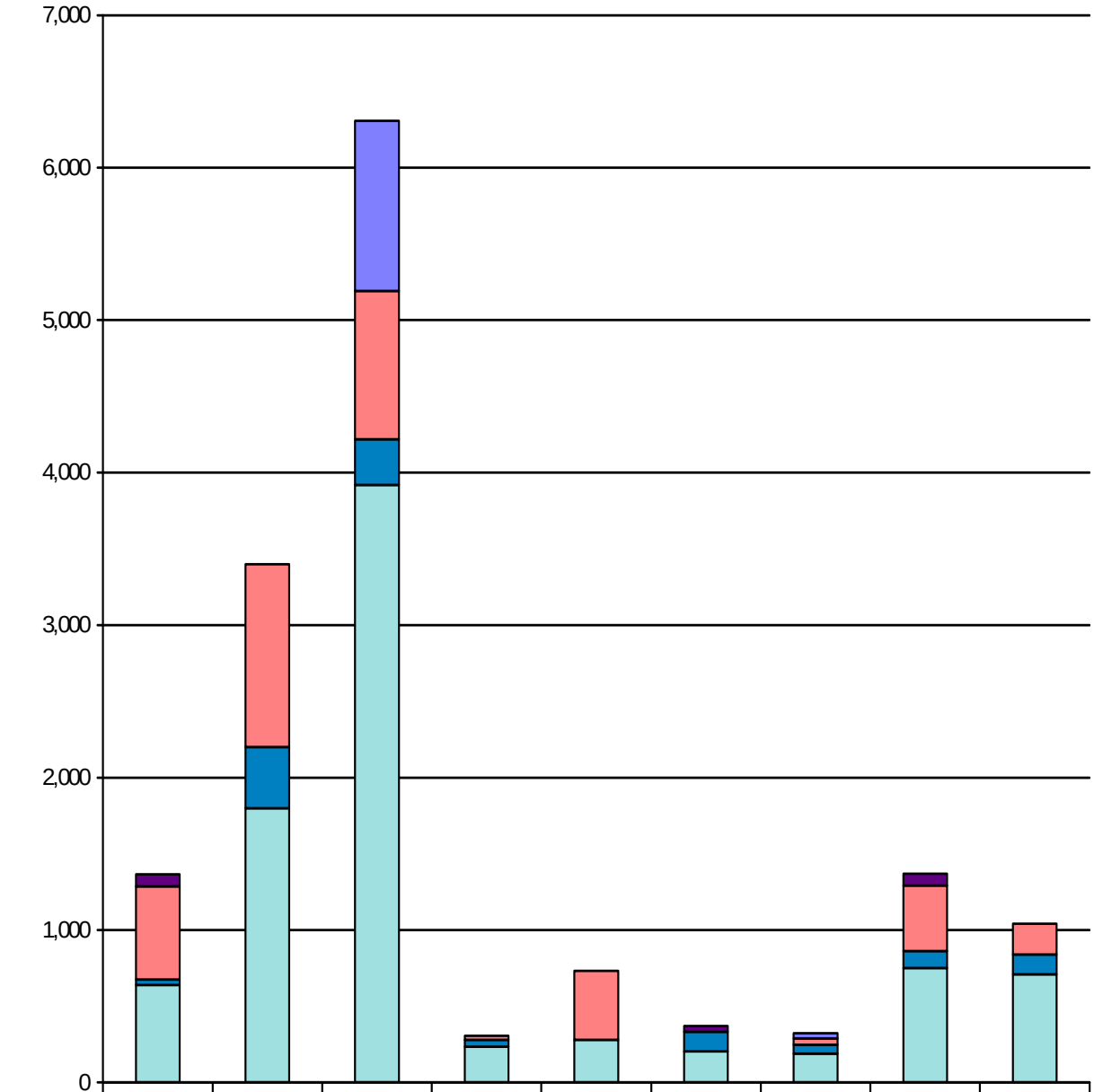
Total Operational Other Armored Vehicles (Lt. Tanks, LAVs, AIFVs, APCs, Recce) in Gulf Forces 1990-2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
1990	845	9,000	3,180	141	765	44	198	694	665
1993	920	4,400	3,915	168	120	51	190	571	1,305
2000	1,105	3,400	4,285	411	455	219	284	1,138	1,290
2003	1,455	3,400	5,057	306	561	349	302	1,305	1,040
2004	1,535	3,100	6,307	276	636	371	252	1,350	570
2005	1,364	3,100	6,307	276	636	371	252	1,350	570

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.10
Gulf Other Armored Fighting Vehicles (OAFVs) by Category in 2005

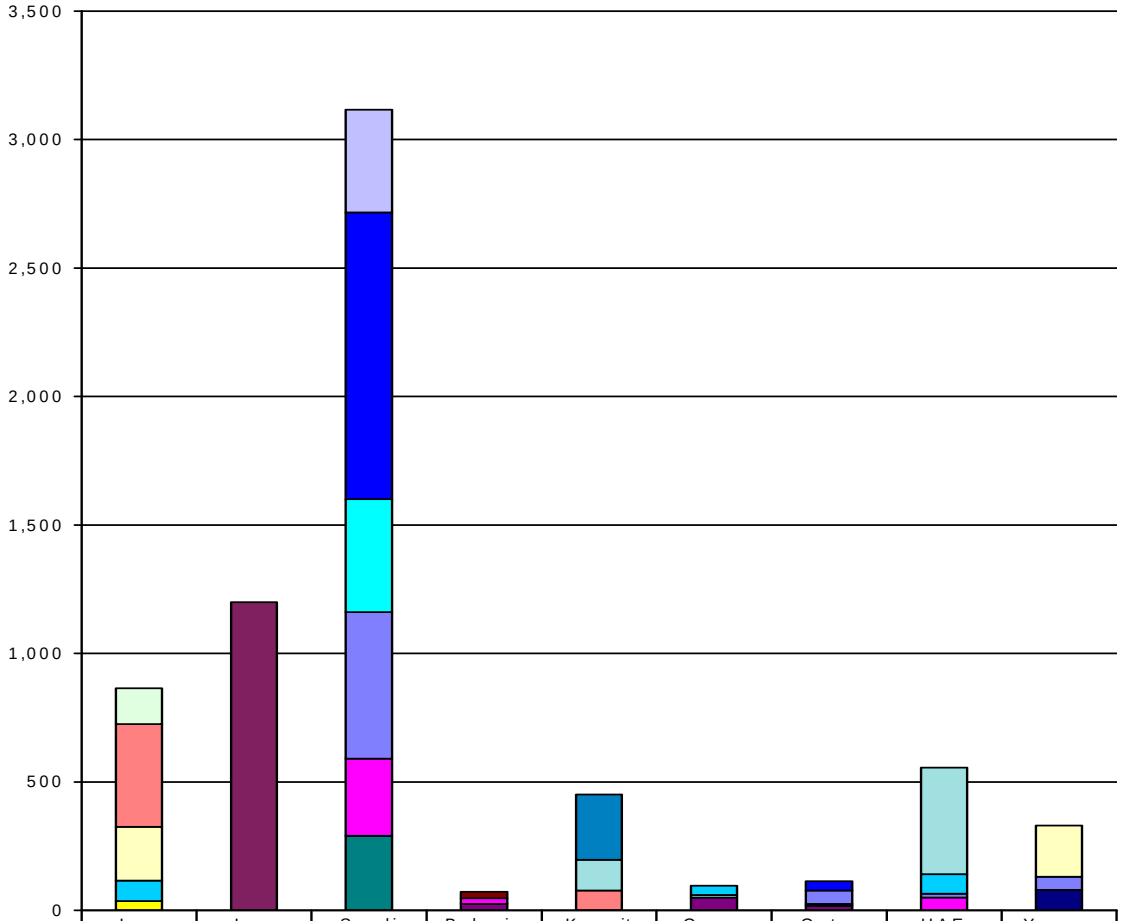


	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
LAV			1,117				36		
Lt. Tank	80					37		76	
AIFV	610	1,200	970	25	450		40	430	200
Recce	35	400	300	46		130	58	113	130
APC	640	1,800	3,920	235	281	204	190	750	710

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.11

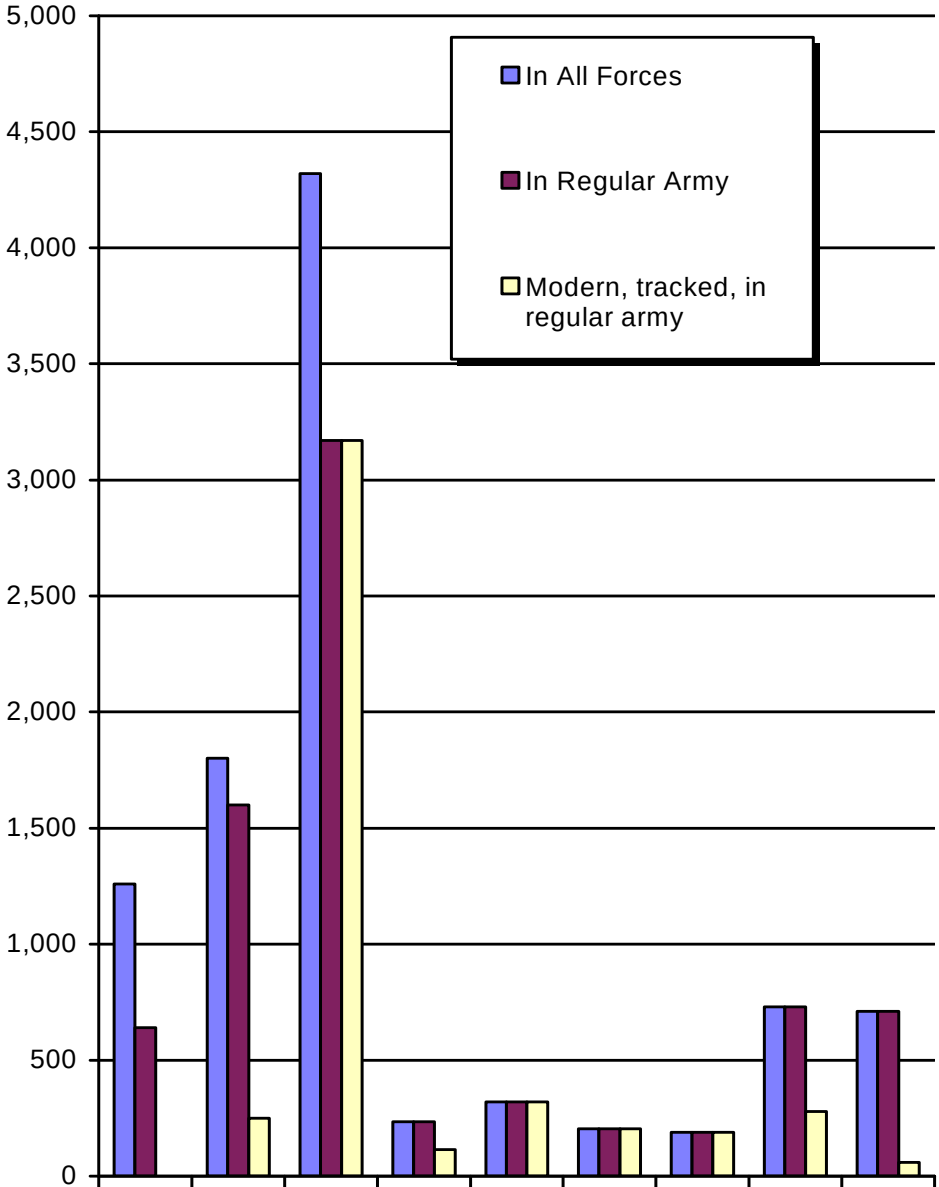
Armored Infantry Fighting Vehicles, Reconnaissance Vehicles, LAVs and Light Tanks by Type in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Boragh	140								
Bradley			400						
Warrior					254				
BMP-3					120			415	
BMP-2	400				76				
BMP-1	210								200
BMP-1/2		1,200							
Scorpion	80					37		76	
LAV-25			1,117				36		
Piranha			440						
YPR-765				25					
AMX-10P/RC			570				52	15	50
BDRM-2									80
AML-60/90			300	22				49	
EE-9 Cascavel	35								
V-150			290				8		
VBC-90						9			
Armored Cars				24		50	16		

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.12
Armored Personnel Carriers (APCs) in Gulf Armies in 2005

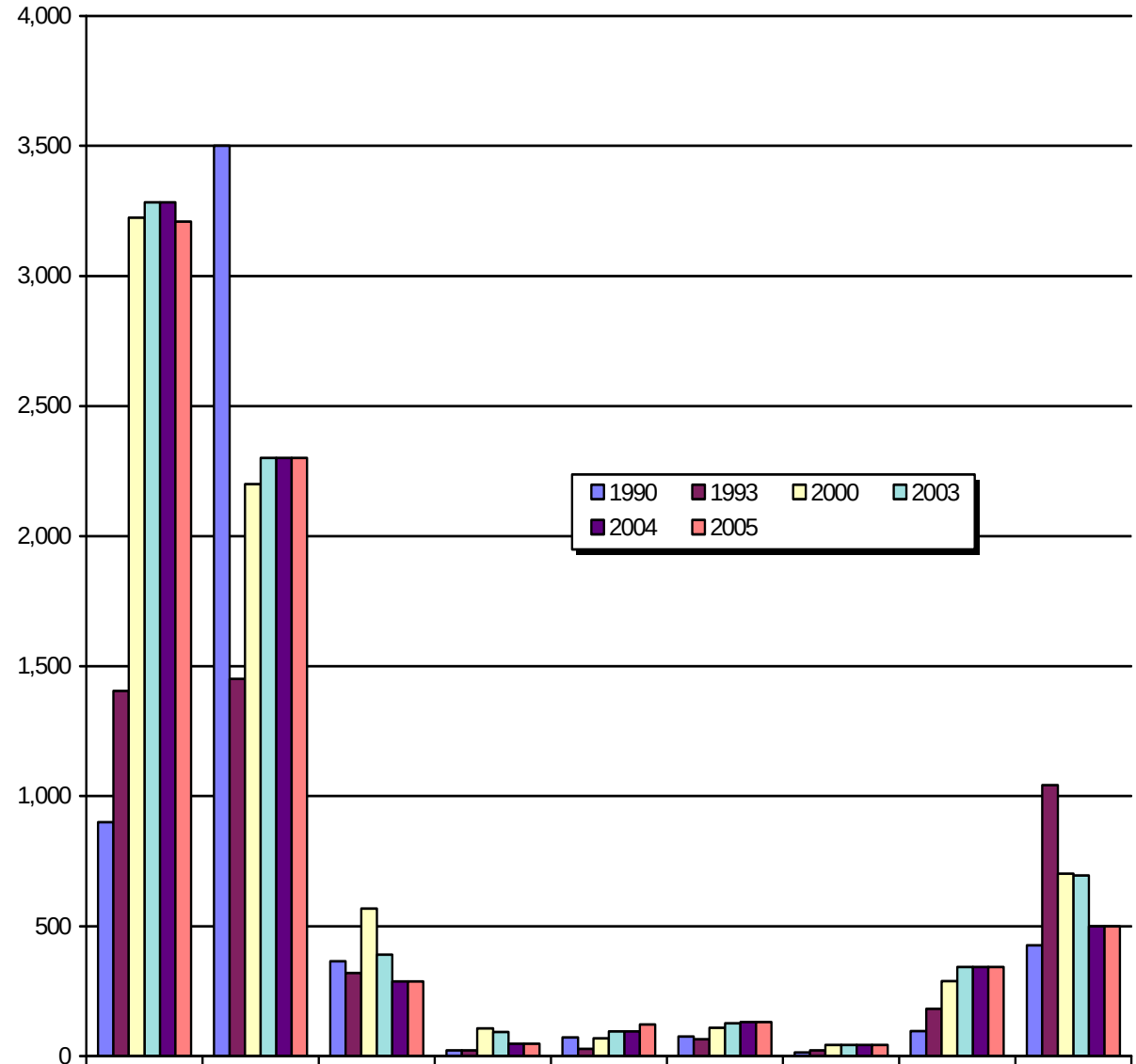


	Iran	Iraq	Saudi Arabia	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
In All Forces	1,260	1,800	4,320	235	321	204	190	730	710
In Regular Army	640	1,600	3,170	235	321	204	190	730	710
Modern, tracked, in regular army	?	250	3,170	115	321	204	190	280	60

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.13

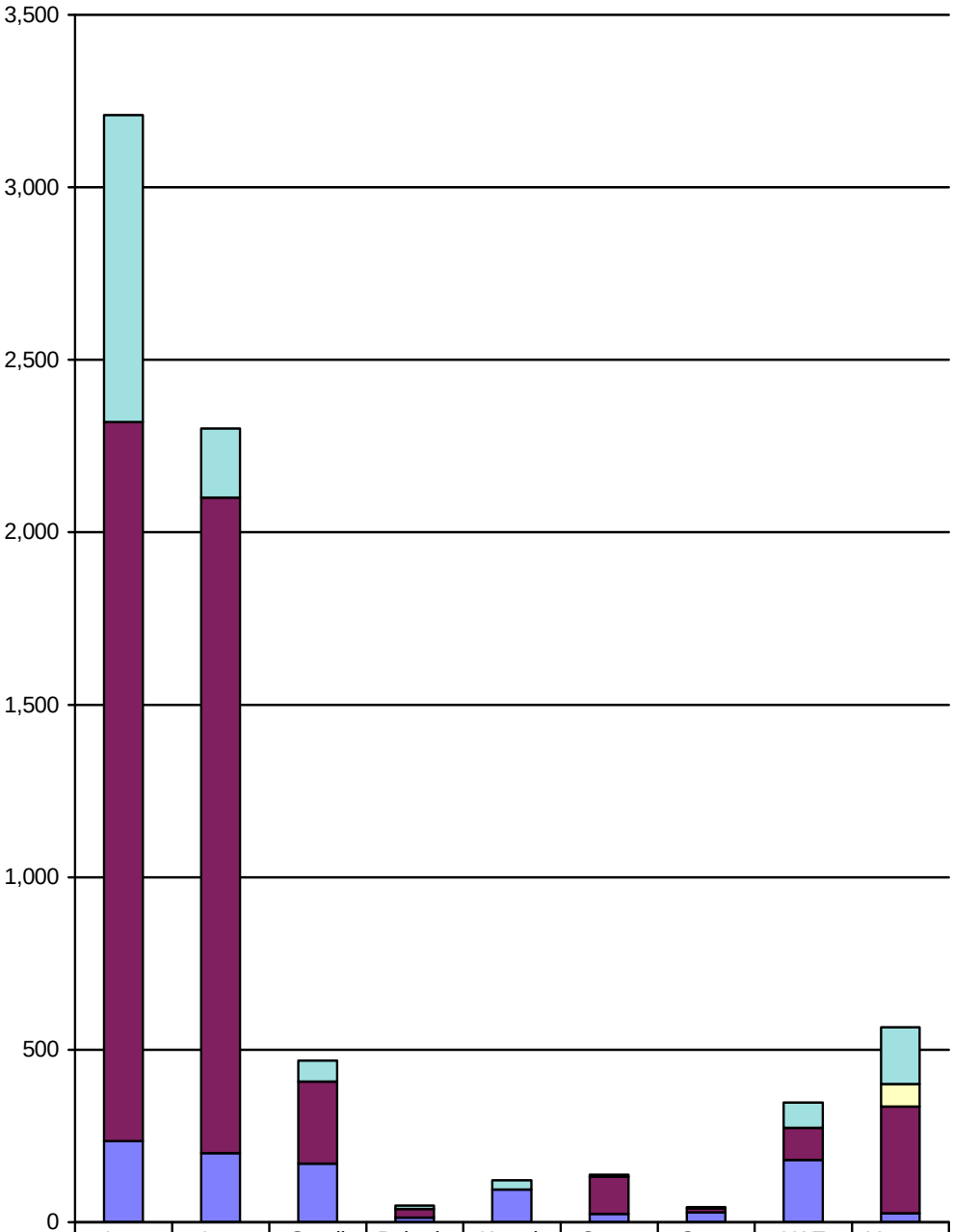
Total Operational Self-Propelled and Towed Tube Artillery and Multiple Rocket Launchers in Gulf Forces 1990-2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
1990	900	3,500	365	22	72	75	14	97	427
1993	1,405	1,450	320	22	29	66	22	182	1,042
2000	3,224	2,200	568	107	68	109	44	289	702
2003	3,284	2,300	390	93	95	126	44	343	695
2004	3,284	2,300	288	48	95	132	44	343	499
2005	3,209	2,300	288	48	122	132	44	343	499

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

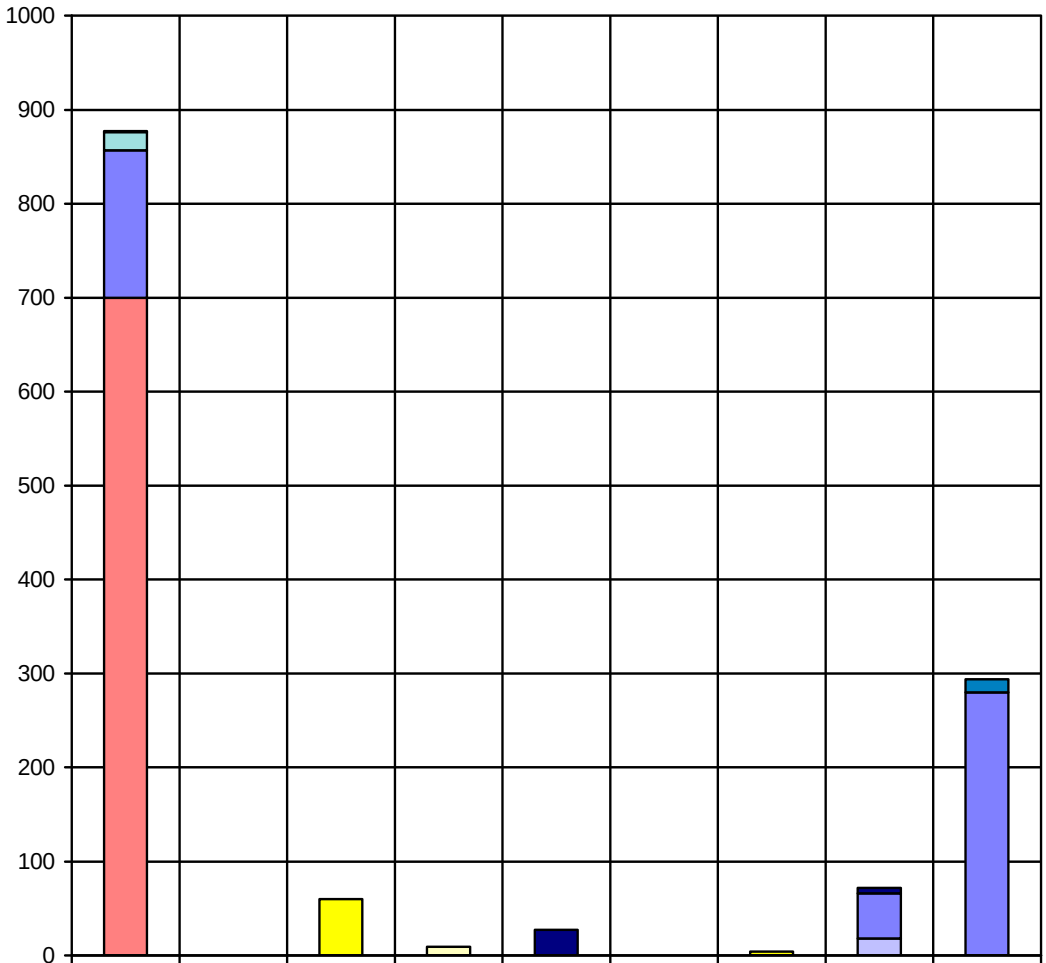
Figure 2.14
Total Operational Gulf Artillery Weapons in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Multiple Rocket Launcher	889	200	60	9	27	6	4	72	164
Assault and Coastal	0	0	0	0	0	0	0	0	66
Towed Tube	2,085	1,900	238	26	0	108	12	93	310
Self-Propelled Tube	235	200	170	13	95	24	28	181	25

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.15
Gulf Inventory of Multiple Rocket Launchers by Caliber in 2005



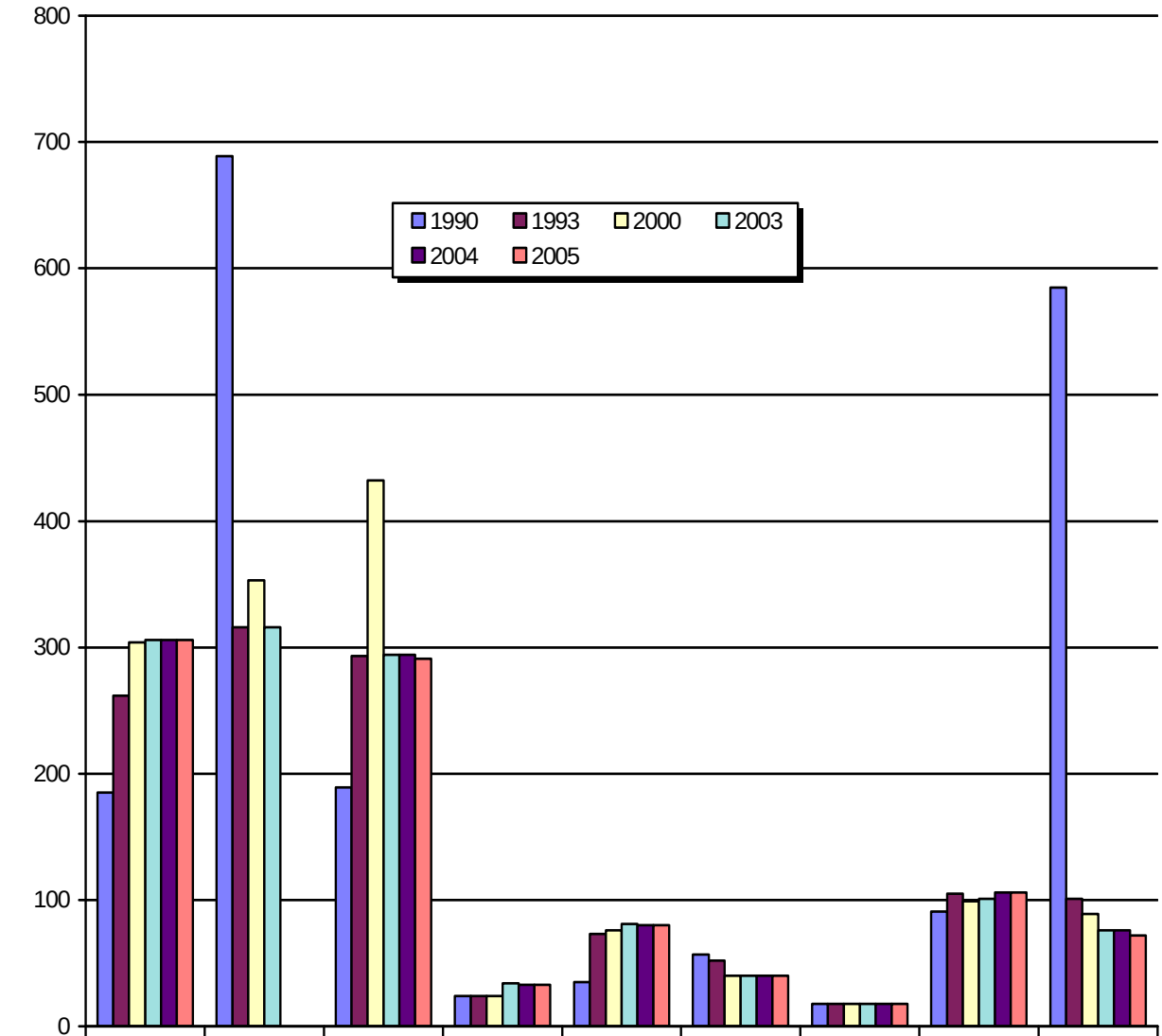
	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
400 mm		??							
333 mm	1								
300 mm					27			6	
262 mm									
240 mm	19								
227 mm				9					
140 mm									14
132 mm		??							
127 mm		??	60				4		
122 mm	157	??				??		48	280
107 mm	700	??							
70 mm								18	

Note: Iranian totals include active forces in the Revolutionary Guards. Saudi totals include active National Guard. Omani totals include Royal Household Guard. Iraq has a total of approximately 200 Multiple-Rocket Launchers.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.16

Total Operational Combat Aircraft in All Gulf Forces 1990-2005

(Does not include stored or unarmed electronic warfare, recce or trainer aircraft)

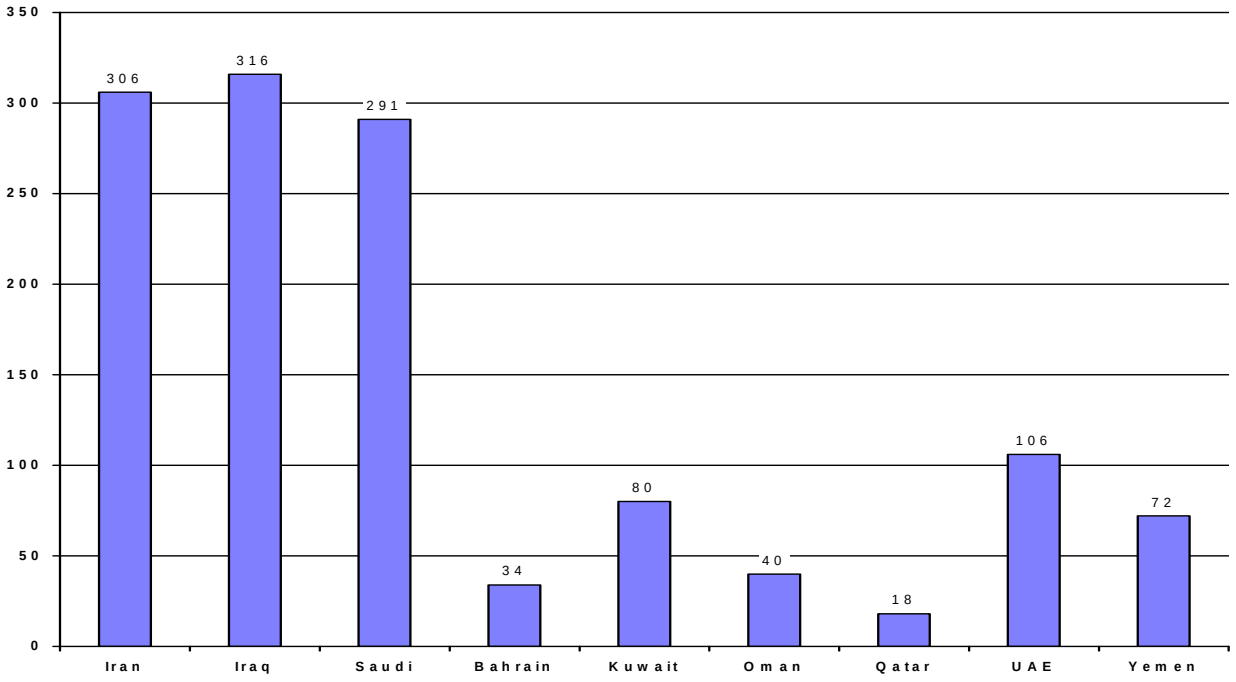


	Iran	Iraq	Saudi Arabia	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
1990	185	689	189	24	35	57	18	91	585
1993	262	316	293	24	73	52	18	105	101
2000	304	353	432	24	76	40	18	99	89
2003	306	316	294	34	81	40	18	101	76
2004	306	?	294	33	80	40	18	106	76
2005	306	?	291	33	80	40	18	106	72

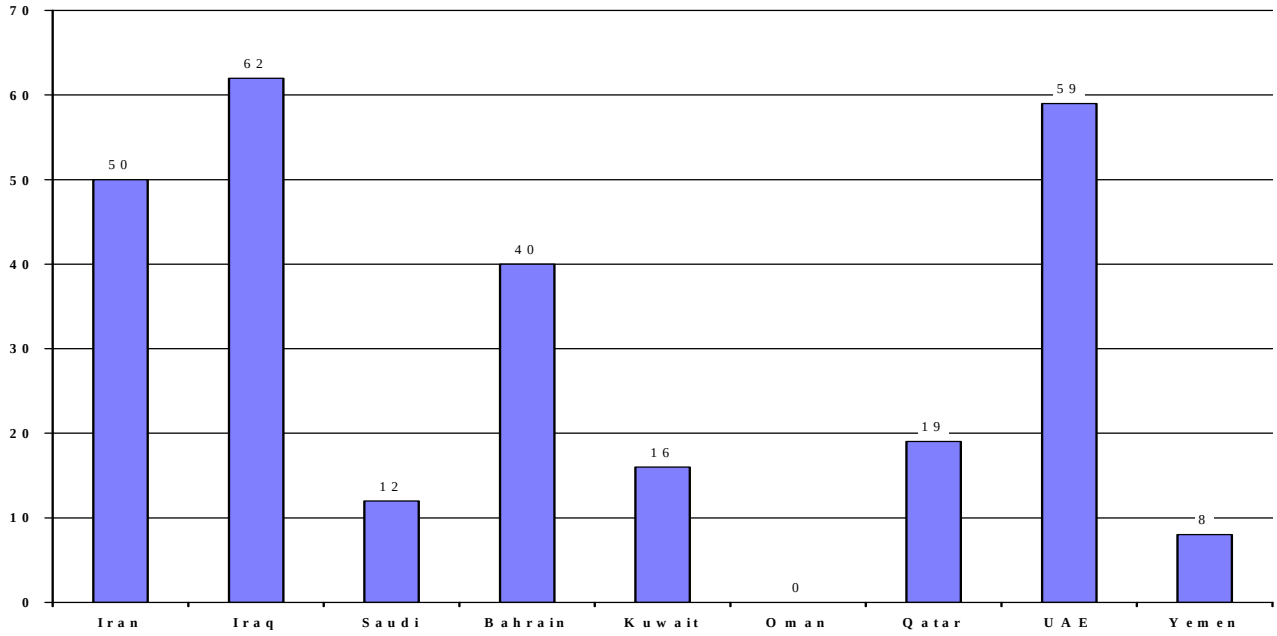
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

Figure 2.17
Total Gulf Holdings of Combat Aircraft in 2005

Fixed Wing Combat Aircraft



Armed and Attack Helicopters

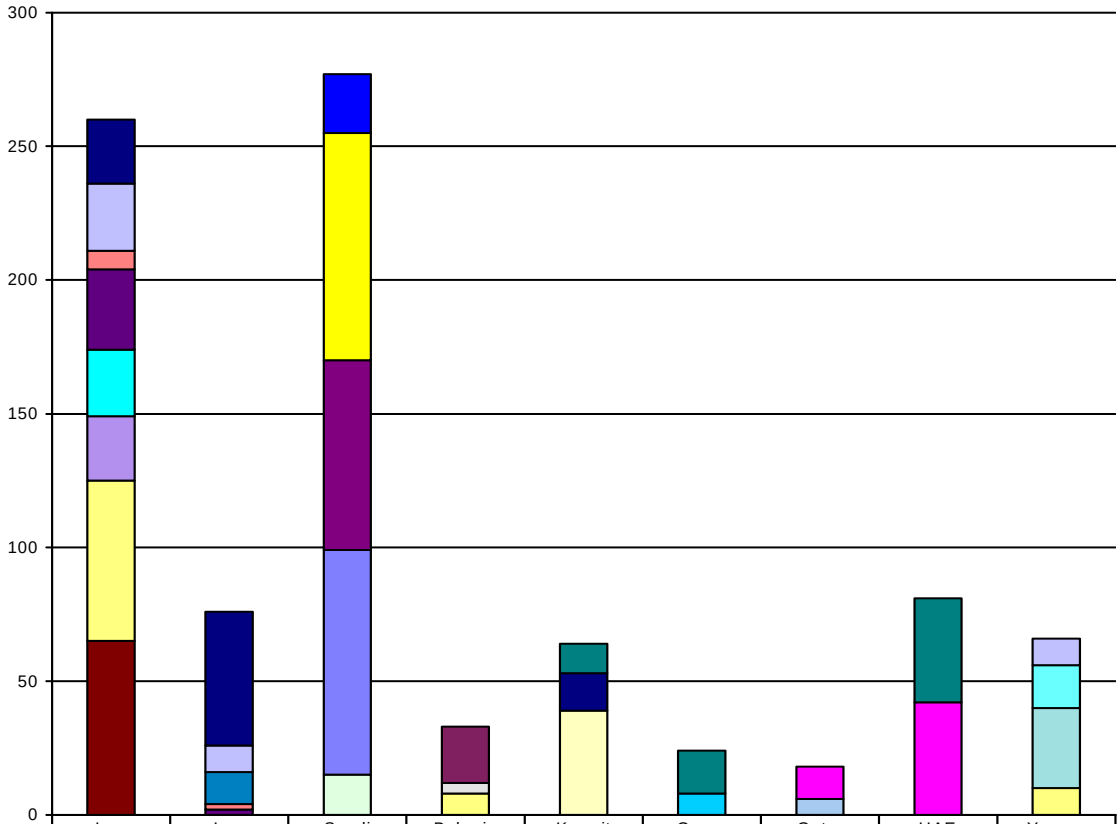


Note: Only armed or combat-capable fixed wing combat aircraft are counted, not other trainers or aircraft. Note: Yemen has an additional 5 MiG-29S/UB on order. Iraq totals are for March 2003, before the Iraq war
Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions.

Figure 2.18

Gulf High and Medium Quality Fixed Wing Fighter, Fighter Attack, Attack, Strike, and Multi-Role Combat Aircraft by Type in 2005

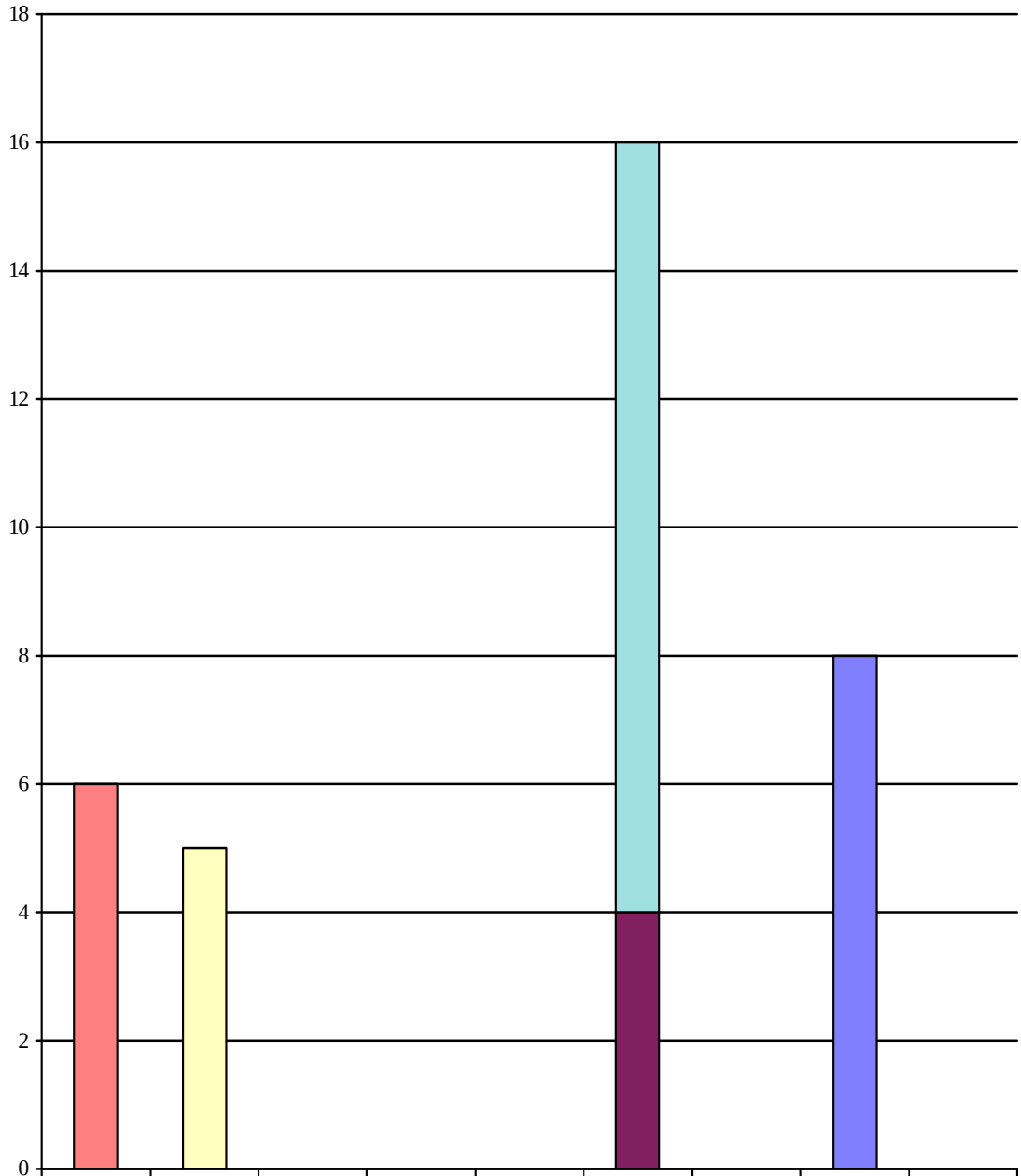
(Totals do not include combat-capable recce but does include OCUs and Hawk combat-capable trainers)



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Tornado ADV			22						
Tornado IDS			85						
Hawk					11	16		39	
Jaguar						8			
Mirage 2000							12	42	
Mirage F-1	24	50			14				
MiG-29	25	10							10
MiG-25		12							
MiG-21									16
Su-25	7	2							
Su-24	30	2							
Su-20/22		??							30
F-18					39				
F-16				21					
F-15S			71						
F-15C/D			84						
F-14	25								
F-7M	24								
F-5F				4					
F-5E	60			8					10

Note: Yemen has an additional 5 MiG-29S/UB on order.
Source: Adapted by Anthony H. Cordesman from various sources and IISS, The Military Balance, various editions.

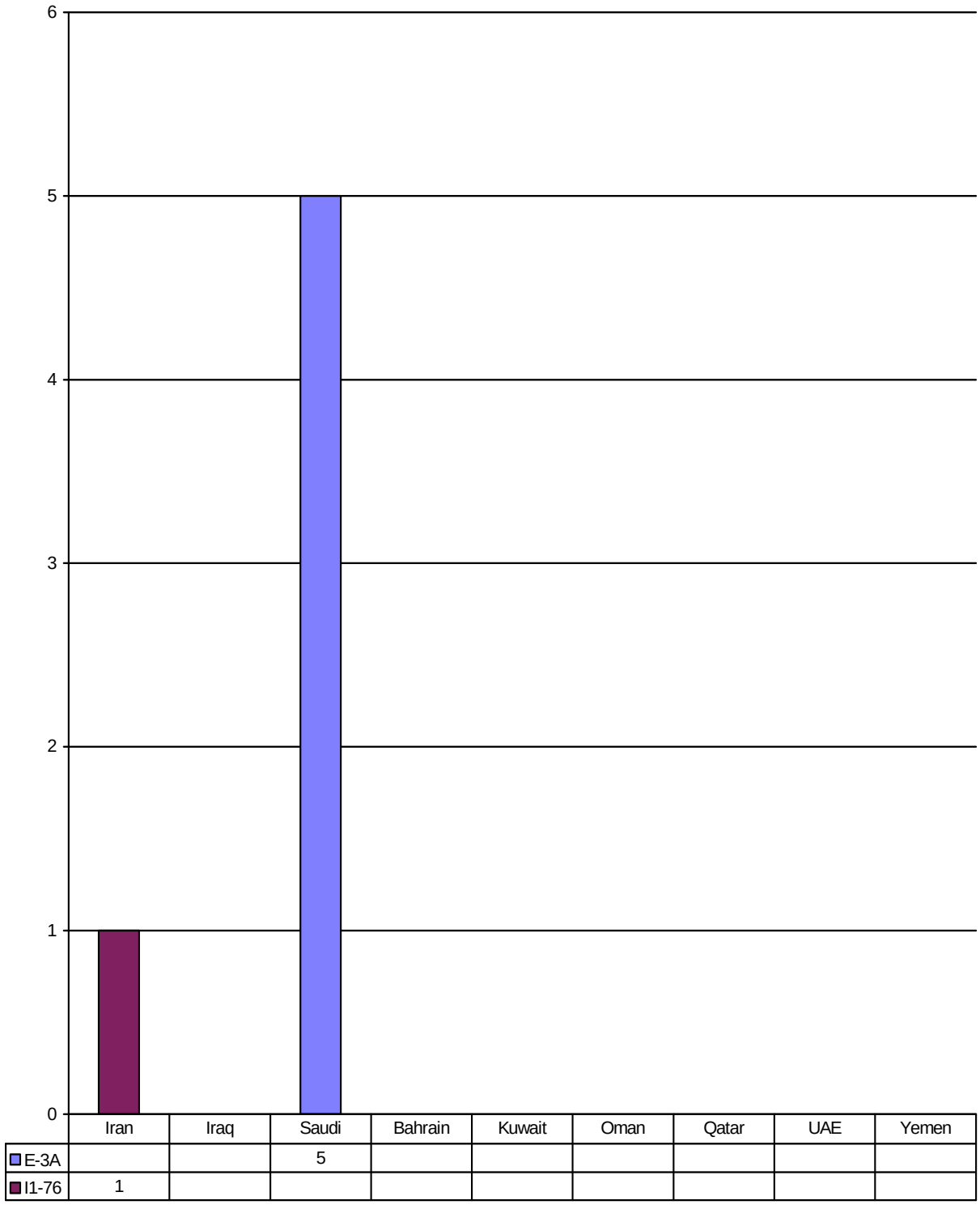
Figure 2.19
Gulf Reconnaissance Aircraft in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Mirage 2000 RAD								8	
MiG-25		5							
RF-4E	6								
PC-9						12			
Hawk 203						4			

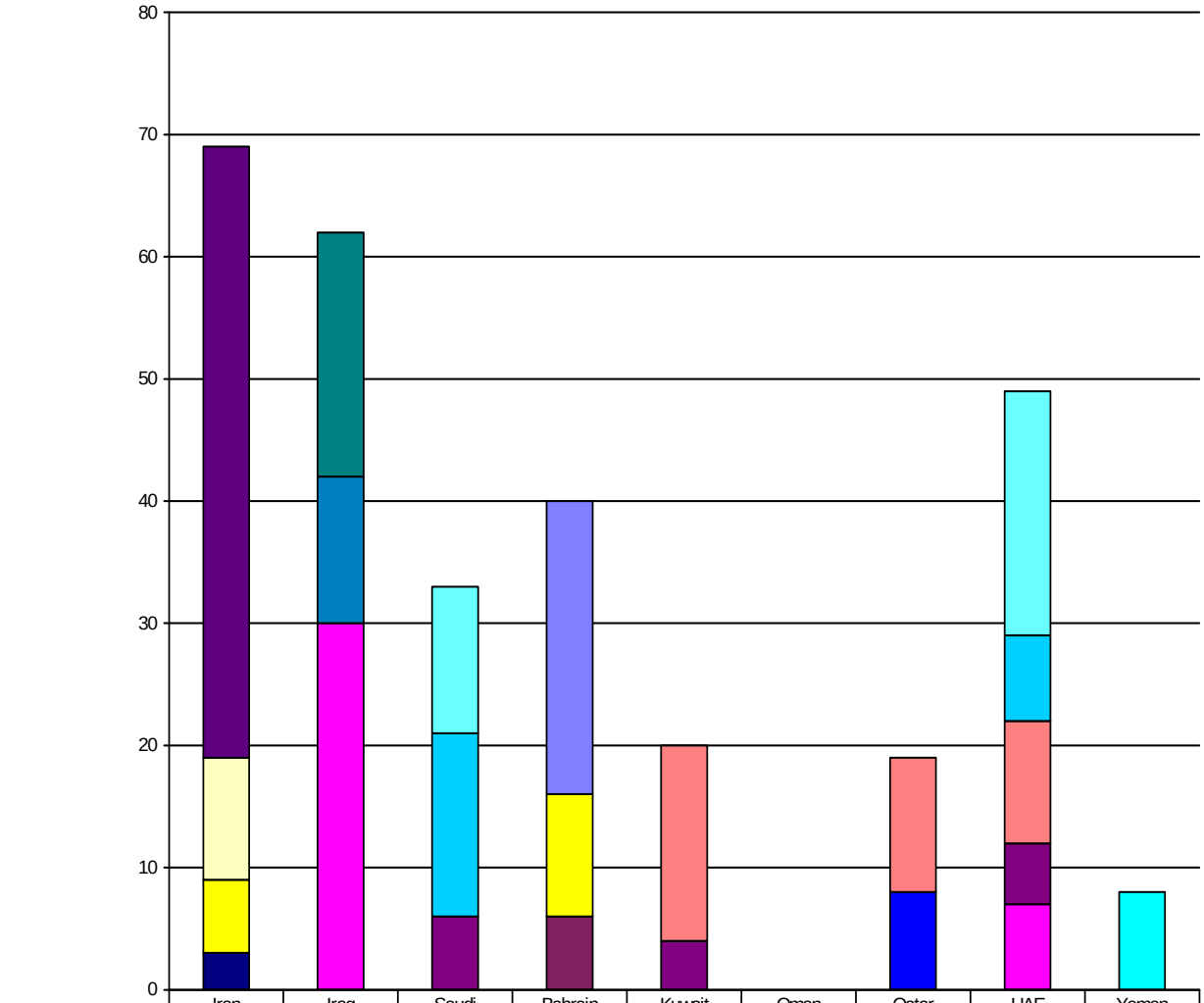
Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions.

Figure 2.20
Sensor, AWACS, C4I, EW and ELINT Aircraft in 2005



Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions.

Figure 2.21
Gulf Attack, Anti-Ship and ASW Helicopters in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
AH-64			12					20	
AS-565			15					7	
SA-342 HOT					16		11	10	
AH-1E				24					
AH-1J	50								
SG-3D	10								
SA-342		20							
Commando Exocet							8		
AS-332 Exocet			6		4			5	
Mi-35									8
Mi-25		12							
AB-212	6			10					
SA-316/319		30						7	
TAH-1P				6					
RH-53D	3								

Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions.

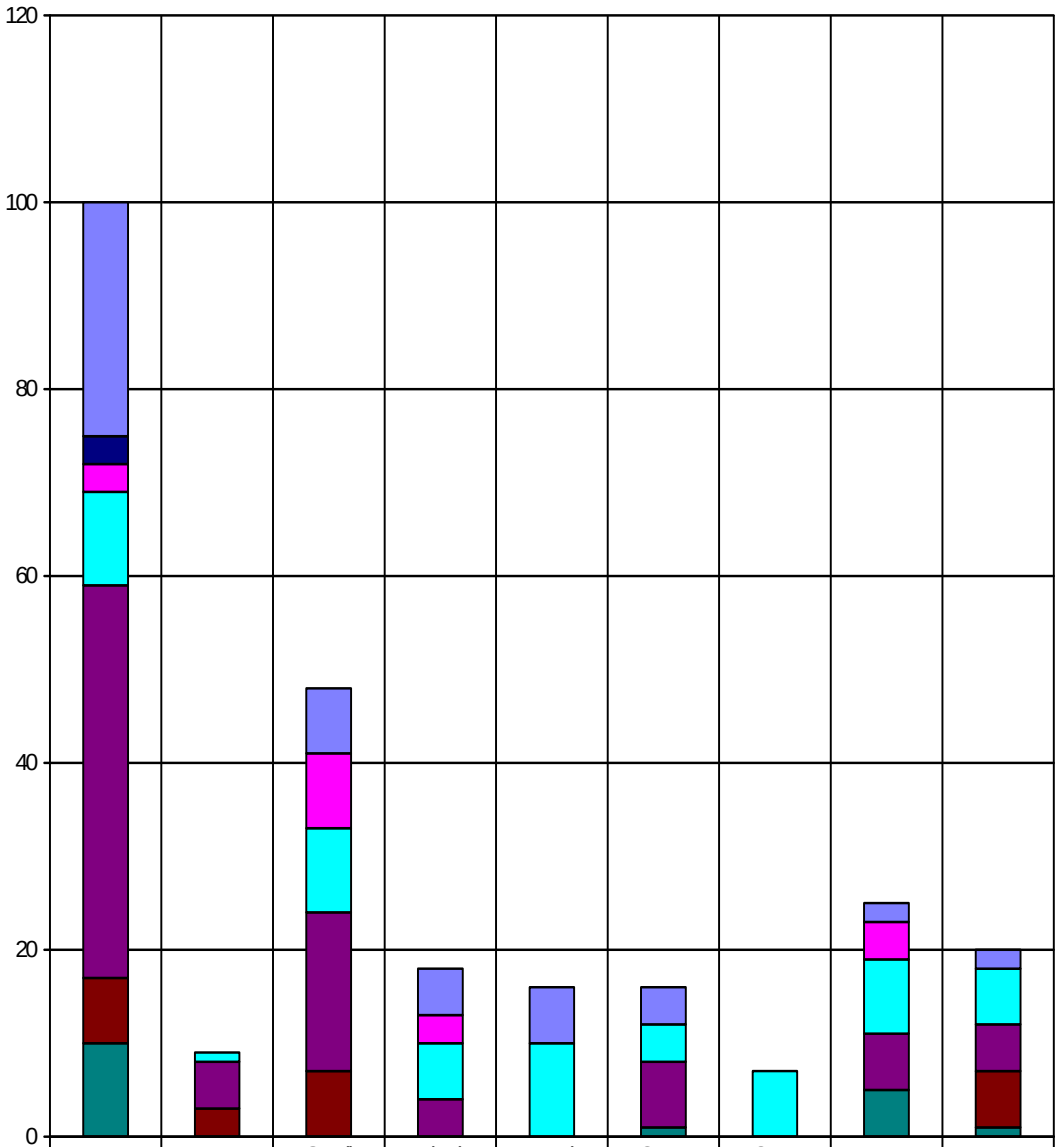
Figure 2.22

Gulf Land-Based Air Defense Systems in 2005

Country	Major SAM	Light SAM	AA Guns
Bahrain	8 I Hawk	60 RBS-70 18 Stinger 7 Crotale	15 Oerlikon 35 mm 12 L/70 40 mm
Iran	16/150 I Hawk 3/10 SA-5 45 HQ-2J (SA-2) ? SA-2 15 Tigercat Type 55 SA-7 Stinger (?)	SA-7/14/16, HQ-7 HN-5 30 Rapier FM-80 (Ch Crotale)	1,700 Guns ZU-23, ZSU-23-4, ZSU-57-2, KS-19 ZPU-2/4, M-1939,
Iraq	SA-2 SA-3 SA-6	Roland 1,500 SA-7 850 (SA-8 (SA-9 (SA-13 (SA-14, SA-16)	6,000 Guns ZSU-23-4 23 mm, M-1939 37 mm, ZSU-57-2 SP, 57 mm 85 mm, 100 mm, 130 mm
Kuwait	4/24 I Hawk 4-5/40 Patriot	6/12 Aspede 48 Starburst	6/2X35mm Oerlikon
Oman	None	Blowpipe 2 Mistral SP 34 SA-7 20 Javelin 40 Rapier	10 GDF 35 mm/Skyguard 4 ZU-23-2 23 mm 12 L-60 40 mm
Qatar	None	10 Blowpipe 12 Stinger 9 Roland 20 SA-7, 24 Mistral	?
Saudi Arabia	16/128 I Hawk 4-6/16-24 Patriot 17/68 Shahine Mobile 2-4/160 PAC-2 launchers 17 ANA/FPS-117 radar	40 Crotale 500 Stinger (ARMY) 500 Mistral (ADF) 500 Redeye (ARMY) 500 Redeye (ADF) 73-141 Shahine static 500 Stinger (ADF)	 50 AMX-30SA 30 mm 92 M-163 Vulcan 20 mm 150 L-70 40 mm (in store)
UAE 5/30 I Hawk Bty.	20+ Blowpipe	42 M-3VDA 20 mm SP 20 Mistral 12 Rapier 9 Crotale 13 RBS-70 Igla (SA-16)	 20 GCF-BM2 30 mm Javelin
Yemen	Some SA-2, SA3, SA-6 SA-7, SA-9, SA-13 SA-14	Some SA-7, SA-9, SA13, SA-14 800 SA-7/9/13/14	50 M-167 20mm 20 M-163 Vulcan 20mm 100 ZSU-23-4 23 mm 150 M-1939 23 mm 120 S-60 37 mm 40 KS-12 85 mm

Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, Periscope, JCSS, Middle East Military Balance, Jane's Sentinel and Jane's Defense Weekly. Some data adjusted or estimated by the author.

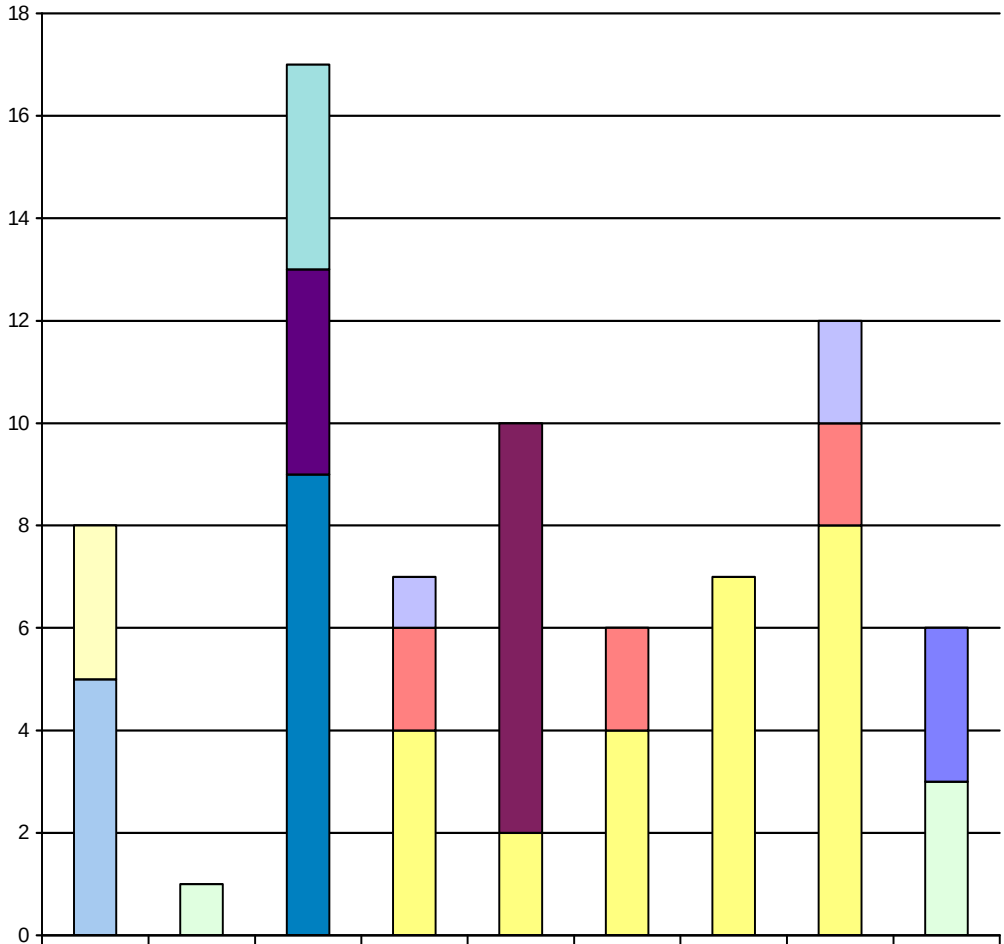
Figure 2.23
Gulf Naval Ships by Category in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Support	25		7	5	6	4		2	2
Submarines	3								
Major Missile Combat	3		8	3				4	
Major Other Combat	0								
Missile Patrol	10	1	9	6	10	4	7	8	6
Other Patrol	42	5	17	4		7		6	5
Mine	7	3	7						6
Amphibious	10					1		5	1

Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions.

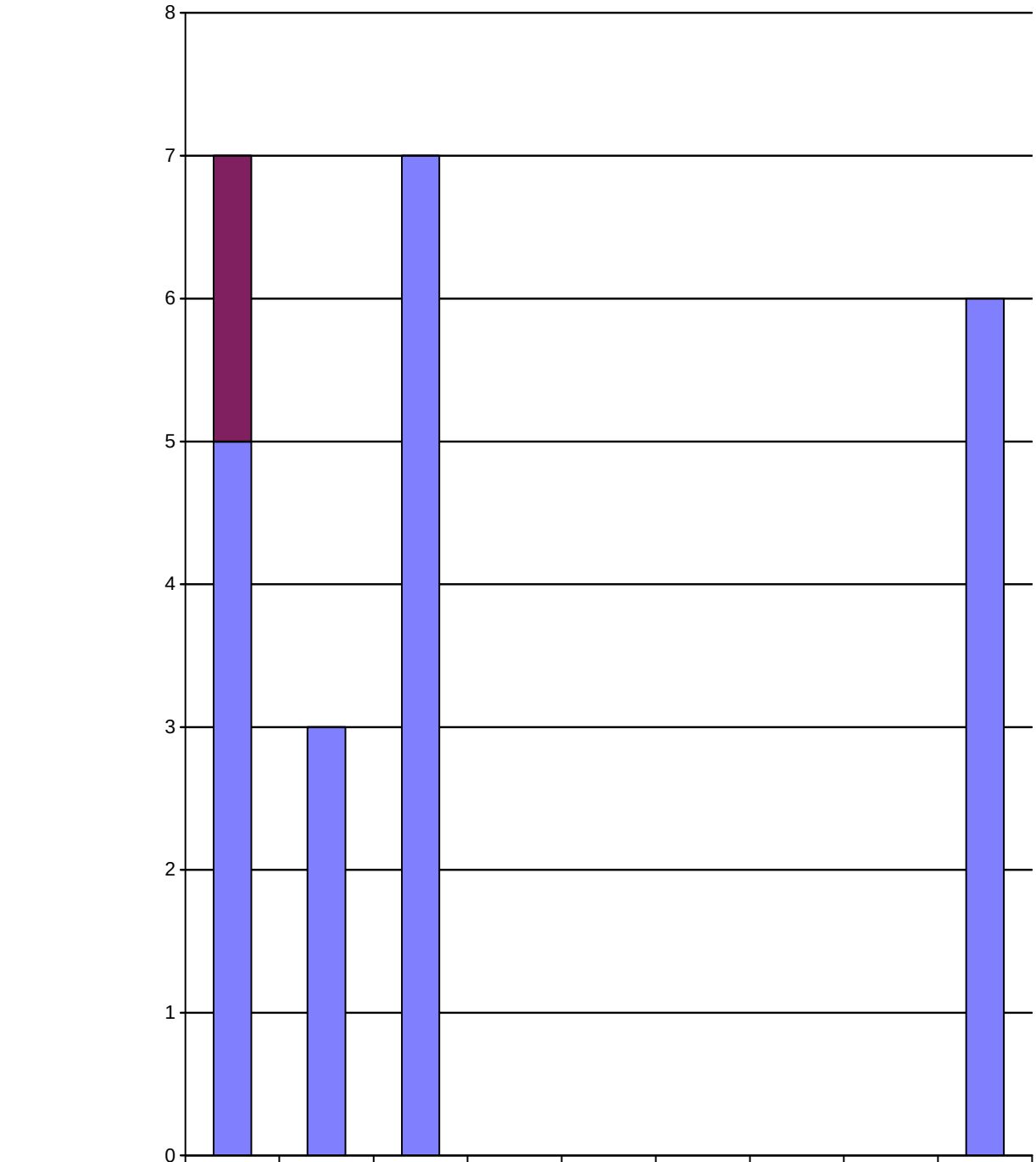
Figure 2.24
Gulf Warships with Anti-Ship Missiles in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Frigates with Harpoon				1				2	
Frigates with C-802	3								
Frigates with Otomat			4						
Corvettes with Harpoon			4						
Corvettes with Exocet				2		2		2	
Patrol Craft with Harpoon			9						
Patrol Craft with C-802	5								
Patrol Craft with Sea Skua					8				
Patrol Craft with Exocet				4	2	4	7	8	
Patrol Craft with C-801									3
Patrol Craft with SS-N-2A		1							3

Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions and material provided by US experts.

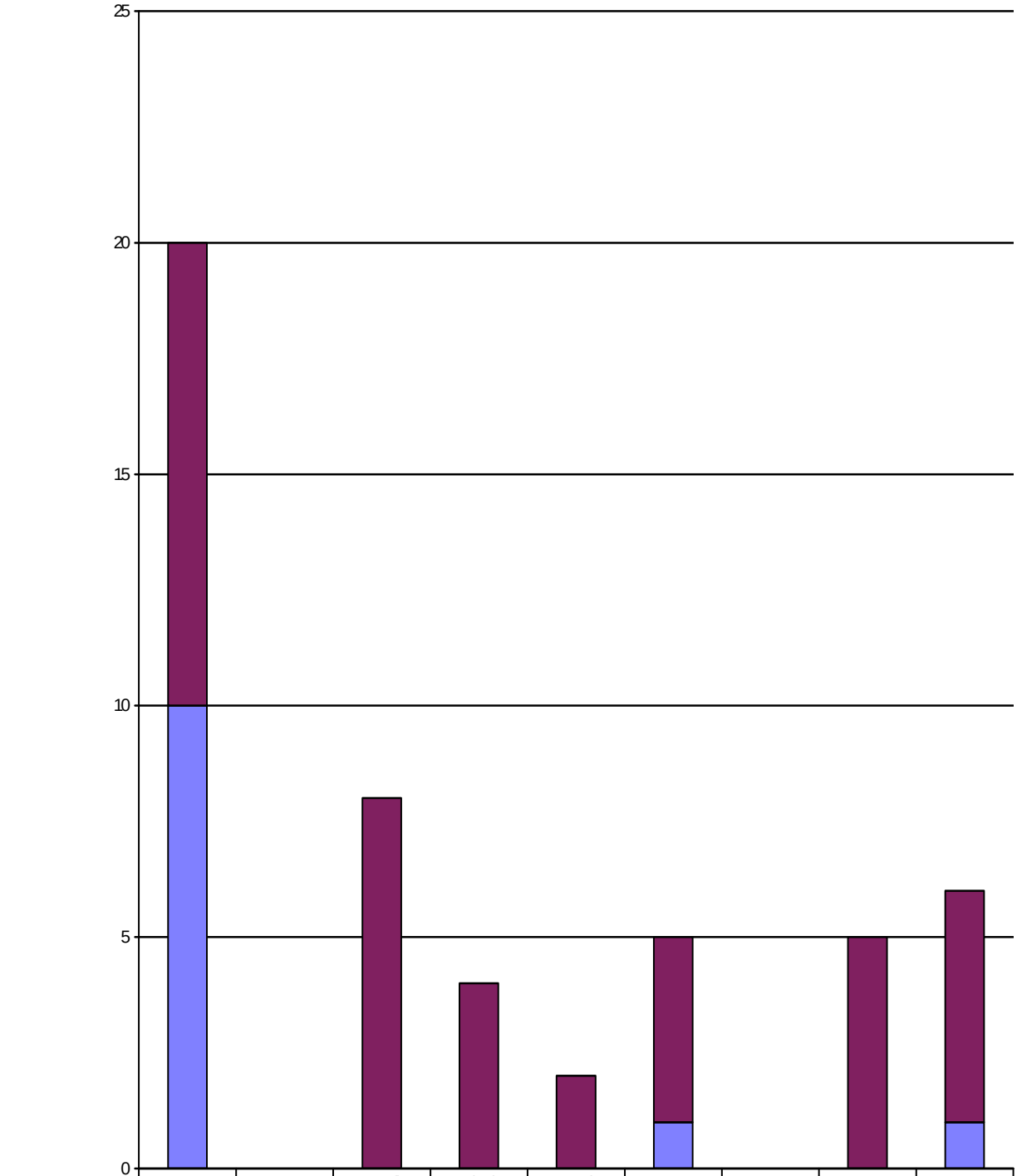
Figure 2.25
Gulf Mine Warfare Ships in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Mine Layers	2		0	0	0	0	0	0	0
Mine Countermeasure	5	3	7	0	0	0	0	0	6

Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions and material provided by US experts.

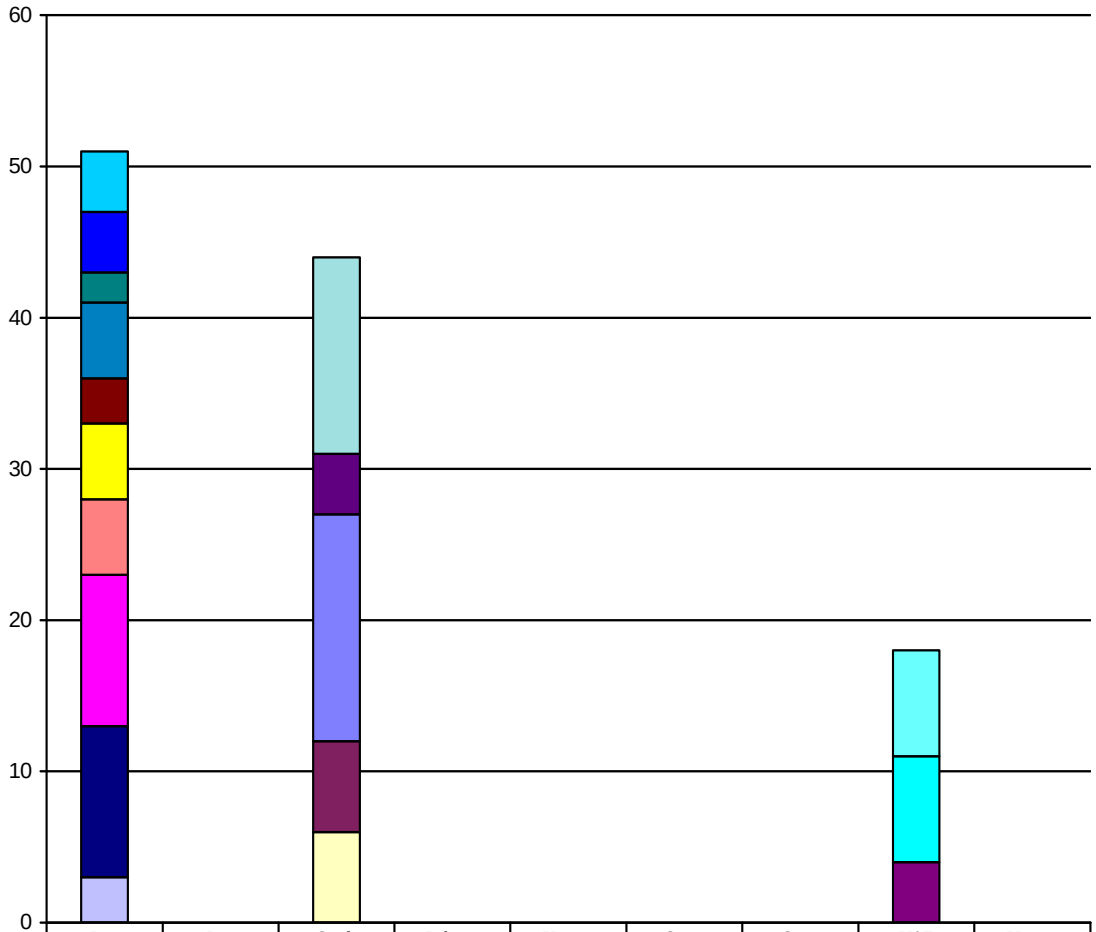
Figure 2.26
Gulf Amphibious Warfare Ships in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
Landing Craft	10	0	8	4	2	4	0	5	5
Amphibious Ships	10	0	0	0		1	0	0	1

Source: Adapted by Anthony H. Cordesman from IISS, The Military Balance, various editions and material provided by US experts.

Figure 2.27
Gulf Naval Aircraft and Helicopters Aircraft in 2005



	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
F-27 TPT	4								
Commander TPT	4								
AB 206 TPT	2								
AB 205a TPT	5								
Falcon 20 TPT	3								
Do-228	5								
PF-3 MR	5								
Bell 406Cs			13						
AS-565 SAR			4						
AS-565 AS-15TT			15						
AS-332 Exocet			6						
AS-332 Tpt			6						
AS-332F								7	
AS 585 Panther								7	
SA-316 Alouette								4	
AB-212 ASW	10								
SH-3D ASW	10								
RH-53D MCM	3								

Source: Adapted by Anthony H. Cordesman from the IISS, The Military Balance.

Trends in Military Expenditures and Arms Imports

The prospects for success in meeting all of these objectives are limited, both in terms of the effective management of military spending and improving the quality and relevance of arms sales. The Southern Gulf states have made truly massive investments in military forces and equipment, although often with equally massive inefficiency and waste:

- **Figure 2.28** shows the trends in Gulf military spending in constant dollars during 1984-1999. It clearly reflects the impact of the end of the Iran-Iraq War in 1988, and then the massive impact of the Gulf War of 1991 on military spending in Kuwait and Saudi Arabia. It is clear that Saudi Arabia has overwhelmingly dominated military spending during the period since the Gulf War.

- **Figure 2.29** highlights the recent trends in Gulf military expenditures. It shows clearly how much Saudi Arabia has dominated regional military spending, and how Saudi Arabia and the Southern Gulf states have continued to massively outspent Iran.

- **Figure 2.30** shows that there is little correlation between country size and the burden military spending places on its economy. It shows that Iraq was forced to make massive cuts in its military spending effort when an embargo was placed on its arms imports in 1990. Iran, however, always kept its military efforts relatively low, clearly choosing not to try to directly compete with the Southern Gulf states after 1988. As might be expected, the Saudi level of effort is consistently high, imposing a major strain on the Saudi economy. At the same time, the same is true of Bahrain and Oman, which have very high levels of effort. Kuwait's level of effort was so high during the gulf War that the war time peaks have been removed from the chart to make the data easier to compare, but gradually dropped to more comparable levels during 1999-1997. Yemeni levels have remained high in spite of border settlements and the lack of a clear external threat. The UAE has a low level of effort in spite of major arms purchases largely because of its high oil export revenues and the fact its small native population limits civil expenditures.

- **Figure 2.31** shows the trends in the value of arms deliveries to the Gulf in constant dollars during 1984-1999. It also shows the trends in Gulf military spending in constant dollars during 1984-1999. It reflects the impact of the end of the Iran-Iraq War in 1988, the impact of sanctions on Iraqi arms imports after mid-1990, and then the massive impact of the Gulf War of 1991 on military spending in Kuwait and Saudi Arabia. It is again clear that Saudi Arabia has overwhelmingly dominated military spending during the period since the Gulf War.

- **Figure 2.32** the recent trends in the Gulf spending of new arms orders and in the value of actual arms deliveries. It also shows a significant decline in spending levels since the Gulf War. The figures shown are in current dollars and the decline is much sharper in real terms.

- **Figure 2.33 to Figure 2.35** shows that the Southern Gulf states have had better and more consistent access to the US, West Europe and other suppliers of the most advanced combat equipment than other Arab states. At the same time, it reflects the lack of standardization and concern for interoperability that has been a continuing problem limiting effective military cooperation within the GCC states.

There are dangers in any generalizations about the problems in the way Southern Gulf states buy major combat equipment and manage the military procurement and modernization. It is also clear that properly managed acquisition of advanced weapons and technology can offer major advantages.

Actually achieving such advantages, however, requires the Southern Gulf states to pay far more attention to manpower quality, readiness, and sustainability and to focus their military expenditures and arms efforts on the following key procurement priorities:

- Advanced heavy armor, artillery, attack helicopters, and mobile air defense equipment.

- Interoperability and standardization with US and British power projection forces.

- Interoperable offensive air capability with stand-off, all-weather precision weapons and anti-armor/anti-ship capability.

- Interoperable air defense equipment, including heavy surface-to-air missiles, BVR/AWX fighters, AEW & surveillance capability, ARM & ECM capability. (Growth to ATBM and cruise missile defense capability)

- Maritime surveillance systems and equipment for defense against maritime surveillance, and unconventional warfare.

- Mine detection and clearing systems.

- Improved urban, area, and border security equipment for unconventional warfare and low intensity conflict.

- Advanced training aids.

- Support and sustainment equipment.

The Southern Gulf states have bought much of the equipment and technology they need. Unfortunately, they generally have paid at least as much attention to the wrong procurement priorities as to the right ones. These "non priorities" include:

- Attempt every mission or show no real mission focus.

- Mood swings in one major official, or leader, drive major procurements.

- Buy on the basis of unrealistic threat and net assessment.

- No serious force planning effort, no long-term program budget; military budget decoupled from national budget.

- Focus on a few narrow performance parameters and conduct unrealistic trials. Ignore broader issues of jointness, combined operations, and interoperability.

- Purchase "glitter factor" weapons" and developmental equipment and technology for status purposes. "He who dies with the most advanced new toys wins."

- Focus on high visibility major weapons platforms at the expense of funding IS&R and battle management. C4I, maintenance, and sustainability. "All teeth and no brain or body."

- Lack of serious interest in regional coalitions; every nation for itself.

- Purchase unique equipment types and one-of-a-kind modifications status purposes and/or purely on the basis of national calculations without coordination with other Southern Gulf states or the US and UK. Deliberately buy non-interoperable weapons and systems or without concern for interoperability.

- Purchase equipment for divided or "dual" forces even within a given country, such as divisions within the UAE and between the Saudi regular forces and National Guard.

- Buy new types of equipment, while deliberately failing to fund the required maintenance, sustainability, and training.

- Layer new types of military equipment and technology over old, retaining older equipment to have the largest possible force structure at the expense of waste and underfunding the effective conversion to new equipment. Retain too much old equipment, ignore need for manpower and budget trade-offs

- Ignore the need to provide balancing funding of manpower quality. Create inflated force structures; too many older officers and generals, too few technicians and NCOs. Skilled manpower not properly paid.

- Maximize the investment in weapons. Ignore infrastructure, parts, facilities, manpower, and sustainability.

- Make impossible offset demands, and create domestic "military industries" with little real value or cost-effectiveness.

- Ignore life-cycle costs; go with a seemingly lower bid.

- Allow fees and corruption. Something for the buyer on the side.

In fairness to the Southern Gulf states, there are also major problems in the ways seller countries and companies behave, and in the seriousness of their efforts to help Southern Gulf states modernize. The list of seller problems is as long as impressive as the list of buyer problems:

- A clear lack of Western cohesion in tying arms sales to strategic needs, policy towards buyer countries, and power projection in effective coalitions.

- Neither seller national strategic interests nor corporate profits and survival are altruistic. Seller governments face massive problems in keeping national defense industries viable. Governments may talk strategy and go for bottom-line savings on equipment costs. Governments interfere in market-oriented decisions and often micro-manage sales.

- For industry, neo-Darwinism often means survival of the most opportunistic, whether New US "super-firm," a disunited European firm, or a desperate Russian and Chinese firm.

- Arms sales are Ministry of Defense-driven and compartmented from overall policy towards Southern Gulf economic and economic reform needs. In contests between strategy and money, government policy leans towards more sales.

- No meaningful forum exists for supplier cooperation and none is likely to exist.

- For governments, keeping defense industries alive means ruthless competition, political pressure to sell, and giving the customer what he wants regardless of effectiveness.

- Declining European and Russian power projection capabilities in the region mean these states place steadily less emphasis on effectiveness.

- The customer knows that industry is vulnerable and increasingly exploits the situation politically. Margins are minimal and exaggerated offset requirements are the rule. Seller states and industries defend themselves through undercosting, and avoiding upfront life-cycle and support costs. False terms of sale are often critical to seller survival.

The end result of these buyer and seller actions has been to create a "royal mess" in regional military development and arms sales with the following general characteristics:

- Emphasis on weapons numbers and high prestige "glitter factor" buys of advanced weapons and technologies.

- Sub-optimization on minor military specifications or advanced technologies for key weapons platforms over balanced and integrated arms buys, and creating a "system of systems."

- National and service rivalries are given emphasis over standardization, integration, and the creation of regional deterrent and war fighting capabilities.

- Episodic “boom and bust” buys from different suppliers greatly complicate the problems of force expansion and conversion.

- Maneuver capabilities, sustainability and maintenance, recovery and repair, and training are given far too little priority.

- A failure to understand conversion times and the real world difficulties in absorbing major new weapons and technologies.

- Weapons and other imports from different suppliers are layered over other systems and equipment creating a steadily growing problem in force integration and support.

- Cost analysis is lacking or based on engineering cost estimates of procurement costs. Realistic life-cycle cost analysis is almost non-existent.

- A lack of long-term force planning and procurement planning leads to recurring efforts to over-expand force structures and equipment pools at a time when limited oil revenues and growing civil spending burdens make such plans unsustainable.

- A “buy it and they will come” approach to obtaining trained and effective manpower.

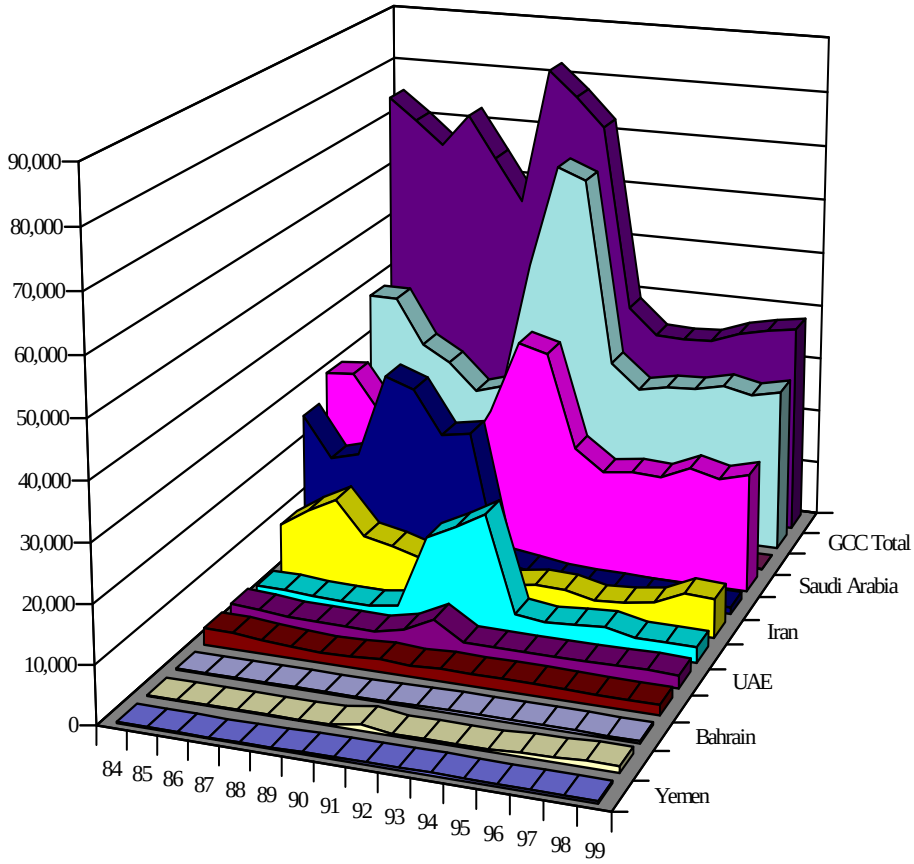
- Tendency to mix advanced weapons designed for aggressive joint operations with static tactical concepts divided by service and “stove piped” within individual services.

- Sale-oriented suppliers with little strategic concern for the end result in terms of regional stability and deterrent/war fighting capability.

Figure 2.28

Comparative Military Expenditures of the Gulf Powers - 1984-1999

(Constant $US 1999 Millions)



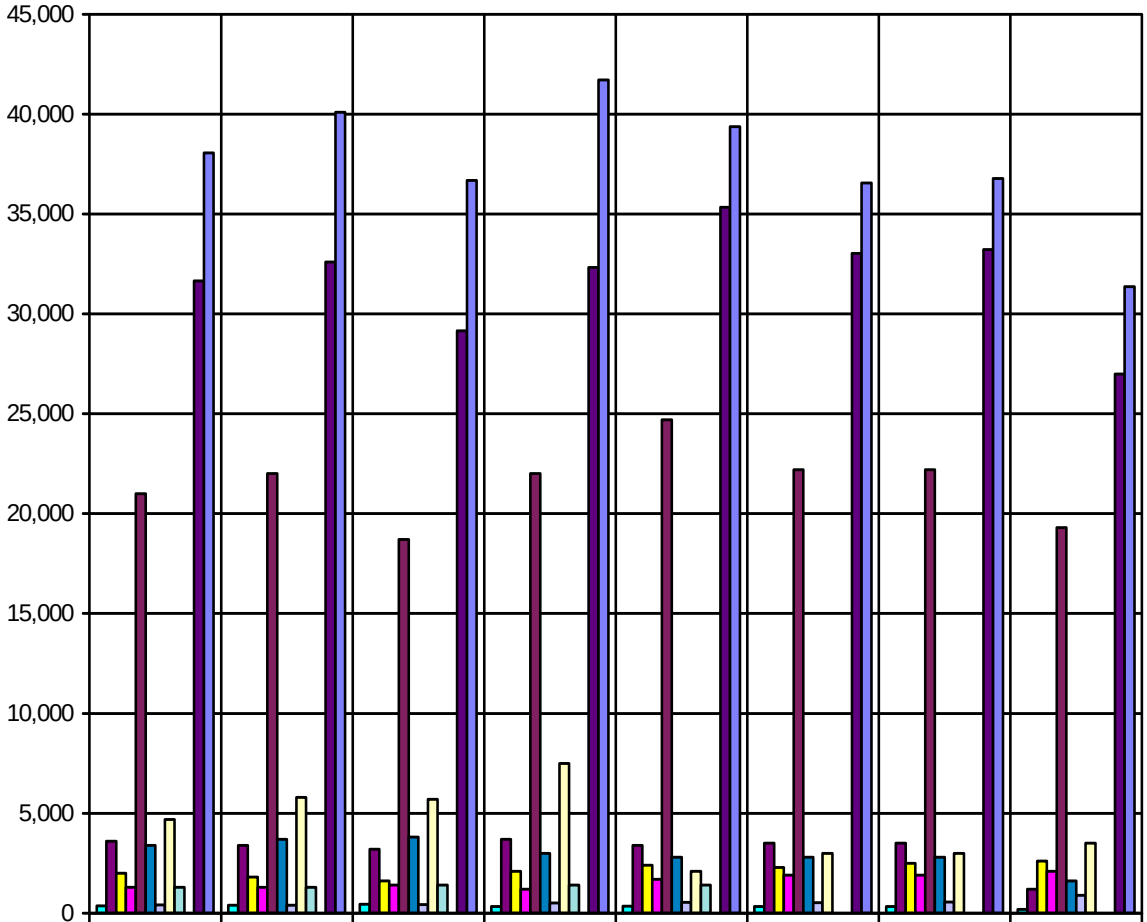
	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Yemen	192	179	183	89	161	183	372	403	430	431	536	419	379	411	414	374
Qatar	109	117	113	145	119	111	209	1,032	284	346	310	330	700	755	1,100	1,060
Bahrain	235	225	218	214	237	238	253	315	414	505	508	519	531	533	388	415
Oman	2,911	2,855	2,389	2,020	1,710	1,890	2,230	1,890	2,230	2,060	2,130	2,080	1,940	1,820	1,780	1,780
UAE	3,000	2,666	2,187	2,120	2,010	1,930	3,030	5,550	2,330	2,290	2,270	2,250	2,250	2,310	2,410	2,180
Kuwait	2,190	2,160	1,768	1,630	1,560	2,310	15,200	17,800	20,700	3,810	3,190	3,550	3,900	2,760	2,730	2,690
Iran	9,386	12,680	15,320	9,350	8,330	6,820	7,160	6,710	4,170	4,950	4,770	3,640	3,940	4,730	7,150	6,880
Iraq	25,890	18,670	20,050	35,000	33,200	25,500	26,400	3,500	2,800	2,000	1,750	1,750	1,500	1,440	1,270	1,250
Saudi Arabia	30,500	30,900	24,010	21,600	17,200	17,900	27,100	40,200	38,800	22,100	18,400	19,100	18,800	21,100	19,800	21,200
.																
GCC Total	38,945	38,923	30,685	27,729	22,836	24,379	48,022	66,787	64,758	31,111	26,808	27,829	28,121	29,278	28,208	29,325
Gulf Total	74,413	70,452	66,238	72,168	64,527	56,882	81,954	77,400	72,158	38,492	33,864	33,638	33,940	35,859	37,042	37,829

Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996 and US State Department, World Military Expenditures and Arms Transfers, 1999-2000, Bureau of Arms Control, Washington, 2001.

Figure 2.29

Southern Gulf Military Expenditures by Country: 1997-2004

(in $US Current Millions)

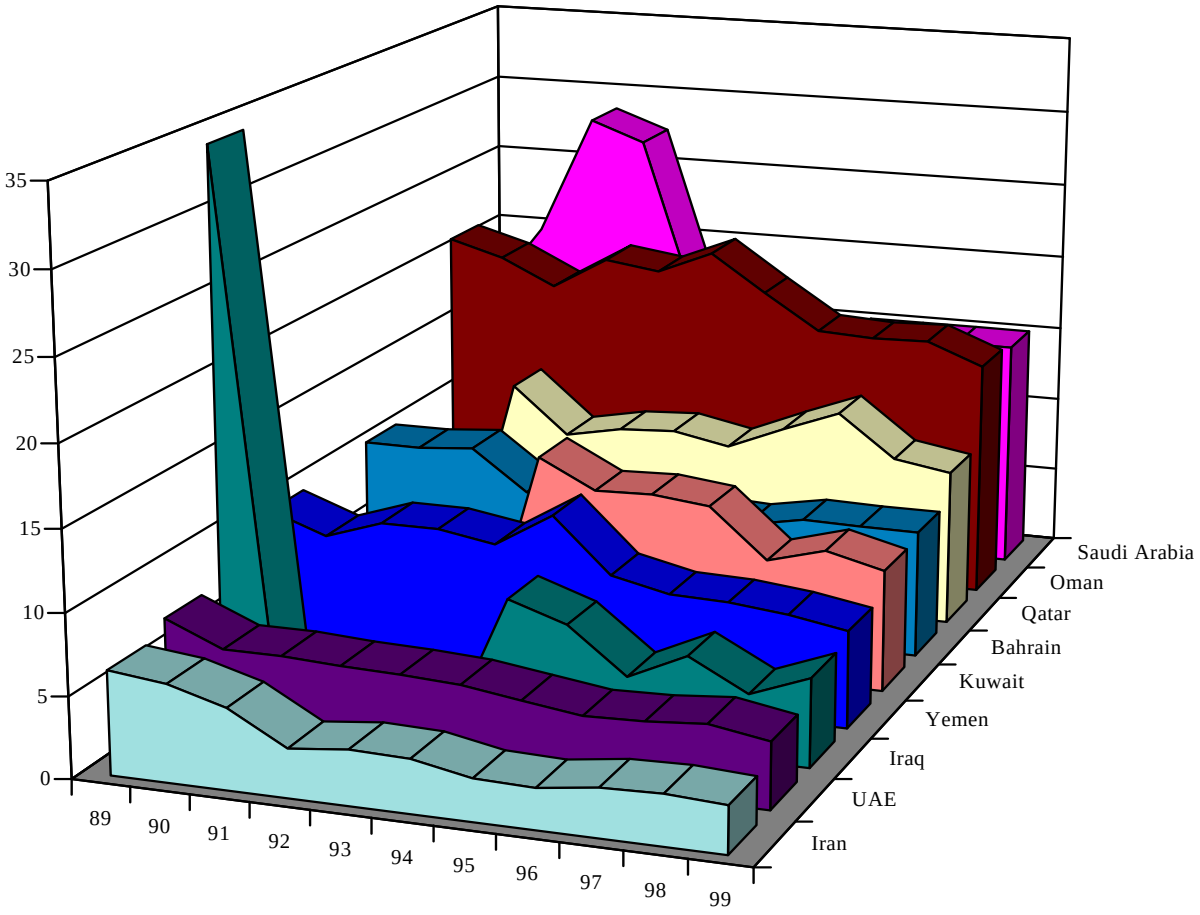


	1997	1998	1999	2000	2001	2002	2003	2004*
Bahrain	364	402	444	322	334	331	329	180
Kuwait	3,600	3,400	3,200	3,700	3,400	3,500	3,500	1,200
Oman	2,000	1,800	1,600	2,100	2,400	2,300	2,500	2,600
Qatar	1,300	1,300	1,400	1,200	1,700	1,900	1,900	2,100
Saudi Arabia	21,000	22,000	18,700	22,000	24,700	22,200	22,200	19,300
UAE	3,400	3,700	3,800	3,000	2,800	2,800	2,800	1,600
Yemen	411	396	429	498	536	515	561	885
Iran	4,700	5,800	5,700	7,500	2,100	3,000	3,000	3,500
Iraq	1,300	1,300	1,400	1,400	1,400	?	?	?
.								
GCC Total	31,664	32,602	29,144	32,322	35,334	33,031	33,229	26,980
Gulf Total	38,075	40,098	36,673	41,720	39,370	36,546	36,790	31,365

Source: International Institute of Strategic Studies, Military Balance, various editions.
* The IISS did not report military expenditures for 2004. The number for 2004 represents the military budget, which does not include procurement costs.

Figure 2.30

Comparative Military Expenditures of the Gulf Powers as a Percent of GNP - 1989-1999



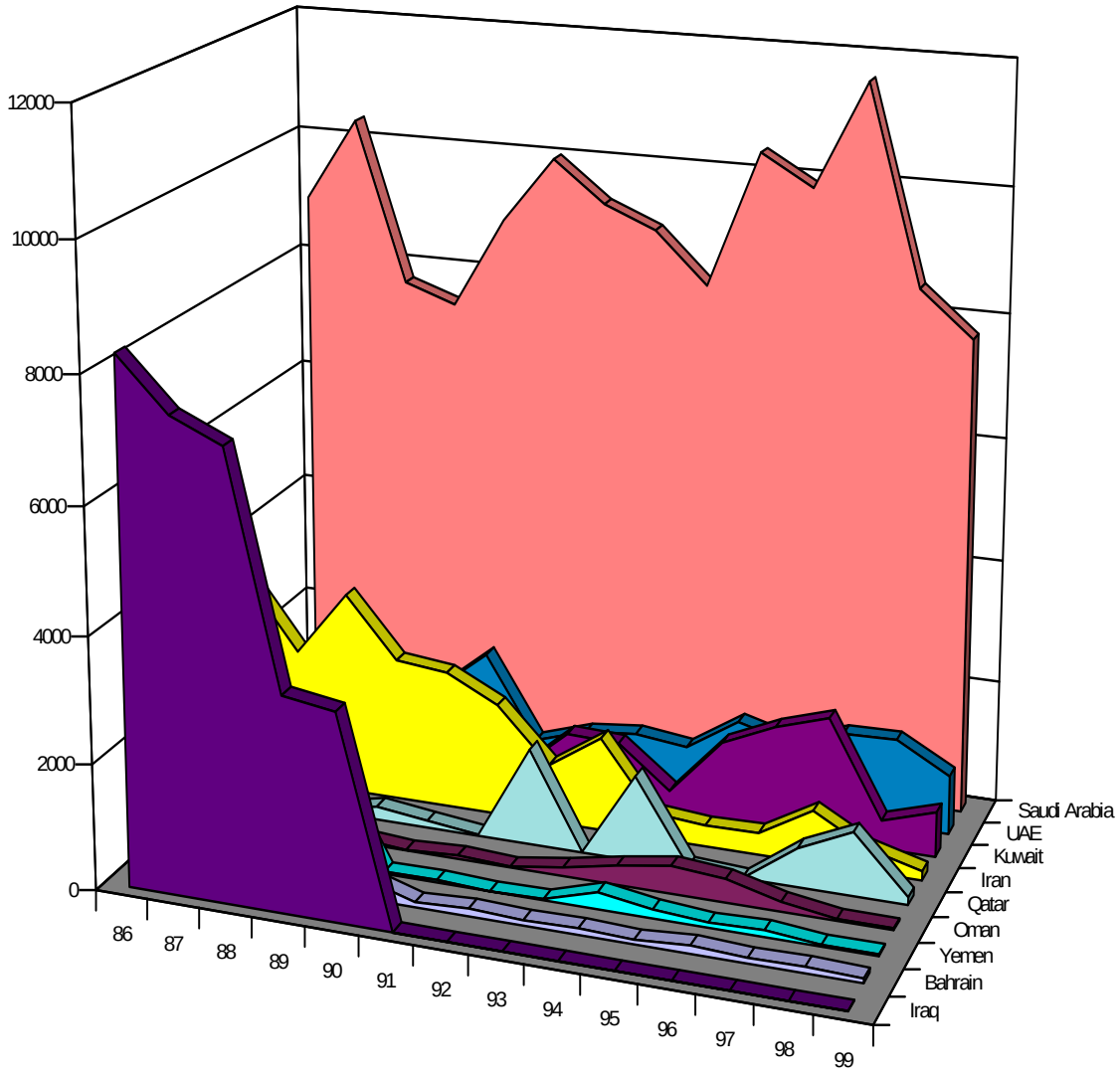
	89	90	91	92	93	94	95	96	97	98	99
Iran	6.4	6	5	3	3.4	3.3	2.6	2.5	3	3.1	2.9
UAE	7.3	5.8	5.8	5.6	5.5	5.3	4.8	4.3	4.4	4.7	4.1
Iraq	34.3	-	-	-	-	8.3	7.1	4.3	6	4.1	5.5
Yemen	9.9	8.6	9.8	9.8	9.2	11.4	8	7.2	7.1	6.7	6.1
Kuwait	6.1	{53.1}	{101.9}	{77.0}	12.8	11	11.1	10.7	7.6	8.6	7.7
Bahrain	10.5	10.5	10.8	8.2	7.9	7.5	7.7	7.5	8.2	8.1	8.1
Qatar	-	-	13.2	10.2	10.9	11.1	10.4	11.9	13.3	10.6	10
Oman	21.1	20.1	18.4	20.5	20	21.5	19.1	16.8	16.6	16.7	15.3
Saudi Arabia	15.9	20.6	28.5	27.2	16.4	14.1	13.2	14.9	14.9	14.9	14.9

Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996 and US State Department, World Military Expenditures and Arms Transfers, 1999-2000, Bureau of Arms Control, Washington, 2001.

Figure 2.31

Cumulative Arms Imports of the Other Gulf states - 1986-1999

(Value of Deliveries in Constant $US Millions)



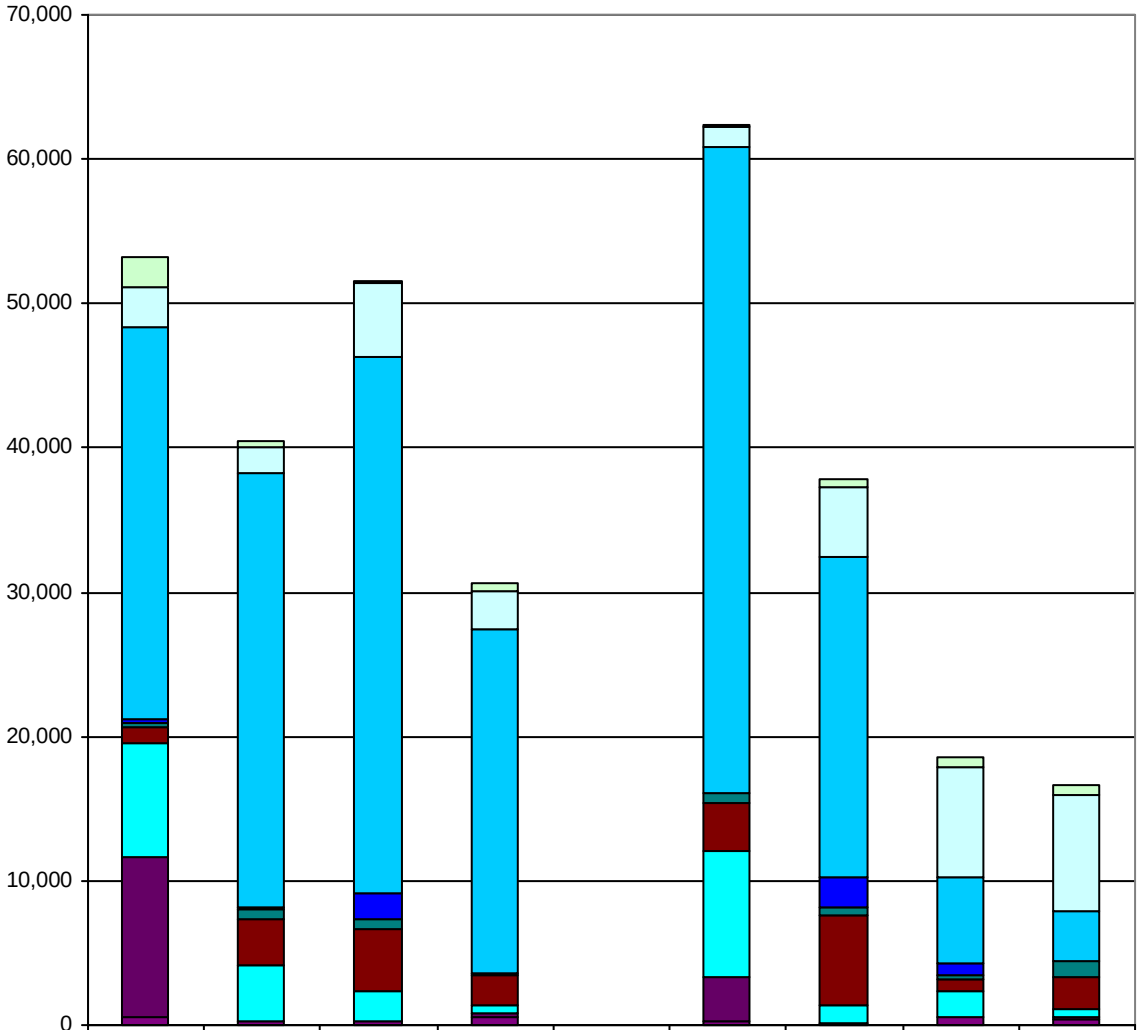
	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Iraq	8288	7448	7078	3407	3279	0	0	0	0	0	0	0	0	5
Bahrain	91	418	126	97	328	79	122	86	106	72	132	90	101	70
Yemen	564	1045	1523	1554	35	41	6	22	275	145	81	110	30	30
Oman	178	157	38	73	12	57	11	140	307	445	376	160	30	30
Qatar	7	12	38	219	117	23	1552	11	1,375	52	5	625	1,015	120
Iran	3305	2221	3286	2312	2225	1812	942	1,512	412	342	356	850	376	150
Kuwait	271	248	152	316	316	374	1109	1,080	412	1,346	1,728	2,000	457	725
UAE	247	261	404	1187	1874	532	804	891	793	1,346	1,118	1,400	1,421	950
Saudi Arabia	8978	10320	7710	7423	8900	9968	9312	8,962	8,143	10,350	9,862	11,600	8,424	7,700

Source: Adapted by Anthony H. Cordesman from State Department, World Military Expenditures and Arms Transfers, GPO, Washington, various editions.

Figure 2.32

Gulf Arms Agreements and Deliveries by Country: 1988-2003

(in $US Current Millions)



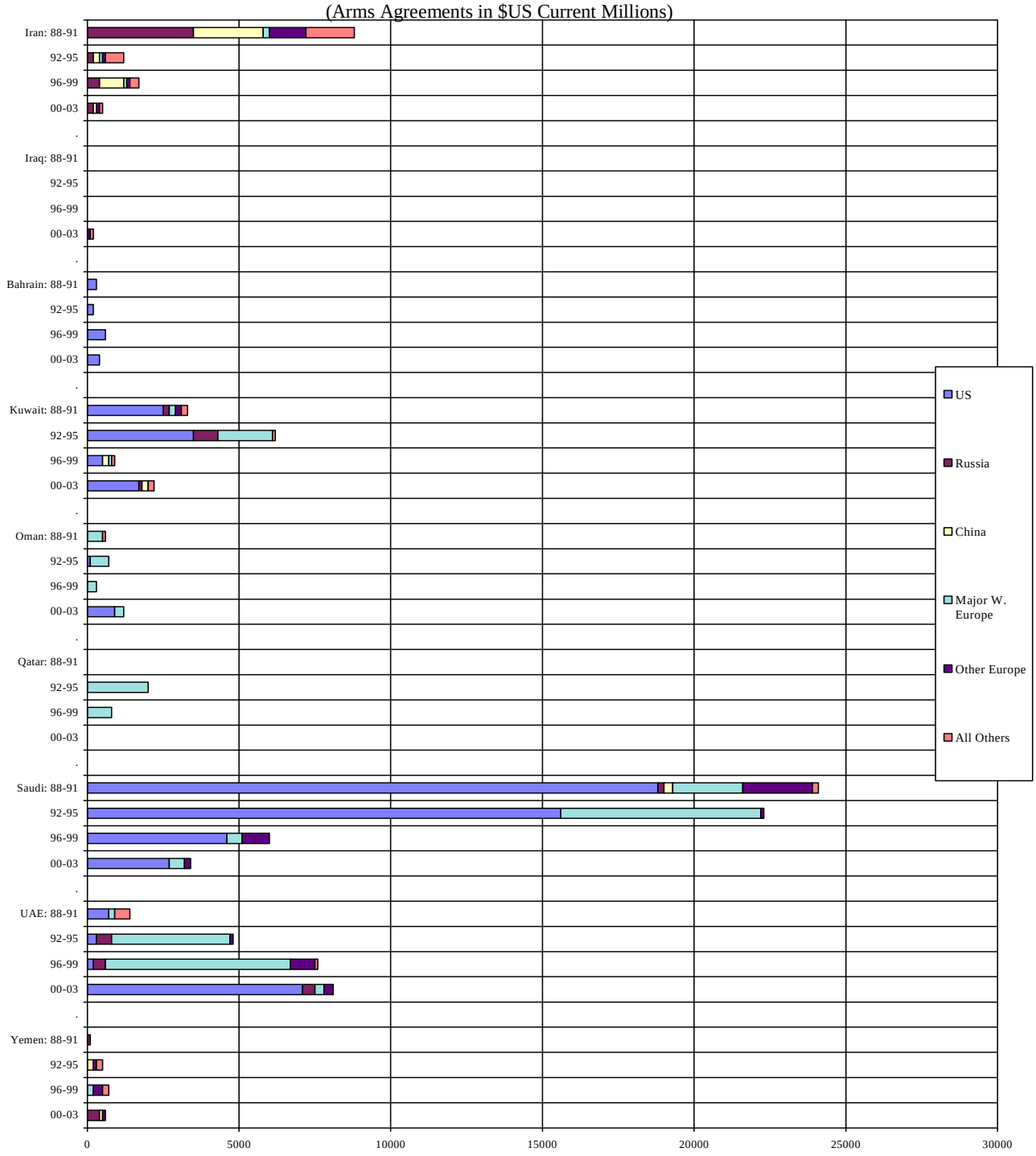
	88-91	92-95	96-99	00-03		88-91	92-95	96-99	00-03
----------		Deliveries					Agreement		
Yemen	2,100	500	200	600		100	500	700	600
UAE	2,700	1,800	5,100	2,600		1,400	4,800	7,600	8,100
Saudi Arabia	27,200	30,000	37,200	23,900		44,800	22,300	6,000	3,400
Qatar	300	100	1,800	0		0	2,000	800	0
Oman	200	800	600	100		700	600	300	1,200
Kuwait	1,200	3,100	4,400	2,100		3,300	6,200	900	2,200
Iran	7,900	3,900	2,000	600		8,800	1,200	1,700	500
Iraq	11,100	0	0	200		3,000	0	0	200
Bahrain	500	300	300	600		300	200	600	400

0 = Data less than $50 million or nil. All data rounded to the nearest $100 million.
Source: Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

Figure 2.33

Southern Gulf New Arms Orders by Supplier Country: 1988-2003

(Arms Agreements in $US Current Millions)



0 = less than $50 million or nil, and all data rounded to the nearest $100 million.
Source: Adapted by Anthony H. Cordesman, CSIS, from Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

Figure 2.34:

Gulf States New Arms Orders (Agreements) by Supplier Country 1988-2003

(Arms Agreements in $US Current Millions)

	US	Russia	China	Major W. Europe	Other Europe	All Others	Total
Yemen							
00-03	0	400	100	0	100	0	600
96-99	0	0	0	200	300	200	700
92-95	0	0	200	0	100	200	500
88-91	0	100	0	0	0	0	100
UAE							
00-03	7,100	400	0	300	300	0	8,100
96-99	200	400	0	6,100	800	100	7,600
92-95	300	500	0	3,900	100	0	4,800
88-91	700	0	0	200	0	500	1,400
Saudi Arabia							
00-03	2,700	0	0	500	200	0	3,400
96-99	4,600	0	0	500	900	0	6,000
92-95	15,600	0	0	6,600	100	0	22,300
88-91	18,800	200	300	2,300	2,300	200	24,100
Qatar							
00-03	0	0	0	0	0	0	0
96-99	0	0	0	800	0	0	800
92-95	0	0	0	2,000	0	0	2,000
Aug-91	0	0	0	0	0	0	0
Oman							
00-03	900	0	0	300	0	0	1,200
96-99	0	0	0	300	0	0	300
92-95	100	0	0	600	0	0	700
88-91	0	0	0	500	0	100	600
Kuwait							
00-03	1,700	100	200	0	0	200	2,200
96-99	500	0	200	100	0	100	900
92-95	3,500	800	0	1,800	0	100	6,200
88-91	2,500	200	0	200	200	200	3,300
Bahrain							
00-03	400	0	0	0	0	0	400
96-99	600	0	0	0	0	0	600
92-95	200	0	0	0	0	0	200

88-91	300	0	0	0	0	0	300
Iraq							
00-03	0	0	0	0	100	100	200
96-99	0	0	0	0	0	0	0
92-95	0	0	0	0	0	0	0
88-91	0	0	0	0	0	0	0
Iran							
00-03	0	200	100	0	100	100	500
96-99	0	400	800	100	100	300	1,700
92-95	0	200	200	100	100	600	1,200
88-91	0	3,500	2,300	200	1,200	1,600	8,800
GCC Total							
00-03	12,800	500	200	1,100	500	200	15,300
92-95	5,900	400	200	7,800	1,700	200	16,200
96-99	19,700	1,300	0	14,900	200	100	36,200
88-91	22,300	400	300	3,200	2,500	1,000	29,700
Gulf Total							
00-03	12,800	1,100	400	1,100	800	400	16,600
96-99	5,900	800	1,000	8,100	2,100	700	18,600
92-95	19,700	1,500	400	15,000	400	900	37,900
88-91	22,300	4,000	2,600	3,400	3,700	2,600	38,600

0 = less than $50 million or nil, and all data rounded to the nearest $100 million.
Source: Adapted by Anthony H. Cordesman, CSIS, from Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

Figure 2.35:

Gulf States New Arms (Deliveries) by Supplier Country: 1988-2003

(Arms Deliveries in $US Current Millions)

	US	Russia	China	Major W. Europe	Other Europe	All Others	Total
Yemen							
00-03	0	200	100	0	200	100	600
96-99	0	0	0	100	200	100	400
92-95	0	0	200	0	100	200	500
88-91	0	2,100	0	0	0	0	2,100
UAE							
00-03	300	100	0	1,900	200	100	2,600
96-99	400	300	0	3,600	700	100	5,100
92-95	700	300	0	300	100	400	1,800
88-91	500	0	0	2,100	0	100	2,700
Saudi Arabia							
00-03	6,300	0	0	16,600	1,000	0	23,900
96-99	16,600	0	0	17,600	3,000	0	37,200
92-95	12,400	0	200	15,600	1,700	100	30,000
88-91	6,600	200	2,600	16,500	900	400	27,200
Qatar							
00-03	0	0	0	0	0	0	0
96-99	0	0	0	1,800	0	0	1,800
92-95	0	0	0	100	0	0	100
Aug-91	0	0	0	300	0	0	300
Oman							
00-03	0	0	0	0	0	100	100
96-99	0	0	0	400	0	0	400
92-95	0	0	0	800	0	0	800
88-91	100	0	0	100	0	0	200
Kuwait							
00-03	1,100	100	400	300	0	200	2,100
96-99	2,500	400	0	1,400	100	0	4,400
92-95	2,400	200	0	300	100	100	3,100
88-91	500	200	0	200	200	100	1,200
Bahrain							
00-03	600	0	0	0	0	0	600
96-99	300	0	0	0	0	0	300

92-95	300	0	0	0	0	0	300
88-91	400	0	0	100	0	0	500
Iraq							
00-03	0	0	0	0	100	100	200
96-99	0	0	0	0	0	0	0
92-95	0	0	0	0	0	0	0
88-91	0	4,100	1,200	2,700	2,000	1,100	11,100
Iran							
00-03	0	200	0	0	0	400	600
96-99	0	900	700	100	300	0	2,000
92-95	0	1,400	700	100	100	300	2,600
88-91	0	1,600	3,100	300	1,400	1,500	7,900
GCC Total							
00-03	8,300	200	400	18,800	1,200	400	29,300
92-95	19,800	700	0	24,800	3,800	100	49,200
96-99	15,800	500	200	17,100	1,900	600	36,100
88-91	8,100	400	2,600	19,300	1,100	600	32,100
Gulf Total							
00-03	8,300	600	500	18,800	1,500	1,000	30,700
96-99	19,800	1,600	700	25,000	4,300	200	51,600
92-95	15,800	1,900	1,100	17,200	2,100	1,100	39,200
88-91	8,100	8,200	6,900	22,300	4,500	3,200	53,200

0 = less than $50 million or nil, and all data rounded to the nearest $100 million.
Source: Adapted by Anthony H. Cordesman, CSIS, from Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

II. Looking at National Forces

A country-by-country review of national forces provides a clear picture of the strengths and weaknesses of Gulf forces, as well as insights into key capabilities and trends. One key insight from such an examination is that it is the quality of Saudi forces that is pivotal to any effective regional defense efforts in the Southern Gulf. This is a matter of both geography and force size. Saudi Arabia is the only Southern Gulf state capable of funding and creating modern forces on any significant scale.

Iran is a nation with a mixed record in terms of Gulf and regional security. It no longer actively seeks to export its religious revolution to other Islamic states. It reached a rapprochement with Saudi Arabia and the other Southern Gulf states in the late 1990s. It has since avoided further efforts to try to use the Pilgrimage to attack the Kingdom, or to exploit Shiite versus Sunni tensions in Saudi Arabia and other Gulf countries like Bahrain. Iran maintains an active presence in the Gulf, conducts large scale-exercises, and maintains an active intelligence and surveillance presence in both the Gulf and neighboring states. It has avoided provocative military action, however, and there is no evidence of active hostile attacks on Southern Gulf targets or US targets since the Al-Khobar bombings.

Iran is a far less modern military power in comparative terms than it was during the time of the Shah, or during the Iran-Iraq War. Nevertheless, it is slowly improving its conventional forces, and is now the only regional military power that poses a serious conventional military threat to Gulf stability. Iran has significant capabilities for asymmetric warfare, and poses the additional threat of proliferation. There is considerable evidence that it is developing both a long-range missile force and a range of weapons of mass destruction. It has never properly declared its holdings of chemical weapons, and the status of its biological weapons programs is unknown.

It is far too early to predict that Iraqi Coalition efforts at nation building will fail, that a moderate Iraqi government will not emerge, or that Iraq will be a long-term source of instability. The fact remains, however, that poor US preparations for stability and nation building operations helped create a level of insurgency that has become a "war after the war," and has greatly increased the risk of failure. The success of the Coalition effort in Iraq, and Iraq's ability to create a stable and secure new government, is now too close to call. Moreover, there is at least some risk that Iraq may divide on sectarian lines, and that a Shiite-dominated regime may come to power that will create serious tensions with its Sunni neighbors, ally itself with Iran, and be overtly or covertly hostile to the Saudi Arabia.

The Military Forces of Bahrain

Bahrain is a small, strategic island in the middle of the Southern Gulf. It has a population of only about 730,000, and cannot support large military forces. Bahrain has long hosted the US naval presence in the Gulf, however, and had close military ties to the US ever since Britain ceased to act as the military protector of the Southern Gulf states. It now is the site of the headquarters of the US 5th Fleet, and Bahrain provided major basing facilities and support to US forces during the "Tanker War" with Iran in 1987-1998, the Gulf War of 1990-1991, and the Iraq War in 2003.

The US provides de facto security guarantees to Bahrain against any foreign threat, and Saudi Arabia provides major amounts of economic aid as well as the capability to rapidly reinforce Bahrain's internal security forces. The fall of Saddam Hussein's regime and improvements in relations with Iran have also greatly reduced the level of internal threat. Bahrain's new ruler has also made significant political reforms that have greatly eased the tensions between Bahrain's ruling Sunni elite and its Shi'ite majority. Nevertheless, these tensions now remain Bahrain's greatest security concern, and Bahrain does have small cadres of Sunni Islamic extremists.

Bahrain is not a wealthy state and has always been careful about its military expenditures. It does, however, selectively modernize its military forces. It bought 8 IHawk surface-to-air missile batteries and 30 ATACMs launchers in the 1990s, and ordered 10 F-16C/D with advanced air combat munitions like the AMRAAM in 2000. In the future, further military expenditures will be even more closely monitored by the newly established parliament. The first deputy chairman of the National Assembly indicated that defense spending would be minimal given the amicable relations it has in the region. The defense budget for 2004-2005 was slashed by $10.6 million, though the armed forces are seeking to add additional landing craft, helicopters, and an upgrade to the existing C4ISR systems.[v]

The Bahraini Army

Bahrain's small army has 8,500 men and its combat units include one armored brigade, one infantry brigade, one artillery brigade, one special forces battalion, one Amiri Guard battalion, and one air defense battalion with two missile and on AA gun battery. Its major combat equipment includes 180 M-60A3 main battle tanks; 22 AML-90 and 8 Saladin, 8 Ferret, and 8 Shorland armored reconnaissance vehicles; 25 Dutch YPR-765 AIFVs, and 235 APCs: 115 M-113s, 110 Panhard M-3, and 10 AT-105s. It has 15 TOW anti-tank guided weapons launchers. Its artillery strength now includes 9 MRLS multiple rocket launchers, 13 towed M-110 203mm self-propelled weapons, 8 light towed 105mm weapons, 18 M-198 towed 155mm weapons, and 21 81mm and 120mm mortars. Air defense weapons include 8 IHawk, 7 Crotale, 60 RBS-70 and 24 Stingers.

This force is roughly the equivalent of one heavy brigade. It is well equipped for its size, but has so many diverse types of equipment that it is difficult to sustain and support. It has moderate levels of combat readiness and training, and is largely suited to service as a local deterrent, with very limited ability to deploy outside Bahrain.

The Bahraini Air Force

The Bahraini air force has 1,500 men, 54 combat aircraft, and 40 armed helicopters, and benefits substantially from US aid and support. It has one fighter attack squadron with 8 F-5E and 4 F-5F, a fighter squadron with 18 F-016C and 4 F-16CD, and 24 AH-1E, 6 TAH-1P, and 10 AB-212 attack and armed helicopters. It has a small transport unit with four aircraft, and 7 utility and transport helicopters (often used for royal flights). Bahrain has made a well-planned transition to advanced combat aircraft, and pilot training standards are moderate to good. Readiness is acceptable, and Bahrain has stocks of modern air munitions. Bahrain is dependent on the US, however, for assistance in battle management, air control and warning, and targeting and battle damage assistance. In spite of various planning efforts, it does not have a fully integrated air defense system with any of its Gulf neighbors, although it does have some data links.

The Bahraini Navy

The Bahraini Navy has 1,200 men and it's a relatively large force for such a small country. The navy is not capable of independent operations against a power like Iran, but has reasonable manpower quality, readiness, and sustainability and good training and at sea rates by regional standards. It is based at Mina Salman, and has a combat strength of 1 frigate, two corvettes, four missile patrol craft, and four inshore patrol craft. It has 4 LCU landing craft utility. The frigate, the Sabha, is an ex-Oliver Hazard Perry class ship with Harpoon ship-to-ship missiles and Standard anti-aircraft missiles. It is equipped with torpedoes, a 76mm gun, and modern radars and fire control systems. The ship entered Bahraini service in 1997. It is active, but does not have helicopters and cannot adequately perform its ASW mission without them.

The two Al Manama class corvettes are 632-ton ships with two twin MM-40 Exocet launchers, and a 76mm gun. They have 40mm AA guns and can carry a helicopter, but are not so equipped. They have moderate radar and combat electronics capabilities and entered service in the late 1980s. The four Ahmad El Fateh class missile patrol boats are 259-ton vessels equipment with two twin MM40 Exocet launchers and a 76mm gun. Bahrain has four gun-equipped patrol boats: two of 205 tons and two of 33 tons. Its 4 LCUs have a cargo capacity of 167 tons. It also has one Ajerra class supply ship. Its small coastguard has 20 light patrol boats, 17 small craft, a support craft, and a landing craft (LCM).

The Military Forces of Iran

Iran is still a major military power by Gulf terms. It has active forces of some 540,000 men, although some 220,000 of this total are 18-month conscripts which general receive limited training and have marginal military effectiveness. It also has an army reserve of some 350,000 men, although these reserves receive negligible training and Iran lacks the equipment, supplies, and leadership cadres to make effective use of such reserves without months of reorganization and training.

Iran's problems in military modernization have been compounded by a number of factors. The combat trained manpower Iran developed during the Iran-Iraq War have virtually all left service. Iran is now a largely conscript force with limited military training and little combat experience. The deep divisions between "moderates" and "hard-liners" in Iran's government have inevitably politicized the armed forces, which remain under the command of the supreme religious leader, the Ayatollah Khamenei. Iran has also divided armed forces, split between the regular forces that existed under the Shah, and the Revolutionary Guards created under the Ayatollah Khomeini. This split is compounded by a highly bureaucratic force, which has made limited progress in joint warfare.

The Iranian Army

The Iranian Army is large by regional standards. It has some 350,000 men (220,000 conscripts), organized into four corps, with four armored divisions, six infantry divisions, two commando divisions, an airborne division, and other smaller independent formations. These latter units include independent armored, infantry, and commando brigades' six artillery groups, and army aviation units.

In practice, each Iranian division has a somewhat different organization. For example, only one Iranian division (the 92nd) is equipped well enough in practice to be a true armored division and two of the armored divisions are notably larger than the others. Two of the infantry divisions (28th and 84th) are more heavily mechanized than the others.[vi]The lighter and smaller formations in the regular army include the 23rd Special Forces Division, which was formed in 1993-1994, and the 55th paratroop division. According to one source, the 23rd Special Forces Division has 5,000 full-time regulars, and is one of the most professional units in the Iranian Army.

The airborne and special forces are trained at a facility in Shiraz.[vii] The regular army also has a number of independent brigades and groups. These include some small armored units, 1 infantry brigade, 1 airborne and 2-3 Special Forces brigades, coastal defense units, a growing number of air defense groups, 5 artillery brigades/regiments, 4-6 army aviation units, and a growing number of logistic and supply formations. The land forces have six major garrisons and 13 major casernes. There is a military academy at Tehran, and a signal-training center in Shiraz.[viii]

Iranian Tank Strength

Iran has steadily rebuilt its armored strength since the Iran-Iraq War. It has some 1,613 main battle tanks, and the number has risen steadily in recent years. Iran had a total of 1,135 in 2000, 1,565 in 2003, and 1,613 in 2005. The IISS estimates that Iran's inventory of main battle tanks now includes some 168 M-47/M-48 and 150 M-60A1, 100 Chieftain Mark 3/5s, 540 T-54/T-55s, 150-250 T-59s, 75 T-62s, 480 T-72/T-72S, and 100 Zulfiqars. Its T-72 strength has increased from 120 in 2000 (Other estimates indicate that Iran may have as many as 300 Type 59s and/or 150-250 T-69IIs).

It has some 1,613 main battle tanks, although only 480-580 can be described as "modern" be Gulf standards, 865 other armored fighting vehicles, 550-670 armored personnel carriers, 2,085 towed artillery weapons, 310 self-propelled artillery weapons, more than 870 multiple rocket launchers, some 1,700 air defense guns and large numbers of light anti-aircraft missiles, large numbers of anti-tank weapons and guided missiles, and some 50 attack helicopters. This is a large inventory of major weapons, although many are worn and obsolete.

Only part of Iran's tank inventory is fully operational. It is uncertain how many Chieftains and M-47/M-48s are really operational, although its Chieftains include the remainder of 187 improved FV4030/1 versions of the Mark 5 Chieftain that were delivered to Iran before the fall of the Shah. Smaller problems seem to exist in the rest of the force, and some experts estimate that Iran's sustainable *operational* tank strength may be fewer than 1,000 tanks. Furthermore, Iran's Chieftains and M-60s are at least 16-20 years old, and the T-72 and Zulfiqar are Iran's only tanks with advanced fire control systems, sights, and armor-piercing ammunition.

Iran's T-72Ss are export versions of the Soviet T-72B. Some have been built under license in Iran, and are armed with a 125 mm 2A46M smoothbore gun. They have a relatively modern IA40-1 fire control system and computer, a laser range finder, and a night and day image intensifying sighting system. The T-72S is powered by an 840

horsepower V-84MS diesel engine, has an upgrade suspension and mine protection, a combat weight of 44.5 tons. Russian sources indicate that Iran has ordered a total of 1,000 T-72s from Russia.

As has been touched upon earlier, Iran has developed a main battle tank called the Zulfiqar, with a 125 mm smoothbore gun and welded steel turret of Iranian design. According to one report, the Zulfiqar is powered by a V-46-6-12 V-12 diesel engine with 780 horsepower and uses a SPAT 1200 automatic transmission. This engine is used in the Soviet T-72, but the tank transmission design seems to be closer to that of the US M-60. It seems to have a relatively modern fire control system and Iran may have improved its T-72s with a similar upgrade. The Zulfiqar's combat weight is reported to be 36 tons, and it is reported to have a maximum speed of 65 kilometers per hour and a power to weight ratio of 21.7 horsepower per ton. It has a 7.62 mm coaxial and a 12.7 mm roof mounted machine gun. It uses modern Slovenia Fontana EFCS-3 computerized fire control system to provide a fully-stabilized fire on the move capability. It may have a roof-mounted laser warning device and it could use the same reactive armor system discussed earlier. Roughly 100 Zulifqar seem to be in service.

Iran has extended the life of some of its T-54s, T-55s, and T-59s by improving their armor and fire control systems, and by arming them with an Iranian-made M-68 rifled 105 mm gun similar to the one used on the M-60A1. This weapon seems to be made by the Armament Industries Division of the Iranian Defense Industries Organization. The Revolutionary Guard is reported to have a special conversion of the T-54 called the Safir-74. Iran has developed explosive reactive armor add-ons for its tanks, although the effectiveness of such armor and the extent of such uparmoring of any given model of tank is unclear.

Iran's 168 M-47/M-48s include Iran's surviving upgraded M-47Ms. These M-47s were upgraded by the American firm of Bowen-McLaughlin York between 1970 and 1972, which also built a vehicle manufacturing plant in Iran. They have many of the components of the M-60A1, including the diesel engine, automatic transmission, suspension, gun control and fire components. The conversion extended the operating range of the M-47 from 130 to 600 kilometers, and increased space to hold 79 rounds by eliminating the bow mounted machine gun and reducing the crew to four. A total of about 150 conversions seem to have been delivered to Iran.

In spite of its tank deliveries and production since the Iran-Iraq War, Iran's total operational main battle tank holdings are only sufficient to fully equip 5 to 7 of its divisions by Western standards, and Iran could only sustain about half this force for any period of extended maneuver warfare. At present, however, they are dispersed in relatively small lots among all of its regular Army and some of its IRGC combat units -- all the IRGC units generally only have small tank force cadres and it is unclear how heavy these forces will really be in the future. The 92nd Armored Division is the only Iranian division that has enough tanks to be a true armored division, even by regional standards.

Iran seems to have about 1,000-1,360 armored infantry fighting vehicles (AFVs) and armored personnel carriers (APCs) in its operational inventory, although counts are contradictory and it is difficult to estimate what parts of Iran's holdings are fully operational and/or sustainable for any length of time in combat. The IISS, for example, estimates 690 light tanks and armored infantry fighting vehicles, and 640 APCs. Virtually all estimates indicate, however, that Iran only has about half of the total holdings it would need to fully mechanize its forces.[ix] This total compares with around 3,800 such weapons for Iraq and 3,000-3,600 for Saudi Arabia.

Iran appears to retain 70-80 British-supplied Scorpions out of the 250 it received before the fall of the Shah. These are tracked weapons equipped with 76 mm guns. However, the Scorpion is more than 20 years old, and as few as 30 may be fully operational. These problems may explain why Iran has developed a new light tank called the Tosan ("Wild Horse" or "Fury") with a 90 mm gun, some of which may now be in service.

Iran has some 210 BMP-1s and 400 BMP-2 equivalents in service. The BMPs are Soviet-designed systems, but have serious ergonomic and weapons suite problems. They are hard to fight from, hard to exit, and too slow to keep pace with modern tanks. They lack thermal vision systems and modern long-range fire control systems, and their main weapons are hard to operate in combat even from static positions. Nevertheless, many have smooth bore anti-tank guns and anti-tank guided missiles. Iran also has at least 35 EE-9 Cascavel armored reconnaissance vehicles, and one estimate indicates 100. The Cascavel is an acceptable design for Third World combat, although it lacks modern sensors and weapons.

Iranian forces have some 200 0 M-113s and other Western APCs, and a mix of 300 BTR-40s, BTR- 50s and BTR-60s. Iran is producing an armored fighting vehicle called the Boragh (Boraq) and a lighter APC called the Cobra or BMT-2, and some 140 are in service. The Boragh seems to be a copy of a Chinese version of the BMP-1. It is a fully tracked and amphibious and has a combat weight of 13 tons. It can carry 8-12 people, plus two crew. Reports differ as to its armament -- perhaps reflecting different variants. Initial reports indicated that it has a turret armed with a 73 mm smoothbore gun and anti-tank guided missile launcher. It may, however, lack the commander's position that exists in the BMP-1, and be armed with a 12.7 mm machine gun. Iran has developed an armor package designed to fit over the hull of the Boragh to provide protection against 30mm armor-piercing ammunition.[x] Variants with 120mm mortars, one-man turrets with Iranian-made Toophan ATGMs, and AT-4 ATGMs, and others with 73mm BMP-2 turrets guns also seem to be deploying.

The Cobra or BMT-2 is a low-profile, wheeled troop carrier, which can hold seven personnel some versions may have twin 23mm AA guns.

Iran has an unknown number of British Chieftain bridging-tanks and a wide range of specialized armored vehicles, and some heavy equipment transporters. Iran is steadily improving its ability to support armored operations in the field, and to provide recovery and field repair capability. However, its exercises reveal that these capabilities are still limited relative to those of US forces and that a lack of recovery and field repair capability, coupled with poor interoperability, will probably seriously limit the cohesion, speed, and sustainability of Iranian armored operations.

Iran's armored warfare doctrine seems to be borrowed from US, British, and Russian sources without achieving any coherent concept of operations. Even so, Iran's armored doctrine is improving more quickly than its organization and exercise performance. Iran's armored forces are very poorly structured, and Iran's equipment pool is dissipated among far too many regular and IRGC units. Iran has only one armored division -- the 92nd Armored Division -- with enough tanks and other armor to be considered a true armored unit.

Iran has large holdings of anti-tank guided weapons and has been manufacturing copies of Soviet-systems, while buying missiles from China, Russia, and the Ukraine. It has approximately 50-75 TOW and 20-30 Dragon anti-tank guided missile launchers that were originally supplied by the US, although the operational status of such systems is uncertain. It has Soviet and Asian versions of the AT-2, AT-3, and AT-. Iran seems to have at least 100-200 AT-4 (9K111) launchers, but it is impossible to make an accurate estimate because Iran is producing its own copies of the AT-3. Iran also has some 750 RPG-7V, RPG-11, and 3.5" rocket launchers, and roughly 150 M-18 57 mm, 200 M-20 75 mm and B-10 82 mm, and 200 M-40 106 mm and B-11 107 mm recoilless guns.

Iran makes a number of anti-tank weapons. These include an improved version of the manportable RPG-7 anti-tank rocket with an 80 mm tandem HEAT warhead instead of the standard 30 mm design, the NAFEZ anti-tank rocket, and a copy of the Soviet SPG-9 73 mm recoilless anti-tank gun. Iran also makes a copy of the Russian AT-3 9M14M (Sagger or Ra'ad) anti-tank guided missile. This system is a crew-operable system with a guidance system that can be linked to a launcher holding up to four missiles. It has a maximum range of 3,000 meters, a minimum range of 500 meters, and a flight speed of 120 meters per second. Iran is also seeking more advanced technology from Russian arms firms. The US maintains that a firm sold Iran Krasnopol artillery shells while the company denies any connection with Iran.[xi] Prospective sanctions are likely to deter arms manufacturers from filling the many needs of the Iranian military.

The Iranian copy of the AT-3 is made by the Shahid Shah Abaday Industrial Group in Tehran, and seems to be an early version of the missile which lacks semi-automatic guidance that allows the operator to simply sight the target, rather than use a joystick to guide the missile to the target by using the light from the missile to track the missile. The Iranian version also seems to have a maximum armored penetration capability of 500 mm, which is not enough to penetrate the forward armor of the latest Western and Russian main battle tanks. Russia has, however, refitted most of its systems to semi-automatic line of sight guidance and warheads capable of penetrating 800 mm. Iran may have or be acquiring such capability, and it would significantly improve the lethality of its anti-armor forces.

Iranian Artillery Strength

Iran has some 3,000-3,200 operational medium and heavy artillery weapons and multiple rocket launchers, and some 5,000 mortars. Its towed artillery consists largely of effective Soviet designs. Its self-propelled artillery includes 60 2S1 122m weapons, and some Iranian copies. It has some 180 aging M-109 155mm weapons and again is seeking to produce its own weapons as part of the "Thunder" series. It has some 60 aging 170mm, 165mm, and 203mm weapons. Iran also has large numbers of multiple rocket launchers, including some 700 107mm weapons, 150-200 122mm weapons, 20-odd 240mm weapons, and some 333mm weapons. It manufactures its own multiple rocket launchers, including the long-range Fajr series.

This total is very high by regional standards, and reflects Iran's continuing effort to build up artillery strength that began during the Iran-Iraq War. Iran used artillery to support its infantry and Islamic Revolutionary Guards Corps in their attacks on Iraqi forces. Iran had to use artillery as a substitute for armor and air power during much of the Iran-Iraq War, and generally used relatively static massed fires. However, Iran's reliance on towed artillery and slow moving multiple rocket launchers limits Iran's combined arms maneuver capabilities, and Iran has failed to develop effective night and beyond-visual-range targeting capability.

Some 2,085 of Iran's weapons are towed tube artillery weapons, versus 310 self-propelled tube weapons, and 700-900 vehicle-mounted or towed multiple rocket launchers. Iran's holdings of self-propelled weapons still appear to include a substantial number of US-supplied systems, including 25-30 M-110 203 mm howitzers, 20-30 M-107 175 mm guns, and 130-150 M-109 155 mm howitzers. These US-supplied weapons are worn, have not been modernized in over 15 years, and lack modern fire control systems and artillery radars. Many lack sustainability, and a number may not be operational.

Iran understands that it has less than a quarter of the self-propelled artillery it needs to properly support its present force structure, and that maneuverable artillery is critical to success in dealing with Iraqi and other maneuver forces. It is attempting to compensate for the resulting lack of modern artillery and artillery mobility by replacing its US self-propelled weapons with other self-propelled systems. Iran has purchased 60-80 Soviet 2S1 122 mm self-propelled howitzers, and has developed an Iranian-made design called the Raad (Thunder 1) and Raad (Thunder 2). The Thunder 1 is a 122mm weapon similar to Russian designs. The Thunder 2 is a "rapid fire" 155 mm self-propelled weapon. Both systems are now in deployment.

Iran bought large numbers of mortars during the Iran-Iraq War for the same reasons it bought large numbers of towed tube artillery weapons. Iran has some 5,000 weapons. These include 107 mm and 120 mm heavy mortars and 800-900 were 81 mm and 82 mm mortars. Iran mounts at least several hundred of its heavy mortars on armored vehicles.

Iran's emphasis on massed, static area fire is also indicated by the fact it has 700-900 multiple rocket launchers, It is difficult to estimate Iran's inventory, but its holdings include roughly 10 M-1989 240 mm multiple rocket launchers, 500-700 Chinese Type 63 and Iranian Haseb and Fadjir-1 107 mm multiple rocket launchers, and 100+ Soviet BM-21, Soviet BM-11 122, mm launchers.

Iran has produced its own multiple rocket launchers. These include some 50 122mm, 40 round Hadid rocket launcher systems. In addition, Iran is producing variants of Chinese and Russian 122 mm rockets called the Arash and Noor. The Iranian state television announced the production of the DM-3b seeker for the Noor. The DM-3b is an active radar sensor that is used in the final stages of flight to acquire and home in on ship targets. A joint program between Iran's Aerospace Industries Organization (AID) and the China Aerospace Science and Industry Corp developed the Noor. [xii] The Falaq 1 and 2 series are examples of vehicle mounted unguided rocket systems in the Iranian arsenal. The Falaq 1 fires a 240mm rocket with 50kg of explosives, and can reach a target up to 10 km away. The Falaq 2 is slightly larger, carries ten more kg of explosives, and flies almost a full kilometer further.[xiii]

Iran's land forces operate a number of Iranian-made long-range unguided rockets, including the Shahin 1 and 2, Oghab, and Nazeat. They also include some 10 large 240mm artillery rockets with a range of up to 40-43 kilometers called the Fadjr 3. The key longer-range systems seem to include: [xiv]

- The Shahin 1 (sometimes called the Fadjr 4) is a trailer-launched 333 mm caliber unguided artillery rocket. Two rockets are normally mounted on each trailer, and they have with a solid propelled rocket motor, a maximum range of 75 kilometers, and a 175 kilogram conventional or chemical warhead. The Shahin evidently can be equipped with three types of warheads: a 180 kilogram high explosive warhead, a warhead using high explosive submunitions, and a warhead that uses chemical weapons. There is a truck mounted version, called the Fajr 5, with a rack of four rockets. A larger Shanin 2, with a range of 20 kilometers, is also deployed.

- The Fadjr-3 is a truck mounted system with a 12 round launcher for 240mm rockets. It has a maximum range of 43 kilometers, and a 45 kg payload in its warhead.

- The Fadjr 5 is truck mounted 333 mm caliber unguided artillery rocket with a solid propelled rocket motor, a maximum range of 75 kilometers, and a 175 kilogram conventional or chemical warhead. It carries four rockets, and they can evidently be equipped with three types of warheads: a kilogram high explosive warhead, a warhead using high explosive submunitions, and a warhead that uses chemical weapons.

- The Oghab is a 320 mm caliber unguided artillery rocket that is spin stabilized in flight, has a maximum range of 34 kilometers, and a 70 kilogram HE fragmentation warhead -- although chemical warheads may be available. While it may have a chemical warhead, it has an operational CEP that has proved to be in excess of 500 meters at maximum range. Further, Iran has no way to target accurately the Oghab or any other long range missile against mobile or point targets at long ranges, other than a limited ability to use RPVs.

- The Nazeat is a TEL launched system with conventional and possibly chemical and biological warheads. The full details of this system remain unclear, but it seems to be based on Chinese technology and uses a solid fuel rocket, with a simple inertial guidance system. Nazeat units are equipped with communications vans, meteorological vans, and a global positioning system for surveying the launch site. Some reports indicate there are two variants of the Nazeat solid-fueled rocket system -- a 355.6 mm caliber rocket with 105 kilometers range and a 150-kilogram warhead, and a 450 mm caliber rocket with a reported range of 130-150 kilometers and a 250-kilogram warhead. Both systems have maximum closing velocities of Mach 4-5, but both also appear to suffer from poor reliability and accuracy. Other reports indicate all Nazeats are 335.6mm and there are four versions of progressively larger size, with ranges from 80 to 120 kilometers. It is claimed to have a CEP within 5% of its range.

- The Zelzal 2 is a 610mm long-range rocket, with a warhead with a 600-kilogram payload and a maximum range of up to 210 kilometers. A single rocket is mounted on a launcher on a truck. It is unguided, but is spin stabilized, and is claimed to have a CEP within 5% of its range.

- The Fateh A-110 is a developmental system believed to be similar to the Chinese CSS-8, which is a surface-to-surface system derived from the Russian SA-2 surface-to-air missile.

Iran has only limited artillery fire control and battle management systems, counter-battery radar capability, and long-range target acquisition capability (although it does have some RPVs) to support its self-propelled weapons. Iran has actively sought more modern fire control and targeting systems since the mid-1980s. It has had some success in deploying and testing RPVs as targeting systems, and has obtained some additional counterbattery radars, but it is unclear how many it obtained or put in service.

Iran has transferred large numbers of Fadjr rockets to the Hezbollah in Lebanon.[xv]

Iranian Surface-to-Surface Missiles

Iran continues to deploy surface-to-surface missiles, and has its own systems in development. The number assigned to the army versus the Iranian Revolutionary Guards Corps (IRGC) is unclear, but the IRGC seems to hold and operate most long-range missiles rather than the Army. Iran seems to have some 12-18 Scud B/C launchers and 250-

350 missiles, and 30 land-based CSS-8 launchers with 175 missiles. Iran refers to the Scud-B as the Shahab 1 and the Scud C as the Shahab-2.

Iran's Scud B Missiles

The Soviet-designed Scud B (17E) guided missile currently forms the core of Iran's ballistic missile forces:

- Iran acquired its Scuds in response to Iraq's invasion. It obtained a limited number from Libya and then obtained larger numbers from North Korea. It deployed these units with a special Khatam ol-Anbya force attached to the air element of the Pasdaran. Iran fired its first Scuds in March 1985. It fired as many as 14 Scuds in 1985, 8 in 1986, 18 in 1987, and 77 in 1988. Iran fired 77 Scud missiles during a 52 day period in 1988, during what came to be known as the "war of the cities." Sixty-one were fired at Baghdad, nine at Mosul, five at Kirkuk, one at Tikrit, and one at Kuwait. Iran fired as many as five missiles on a single day, and once fired three missiles within 30 minutes. This still, however, worked out to an average of only about one missile a day, and Iran was down to only 10-20 Scuds when the war of the cities ended.
- Iran's missile attacks were initially more effective than Iraq's attacks. This was largely a matter of geography. Many of Iraq's major cities were comparatively close to its border with Iran, but Tehran and most of Iran's major cities that had not already been targets in the war were outside the range of Iraqi Scud attacks. Iran's missiles, in contrast, could hit key Iraqi cities like Baghdad. This advantage ended when Iraq deployed extended range Scuds.
- The Scud B is a relatively old Soviet design that first became operational in 1967, designated as the R-17E or R-300E. The Scud B has a range of 290-300 kilometers with its normal conventional payload. The export version of the missile is about 11 meters long, 85-90 centimeters in diameter and weighs 6,300 kilograms. It has a nominal CEP of 1,000 meters. The Russian versions can be equipped with conventional high explosive, fuel air explosive, runway penetrator, submunition, chemical, and nuclear warheads.
- The export version of the Scud B comes with a conventional high explosive warhead weighing about 1,000 kilograms, of which 800 kilograms are the high explosive payload and 200 are the warhead structure and fusing system. It has a single stage storable liquid rocket engine and is usually deployed on the MAZ-543 eight wheel transporter-erector-launcher (TEL). It has a strap-down inertial guidance, using three gyros to correct its ballistic trajectory, and uses internal graphite jet vane steering. The warhead hits at a velocity above Mach 1.5.
- Most estimates indicate that Iran now has 6-12 Scud launchers and up to 200 Scud B (R-17E) missiles with 230-310 KM range.
- Some estimates give higher figures. They estimate Iran bought 200-300 Scud Bs from North Korea between 1987 and 1992, and may have continued to buy such missiles after that time. Israeli experts estimate that Iran had at least 250-300 Scud B missiles, and at least 8-15 launchers on hand in 1997.
- US experts also believe that Iran can now manufacture virtually all of the Scud B, with the possible exception of the most sophisticated components of its guidance system and rocket motors. This makes it difficult to estimate how many missiles Iran has in inventory and can acquire over time, as well as to estimate the precise performance characteristics of Iran's missiles, since it can alter the weight of the warhead and adjust the burn time and improve the efficiency of the rocket motors

Iran's Scud C Missiles

Iran also has longer range North Korean Scuds - with ranges near 500 kilometers. According to some reports, Iran has created shelters and tunnels in its coastal areas that it could use to store Scuds and other missiles in hardened sites to reduce their vulnerability to air attack.

- The North Korean missile system is often referred to as a "Scud C." Typically, Iran formally denied the fact it had such systems long after the transfer of these missiles became a fact. Hassan Taherian, an Iranian foreign ministry official, stated in February 1995, "There is no missile cooperation between Iran and North Korea whatsoever. We deny this."
- In fact, a senior North Korean delegation traveled to Tehran to close the deal on November 29, 1990, and met with Mohsen Rezaei, the former commander of the IRGC. Iran either bought the missile then, or placed its order shortly thereafter. North Korea then exported the missile through its Lyongaksan Import Corporation. Iran imported some of these North Korean missile assemblies using its B-747s, and seems to have used ships to import others.

- Iran probably had more than 60 of the longer range North Korean missiles by 1998, although other sources report 100, and one source reports 170.
- Iran may have 5-10 Scud C launchers, each with several missiles. This total seems likely to include four new North Korean TELs received in 1995.
- Iran seems to want enough missiles and launchers to make its missile force highly dispersible.
- Iran has begun to test its new North Korean missiles. There are reports it has fired them from mobile launchers at a test site near Qom about 310 miles (500 kilometers) to a target area south of Shahroud. There are also reports that units equipped with such missiles have been deployed as part of Iranian exercises like the Saeqer-3 (Thunderbolt 3) exercise in late October 1993.
- The missile is more advanced than the Scud B, although many aspects of its performance are unclear. North Korea seems to have completed development of the missile in 1987, after obtaining technical support from the People's Republic of China. While it is often called a "Scud C," it seems to differ substantially in detail from the original Soviet Scud B. It seems to be based more on the Chinese-made DF-61 than on a direct copy of the Soviet weapon.
- Experts estimate that the North Korean missiles have a range of around 310 miles (500 kilometers), a warhead with a high explosive payload of 700 kilograms, and relatively good accuracy and reliability. While this payload is a bit limited for the effective delivery of chemical agents, Iran might modify the warhead to increase payload at the expense of range and restrict the using of chemical munitions to the most lethal agents such as persistent nerve gas. It might also concentrate its development efforts on arming its Scud C forces with more lethal biological agents. In any case, such missiles are likely to have enough range-payload to give Iran the ability to strike all targets on the southern coast of the Gulf and all of the populated areas in Iraq, although not the West. Iran could also reach targets in part of eastern Syria, the eastern third of Turkey, and cover targets in the border area of the former Soviet Union, western Afghanistan, and western Pakistan.
- Accuracy and reliability remain major uncertainties, as does operational CEP. Much would also depend on the precise level of technology Iran deployed in the warhead. Neither Russia nor the People's Republic of China seems to have transferred the warhead technology for biological and chemical weapons to Iran or Iraq when they sold them the Scud B missile and CSS-8. However, North Korea may have sold Iran such technology as part of the Scud C sale. If it did so, such a technology transfer would save Iran years of development and testing in obtaining highly lethal biological and chemical warheads. In fact, Iran would probably be able to deploy far more effective biological and chemical warheads than Iraq had at the time of the Gulf War.
- Iran may be working with Syria in such development efforts, although Middle Eastern nations rarely cooperate in such sensitive areas. Iran served as a transshipment point for North Korean missile deliveries during 1992 and 1993. Some of this transshipment took place using the same Iranian B-747s that brought missile parts to Iran. Others moved by sea. For example, a North Korean vessel called the *Des Hung Ho*, bringing missile parts for Syria, docked at Bandar Abbas in May, 1992. Iran then flew these parts to Syria. An Iranian ship coming from North Korea and a second North Korean ship followed, carrying missiles and machine tools for both Syria and Iran. At least 20 of the North Korean missiles have gone to Syria from Iran, and production equipment seems to have been transferred to Iran and to Syrian plants near Hama and Aleppo.
- Iran can now assemble Scud B and Scud C missiles using foreign-made components. It may soon be able to make entire missile systems and warhead packages in Iran.

Iran's Shahab Missiles

Iran's new Shahab-3 (Shihab, Sehob) series is a much larger missile that seems to be based on the design of the North Korean No Dong 1 or A and No Dong B missile, which some analysts claim were developed with Iranian financial support. It is based on North Korean designs and technology, but being developed and produced in Iran. This development effort is controlled and operated by the IRGC.

The Shahab-3 is a single-stage liquid fueled missile. It is road mobile, is believed to be 16 meters long and 1.32 meters in diameter, and to have a launch weight of 16,250 kilograms. Iran has discussed payloads using submunitions, but it seems more likely to be designed to carry a chemical, nuclear, or biological weapon.[xvi]

Its range-payload, accuracy, and reliability are matters of speculation. Its nominal range is believed to be 1,300 km – long enough to hit virtually any target in the Gulf as well as Israel -- and its payload to be 1,000-1,200 kg. It can carry a warhead with a 550-700 kg payload. An analysis by John Pike of Global Security points out, however, that

missiles – like combat aircraft – can make trade-offs between range and payload. For example, the No Dong B has a range of 1,560 kilometers with a 760 kilogram warhead and 1,350 kilometers with a 1,158 kilogram warhead.

The Shahab-3 may now be in deployment, but possibly only in "test-bed" units. Some reports have claimed that the Shahab-3 was operational as early as 1999. Reports surfaced that development of the Shahab-3 was completed in June 2003, and that it underwent "final" tests on July 7, 2003. However, the Shahab-3 underwent a total of only nine tests from inception through late 2003, and only four of them could be considered successful in terms of basic system performance. The missile's design characteristics also continued to evolve during these tests. A CIA report to Congress, dated November 10, 2003, indicated that upgrading of the Shahab-3 was still underway, and some sources indicate that Iran is now seeking a range of 1,600 kilometers.

Iran conducted further major Shahab-3 tests on August 11, 2004, deploying it with a new, smaller, and "bottle neck" warhead. This kind of warhead has a slower reentry than a cone shaped warhead and has advantages using warheads containing chemical and biological agents. Another test took place on September 19, 2004, and the missile was paraded on the 21st covered in banners saying "we will crush America under our feet" and "wipe Israel off the map."[xvii]

Nasser Maleki, the head of Iran's aerospace industry, stated on October 7, that, "Very certainly we are going to improve our Shahab-3 and all of our other missiles." Tehran also claimed in September that the Shahab-3 could now reach targets up to 2,000 km away, presumably allowing the missiles to be deployed a greater distance away from Israel's air force and Jericho-2 ballistic missiles.[xviii] IRGC political bureau chief, Yadollah Javani, stated that the Shahab-3 could be used to attack Israel's Dimona nuclear reactor.[xix]

Iran performed another test on October 20, 2004, and this time Iran's Defense Minister, Ali Shamkani, claimed it was part of an exercise. Iran's Defense Minister also claimed that Iran was now capable of mass-producing the Shahab-3 on November 9, 2004 and that Iran reserved the option of pre-emptive strikes in defense of its nuclear sites. Shamkani also claimed shortly afterwards that the Shahab 3 now had a range of more than 2,000 kilometers (1,250 miles).[xx]

Since that time, the MEK has claimed that Iran is developing a version of the Shahab with a 2,400-kilometer range (1,500 miles). Mortezar Ramandi, an official in the Iranian delegation to the UN has denied that Iran is developing a missile with a range of more than 1,250 miles (2,000 kilometers); the MEK has an uncertain record of accuracy in making such claims, and they cannot be confirmed.[xxi]

Discussions of the Shahab-3's accuracy and reliability are largely speculative. If the system used older guidance technology, and warhead separation methods, its CEP could be anywhere from 1,000-4,000 meters. If it uses newer technology, such as some of the most advanced Chinese technology, it could have a CEP as low as 250-800 meters. In any case, such CEP data are engineering estimates, and missile accuracy and reliability cannot be measured using technical terms like CEP, which are based on simulations and models, not tests. Such tests assume the missile can be perfectly targeted at launch and performs perfectly through its final guidance phase, and then somewhat arbitrarily define CEP as the accuracy of 50% of the systems launched. True performance can only be derived from observing reliability under operational conditions, and correlating actual point of impact to a known aim point.

As is the case with virtually all unclassified estimates of missile performance, the estimates of accuracy and CEP available from public sources are matters of speculation, and no such source has credibility in describing performance in real-world, warfighting terms. This is not a casual problem, since actual weaponization of a warhead requires extraordinarily sophisticated systems to detonate a warhead at the desired height of burst and to reliably disseminate the munitions or agent. Even the most sophisticated conventional submunitions are little more than area weapons if the missile accuracy and target location has errors in excess of 250-500 meters, and a unitary conventional explosive warhead without terminal guidance is little more that a psychological or terror weapon almost regardless of its CEP.

The effective delivery of chemical agents by either spreading the agent or the use of submunitions generally requires accuracies under 1,000 meters to achieve lethality against even large point targets. Systems with biological weapons are inherently area weapons, but a 1,000-kilogram nominal warhead can carry so little agent that accuracies under 1,000 meters again become desirable. Nuclear weapons require far less accuracy, particularly if a "dirty" ground

burst can be targeted within a reliable fall out area. There are, however, limits. For example, a regular fission weapon of some 20 kilotons requires accuracies under 2,500-3,000 meters for some kinds of targets like sheltered airfields or large energy facilities.

The CIA report, dated November 10, 2003, also reported that the Islamic Republic was developing a 'Shahab-4' ballistic missile with a range of 2,000 km and possibly up to 3,000 kilometers with a small warhead. Such a missile could reach targets in Europe and virtually any target in the Middle East.

Various experts have claimed that the Shahab-4 is based on the North Korean No Dong 2 or three stage Taepodong-1 missile, or even some aspects of the Russian SS-4, but has a modern digital guidance package rather than the 2,000-3,000 meter CEP of early missiles like the SS-4. Russian firms are believed to have sold Iran special steels for missile development, test equipment, shielding for guidance packages, and other technology. Iran's Shahid Hemmet Industrial Group is reported to have contracts with the Russian Central Aerohydrodynamic Institute, Rosvoorouzhenie, the Bauman Institute, and Polyus. It is also possible that Iran has obtained some technology from Pakistan.

There have also been Israeli reports of an Iranian effort to create a Shahab-5, with a 4,900-5,000 kilometer range. These reports remain uncertain, and Israeli media and official sources have repeatedly exaggerated the nature and speed of Iranian efforts.

The Iranian government stated as early as 1999, that it was developing such a large missile body or launch vehicle for satellite launch purposes, however, and repeatedly denied that it is upgrading the Shahab-3 for military purposes. Iran also continued to claim that the program that the West refers to as 'Shahab-4' is a program aimed at developing a booster rocket for launching satellites into space. In January 2004, Iran's Defense minister claimed that Iran would launch a domestically built satellite within 18 months.[xxii]

As of December 2004, some US intelligence experts were firmly convinced that Iran was aggressively seeking to develop a nuclear warhead for the Shahab series. They mentioned that Iran was actively working on the physic package for such a warhead design, and cited Secretary of State Colin Powell's warning on November 17, 2004 that Iran was working on such developments. Powell had stated that Iran was, actively working on (nuclear delivery) systems…You don't have a weapon until you put it in something that can deliver a weapon." [xxiii] US officials stated that this information did not come from Iranian opposition sources like the MEK.

It was reported that US officials have firm evidence that Iran was trying to develop the Shahab-3 missile to carry a "black box" in 2001-2003. The evidence is in the form of thousands of pages of Farsi computer files and diagrams on the Iranian missile program shared with US intelligence by Germany. Both countries believe that while these files do not provide the ultimate proof, a US official was quoated as saying that these documents provide "nearly a smoking gun."[xxiv]

It was reported in March 2005 that Ukranian arms dealers smuggled 18 nuclear capable air-launched missiles to Iran in 1999-2001. The Kh-55 misslies, which are also known as the AS-15, were designed to carry a nuclear warhead with a 200-kiloton yield and to have a range of 2,500km range. The AS-15 missiles can be launched from long range bombers and iIt was reported that these missiles can reach Israel, if launched from Iran.[xxv]

Iranian Army Air Defense Systems

Iranian land forces have a total of some 1,700 anti-aircraft guns, including 14.5 mm ZPU-2/4s, 23 mm ZSU-23-4s and ZU-23s, 35 mm M-1939s, 37 mm Type 55s, and 57 mm ZSU-57-2s. Iran also has 100-180 Bofors L/70 40 mm guns, and moderate numbers of Skyguard 35 mm twin anti-aircraft guns (many of which may not be operational). Its largest holdings consist of unguided ZU-23-2s (which it can manufacture) and M-1939s.

It is unclear how many of these systems are really operational as air defense weapons and most would have to be used to provide very short-range "curtain fire" defense of small point targets. They would not be lethal against a modern aircraft using an air-to-ground missile or laser guided weapon. The only notable exception is the ZSU-23-4

radar guided anti-aircraft gun. Iran has 50-100 fully operational ZSU-23-4s. The weapon is short-ranged, and vulnerable to electronic counter-measures (ECM), but is far more lethal than Iran's unguided guns.

Iran has large numbers of SA-7 (Strela 2M), and SA-14 (Strela) manportable surface-to-air missiles, and some SA-16s and HN-5/HQ-5 manportable surface-to-air missiles. It had some US-made Stinger manportable surface-to-air missiles it bought from Afghan rebels, but these may no longer be operational or may have been used for reverse engineering purposes. Iran also has some RBS-70 low-level surface-to-air missiles. Iran seems to be producing some version of the SA-7, perhaps with Chinese assistance. It is not clear whether Iran can do this in any large number. Iran's land-based air defense forces are also acquiring growing numbers of Chinese FM-80s, a Chinese variant of the French-designed Crotale.

Iranian Army Aviation

Iran pioneered the regional use of army aviation and attack helicopters during the time of the Shah, but built up its holdings of helicopters far more quickly than it expanded its training and maintenance capability. As a result, it had a hollow force at the time the Shah fell. Its inability since that time to obtain adequate spare parts and help in modernizing the aircraft has long made Iranian operational helicopter holdings uncertain.

The Iranian Army seems to retain 50 AH-1J Sea Cobra attack helicopters, and 20 CH-47C, 110-130 Bell-214A, 30-35 AB-214C, 35-40 AB-205A, 10 AB-206, and 25 Mi-8/Mi-27 transport and utility helicopters. There are also reports that it signed orders for four Mi-17s in 1999 and 30 Mi-8s in 2001.

These Western-supplied transport and support helicopters have low operational readiness, and they have little sustained sortie capability.

Iran is also seeking to create a significant RPV force that borrows in many ways from Israeli technical developments and doctrine. It has produced some such RPVs, such as the Mohajer series – and several exercise reports refer to their use. It has sold some of these systems to the Hezbollah, but insufficient data are available to assess this aspect of Iranian capabilities.

Iranian Army Command, Control, Communications, Computers, and Intelligence (C4I)

Iranian Army communications have improved, as have Iranian battle management and communications exercises. They are now capable of better coordination between branches, the density of communications equipment has improved, and the functional lines of communication and command now place more emphasis on maneuver, quick reaction, and combined arms. However, Iranian battle management and communications capabilities seem to remain relatively limited.

Iran's holdings still consist largely of aging VHF radio with some HF and UHF capability. This equipment cannot handle high traffic densities and secure communications are poor. Iran still relies heavily on analogue data handling and manually switched telephone systems. It is, however, acquiring a steadily growing number of Chinese and Western encryption systems and some digital voice, fax, and telex encryption capability.

Other Aspects of Iranian Army Capability

Iran's Army has improved its organization, doctrine, training, and equipment for land force operations. Iran still, however, is a slow moving force with limited armored maneuver capability and artillery forces better suited to static defense and the use of mass fires that the efficient use of rapidly switched and well-targeted fire. Sustainability is limited, as is field recovery and repair capability. Overall manpower quality is mediocre because of a lack of adequate realistic training and a heavy reliance on conscripts.

The army has some capability for power projection and armored maneuver warfare, but does not train seriously for long-range maneuver and does little training for amphibious warfare or deployment by sea. Its logistics,

maintenance, and sustainment system is largely defensive and designed to support Iranian forces in defending Iran from local bases. It does not practice difficult amphibious operations, particularly "across the beach" operations. It could, however, deploy into Kuwait and cross the border into Iraq. It can also move at least brigade-sized mechanize units across the Gulf by amphibious ship and ferry if it does not meet significant naval and air opposition to any such movement. It lacks the air strength and naval air and missile defense capabilities to be able to defend such an operation.

The Islamic Revolutionary Guards Corps (Pasdaran)

The Iranian Revolutionary Guards add some 120,000 additional men to Iran's forces. Roughly 100,000 are ground forces, including many conscripts. Some 20,000 are in the naval branch, and there is a small air force. Estimates of its fighting strength are highly uncertain. The IISS estimates that it has some 470 tanks, 620 APCs, 360 artillery weapons, 40 multiple rocket launchers, and 150 air defense guns. The naval branch has at least 40 light patrol boats, 10 Houdong guided missile patrol boats armed with C-802 antiship missiles, and a battery of HY-2 Seersucker land-based anti-ship missiles. The air branch is believed to operate Iran's three Shahab-3 IRBM units, and may have had custody of its chemical and any biological weapons. Iran's supreme leader, Ayatollah Ali Khamenei, announced that Shahab-3 missiles had been delivered to the Islamic Revolutionary Guards Corps. In addition, six Shahab-3s were displayed in Tehran during a military parade in September 2003.[xxvi] According to the IISS, the IRGC now has command of Iran's Marine Brigade of some 5,000 men. Other sources show this force subordinated to the Navy.

Sources differ sharply on the organization of the IRGC, and its combat formations seem to be much smaller than the title implies, and to differ sharply from unit to unit. The IISS reports a strength of 2 armored, 5 mechanized, 10 infantry, and one Special Forces division, plus 15-20 independent brigades, including some armed and paratroop units. In practice, its manning would support 3-5 real divisions, and many of its divisions have an active strength equivalent to large brigades.

The IRGC has a complex structure that is both political and military. It has separate organizational elements for its land, naval, and air units, which include both military and paramilitary units. The Basij and the tribal units of the Pasdaran are subordinated to its land unit command, although the commander of the Basij often seems to report directly to the commander-in-chief and Minister of the Pasdaran and through him to the Leader of the Islamic Revolution.. The IRGC has close ties to the foreign operations branch of the Iranian Ministry of Intelligence and Security (MOIS), particularly through the IRGC's Qods force. The Ministry of Intelligence and Security was established in 1983, and has an extensive network of offices in Iranian embassies. It is often difficult to separate the activities of the IRGC, VEVAK, and Foreign Ministry and many seem to be integrated operations managed by a ministerial committee called the "Special Operations Council" that includes the Leader of the Islamic Revolution, President, Minister of Intelligence and Security and other members of the Supreme Council for National Defense.[xxvii]

The IRGC's growing involvement in Iran's military industries, and its lead role in Iran's efforts to acquire surface-to-surface missiles and weapons of mass destruction, give it growing experience with advanced military technology. As a result, the IRGC is believed to be the branch of Iran's forces that plays the largest role in Iran's military industries.[xxviii] It also operates all of Iran's Scuds, controls most its chemical and biological weapons, and provides the military leadership for missile production and the production of all weapons of mass destruction.

The IRGC plays a major role in internal security. Nevertheless, it seems best to treat the IRGC primarily as a military land force which parallels the Iranian regular army, and which would operate with it in most contingencies. As has been discussed earlier, the IRGC has been placed under an integrated command with Iran's regular armed forces at the General staff level. It retains an independent command chain below this level, however, and generally continues to exercise as an independent force. It rarely exercises with the regular Iranian army -- and then usually in large, set piece exercises which do not require close cooperation.[xxix]

It is difficult to estimate the proficiency of IRGC units. It seems likely, however, that they vary sharply by unit and that only a portion of the IRGC land forces are intended to participate in joint operations with the regular army in regular combat. These forces seem to have improved steadily in their training, organization, and discipline since the early 1990s, and have also expanded their joint training with the regular army, navy, and air force.

The Quds (Qods) Forces

The IRGC has a large component for intelligence operations and unconventional warfare. Roughly 5,000 of the men in the IRGC are assigned to the unconventional warfare mission. The IRGC has the equivalent of one special forces "division," plus additional smaller formations, and these forces are given special priority in terms of training and equipment. In addition, the IRGC has a special Quds force which plays a major role in giving Iran the ability to conduct unconventional warfare overseas using various foreign movements as proxies. This force is under the command of General Ahmad Vahidi (Wahidi), who used to head the information department in the IRGC General Command and had the mission of exporting the revolution.[xxx]

The budget for this part of the force is a classified budget directly controlled by Khamenei, and is not reflected in the Iranian general budget. It operates primarily outside Iran's borders, although it has bases inside and outside of Iran. The Quds troops are divided into specific groups or "corps" for each country or area in which they operate.. There are Directorates for Iraq; Lebanon, Palestine, and Jordan; Afghanistan, Pakistan, and India; Turkey, the Arabian Peninsula; the Asiatic republics of the FSU, Western Nations (Europe and North America) and North Africa (Egypt, Tunisia, Algeria, Sudan, and Morocco.

The Quds has offices or "sections" in many Iranian embassies, which operate as closed sections. It is not clear whether these are integrated with Iranian intelligence operations, or that the ambassador in such embassies has control of, or detailed knowledge of, operations by the Quds staff. However, there are indications that most operations are coordinated between the IRGC and offices within the Iranian Foreign Ministry and Ministry of Intelligence and Security (MOIS). There are separate operational organizations in Lebanon, Turkey, Pakistan, and several North African countries. There also indications that such elements may have participated in the bombings of the Israeli Embassy in Argentina in 1992, and the Jewish Community Center in Buenos Aires in 1994 -- although Iran has strongly denied this.[xxxi]

The Quds force seems to control many of Iran's training camps for unconventional warfare, extremists, and terrorists in Iran and countries like the Sudan and Lebanon. It has at least four major training facilities in Iran. The Quds forces have a main training center at Imam Ali University that is based in the Sa'dabad Palace in Northern Tehran. Troops are trained to carry out military and terrorist operations, and are indoctrinated in ideology.. There are other training camps in the Qom, Tabriz, and Mashhad governates, and in Lebanon and the Sudan. These include the Al Nasr camp for training Iraqi Shi'ites and Iraqi and Turkish Kurds in northwest Iran, and a camp near Mashhad for training Afghan and Tajik revolutionaries. The Quds seems to help operate the Manzariyah training center near Qom, which recruits from foreign students in the religious seminary and which seems to have trained some Bahraini extremists. Some foreigners are reported to have received training in demolition and sabotage at an IRGC facility near Isfahan, in airport infiltration at facilities near Mashad and Shiraz, and in underwater warfare at an IRGC facility at Bandar Abbas.[xxxii]

The Basij and Other Paramilitary Forces

The rest of Iran's paramilitary and internal security forces seem to have relatively little warfighting capability. The Basij (Mobilization of the Oppressed) is a popular reserve force of about 90,000 men with an active and reserve strength of up to 300,000 and a mobilization capacity of nearly 1,000,000 men. It is controlled by the Islamic Revolutionary Guards Corps, and consists largely of youths, men who have completed military service, and the elderly. It has up to 740 regional battalions with about 300-350 men each, which are composed of three companies or four platoons plus support. These include the former tribal levies, and are largely regional in character. Many have little or no real military training and active full time active manning, however, Iran has used the Basij to provide local security ever since the popular riots of 1994. It called up over 100,000 men in 19 regions in September 1994, and began far more extensive training for riot control and internal security missions. It also introduced a formal rank structure, and a more conventional system of command and discipline, and created specialized Ashura battalions for internal security missions. Some reports indicate that 36 of these battalions were established in 1994. The primary mission of the Basij now seems to be internal security, monitoring the activities of Iranian citizens, acting as replacements for the military services, and serving as a static militia force tied to local defense missions.

Iran also has 45,000-60,000 men in the Ministry of Interior serving as police and border guards, with light utility vehicles, light patrol aircraft (Cessna 185/310 and AB-205 and AB-206s), 90 coastal patrol craft, and 40 harbor patrol craft.

The Iranian Navy

The Iranian Navy has some 18,000 men. According to the IISS, this total includes a two brigade marine force of some 2,600 men and a 2,000-man naval aviation force. It has bases at Bandar-e Abbas, Bushehr, Kharg Island, Bander-e Anzelli, Chah Bahar, Bander-e Mahshahar, and Bander-e Khomeini. This gives it bases opposing most of the Saudi coast.

It has 3 submarines, 3 frigates, 2 corvettes, 10 missile patrol craft, 7 mine warfare ships, 44 coastal and inshore patrol craft, and 9-10 amphibious ships. Its naval aviation branch is one of the few air elements in any Gulf Navy, and has 5 maritime patrol aircraft, and 19 armed helicopters. When combined with the IRGC naval branch, this is a total maritime strength of 38,000 men with significant capabilities for both regular naval and asymmetric naval warfare.

Iran has given the modernization of its naval forces high priority, although its major surface ships are all old vessels with limited refits and aging weapons and fire control systems. Since the end of the Iran-Iraq War, Iran has obtained new anti-ship missiles and missile patrol craft from China, midget submarines from North Korea, submarines from Russia, and modern mines. Iran has expanded the capabilities of the naval branch of the IRGC, acquired additional mine warfare capability, and upgraded some of its older surface ships. Iran's exercises have included a growing number of joint and combined arms exercises with the land forces and air force.

Iran has also improved its ports and strengthened its air defenses, while obtaining some logistic and technical support from nations like India and Pakistan. In August 2000, the Islamic Republic announced that it had launched its first domestically-produced light submarine, which is called the Al-Sabiha 15. It can be used for reconnaissance and laying mines.[xxxiii]

Iranian Anti-Ship Missiles and Missile Craft

Iran's depends heavily on its ability to use anti-ship missiles to make up for its lack of airpower and modern major surface vessels. Iran's Western-supplied missiles are now all beyond their shelf life and their operational status is uncertain. Iranian forces are now operating four systems that Iran has obtained from China:

- *The Seersucker* is a long-range, mobile anti-ship missile, which is designated the HY-2 or Sea Eagle-2 by the People's Republic of China. It is a large missile with a 0.76 meter diameter and a weight of 3,000 kilograms. It has an 80-90 kilometer range and a 450 kilogram warhead. There are two variants. One uses radar active homing at ranges from the target of eight kilometers (4.5 nautical miles). The other is set to use passive IR homing and a radar altimeter to keep it at a constant height over the water.

- *The CS-801* anti-ship missile, also called the Yinji (Hawk) missile, is a solid fueled missile. It can be launched from land and ships. It has a range of approximately 74 kilometers in the surface-to-surface mode, and uses J-Band active radar guidance. It has a 512 kilogram warhead and cruises at an altitude of 20-30 meters.

- *The CS-802* is an upgraded CS-801. It uses a turbojet propulsion system with a rocket booster instead of the solid fueled booster in the CS-801. It has a range of 70-75 miles, has a warhead of up to 363 pounds, and can be targeted by a radar deployed on a smaller ship or aircraft operating over the radar horizon of the launching vessel.[xxxiv]

- *The CS-801K* is a Chinese-supplied, air-launched anti-ship missile and variant of the CS-801. It too is a sea-skimming, high-subsonic cruise missile and has a range in excess of 20 nautical miles. It has been test fired by Iran's F-4Es, but Iran may be able to use other launch aircraft. This air delivery capability gives

> Iran what some analysts have called a “360 degree” attack capability, since aircraft can rapidly maneuver to far less predictable launch points than Iranian combat ships.[xxxv]

Iran has sought to buy advanced anti-ship missiles from Russia, North Korea and China, to buy anti-ship missile production facilities, and possibly even Chinese-made missile armed frigates. Some sources have claimed that Iran has bought eight Soviet-made SS-N-22 "Sunburn" or "Sunburst" anti-ship missile launch units from Ukraine, and has deployed them near the Straits of Hormuz. However, US experts have seen no evidence of such a purchase and doubt that Iran has any operational holdings of such systems. The “SS-N-22” is a title that actually applies to two different modern long-range supersonic sea skimming systems -- the P-270 Moskit (also called the Kh-15 or 3M80) and P80 or P-100 Zubi/Onika.

Iran’s main launch platforms for anti-ship missiles include three British-supplied Vosper Mark 5 Sa’am-class frigates -- called the *Alvand*, *Alborz*, and *Sabalan*. These ships date back to the time of the Shah, and each is a 1,100-ton frigate with a crew of 125-146 and maximum speeds of 39 knots. Each was originally armed with one five-missile Sea Killer Mark II surface-to-surface missile launcher and one Mark 8 4.5" gun mount. They have since had their Sea Killer’s replaced with C-802 anti-ship missiles and new fire control radars. The Sea Killer has a relatively effective beam-riding missile with radio command or optical guidance, and a maximum range of 25 kilometers.

All three ships are active, but the *Sabalan* took serious damage from the US Navy during the tanker war of 1987-1988, and the ships have not had a total refit since the early 1990s The ASW capabilities of these ships seem to be limited or non-functioning. Iran has two US PF-103 (Bayandor-class) corvettes called the *Bayandor* and the *Naghdi*. These ships are 900-ton vessels, with crews of 140, two 76 mm guns and a maximum speed of 18 knots. They were laid down in 1962 and delivered in 1964. The *Bayandor* and the *Naghdi* are probably the most active large surface ships in the Iranian navy. However, neither is equipped with anti-ship and anti-air missiles, sophisticated weapons systems, sonars, or advanced electronic warfare equipment and sensors.[xxxvi]

Iran is slowly building a 1,500-ton corvette, but its status is uncertain as is its equipment and armament. It has two old PF-103 class corvettes, the Bayandor and Naghdi that the US transferred to Iran in 1966. These are 900-ton vessels that are very active in the patrol role, but do not have modern radars and fire control, and are only armed with 76 mm guns and not with missiles. They lack any effective anti-aircraft and anti-missile defenses.[xxxvii]

The rest of Iran's major surface vessels consist of missile patrol boats. These include 10 68-ton Chinese-built Thnodor (Hudong)-class fast attack craft or missile patrol boats. The Hudong class fast attack craft are equipped with I-band search and navigation radars, but do not have a major anti-air missile system. Iran ordered these ships for the naval branch of its Iranian Revolutionary Guards Corps in 1992, and all 10 were delivered to Iran by March 1996. The vessels have a crew of 28. They carry four anti-ship missiles, and are armed with the CS-801 and CS-802 missile.

Iran now has at least 100 CS-801s and CS-802s. Iran’s missile patrol boats also include 10 275-ton French-made Combattante II (Kaman-class) fast attack boats, out of an original total of twelve. These boats are armed with anti-ship missiles, one 76 mm gun, and have maximum speeds of 37.5 knots. They were originally armed with four US Harpoon missiles, but their Harpoons may no longer be operational. At least five had been successfully converted with launchers that can carry two to four CS-801/CS-802s.

Iran has a number of large patrol craft and fast attack craft. The operational ships of this type include: three North Korean-supplied 82-ton Zafar-class (Chaho-class) fast attack craft with I-band search radars and armed with 23 mm guns and a BM-21 multiple rocket launcher; two Kavian-class (US Cape-class) 148-ton patrol craft armed with 40 mm and 23 mm guns; and three Improved PGM-71 Parvin-class 98-ton patrol craft supplied in the late 1960s, and armed with 40 mm and 20 mm guns.

There are more than 35 other small patrol boats plus large numbers of small boats operated by the IRGC. Most of these craft are operational and can be effective in patrol missions. They lack, however, sophisticated weapons systems or air defenses, other than machine guns and SA-7s and SA-14s. Iran has 5-6 BH-7 and 7-8 SRN-6 Hovercraft, believed to be operated by the IRGC. About half of these Hovercraft may be operational. They are capable of speeds of up to 60-70 knots. They are lightly armed and vulnerable, but their high speed makes them

useful for many reconnaissance and unconventional warfare missions, and they can rapidly land troops on suitable beaches.

Iranian Mine Warfare Capabilities

Mine warfare, amphibious warfare, anti-ship missiles, and unconventional warfare offer Iran other ways of compensating for the weakness of its conventional air and naval forces. Iran's mine warfare vessels include 2-3 operational Shahrock-class MSC-292/268 coastal minesweepers (1 used for training in the Caspian Sea). Two of these three ships, the *Shahrock* and *Karkas*, are known to be operational. They are 378-ton sweepers that can be used to lay mines as well as sweep, but their radars and sonars date back to the late 1950s and are obsolete in sweeping and countermeasure activity against modern mines.

Iran has 1-2 operational Cape-class (Riazzi-class) 239-ton inshore minesweepers, and seems to have converted two of its Iran Ajar-class LSTs for mine warfare purposes. Many of its small boats and craft can also lay mines. Both the Iranian Navy and the naval branch of the IRGC are expanding their capability for mine warfare. While Iran has only a limited number of specialized mine vessels, it can also use small craft, LSTs, Boghammers, helicopters, and submarines to lay mines. As a result, it is impossible to determine how many ships Iran would employ to plant or lay mines in a given contingency, and some of its mines might be air dropped or laid by commercial vessels, including dhows.

Iran has a range of Soviet, Western, and Iranian-made moored and drifting contact mines, and US experts estimate that Iran has at least 2,000 mines. Iran has significant stocks of anti-ship mines, and has bought Chinese-made and North Korean-made versions of the Soviet mines. It has claimed to be making its own non-magnetic, acoustic, free-floating and remote controlled mines, and has had Chinese assistance in developing the production facilities for such mines. It may have acquired significant stocks of non-magnetic mines, influence mines, and mines with sophisticated timing devices from other countries. [xxxviii]

There also are reports that Iran has negotiated with China to buy the EM-52 or MN-52 rocket-propelled mine. The EM-52 is a mine that rests on the bottom until it senses a ship passing over it, and then uses a rocket to hit the target. The maximum depth of the Straits of Hormuz is 80 meters (264 feet), although currents are strong enough to displace all but firmly moored mines.[xxxix] Combined with modern submarine laid mines and anti-ship missile systems like the CS-801/802, and SS-N-22, the EM-52 would give Iran considerable capability to harass Gulf shipping and even the potential capability to close the Gulf until US naval and air power could clear the mines and destroy the missile launchers and submarines.

Even obsolete moored mines have proven difficult to detect and sweep when intelligence does not detect the original laying and size of the minefield, and free floating mines can be used to present a constant hazard to shipping. Bottom-influence mines can use acoustic, magnetic, or pressure sensors to detect ships passing overhead. They can use multiple types of sensor/actuators to make it hard to deceive the mines and force them to release, can be set to release only after a given number of ships pass, and some can be set to attack only ships of a given size or noise profile. Such mines are extremely difficult to detect and sweep, particularly when they are spaced at wide intervals in shipping lanes.

Iranian Amphibious Assets

Iran has significant amphibious assets by Gulf standards, and the regular Navy and naval branch of the IRGC have independent marine forces. These assets are large enough to move a battalion-sized force relatively rapidly, and include: 3 Hengam-class (Larak-class) LST amphibious support ships (displacement of 2,940-tons loaded) that can carry up to six tanks, 600 tons of cargo, and 227 troops; 3 Iran Hormuz-class (South Korean) LSTs (2,014-tons loaded) that can carry up 9 tanks and berth 140 troops, and. 3 Hormuz-21 class 1,80-ton LSTs and 3 Fouque class 176-ton LSLs.

Iran’s amphibious ships give it the theoretical capability to deploy about 1,000 troops, and theoretically about 30-40 tanks in an amphibious assault – but Iran has never demonstrated that it has an effective over-the-shore capability. Iran might use commercial ferries and roll on-roll off ships if it felt they could survive. Iran has also built up its

capability to hide or shelter small ships in facilities on its islands and coastline along the Gulf, and the ability to provide them with defensive cover from anti-air and anti-ship missiles. However, all of Iran's training to date has focused on amphibious raiding and not on operations using heavy weapons or larger operations. Iran lacks the air and surface power to move its amphibious forces across the Gulf in the face of significant air/sea defenses, or to support a landing in a defended area.

Iran has support ships, but these are generally insufficient to sustain "blue water" operations and support an amphibious task force. It has one Kharg-class 33,014 ton replenishment ship, two Bandar Abbas-class 4,673 ton fleet supply ships and oilers, one 14,410 ton repair ship, two 12,000 ton water tankers, seven 1,300 ton Delva-class support ships, 5-6 Hendijan-class support vessels, two floating dry-docks and 20 tugs, tenders, and utility craft to help support a large naval or amphibious operation.

Iranian Naval Air

The Iranian Navy's air capability consists of two to three operational P-3F Orion maritime patrol aircraft out of an original inventory of five. According to reports from the Gulf, none of the surviving P-3Fs have fully operational radars and their crews often use binoculars. It also has up to 12 Sikorsky SH-3D ASW helicopters, two RH-53D mine laying helicopters, and seven Agusta-Bell AB-212 helicopters. It uses air force AH-1J attack helicopters, equipped with French AS.12 missiles, in naval missions, and has adapted Hercules C-130 and Fokker Friendship aircraft for mine laying and patrol missions. The most significant recent development in Iran's capabilities to use airpower to attack naval targets has been the acquisition of the CS-801K for its regular air force.

Iran's Submarine Forces

Iran has attempted to offset the weakness of its major surface forces by obtaining three Type 877 EKM Kilo-class submarines. The Kilo is a relatively modern and quiet submarine that first became operational in 1980. The Iranian Kilos are Type 877EKM export versions that are about 10 meters longer than the original Kilos and are equipped with advanced command and control systems. Each Type 877EKM has a teardrop hull coated with anechoic tiles to reduce noise. It displaces approximately 3,076 tons when submerged and 2,325 tons when surfaced. It is 72.6 meters long, 9.9 meters in beam, has a draught of 6.6 meters, and is powered by three 1,895 HP generator sets, one 5,900 SHP electric motor and one six-bladed propeller. It has a complement of 52 men and an endurance of 45 days. Its maximum submerged speed is 17 knots and its maximum surface speed is 10 knots.

Each Kilo has six 530 mm torpedo tubes, including two wired guided torpedo tubes. Only one torpedo can be wire-guided at a time. The Kilo can carry a mix of 18 homing and wire guided torpedoes or 24 mines. Russian torpedoes are available with ranges of 15-19 kilometers, speeds of 29-40 knots, and warheads with 100, 205, and 305-kilogram weights. Their guidance systems include active sonar homing, passive homing, wire guidance, and active homing. Some reports indicate that Iran bought over 1,000 modern Soviet mines with the Kilos, and that the mines were equipped with modern magnetic, acoustic, and pressure sensors. The Kilo has a remote anti-aircraft launcher with one pre-loaded missile in the sail and Soviet versions have 6 SA-N-5 (Igla/SA-16) surface-to-air missiles stored inside. However, Russia only supplied Iran with the SA-14 (Strela). It can be modernized to carry Chinese YJ-1 or Russian Novator Alfa surface-to-surface missles.[xl]

The Kilo has a maximum surface speed of 10 knots, a maximum submerged speed of about 17 knots, a minimum submerged operating depth of about 30 meters, an operational diving depth of 240 meters, and a maximum diving depth of 300 meters. The submarine also has a surface cruise range of 3,000-6,000 nautical miles and a submerged cruise range of 400 nautical miles -- depending on speed and combat conditions.[xli]

Iran's ability to use its submarines to deliver mines and fire long-range wake-homing torpedoes give it a potential capability to strike in ways that make it difficult to detect or attack the submarine. Mines can be laid covertly in critical areas before a conflict, and the mines can be set to activate and de-activate at pre-determined intervals in ways that make mining difficult to detect and sweep. Long-range homing torpedoes can be used against tanker-sized targets at ranges in excess of 10 kilometers, and to attack slow-moving combat ships that are not on alert and/or which lack sonars and countermeasures. At the same time, many Third World countries have found submarines to be difficult to operate. For example, Russia delivered the first two Kilos with two 120-cell batteries designed for rapid

power surges, rather than power over long periods. They proved to last only 1-2 years in warm waters versus 5-7 years for similar batteries from India and the UK. Iran had to turn to India for help in developing batteries that are reliable in the warm waters of the Gulf. Iran has also had problems with the air conditioning in the ships, and their serviceability has been erratic. There are serious questions about crew capability and readiness, and all three submarines already need significant refits.

Iran faces significant operational problems in using its submarines in local waters. Many areas of the Gulf do not favor submarine operations. The Gulf is about 241,000 square kilometers in area, and stretches 990 kilometers from the Shatt al-Arab to the Straits of Hormuz. It is about 340 kilometers wide at is maximum width, and about 225 kilometers wide for most of its length. While heat patterns disturb surface sonars, they also disturb submarine sonars, and the advantage seems to be slightly in favor of sophisticated surface ships and maritime patrol aircraft.

The deeper parts of the Gulf are noisy enough to make ASW operations difficult, but large parts of the Gulf -- including much of the Southern Gulf on a line from Al Jubail across the tip of Qatar to about half way up the UAE -- are less than 20 meters deep. The water is deeper on the Iranian side, but the maximum depth of the Gulf -- located about 30 kilometers south of Qeys Island -- is still only 88 meters. This means that no point in the Gulf is deeper than the length of an SN-688 nuclear submarine. The keel to tower height of such a submarine alone is 16 meters. Even smaller coastal submarines have maneuver and bottom suction problems, and cannot hide in thermoclines, or take advantage of diving for concealment or self-protection. This may explain why Iran is planning to relocate its submarines from Bandar Abbas, inside the Gulf, to Chah Bahar in the Gulf of Oman and is deepening the navy facility at Chah Bahar.[xlii]

The Strait of Hormuz at the entrance to the Gulf is about 180 kilometers long, but has a minimum width of 39 kilometers, and only the two deep water channels are suitable for major surface ship or submarine operations. Further, a limited flow of fresh water and high evaporation makes the Gulf extremely salty. This creates complex underwater currents in the main channels at the Straits of Hormuz and complicates both submarine operations, and submarine detection. There are some areas with considerable noise, but not of a type that masks submarine noise from sophisticated ASW detection systems of the kind operated by the US and UK. Further, the minimum operating depth of the Kilo is 45 meters, and the limited depth of the area around the Straits can make submarine operations difficult. Submarines are easier to operate in the Gulf of Oman, which is noisy enough to make ASW operations difficult, but such deployments would expose the Kilos to operations by US and British nuclear attack submarines. It is unlikely that Iran's Kilos could survive for any length of time if hunted by a US or British navy air-surface-SSN hunter-killer team.[xliii]

In any case, the effectiveness of Iran's submarines is likely to depend heavily on the degree of Western involvement in any ASW operation. If the Kilos did not face the US or British ASW forces, the Iranian Kilos could operate in or near the Gulf with considerable impunity. If they did face US and British forces, they might be able to attack a few tankers or conduct some mining efforts, but are unlikely to survive extended combat. This makes the Kilos a weapon that may be more effective in threatening Gulf shipping, or as a remote minelayer, than in naval combat. Certainly, Iran's purchase of the Kilos has already received close attention from the Southern Gulf states and convinced them that they must take Iran more seriously.

The Role of the Naval Branch of the IRGC

Finally, any analysis of the capabilities of the Iranian Navy cannot ignore the fact that Iran's unconventional warfare capabilities include the naval branch of the Islamic Revolutionary Guards Corps that operates Iran's land-based anti-ship missiles and coastal defense artillery. In addition to its land and sea-based anti-ship missile forces, the naval guards can use large numbers of small patrol boats equipped with heavy machine guns, grenade launchers, anti-tank guided weapons, manportable surface-to-air missies, and 106 mm recoilless rifles.

The IRGC also uses small launches and at least 30 Zodiak rubber dinghies to practice rocket, small arms, and recoilless rifle attacks. Its other small craft were armed with a mix of machine guns, recoilless rifles, and man and crew-portable anti-tank guided missiles. These vessels are difficult to detect by radar in anything but the calmest seas. Iran bases them at a number of offshore islands and oil platforms, and they can strike quickly and with limited warning. The Naval Branch of the IRGC also has naval artillery, divers, and mine-laying units. It had extensive

stocks of Scuba equipment, and an underwater combat center at Bandar Abbas.[xliv] Iran is also improving the defenses and port capabilities of its islands in the Gulf, adding covered moorings, more advanced sensors, and better air defenses.

Iran can use IRGC forces to conduct the kind of low-intensity/guerrilla warfare that can only be defeated by direct engagement with land forces, and filter substantial reinforcements into a coastal area on foot or with light vehicles, making such reinforcement difficult to attack. Iran can use virtually any surviving small craft to lay mines and to place unmoored mines in shipping lanes. Its IRGC forces can use small craft to attack offshore facilities and raid coastal targets. Finally, it is important to note the US did not successfully destroy a single land-based Iraqi anti-ship missile launcher during the Gulf War, and the IRGC now has many dispersal launch sites and storage areas over a much longer coast. It also has a growing number of caves, shelters, and small hardened facilities. Such targets are sometimes difficult to detect until they are used, and present added problems because they usually are too small and too numerous to attack with high cost ordnance until it is clear they have valuable enough contents to merit such an attack.

Naval Force Deployments

The main forces of the Iranian navy are concentrated in the Gulf. Iran gives more importance to the security of its territorial sea in the Gulf area since in this direction it has highly complicated relations with various Arab nations, the United States, and Israel. After the collapse of the Soviet Union, however, Iran's policy towards the Caspian has changed. According to the contracts between the Soviet Union and Iran, Tehran was not allowed to station its navy in the Caspian Sea. After the disintegration of the USSR, however, the 4th naval regional forces started representing the Iranian navy in the Caspian. [xlv]

The Islamic Republic has almost 3,000 personnel in the Caspian. The forces include up to 50 fighting ships and support vessels, the Marine Corps, coastal guard forces, and the sea aircraft. There are also training vessels in the fleet, including one Shahrokh MSC minesweeper, 2 Hamzeh ships and others. Currently, Iran has the second largest fleet in the Caspian after Russia. The fleet, however, is outdated. This is why Tehran has been trying to strengthen its naval forces in the Caspian through various programs. It is reported that the government has numerous plans to modernize its fleet. According to these projects, the future fleet will include several divisions and separate battalions of ships and submarines. [xlvi]

Overall Naval Capabilities

Iran's efforts have steadily improved Iran's capabilities to threaten Gulf shipping and offshore oil facilities, its capability to support unconventional warfare, and its ability to defend Iran's off-shore facilities, islands, and coastline. They have not, however, done much to help Iran to act as an effective "blue water" navy.

At the same time, the military capability of Iranian naval forces should not be measured in terms of the ability to win a battle for sea control against US and British naval forces, or any combination of Southern Gulf states supported by US and British forces. For the foreseeable future, Iran's forces are likely to lose any such battle in a matter of days. As a result, it is Iran's ability to conduct limited or unconventional warfare, or to threaten traffic through the Gulf, that gives Iran the potential ability to threaten or intimidate its neighbors.

The Iranian Air Force

The Iranian Air Force has some 52,000 men; 37,000 in the air force per se, and 15,000 in the Air Defense force, which operates Iran's land-based air defenses. It has over 300 combat aircraft in its inventory (The IISS estimates 306). Many of these aircraft, however, are either not operational or cannot be sustained in air combat. This includes 50-60% of Iran's US and French supplied aircraft and some 20-30% of its Russian and Chinese supplied aircraft. It has nine fighter-ground attack squadrons with 162-186 aircraft; seven fighter squadrons, with 70-74 aircraft, a reconnaissance unit with 4-8 aircraft, and a number of transport aircraft, helicopters, and special purpose aircraft. It operates most of Iraq's land-based air defenses, including some 150 I Hawks, 45 HQ-21s, 10 SA-5s, 30 Rapiers, and additional forces equipped with light surface-to-air missiles.

The Iranian air force is headquartered in Teheran with training, administration, and logistics branches, as well as a major central Air Defense Operations Center. It has a political directorate and a small naval coordination staff. It has three major regional headquarters: Northern Zone (Badl Sar), Central Zone (Hamaden), and Southern Zone (Bushehr). Each regional zone seems to control a major air defense sector with subordinate air bases and facilities. The key air defense sub-zones and related bases in the Northern Zone are at Badl Sar, Mashhad, and Shahabad Kord. The sub-zones and bases in the Central Zone are at Hamadan and Dezful, and the sub-zones and bases in the Southern Zone are at Bushehr, Bandar Abbas, and Jask. Iran has large combat air bases at Mehrabad, Tabriz, Hamadan, Dezful, Bushehr, Shiraz, Isfahan, and Bandar Abbas. It has smaller bases at least at eleven other locations. Shiraz provides interceptor training and is the main base for transport aircraft.

Iranian Air Strength

As is the case with most aspects of Iranian military forces, estimates differ by source. The IISS estimates the air force has 18 main combat squadrons. These include nine fighter ground-attack squadrons, with 4/55-65 US-supplied F-4D/E and 4/55-65 F-5E/FII, and 1/27-30 Soviet-supplied Su-24. Iran had 7 Su-25K and 24 Mirage F-1 Iraqi aircraft it seized during the Gulf War, and some may be operational. Some reports indicate that Iran has ordered an unknown number of TU-22M-3 'Backfire C' long-range strategic bombers from either Russia or the Ukraine.[xlvii] Discussions do seem to have taken place, but no deliveries or purchases can be confirmed.

Iran had seven air defense squadrons, with 2/20-25, -60 US-supplied F-14, 2/25-30 Russian/Iraqi-supplied MiG-29, and 1/25-35 Chinese supplied F-7M.[xlviii] The Iranian air force had a small reconnaissance squadron with 3-8 RF-4E. It has 5 C-130H MP maritime reconnaissance aircraft, 1 RC-130 and other intelligence/reconnaissance aircraft, together with large numbers of transports and helicopters.

Most Iranian squadrons can perform both air defense and attack missions, regardless of their principal mission -- although this was not true of Iran's F-14 (air defense) and Su-24s (strike/attack) units. Iran's F-14s have not been able to use their Phoenix air-to-air missiles since the early 1980s. Iran has claimed that it is modernizing its F-14s by equipping them with I-Hawk missiles adapted to the air-to-air role, but it is far from clear that this is the case or that such adaptations can have more than limited effectiveness. [xlix]

Iran has made more ambitious claims about aircraft production than it cannot as yet back up. Russian firms and the Iranian government tried to reach an agreement over license-production of the MiG-29, but repeated attempts have failed. Likely due to the difficulty the regime has had in procuring new aircraft, Iran has been developing three new attack aircraft. The indigenous design and specifics of one of the fighters in development, the Shafagh, were unveiled at the Iran Airshow in 2002. Engineers hope to have a prototype by 2008, though it is unclear what the production numbers will be and what the real-world timetable for deployment may be.[l]

Little is known about the other two fighters in development, the Saeghe and the Azarakhsh, other than they have been reportedly derived from the F-5F. Claims have been made that the Azarakhsh is in low rate production, and has had operational weapons tests. There are also some indications that Iran is experimenting with composites in the Azarakhsh, and is seeking to give it a locally modified beyond-visual-range radar for air-to-air combat.[li]

In practice, Iran is making light turboprop aircraft and a light utility helicopter. It is making enough progress so that it will probably be able to produce a jet trainer and heavier helicopters, but it is unclear how effective it can be in producing modern combat aircraft.[lii]

Iran has moderate airlift capabilities for a regional power. The Iranian air force's air transport assets included 3 B-707 and 1 B-747 tanker transports, and five transport squadrons with 4 B-747Fs, 1 B-727, 18C-130E/Hs, 3 Commander 690s, 10 F-27s, 1 Falcon 20A, and 2 Jetstars. Iran will have 14 Xian Y-7 transports by 2006.[liii] Its helicopter strength includes 2 AB-206As, 27-30 Bell 214Cs, and 2 CH-47, 30 Mi-17 and Iranian-made Shabaviz 206-1 and 2-75 transport helicopters.

The IRGC also has some air elements. It is not clear what combat formations exist within the IRGC, but the IRGC may operate Iran's 10 EMB-312 Tucanos.[liv] It seems to operate many of Iran's 45 PC-7 trainers, as well as some Pakistani-made trainers at a training school near Mushhak, but this school may be run by the regular air force. It has

also claimed to manufacture gliders for use in unconventional warfare. The IRGC has not recently expanded its air combat capabilities.[lv]

Iranian Land-based Air Defense

Iran seems to have assigned about 12,000-15,000 men in its air force to land-based air defense functions, including at least 8,000 regulars and 4,000 IRGC personnel. It is not possible to distinguish clearly between the major air defense weapons holdings of the regular air force and IRGC, but the air force appeared to operate most major surface-to-air missile systems. Total holdings seem to include 30 Improved Hawk fire units (12 battalions/150+ launchers), 45-55 SA-2 and HQ-2J/23 (CSA-1) launchers (Chinese-made equivalents of the SA-2), and possibly 25 SA-6 launchers. The air force also had three Soviet-made long-range SA-5 units with a total of 10-15 launchers -- enough for six sites. Iran has developed and deployed its own domestically manufactured SAM dubbed the Shahab Thaqeb. The SAM requires a four-wheeled trailer for deployment and closely resembles the R440 SAM.[lvi]

Iran's holdings of lighter air defense weapons include five Rapier squadrons with 30 Rapier fire units, 5-10 Chinese FM-80 launchers, 10-15 Tigercat fire units, and a few RBS-70s. Iran also holds large numbers of man-portable SA-7s, HN-5s, and SA-14s, plus about 2,000 anti-aircraft guns -- including some Vulcans and 50-60 radar-guided and self propelled ZSU-23-4 weapons.[lvii] It is not clear which of these lighter air defense weapons were operated by the army, the IRGC, or the air force. The IRGC clearly had larger numbers of manportable surface-to-air launchers, including some Stingers that it had obtained from Afghanistan. It almost certainly had a number of other light air defense guns as well.

There are no authoritative data on how Iran deploys air defenses, but Iran seems to have deployed its new SA-5s to cover its major ports, oil facilities, and Tehran. It seems to have concentrated its Improved Hawks and Soviet and Chinese-made SA-2s around Tehran, Isfahan, Shiraz, Bandar Abbas, Kharg Island, Bushehr, Bandar Khomeini, Ahwaz, Dezful, Kermanshah, Hamadan, and Tabriz. Iran's air defense forces are too widely spaced to provide more than limited air defense for key bases and facilities, and many lack the missile launcher strength to be fully effective. This is particularly true of Iran's SA-5 sites, which provide long-range, medium-to-high altitude coverage of key coastal installations. Too few launchers are scattered over too wide an area to prevent relatively rapid suppression. Iran also lacks the low altitude radar coverage, overall radar net, command and control assets, sensors, resistance to sophisticated jamming and electronic countermeasures, and systems integration capability necessary to create an effective air defense net. Its land-based air defenses must operate largely in the point defense mode, and Iran lacks the battle management systems and data links are not fast and effective enough to allow it to take maximum advantage of the overlapping coverage of some of its missile systems -- a problem further complicated by the problems in trying to net different systems supplied by Britain, China, Russia, and the US. Iran's missiles and sensors are most effective at high-to-medium altitudes against aircraft with limited penetrating and jamming capability.

Iranian Air Force Readiness and Effectiveness

In spite of Iran's efforts, readiness and force quality remain major issues. The Iranian air force still has many qualitative weaknesses, and it is far from clear that its current rate of modernization can offset the aging of its Western-supplied aircraft and the qualitative improvements in US and Southern Gulf forces. The air force also faces serious problems in terms of sustainment, command and control, and training. Iran has a pilot quality problem. Many of its US-trained pilots were purged at some point during the Revolution. Its other US-trained pilots and ground-crew technicians are aging to the point where many should soon retire from service, and have not had advanced air-to-air combat and air attack training for more than 15 years.

While Iran practices realistic individual intercept training, it fails to practice effective unit or force-wide tactics and has shown only limited capability to fly large numbers of sorties with its US supplied aircraft on even a surge basis. It has limited refueling capabilities -- although it has four B-707 tanker/transports and may have converted other transports. The Iranian air force lacks advanced training facilities, and has only limited capability to conduct realistic training for beyond-visual-range combat and stand-off attacks with air-to-surface munitions. Ground crew training and proficiency generally seem mediocre -- although the layout of Iranian air bases, aircraft storage and parking, the

deployment of equipment for maintenance cycles, and the other physical signs of air unit activity are generally better organized than those of most Middle Eastern air forces.

The Iranian air force must also deal with the fact that its primary challenge now consists of the US, British, and Saudi air forces. They are high technology air forces that operate the AWACS airborne control system, have some of the most advanced electronic warfare and targeting systems in the world, and have full refueling capability. They use sophisticated, computer-aided aggressor training and have all of the range and training facilities for beyond-visual-range combat and stand-off attacks with air-to-surface munitions. Iran has no airborne control system, although it may be able to use the radars on its F-14s to support other aircraft from the rear. Its overall C^4I system is a totally inadequate mix of different sensors, communications, and data processing systems. It has limited electronic warfare capabilities by US standards, although it may be seeking to acquire two Beriev A-50 Mainstay AEW aircraft, and has converted some aircraft to provide a limited ELINT/SIGINT capability.

Iran is slowly improving its capability for joint land-air, and air-sea operations. Iranian exercises and statements provide strong indications that Iran would like to develop an advanced air defense system, the ability to operate effectively in long-range maritime patrol and attack missions, effective joint warfare capabilities, and strike/attack forces with the ability to penetrate deep into Iraq, the southern Gulf states, and other neighboring powers. Iran's exercises, military literature, and procurement efforts also make it clear that its air planners understand the value of airborne early warning and C^4I systems, the value of airborne intelligence and electronic warfare platforms, the value of RPVs, and the value of airborne refueling. Iran has even sought to create its own satellite program.[lviii] Further, the air force's efforts at sheltering and dispersal indicate that it understands the vulnerability of modern air facilities and the stand-off attack capabilities of advanced air forces like those of the United States.

Detailed Trends in Iranian Forces

The following figures illustrate the factors driving Iranian military developments and modernization in more depth:

- **Figure 2.1** provides a general overview of military developments in Iran, now the only remaining Gulf military power with a history of hostility to the US and its neighbors.

- **Figure 2.2** shows the long-term trend in arms deliveries to Iran. It is important to note that more recent data from a different source indicates that the downward trend from 1986-1999 has been arrested – although arms deliveries only average $175 million a year during 1999-2002.

- **Figure 2.3** discusses key Iranian equipment developments since 1990, but many of these developments consist of plans for equipment product and new orders that have not yet materialized. In general, the pace of Iranian land force modernization has been very slow, while it has made little real progress in modernizing its air forces and land-based air defense forces.

- **Figure 2.4** shows that Iran remains acutely dependent on worn, aging, and obsolescent Western weapons systems delivered during the time of the Shah.

- **Figure 2.5** summarizes the current uncertainties surrounding Iran's ability to substitute for arms imports by producing modern combat equipment. Iran does seem to be making progress in producing armor and artillery, but its progress in aircraft and naval systems is slower.

Figure 3.1

Iran - Overview

- Iran is still a much poorer nation in terms of export earnings than it was at the time of the Shah, with only about two-thirds of the real export earning it had in the early 1980s. This limits its ability to import arms.

- Iran's military effort is only a small fraction of the share of GNP that Iran spent during the Iran-Iraq War, and Iran's increasing GDP is steadily reducing the impact of its military effort on its economy.

- Although Iran is often said to be involved in a major military build-up, comparisons of the trends in total central government expenditures, military expenditures, arms imports, and export earnings show that Iran has devoted a steadily dropping percentage of its available resources to military spending and arms imports. The IISS estimates that Iran spent $7.9 billion on military forces in 1985, or 7.7% of its GNP. It spent $3.128 billion in 2001 (3.8% of GNP) and $4.9 billion in 2002 (4.6% of GNP), and in 2003 its defense budget was $3.5 billion (2.4% of GDP) (this number does not include procurement costs). According to a report released by Forecast International, Iran's defence spending will be about $4.5 billion by 2007.[lix] These are not inconsiderable defense expenditures, but they represent roughly half the defense effort Iran made during the Iran-Iraq War and time of the Shah, and to put them in perspective, a minor Gulf military power like Kuwait spent $$3.3 billion on military forces in 2002.

- At the same time, the data in the CIA World Factbook reveals that Iran's domestic government expenditures have been allowed to rise sharply and that imports have been allowed to exceed exports. Iran has clearly emphasized public spending on civil programs at the expense of both military spending and private investment.

- Iran's economy is under acute pressure in terms of per capita income and relative wealth. Iran's population increased from 38.2 million in 1980 to over 68 million in 2002. Real per capita income is now about half what it was at the time of the Iranian revolution — a key indicator of the pressures Iran faces to limit military spending.

- Major cuts have taken place in both Iran's arms orders and arms deliveries since 1990, and new orders have dropped faster than deliveries. Iran is spending about 25-35% of what it would need to modernize and recapitalize the force levels in had under the Shah.

    - Iran has received no arms transfer from the US since 1980, and received only $100 million worth of arms from any major West European power during 1985-2002. It received only $1.2 billion worth of arms from Russia, $400 million from other European powers during this period, and only $400 million worth of arms from either source during 1999-2002. As a result, Iran has had only limited access to any source of modern arms.

    - Iran does have more arms in the pipeline. It ordered $1.7 billion worth of arms during 1995-1998, and $800 million of this total will come from Russia, the major West European powers, and other European states. It ordered $.1.0 billion worth of arms during 1995-1998, and $500 million of this total will come from Russia, the major West European powers, and other European states

    - Recent Iranian arms sales agreements do not reflect Iran a high dependence on Russia, relative to Europe ($400 million vs. $800 million in 1995-1998 and $100 million versus $400 million in 1999-2002.

- Iran has made important and potentially destabilizing purchases of arms whose content seems targeted at strengthening its air defenses along its Gulf coast, and improving its anti-ship and unconventional warfare capabilities to threaten Gulf shipping and attack targets in the Southern Gulf.

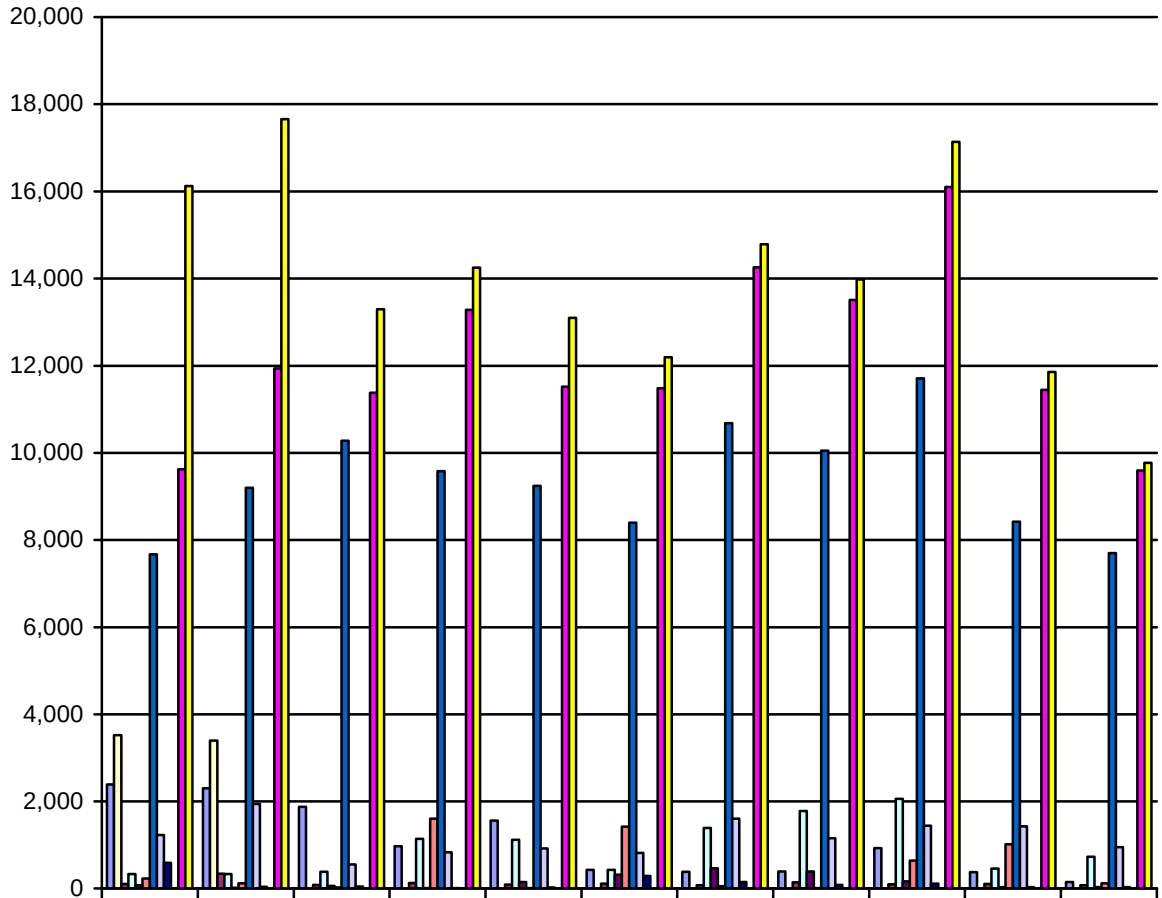
- At the same time, Iran has a massive inventory of worn and decaying obsolete or obsolescent Western-supplied equipment and low performance Chinese and North Korean-supplied systems.

- Iran seems to have placed more emphasis on the acquisition of weapons of mass destruction and new long-range missiles than on obtaining modern conventional weapons and equipment.

Figure 3.2

Value of Gulf Arms Imports

(Constant $US 1999 millions)



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Iran	2,389	2,300	1,869	969	1,559	425	384	388	925	376	150
Iraq	3,521	3,389	0	0	0	0	0	0	0	0	0
Bahrain	101	339	82	125	89	109	75	136	92	101	70
Kuwait	327	327	385	1,140	1,114	425	1,388	1,780	2,055	457	725
Oman	75	12	58	11	145	316	459	388	164	30	30
Qatar	226	121	23	1,597	11	1,418	53	5	642	1,015	120
Saudi	7,671	9,199	10,280	9,579	9,242	8,399	10,680	10,050	11,710	8,424	7,700
UAE	1,226	1,937	549	827	919	818	1,601	1,152	1,439	1,421	950
Yemen	591	36	47	6	22	284	149	84	113	30	30
.											
GCC	9,626	11,935	11,377	13,279	11,520	11,485	14,256	13,511	16,102	11,448	9,595
Gulf	16,127	17,660	13,293	14,254	13,101	12,194	14,789	13,983	17,140	11,854	9,775

Source: Adapted by Anthony H. Cordesman from US State Department, World Military Expenditures and Arms Transfers, various editions.

Figure 3.3

Key Iranian Equipment Developments

LAND

- Russian and Polish T-72 Exports. Reports indicate Iran has procured about 380 T-72Ss from Russia (100 of which are kits for local assembly), and 100 T-72M1s from Poland since 1990. This gives Iran an inventory of about 480 T-72s – now its only truly modern tank and one where it has only taken delivery of 13 such tanks since 1995
- Claims to be producing the Iranian-made Zolfaqar (Zulfiqar) MBT, an M-48/M-60-like tank, but no more than 100 have been produced.
- Has upgraded to T-54/T-54 called "Safir-74. Claims to have upgraded Iraqi T-54s captured in Iran-Iraq War. Has 540 T-54/55 in inventory. Number of upgrades unknown.
- Purchased Russian BMPs. Inventory of 210 BMP-1s and 400 BMP-2s out a total of 865 armored infantry fighting vehicles and light tanks. .
- Russia may be licensing Iranian production of T-72 (100 units) and BMP-2 (200 units).
- Claims domestic production of a Chinese version of the BMP called the Boragh. May have an inventory of 140.
- Claims domestic production of an APC called the BMT-2 or Cobra.
- Possible purchase of 100 M-46 and 300 D-30 artillery weapons from Russia.
- Claims deployment of locally manufactured 122 mm and 155 mm self-propelled guns called Thunder-1 and Thunder –2, respectively. Some seem to be deployed but numbers are not available. Has 60 2S1 122mm and 180 M-109 155mm self-propelled weapon and some estimates indicate the Thunder-series weapons are with these units.
- May have 15+ Chinese and North Korean 146 mm self-propelled weapons
- Has 60 Russian 2S1 122 mm self-propelled howitzers in inventory.
- Growing numbers of BM-24 240 mm, BM-21 122 mm and Chinese Type 63 107 mm MRLs
- Iranian Hadid 122 mm - 50 round MRL
- Manufacturing Iranian Arash and Noor rockets (variants of Chinese and Russian 122 mm rockets)
- Manufacturing Iranian Haseb rockets (variants of Chinese 107 mm rocket)
- Manufacturing Iranian Shahin 1 and 2, Oghab, Nazeat 5 and 10 (may be additional versions), and Fajr battlefield rockets.
- Has shown a modified heavy equipment transporter called the "Babr 400."
- Russian and Asian AT-2, AT-3, AT-4, and AT-5 anti-tank guided weapons. Reports of 100 Chinese Red Arrows seem incorrect.
- Claims to have developed the Saeque-1 ATGW.
- Possible installation of a Russian T-72S main battle tank crew-training center.
- The Shebab-3 MRBM is assessed to enter its early operational status and it is estimated that Iran has some 20 missiles.
- Iran renewed its negotiation with Russia in early 2002 for large weapons deals. None, however, have materialized.

AIR/AIR DEFENSE

- Keeping up to 115 combat aircraft that Iraq sent to Iran during Gulf War. Seem to include 24 Su-24s and four MiG-29s.
- Has 25 MiG-29s with air-to-air refueling capability in inventory. Reports may be receiving 15-20 more from Russia, but no confirmation.
- Has 30 Su-24s in inventory (Su-24MK). Reports may be receiving 6 to 9 more from Russia. But no confirmation.
- Has purchased AS-10, AS-11, AS-12, AS-14/16s from Russia
- Has 7 Su-25Ks (formerly Iraqi), although has not deployed.
- Reports may be trying to purchase more Su-25s, as well as MiG-31s, Su-27s and Tu-22Ms
- Considering imports of Chinese F-8 fighter and Jian Hong bomber
- Has 24 Chinese F-7M fighters with PL2A, and PL-7 AAMs.
- Has purchased 15 Brazilian Tucano trainers and 22 Pakistani MiG-17 trainers.

- Has bought 12 Italian AB-212, 20 German BK-117A-3, and 2 Russian Mi-17 support and utility helicopters (30 Mi-17 to be delivered by the end of 2003).
- Iran claims to have fitted F-14s with I-Hawk missiles adapted to the air-to-air role
- Claims to produce advanced electronic warfare systems.
- IRGC claims to be ready to mass-produce gliders.
- The first Iran-140 transport aircraft assembled under a joint program with Ukraine. Iran is planning to develop two versions of this aircraft for military use.
- The Iranian industry announced that it is planning to move the Azarakhsh combat aircraft and Shabaviz helicopters program into serial production.
- 20 Shahed-5 helicopter gunships in production. F-5 derived indigenous attack aircraft in development
- LAND-BASED AIR DEFENSE
- Most systems now aging or obsolescent in spite of some modifications.
- May be negotiating purchase of S-300 and more SA-14/16s from Russia
- Has acquired four HQ-23/2B (CSA-1) launchers and 45-48 missiles, plus 25 SA-6, and 10 SA-5 launchers.
- Has acquired Chinese FM-80 launchers and a few RBS-70s
- More SA-7s and HN-5s man-portable missiles; may have acquired 100-200 Strelas.
- Reports is seeking to modernize Rapier and 10-15 Tigercat fire units
- May be modifying and/or producing ZSU-23-4 radar-guided anti-aircraft guns.
- Claims to produce advanced electronic warfare systems.

SEA

- Claims will soon start producing 3 corvettes.
- Has taken delivery on three Russian Type 877EKM Kilo-class submarines, possibly with 1,000 modern magnetic, acoustic, and pressure sensitive mines.
- Reports of North Korean midget submarines have never been confirmed. Has produced small swimmer delivery vehicles called the Al-Sabehat 15 mini-sub.
- Main surface ships are 3 Alvan (Vosper 5) class frigates dating back to late 1960s and early 1970s, and two Bayandor-class frigates from early 1980s.
- Obtained 10 Hudong-class Chinese missile patrol boats with CS-802 during early to mid-1990s. Has 10 Kaman class missile patrol boats from late 1970s, early 1980s.
- US Mark 65 and Russian AND 500, AMAG-1, KRAB anti-ship mines
- Reported that Iran is negotiating to buy Chinese EM-52 rocket-propelled mine
- Iran claims to be developing non-magnetic, acoustic, free-floating and remote controlled mines. It may have also acquired non-magnetic mines, influence mines and mines with sophisticated timing devices.
- Wake-homing and wire-guided Russian torpedoes
- Seersucker (HY-2) sites with 50-60 missiles - Iran working to extend range to 400 km.
- Has 60-100 Chinese CS-801(Ying Jai-1 SY-2) and CS-802 (YF-6) SSMs.
- Iran is developing FL-10 anti-ship cruise missile that is copy of Chinese FL-2 or FL-7.
- Boghammer fast interceptor craft
- The Iranian navy received fast patrol boats and C-701 ship-borne missiles from China.
- Iran received 15 small patrol boats from North Korea.

MISSILES

- Obtained up to 300 Scud Bs with 12-18 launchers
- Some 175 Chinese CSS-8 surface-to-surface missiles with 25-30 launchers.
- Reports that China is giving Iran technology to produce long-range solid fuel missiles
- Mushak –90, -120, -160, -200 missiles based on the Chinese CSS-8.
- Has bought North Korean Scud Cs with 5-14 launchers. South Korea reports Iran has bought total of 100 Scud Bs and 100 Scud Cs from North Korea.
- May be developing the Zelzal-3 missile with a range of 900 kilometers with Chinese and North Korean support.
- Iran has tested the Shahab-3 (which may have a 1,500 km range and is based on the North Korean No-dong 1) and may have started production.
- Iran may be planning to purchase North Korean No-Dong 1/2s

- Has shown interest in technology for interested in North Korea's developmental Tapeo Dong 1 or Tapeo Dong 2.
- Reports of tunnels for hardened deployment of Scuds and SAMs.
- Possible deployment of locally produced Nazeat series missiles, based on Russian FROG missiles.
- CBW
- Chemical weapons (sulfur mustard gas, hydrogen cyanide, phosgene and/or chlorine; possibly Sarin and Tabun).
- Biological weapons (possibly Anthrax, hoof and mouth disease, and other biotoxins).
- Nuclear weapons development (Russian and Chinese reactors).

Source: Based on interviews, reporting in various defense journals, Jane's Fighting Ships the IISS, The Military Balance, various editions, and JCSS's The Middle East Military Balance.

Figure 3.4

Iranian Dependence on Decaying Western Supplied Major Weapons

Military Service	Weapon Type	Quantity	Comments
Land Forces	Chieftain tank	100	Worn, under-armored, under-armed, and underpowered. Fire Control and sighting system now obsolete. Cooling problems.
	M-47/M-48	168	Worn, under-armored, under-armed, and underpowered. Fire control and sighting system now obsolete.
	M-60A1	150-160	Worn, under-armored, under-armed, and underpowered. Fire control and sighting system now obsolete.
	Scorpion AFV	80	Worn, light armor, under-armed, and underpowered.
	M-114s	70	Worn, light armor, under-armed, and underpowered.
	M-109 155 mm SP	180	Worn, fire control system now obsolete. Growing reliability problems due to lack of updates and parts.
	M-107 175 mm SP	30	Worn, fire control system now obsolete. Growing reliability problems due to lack of parts.
	M-110 203 mm SP	30	Worn, fire control system now obsolete. Growing reliability problems due to lack of parts.
	AH-1J Attack Helicopters.	50	Worn, avionics and weapons suite now obsolete. Growing reliability problems due to lack of updates and parts.
	CH-47 Trans. Helicopters	20	Worn, avionics now obsolete. Growing reliability problems due to lack of updates and parts.
	Bell, Hughes, Boeing, Augusta, Sikorsky Helicopters	145-185	Worn, Growing reliability problems due to lack of updates and parts.
Air Force	F-4D/E FGA	35-65	Worn, avionics now obsolete. Critical problems due to lack of updates and parts.
	F-5E/F FGA	50-60	Worn, avionics now obsolete. Serious problems due to lack of updates and parts.
	F-5/A/B	20-25	Worn, avionics now obsolete. Serious problems due to lack of updates and parts.
	RF-4E	6	Worn, avionics now obsolete. Serious problems due to lack of updates and parts. (May be in storage)
	F-14 AWX	25	Worn, avionics now obsolete. Critical problems due to lack of updates and parts. Cannot operate some radars at long ranges. Phoenix missile capability cannot be used.
	P-3F/ MPA	5	Worn, avionics and sensors now obsolete. Many sensors and weapons cannot be used. Critical problems due to lack of updates and parts.
	Key PGMs	-	Remaining Mavericks, Aim-7s, Aim-9s, Aim-54s are all long past rated shelf life. Many or most are unreliable or inoperable.
	I-Hawk SAM	150	Worn, electronics, software, and some aspects of sensors now obsolete. Critical problems due to lack of updates and parts.
	Rapier SAM	30	Worn, electronics, software, and some aspects of sensors now obsolete. Critical problems due to lack of updates and parts.
	Tigercat SAM	15	Worn, electronics, software, and some aspects of sensors now obsolete. Critical problems due to lack of updates and parts.
Navy	Alvand FFG	3	Worn, weapons and electronics suite obsolete, many systems inoperable or partly dysfunctional due to Critical problems due to lack of updates and parts.
	Bayandor FF	2	Obsolete. Critical problems due to lack of updates and parts.

	Hengeman LST	4	Worn, needs full-scale refit.

Source: Estimate made by Anthony H. Cordesman based on the equipment counts in IISS, The Military Balance, and discussions with US experts. Note that different equipment estimates are used later in the text. The IISS figures are used throughout this chart to preserve statistical consistency.

Figure 3.5

Can Iran Mass Produce Major New Weapons Systems?

LAND

- Can produce nearly 50 types of munitions, including tank rounds, artillery shells, and rockets. Probably meets between 50% and 75% of Iran's needs in a major regional contingency and their output is steadily building up Iran's reserves.
- Manufacturers most of Iran's assault rifles, mortars up though 120 mm in caliber, and anti-tank rocket launchers
- Showed prototype of a main battle tank called the Zulfiqar (Zolfaqar) in 1994. Tank has undergone field trials ever since the Velayat military exercises of May 1996. Its drive train and suspension seems to be modeled on the US-designed M-48A5 and M-60A1 series of tanks and to have either a 105 mm or 125mm rifled gun. Reports differ as to the Zulfiqar's production status. One report indicates that Iran announced on July 8, 1997, that President Rafsanjani opened the "first phase" of a plant to produce the tank in Dorud, some 300 kilometers southwest of Tehran. Another report indicates that it is produced at the Shahdid Industrial Complex. Up to 100 may have been produced.
- T-72S (Shilden) tanks being assembled under license.
- Upgrading T-54s, T-55s, T-59s with 105 mm gun made in Iran and new fire control system.
- Claims ready to produce light tank for "unconventional warfare" called the Towan (Wild Horse) with 90 mm gun.
- Developed Iranian-made modification of the Chinese Type WZ 501/503 armored infantry fighting vehicle that Iran calls the Boragh. The WZ 501/503 is itself a Chinese copy of the Russian BMP, and is 30-year old technology. Up to 120 may be in inventory.
- Displayed APC called the Cobra or BMT-2, which seems to be an indigenous design armed with a 30 mm gun or the ZU-23-2 anti-aircraft gun — a light automatic weapons system that Iran has been manufacturing for some years. Like the Zulfiqar, the Cobra has been undergoing field trials in Iranian military exercises since May, 1996.
- Iran now makes a number of anti-tank weapons. These include an improved version of the man-portable RPG-7 anti-tank rocket with an 80 mm tandem HEAT warhead instead of the standard 30 mm design, the NAFEZ anti-tank rocket, and a copy of the Soviet SPG-9 73 mm recoilless anti-tank gun. Iran also makes a copy of the Russian AT-3 9M14M (Sagger or Ra'ad) anti-tank guided missile.
- Claimed in May 1996, to have produced a self-propelled version of a Russian 122 mm gun that it called the Thunder-1, with a firing range of 15,200 meters and a road speed of 65 kilometers per hour.[lx] It may use the Boragh chassis for this weapon. It also claimed to have tested a "rapid fire" 155 mm self-propelled weapon in September, 1997, called the Thunder 2. some seem to have been deployed.
- Makes military radios and low-technology RPVs like the 22006, Baz, and Shahin.
- Has developed tactical radios ART 2000, VHF frequency-hopping radio with a range of 30-88 MHz, and the PRC-110 HF fixed-frequency manpack radio, which covers the 1.6-29.999 H MHz band in 100Hz steps. (JIDR 6/1998: 22)
- Has developed low-drag 155mm high explosive base-bleed projectile. The 155BB HE-TNT incorporates a 16kg TNT and has a range of 35km when fired with an M11 top charge from a 45-caliber gun. Range is 17km without base bleed. A new low-drag HE projectile for 120mm smoothbore mortars with a range of 13.2 km. (JIDR 6/1998: 22)

AIR/AIR DEFENSE

- Necessary technical sophistication to rebuild the jet engines for many of its American fighters and helicopters.
- Produce parts and modifications for some of its radars, missile systems, avionics, ships, and armored personnel carriers

- Claims to have built its first Iranian-designed helicopter, and to have tested a locally built fighter plane. Brigadier General Arasteh, a deputy head of the General Staff of the Armed Forces (serving under Major General Ali Shahbazi, the joint chief of staff) stated in April, 1997 that the "production line of this aircraft will begin work in the near future."

- Chinese F-7 assembled in Iran

- Defense Industries Organization claimed that Iran was soon going to start producing two trainers, a jet-powered Dorna (Lark) and propeller-driven Partsu (Swallow).

- There had been reports in 1996 that Iran had obtained Ukrainian aid in producing the Antonov An-140 at a factory in Isfahan. In September, 1997, Iran indicated that it had signed a contract to buy 10 Antonov An-74 transport jets, and reports surfaced that it might co-produce the An-T74T-200. In November, 1998, it was reported that the first of the 52-seat An-140 will roll off the assembly line next year. (JDW 4 November 1998: 20)

- Iran has upgraded some of its F-4s, F-14s, and C-130s

- Iranian military claimed that Iran has begun mass production of a jet strike aircraft, the Azarakhsh (Lightning), which reportedly resembles the F-4 Phantom (JDW 4 November 1998: 20)

- Iranian Air Force claims that it is developing two combat aircraft based on the F-5 and a third indigenously designed (JDW 20 November 2002: 15)

- Armed Forces Air Industries Organization was discussing in November 1998, a deal with Ukraine's Aviant Aviatsiny Zavod, co-producer of the new Tupolev-334, to build the planes in Iran. The deal would be for the production of 100 of the 100-seat aircraft over 15 years. (JDW 4 November 1998: 20; Reuters 12 October 1998)

- Iran has reportedly developed a TV-guided missile for carriage on F-4 Phantoms

- Iran claims to have deployed an air-to-air adapted variant of the SM1 Standard missile for its fleet of F-4D/E Phantom II fighter-bombers. (JDW 29 April 1998: 17)

LAND-BASED AIR DEFENSE

- President Rafsanjani announced on October 11, 1997, that Iran had test-launched a major new surface-to-air missile system with a range of 250 kilometers, although he gave no further details. The description of the missile sounded vaguely like the Russian SA-5, which is deployed in Iran. Reports has acquired four HQ-23/2B (CSA-1) launchers and 45-48 missiles, plus 25 SA-6, and 10-15 SA-5 launchers.

- May be modifying and/or producing ZSU-23-4 radar-guided anti-aircraft guns.

- Claims to produce advanced electronic warfare systems.

SEA

- Claims will soon start producing 6 multi-purpose destroyers, with initial production run of three.

- Constructing small submarine?

- Iran claims to be developing non-magnetic, acoustic, free-floating and remote controlled mines. It may have also acquired non-magnetic mines, influence mines and mines with sophisticated timing devices.

- Wake-homing and wire-guided Russian torpedoes

- Iran is developing FL-10 anti-ship cruise missile that is copy of Chinese FL-2 or FL-7.

- Reportedly assembled domestic variants the YJ-1 (C-801) solid-propellant anti-ship missile under the local name of Karus, and the YJ-2 (C-802) turbojet-powered anti-ship missile under the local name of Tondar (JDW 9 December 1998)

- Boghammer fast interceptor craft

MISSILES

- Iranian made IRAN 130 rocket with 150+ kilometers range.
- Iranian Oghab (Eagle) rocket with 40+ kilometers range.
- New SSM with 125 mile range may be in production, but could be modified FROG.
- Developing the Zelzal-3 missile with a range of 900 kilometers with Chinese and North Korean support.
- Claims that Russia is helping Iran develop four missiles. These missiles include:
    - Shahab 3— a liquid fueled missile with a range of 810 miles (1,200-1,500 kilometers) and a payload of 1550 pounds, based on North Korean Nodong missile. Israel claims the Shahab might be ready for deployment as early as 1999.
    - Shahab 4, with a range of 1,250 miles (1,995 kilometers) and a payload in excess of one ton, based on the Russian R-12, may be in service in 2001. However, the Ministry of Defense released a statement declaring that Iran had no intention of building the Shahab 4 and would continue to rely on the Shahab 3 and potential future variants.[lxi]
    - Other two missiles are longer-range systems with a maximum ranges of 4,500 and 10,000 kilometers.
- Iran is reportedly receiving or trying to receive steel from China and Russia for the production of missiles.
- Has tested Iranian made Fajr-4 ballistic missiles and new version of Fajr-3 missile, with a range of 28 miles (45 kilometers)
- Has developed solid-propellant surface-to-surface missiles: the Zelzal 2, Nazeat and Shahin
- Reports of tunnels for hardened deployment of Scuds and SAMs.
- Experimenting with cruise missile development, although no links as yet to the employment of such missiles with warheads using weapons of mass destruction.

CBW

- Chemical weapons (sulfur mustard gas, hydrogen cyanide, phosgene and/or chlorine; possibly Sarin and Tabun).
- Biological weapons (possibly Anthrax, hoof and mouth disease, and other biotoxins).
- Nuclear weapons development (Russian and Chinese reactors).

Source: Adopted by Anthony H. Cordesman based on interviews, reporting in various defense journals, and the IISS, The Military Balance, various editions.

The Military Forces of Iraq

Iraq's Military Collapse

Iraq was still a major regional military power when the US-led coalition invaded in March 2003. Its armed forces had an active strength of around 340,000-380,000 men, with some 650,000 reserves. The bulk of Iraq's actives, however, were also poorly trained conscripts, and its reserves had little training and could only be equipped and sustained for light infantry warfare. The army had some 300,000 men, some 2,600 main battle tanks, 1,600 other armored vehicles, 1,800 armored personnel carriers, 1,900 towed artillery weapons, 200 self-propelled artillery weapons, and 200+ multiple rocket launchers, with 164 helicopters, including armed and attack helicopters.

Iraq's navy had negligible strength: some 2,000 men with 6 aging patrol boats, 3 mine warfare ships, and two support ships. Its air force, however, still had some 20,000 men and 307-316 combat aircraft, with 6 bombers, 130 fighter ground-attack aircraft, 180 fighters, and 5 reconnaissance aircraft. Its Air Defense Command had some 17,000 men, up to 3,000 air defense guns, and some 850 surface-to-air missile launchers, including several hundred SA-2s, SA-3s, and SA-6s.

Nevertheless, Iraq's military forces put up only limited resistance to a much smaller US and British led coalition. Iraq was unable to deal with the high quality coalition forces that invaded it on March 19, 2003 and all of its conventional forces were destroyed, collapsed, or deserted by May 1st. This collapse reflected the impact of many of the changes in the military balance discussed earlier as well as the impact of many of the defects common to most Middle Eastern forces:

Iraqi Failures in Leadership and Command and Control

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

- Iraq's overlapping structure of forces and security elements were often better at watching one another and at securing the regime than at fighting. There was little coordination except at the local level, and command and control could not direct cohesive action. Iraq also suffered from the fact that it had rebuilt its post–Gulf War forces more around internal security missions, regime stability, and static defense than around the lessons of that war.

- Large parts of the Iraqi force structure were designed to cover the Iranian border, secure the Kurdish security zone, and fight a low-level battle against the Shi'ites in the south. Others were designed to protect the regime against other elements of the armed forces. The result was a garrison force optimized around the wrong missions that was not trained to fight as a cohesive force and whose command and control structure was focused around the command of disparate force elements in border defense and internal security missions, and had limited capability for actual warfighting. This, in turn, exacerbated the divisions between the different elements of the ground forces and security forces, effectively leaving coordinated to Saddam, his sons, and the elite around him rather than creating a C4I structure capable of developing any kind of comprehensive operational picture, coordinating maneuver on a national level, and reacting within the tight time limits forced on Iraq by the speed and intensity of the US drive deep into Iraq.

- Iraqi command and control system was not effective, and Iraq could not establish effective command and control in the face of coalition airpower and the speed of its advance, although it is unclear how much of the Iraqi collapse was the result of attacks on its C^4I assets, the ability of allied airpower to paralyze its operations, and the slow-moving nature of Iraq's land forces. Iraq had no satellites, minimal UAV assets,

no survivable reconnaissance assets, poor artillery radar capability, and no other airborne intelligence assets. It conducted minimal active reconnaissance. If its C4I problems deprived it of a functioning brain, its lack of modern IS&R assets effectively left it blind in most aspects of combat beyond visual range.

- The almost universal failures in Saddam Hussein's strategic leadership cannot be explained as the result of ignorance or "shock and awe." The Iraqi regime had already lost one war to a U.S. led-Coalition and joint arms. It had seen what the United States and Britain could do in some 12 years of postwar clashes and in the fighting in Afghanistan. The broad details of the Coalition buildup were fully revealed in the media during the months of debate within the UN, and so were many of the details of the Coalition war plan.

- If there are excuses for the failures of the Iraqi leadership, they could include the following:

  - the belief that the UN debate would paralyze the ability of the Coalition to take military action;

  - belief that Turkey's decision not to base Coalition land and air forces would delay or prevent military action (while Iraq's uncertainty regarding Turkey's ultimate intentions led it to leave its forces in the north);

  - belief that a Popular Army that did not in reality exist could be mobilized;

  - an inability to support and sustain most forces outside their peacetime barracks OK and bases that forced Iraq to wait to deploy them until the war began;

  - an inability to translate a theoretical knowledge of Coalition joint warfare capabilities into practical estimates of the lethality of the coalition's airpower, rates of maneuver, and capability to disrupt Iraqi movement and command and control capability once the war began;

  - an unrealistic faith in unconventional and asymmetric warfare and the impact of delay, deception, and potential casualties on the willingness of the United States and Britain to sustain the war;

  - a worldview that mixed the cult of the leader with an inability to realistically assess the strengths and weaknesses of Iraqi forces; and

  - a series of actions to conceal and destroy Iraq's weapons of mass destruction in the face of UNMOVIC that continued virtually until the war began and meant that Iraq could never make effective use of any such weapons that remained.

Lack of Military Modernization and Supply

- Sanctions and the impact of the Gulf War had a major impact on Iraqi war-fighting capabilities. Iraq was not able to fund and/or import any major new conventional warfare technology to react to the lessons of the war or to produce any major equipment, Iraq's inability to recapitalize and modernize its forces meant that much of its large order of battle was obsolescent or obsolete, that its combat readiness was uncertain, and that much of its equipment was difficult to sustain in combat. It also limited the ability of its forces to conduct long-range movements or maneuvers and then sustain coherent operations.

- In addition to lack of funds and spare parts, Iraq lacked the production capabilities to help sustain the quality of its consolidated forces. It had domestic military production facilities, but they were limited to the production of guns and ammunition and had never succeeded in mass-producing more advanced weapons. Many of its modernization efforts showed some technical skill, but others were little more than unintentional technical practical jokes.

Problems in Iraqi Land Forces

- The Iraqi forces of March 2003 had lost most of the battle-experienced personnel of the Iran-Iraq War and Gulf War. They generally had had only low-level combat experience against the Shi'ite opposition in southern Iraq, and most forces had limited exercise training and had never mastered combined arms and joint operations by Western standards.

- No cohesive prewar effort was made to create an in-depth defense of Baghdad or to protect the lines of advance up the Euphrates. Although one division was moved south from the area around Mosul to the area around Tikrit, Iraq's Republican Guard did not begin to move to position themselves where they could oppose the United States' advance from the south until the war began and they were exposed to Coalition airpower. The Republican Guard then moved largely in response to the Coalition advance and had to fight mainly in scattered engagements rather than as part of a coherent, in-depth defense. In many cases, they intermingled their brigade elements with scattered elements of regular army forces and paramilitary units in ways that made well-organized defensive action difficult or impossible and compounded the impact of Coalition strikes on Iraq's weak command and control capabilities.

- There was no real effort to prepare the regular army in the south for defense in depth. The coalition seems to have successfully subverted the Iraqi 51st Mechanized Division in Basra to the point it disrupted the defense of Basra. It largely bypassed the Iraqi regular army corps defending the Iranian border, although elements of that corps did move to challenge the 1st Marine Division advance on Al Kut.

- Iraq had no ability to resist US and allied air power. The Iraqi Republican Guards and other ground forces became the major focus of the coalition air attacks and its use of precision weapons. While the numbers the US and Britain issue do not always agree from briefing to briefing, Lt. General T. Michael Mosley, the commander of coalition air operations during the war, stated that some 1,800 aircraft delivered some 20,000 strikes, and that 15,800 of these were directed against Iraqi ground forces versus 1,800 against the Iraqi government, 1,400 against Iraqi Air Force and Air Defense Command targets, and 800 against suspected sites, forces, and installations that might have weapons of mss destruction or surface-to-surface missiles. This meant that 80% of the coalition air strikes hit at Iraqi ground forces.[lxii] Many Guard and regular units had mass desertions after their initial clashes with US land forces or after they began to take serious equipment losses because of coalition air attacks. The end result was that casualties were probably surprisingly limited, as the forces ceased to be operational when they came under air attack and often could not recover from the resulting desertions.[lxiii]

- Iraq was thrown off balance by the speed of U.S. maneuver as well as by the flanking movement through the western edge of the Euphrates and, then, the drive along the eastern edge of the Tigris. Once the United States approached Baghdad, Iraqi forces could neither maneuver quickly enough to establish a cohesive, in-depth defense nor cope with U.S. penetrations. The Iraqi decision-making cycle fell steadily behind the realities on the ground. By the time the United States entered Baghdad, Iraq had lost force cohesion and committed its best forces —the Republican Guards—in a piecemeal way in meeting engagements that virtually ensured its destruction.

- Iraq effectively wasted most of the Baghdad, Medina, Nebuchadnezzar, and Hammurabi divisions of its Republican Guard by sending them into exposed positions some 100 miles south of the capital. They could then be located by UAVs and aircraft like the E-8C and hit from the air. Some reports indicate that more than half of the air munitions dropped by U.S. forces were directed against the Guard units.

- When Iraqi units did clash with U.S. Army, US Marine, and British land forces, the advanced sensors, helicopters, tanks, artillery, and anti-tank guided weapons the Western forces could generally destroy the forward elements of Iraqi forces before they could close within effective range of the coalition forces.

- Iraq had no modern tanks by U.S. and British standards, although it did have some 700 moderately capable T-72 tanks and 200–300 T-62s. But even the T-72s and T-62s had poor ergonomics. They were limited by lack of thermal vision and modern night warfare systems, and their sights and fire control systems could

not approach the engagement range of Coalition tanks. The 120mm gun on the M-1A1, for example, has a nominal maximum engagement range of about 3,000 meters. The T-72 can fire accurately out to about 2,500 meters but has far worse sights, fire control systems, and sensors. The older T-55 is limited to about 2,000 meters but has poor fire control systems and stabilization.[lxiv] The Coalition tanks could normally engage Iraqi tanks at 50 percent to 100 percent longer engagement ranges in open maneuver combat, and the Coalition tanks had much better armor and mobility.

- Iraq's doctrine and tactics for using tanks was poor. Iraqi corps and division commanders often set personal standards for training and employing tanks.

- The Iraqi army's other major weapons had similar problems. They included some 400 aging Soviet-bloc and French armored reconnaissance vehicles (AML-60/90s, BDRM-2s, EE-3s, and EE-9s). The army had some 1,200 BMP-1/2 armored infantry fighting vehicles, of which about 900 BMP-series seem to have been active. It had some 1,800 aging, worn, armored personnel carriers made up of 10 major types.

- Iraq's lack of standardization in spare parts, and lack of common weapons and operating features, created major sustainability and cross-training/interoperability problems. Iraq faced a logistic and maintenance nightmare in supporting and providing combat and field repairs for so many types of vehicles with such different firepower, mobility, and endurance. Many were nonfunctional due to a lack of spare parts or otherwise limited operational capability. Furthermore, Iraq was forced to equip its divisions with different mixes of armor, with different maneuver capabilities and often with different training requirements for both the weapons crew and maintenance and support teams. It also had difficulties ensuring that its infantry could keep up with its tanks.

- Iraq's tactical doctrine for using other armored vehicles varied with the major combat unit using a given mix of equipment. Some heavy Republican Guard units and regular army units used other armored vehicles much more effectively in supporting tanks than most of the Iraqi army. Iraq generally over relied on tanks, however, and had not used its other armored vehicles aggressively in scouting or combat support operations. Its forces were best suited to defensive operations against relatively slow-moving mechanized infantry at short to moderate ranges.

- Iraq had some 200 to 250 active self-propelled artillery weapons—with Soviet 122mm 2S1sand152mm 2S3s -- largely in Republican Guard and a few elite regular army heavy divisions. The bulk of Iraqi artillery consisted of some 1,200-1,900 towed weapons, mostly 122mm, 152mm, and 155mm. Iraq had some 200 multiple rocket launchers—largely 122mm and 127mm systems but also some longer-range 400mm Ababil-100 systems. Iraq also had large numbers of 81mm, 120mm, 160mm, and 240mm mortars.

- Iraqi artillery had relatively long range. Iraq never demonstrated, however, that it could approach U.S. and British capability to rapidly target moving forces and switch fire. It relied heavily on mass fire and area suppression. Its ability to target beyond line of sight was limited, and sensor and command problems severely limited the ability to target maneuver forces at long ranges (although Iraq did have some RASIT artillery surveillance vehicles and French Cymbeline counter-mortar radars).

- Only a few Iraqi artillery units had the radars, training, and organization to allow them to conduct effective counter-battery fire. Their targeting and observed fire was heavily dependent on forward observers, and it was often slow and unresponsive. Their ability to use UAVs and other techniques to acquire targets beyond visual range was limited, and artillery support of mobile Iraqi armored units had previously been consistently poor—even when the forward armored unit called in targets and requested support.

- Iraq never demonstrated the ability to quickly shift fire and deal with rapidly moving armored forces. Its towed artillery was relatively slow moving and often road bound, unless sufficient time existed to support rear areas. Iraqi artillery units usually needed extensive time to deploy large amounts of ammunition into prepared rear areas in order to maintain high rates of fire, and had to pre-survey the battlefield to mass artillery fire effectively. Iraq also relied heavily on the "feed forward" of large amounts of ammunition, without prior request from the user unit, to make up for its slow-moving and unresponsive logistic and

support system. Iraqi self-propelled artillery units frequently had problems extracting themselves from prepared positions and moving rapidly under defensive conditions. Field repair and recovery of artillery systems were poor.

- Iraqi land forces had extensive stocks (2,000 plus) of relatively modern AT-3 (AM14), AT-4 (M136), Milan, and High-subsonic Optically Teleguided (HOT) anti-tank guided weapons. Iraq also had significant numbers of obsolescent 85mm and 100mm anti-tank guns and 73mm, 82mm, and 107mm rocket launchers and recoilless rifles. Iraq had rarely employed these weapons well in previous battles. During the Gulf War, it showed little understanding of the range at which modern Western armor could engage; the rate of advance and scale of maneuver of modern well-led armor; the limiting effects of night and poor-weather warfare on crew-served weapons without night vision aids; the need to rapidly maneuver crew-served weapons rather than rely on static positions; and the need to continuously conduct actual training firings of such equipment to develop and maintain proficiency. Iraq was also unprepared for the rapidly moving precision of Coalition artillery and the ability of helicopters and tanks to bypass prepared defenses using such weapons.

- Iraqi Army Aviation had roughly 100 attack and 275 utility/transport helicopters, but Iraq's combat helicopter performance was consistently poor to bad before the Iraq War. Training, operational readiness, and sustainability were all believed to be poor, and Iraq never demonstrated the ability to use these assets effectively against coalition forces. Further, Iraq had to operate a fleet with 12 different types of helicopters of very different ages, using different technologies and sources of spare parts. The sensor and weapons mixes on Iraqi attack helicopters were at least 15 years old. Even those helicopters equipped with HOT guided weapons lacked the sensors and fire control systems to effectively use the missiles without closing to ranges that made the helicopter vulnerable.

- The Iraqi army and semi-mobile elements of Iraq's 17,000-man Air Defense Command were capable of deploying large numbers of manportable surface-to-air missiles like the SA-14 Strela 3, plus SA-7, SA-8, SA-9, and Roland vehicle-mounted surface-to-air missiles. Iraq is believed to have had an inventory of well over 1,000 such missiles, but the types are unclear. These systems had limited effectiveness against high-flying U.S.-UK fighters with standoff weapons but sometimes presented a significant threat at low altitudes.

Problems in Paramilitary and Irregular Forces

- Iraq had a reserve pool of some 650,000 and a large pool of annual conscripts. The U.S. Central Intelligence Agency estimated that some 274,000 males entered military service each year. Iraq also could include more than 100,000 men from the security services and police forces in some military or paramilitary roles, and it had at least lightly armored combat elements in each of its three main civilian security and intelligence services. It also had a popular force called the Fedayeen Saddam (Saddam's Men of Sacrifice) and a youth corps that received some form of military training. Iraq had small arms enough to equip several hundred thousand men for light infantry warfare and to play a limited role in urban warfare. It did not, however, have enough heavy weapons to properly equip such forces, and it rapidly became clear during the war that most Iraqi reserve and popular forces lacked the motivation to show up and fight,

- Iraq badly exaggerated the potential importance of using irregular forces and trying to draw U.S. and British forces into the cities in the south. In practice, these tactics produced clashes and occasional successes. But the United States quickly adjusted its own tactics to bypass most cities, secure key bridges and routes, and give the pacification of cities secondary importance.

- The regime fundamentally misjudged the popular support it could obtain from its own people. It cached massive levels of arms in facilities for an "Al Quds" or Popular Army it was never able to call up, arm, and deploy. This may in part have been a function of time and disorganization at the top; but it seems clear that many, if not most, of the Popular Army simply did not support the regime and had no willingness to fight.

- Iraq deployed some of its most loyal irregular forces, like Saddam's Fedayeen, in the south. These units had some successes in ambushes, but could not survive open combat with US or British forces and lacked mobility other than light civilian vehicles. This made them relatively easy to bypass or force out into open combat. One ironic sub-lesson of the war is that the bypasses and roads that went around many cities in Iraq greatly reduce their importance as potential defenses and barriers, and that one way to win an urban war is to avoid one.

Problems in Air and Air Defense Forces

- The Iraqi air force never even engaged coalition forces, but it is unclear that it would have mattered if they did. The Iraqi air force lacked anything approaching the level of technology of coalition forces and had very weak organization and training. It did little to improve its capability to conduct joint operations with any element of the Iraqi ground forces during the period between the end of the Gulf War in 1991 and the beginning of the Iraq War in 2003. It did equally little to improve its tactics and operations to deal with large-scale air operations. Rather than prepare for war during the months before the war, it executed plans it had been developing and exercises since 1991 to strip the wings from its combat aircraft and disperse them in fields, towns, and shelters. For reasons that are not yet fully apparent, this plan was executed in February 2003, effectively taking the Iraqi Air Force out of the fight.

- The regime seems to have compounded these problems by largely ignoring the air force in its command and communications activity once the war began. Moreover, coordination among the military services was so poor that the Iraqi Air Force did not receive the additional weapons it requested to defend its air bases, and many air force units were left with little more than assault rifles to defend their bases.[lxv]

- Iraq did little or nothing to develop a coordinated defensive strategy between the Iraqi Air Force and Air Defense Command. It failed to develop a cohesive strategy for relocating the sensors and fire units of the Air Defense Command, although it did attempt such activity on a largely uncoordinated basis once the war began. It did not take steps to make effective use of the mobile forces of the Air Defense Command to provide cover for Iraqi land maneuver units like the Republican Guards. Moreover once the war began, the Iraqi Special Republican Guards and security forces interfered with ground-based air defense operations in the Baghdad area, and further complicated the problems the Iraqi Air Defense Command had in the face of coalition air dominance and constant attacks on its command centers, radars, and fire units.

- The Iraqi Air Force's air-to-air and air-to-ground training was limited and unrealistic. Its command and control was overcentralized, and its mission planning often set impossible goals. The two no-fly zones further limited air training and combat experience. It had no modern airborne sensor, command and control, or intelligence capabilities, other than its small number of UAVs. Its air control and warning was still heavily dependent on outdated ground-based intercept capabilities.

- Iraqi land-based air defenses were too old and too ineffective to counterbalance the Coalition's air dominance or even seriously degrade the quality of most Coalition attack missions. Iraq's mix of SA-2s, SA-3s, and SA-6s was badly outdated, going back to the 1950s and 1960s. The Coalition had shown it could suppress them during the Gulf War in 1991 and had had years of practice in dealing with Iraqi tactics and technology. It had long developed effective countermeasures it could use in most areas to launch strikes that avoided Iraqi defenses or penetrated them and then launched standoff strikes from outside the range of Iraq's shorter-range air defenses, which were more difficult to suppress

- Iraq also had lost much of its land-based air defense forces to carefully focused U.S. and British strikes on its air defense facilities during the time of the UN debate and particularly from March 1, 2003, to the start of the war. This "enforcement" of the no-fly zones effectively allowed the Coalition to begin the suppression of enemy air defense (SEAD) phase of the war long before G- Day on March 19. During the struggle in the no-fly zones, the United States claimed it destroyed some 20 to 33 percent of the launchers and major radars Iraq still had.

- Nevertheless, the sheer density of Iraqi defenses made them dangerous until the last stages of the fighting around Baghdad. Low-altitude penetration missions in close air support remained dangerous and sometimes fatal until the end of the war—particularly for helicopters.

- Iraq never made use of its weapons of mass destruction, if it had them.

Other Factors Shaping Iraq's Military Performance

Given these events, many of the past military developments in Iraq's military forces are now moot. At the same time, there are some details and trends that do provide insight into both the reasons for Iraq's defeat and the problems in dealing with Saddam's military legacy.

- **Figure 3.6** summarizes the problems in Iraq's military efforts between 1990 and 2003. Iraq's conventional war fighting capabilities were costly but were steadily crippled by a lack of modernization and resupply.

- **Figure 3.7** shows Iraq's military strength at the time of the Gulf War and before the US-led coalition invaded. These totals reflect a severe decline in force strength, but nothing like the decline that occurred as a result of the Iraq War. It should be noted that the figures for post-Iraq War weapons strength are guesstimates based on discussed in Iraq, and assume substantial efforts to recover and recondition most of the weapons listed.

- **Figure 3.8** shows Iraq's acute dependence on worn and obsolete weapons before the Iraq War, systems for which it could not obtain more than limited supplies of parts and munitions between 1990 and 2003.

- **Figure 3.9** provides a rough estimate of the cumulative rise in the cost of properly modernizing and recapitalizing Iraq's military forces after the Gulf War in 1990. It is clear that this would have been unaffordable regardless of whether the US-led coalition invaded.

- **Figure 3.10** summarizes the acute problems in Iraq's military production base. Like most military industrial and production efforts in the Middle East, Iraq's efforts consumed far more resources than their output was worth.

- **Figure 3.11** lists Iraq's key military production facilities. Most were looted or destroyed during the Iraq War and now have little value.

Figure 3.6

Iraq's Military Status in the Period before the Iraq War Began

- The broad trends in Iraqi central government expenditures, military expenditures, and arms spending reflect the near collapse of Iraq's economy, and a near cut off of military imports between 1991 and 2003, although higher oil exports did lead to increased arms smuggling after 1998.
    - Iraq's military effort had already placed a massive burden on its economy throughout the Iran-Iraq War, and during the period between Iran-Iraq War and its invasion of Kuwait. Its efforts to rebuild its forces after the Gulf War involved such high military expenditures relative to Iraq's GDP that they reached the crisis level and were a critical factor in the decline in living standards in Iraq.
    - The trends in Iraq's military expenditure per capita versus GDP per capita were worse than the trend in gross military expenditures versus total GDP. Iraq clearly had a government which cared little for the welfare of its people, and which emphasized guns over butter -- even at the cost of a devastating cut in per capita income.
- A detailed comparison of the trends in the Iraqi economy versus the Iraqi military and arms import effort reveals that Iraq began to encounter critical problems in funding its military efforts as early as 1985. It also reveals that Iraq has chosen guns over butter since the Gulf War at an immense cost in terms of the resulting share of GDP.
    - As a result, Iraq began to experience a crisis in recapitalizing its military forces as early as 1985, and the Gulf War turned this crisis into a virtual catastrophe. Iraq's military machine may retain a massive order of battle, but Iraq's lack of arms imports means that its military readiness and sustainability is only a fraction of what it was in 1990.
    - Iraqi purchases matched Saudi purchases during the mid-1980s, but Iraqi deliveries in current US dollars dropped from $11 billion annually during 1988-1991 to below $200 million annually in 1992-1995.
    - Comparisons of Iraqi new agreements and arms deliveries by supplier country reveal a drastic decline in new agreements before the Gulf War that would have seriously compromised Iraq's import-dependent forces even without the Gulf War.
    - New agreements with Russia dropped from $11.8 billion in 1983-1986 to $4.1 billion in 1987-1990, before dropping to zero after 1991.
    - New agreements with China dropped from $1.7 billion in 1983-1986 to $0.6 billion in 1987-1990, before dropping to zero after 1991.
    - New agreements with E. Europe dropped from $4.0 billion in 1983-1986 to $1.0 billion in 1987-1990, before dropping to zero after 1991.
    - In contrast, new agreements with the major West European states rose from $1.0 billion in 1983-1986 to $2.7 billion in 1987-1990, before dropping to zero after 1991 — reflecting Iraq's growing interest in advanced military technology before the cutoff of arms imports.
- In spite of various claims during 1980-2003, Iraq's domestic military production capability only played a major role in allowing Iraq to sustain its modern weapons and ability to use advanced military technology. Iraq remains an import dependent country.
- Iraq's past pattern of arms imports makes it highly dependent on access to a wide range of suppliers — particularly Western Europe and Russia. Even if one nation should resume supply, Iraq could not rebuild its military machine without broad access to such suppliers and would be forced to convert a substantial amount of its order of battle to whatever supplier(s) were willing to sell.
- No accurate data are available on Iraqi military spending and arms imports since 1991, but estimates of trends in constant dollars, using adjusted US government data, strongly indicate that Iraq would have had to spend sums approaching $20 billion to recapitalize its force structure, and only succeeded in smuggling in an average of less than $50 million of arms a year during 1992-2003.

Figure 3.7

Iraq Before the Gulf and Iraq Wars and Now

	1990	February 2003	Post-War Estimate[a]
Manpower			
Total Active	1,000,000	389,000	51,623[b]
Regular	425,000	375,000	13,482[c]
National Guard & Other	0	0	36,827
Reserve	850,000	650,000	-
Paramilitary	40,000	44,000+	-
Army and Guard			
Manpower	955,000	350,000	43,345
Regular Army Manpower	-	375,000	13,482
Reserve	480,000(recalled)	650,000	-
Total Main Battle Tanks	5,500 - 6,700	2,200 - 2,600	200-500
Active Main Battle Tanks	5,100	1,900 - 2,200	?
Active AIFV/Recce, Lt. Tanks	2,300	1,300 - 1,600	?
Total APCs	7,100	2,400	200-300
Active APCs	6,800	1,800	?
ATGM Launchers	1,500	900+	?
Self Propelled Artillery	500+	150-200	10-50
Towed Artillery	3,000+	1,900	200-300
MRLs	300+	200	20-30
Mortars	5,000	2,000+	?
SSM Launchers	?	56	?
Light SAM Launchers	1,700?	1,100	50-75?
AA Guns	?	6,000	200-300?
Air Force Manpower	40,000	20,000	145
Air Defense Manpower	10,000	17,000	-
Total Combat Aircraft	513	316	?
Bombers	20	6	?
Fighter/Attack	284+	130	?
Fighter/Interceptor	223+	180	?
Recce/FGA Recce	10	5	?
AEW C4I/BM	1	0	0
MR/MPA	0	0	0
OCU/COIN/CCT	0	0	0
Other Combat Trainers	157	73	40
Transport Aircraft*	63	12	3 - 4
Tanker Aircraft	4?	2	0
Total Helicopters	584	375	10-25
Armed Helicopters*	160	100	?
Other Helicopters*	424	275	?
Major SAM Launchers	600+	400	?
Light SAM Launchers	?	450	?
AA Guns	-	3,000	200-300
Total Naval Manpower	5,000	2,000	495
Regular Navy	5,000	2,000	?
Naval Guards	0	0	?

Marines	-	-	?
Major Surface Combatants			
Missile	4	0	0
Other	1	0	0
Patrol Craft			
Missile	8	1	0
Other	6	5	0
Submarines	0	0	0
Mine Vessels	8	3	0
Amphibious Ships	6	0	0
Landing Craft	9	-	-
Support Ships	3	2	0

* Includes navy, army, national guard, and royal flights, but not paramilitary.
a: The estimates were adapted by Anthony Cordesman from IISS Military Balance and the US state Department Iraq Weekely Status report, dated January 19, 2005. Please these number change on frequently.
b: This number is the sum of the Iraqi new Army, Internvention Force, Special Operations Force, Air Force, and Navy manpower.
c: Please note that there are 2,638 people who are being trained.

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

Figure 3.8

Iraqi Dependence on Decaying, Obsolete, or Obsolescent Major Weapons before the Iraq War of 2003

Land Forces

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

Air Force

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

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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

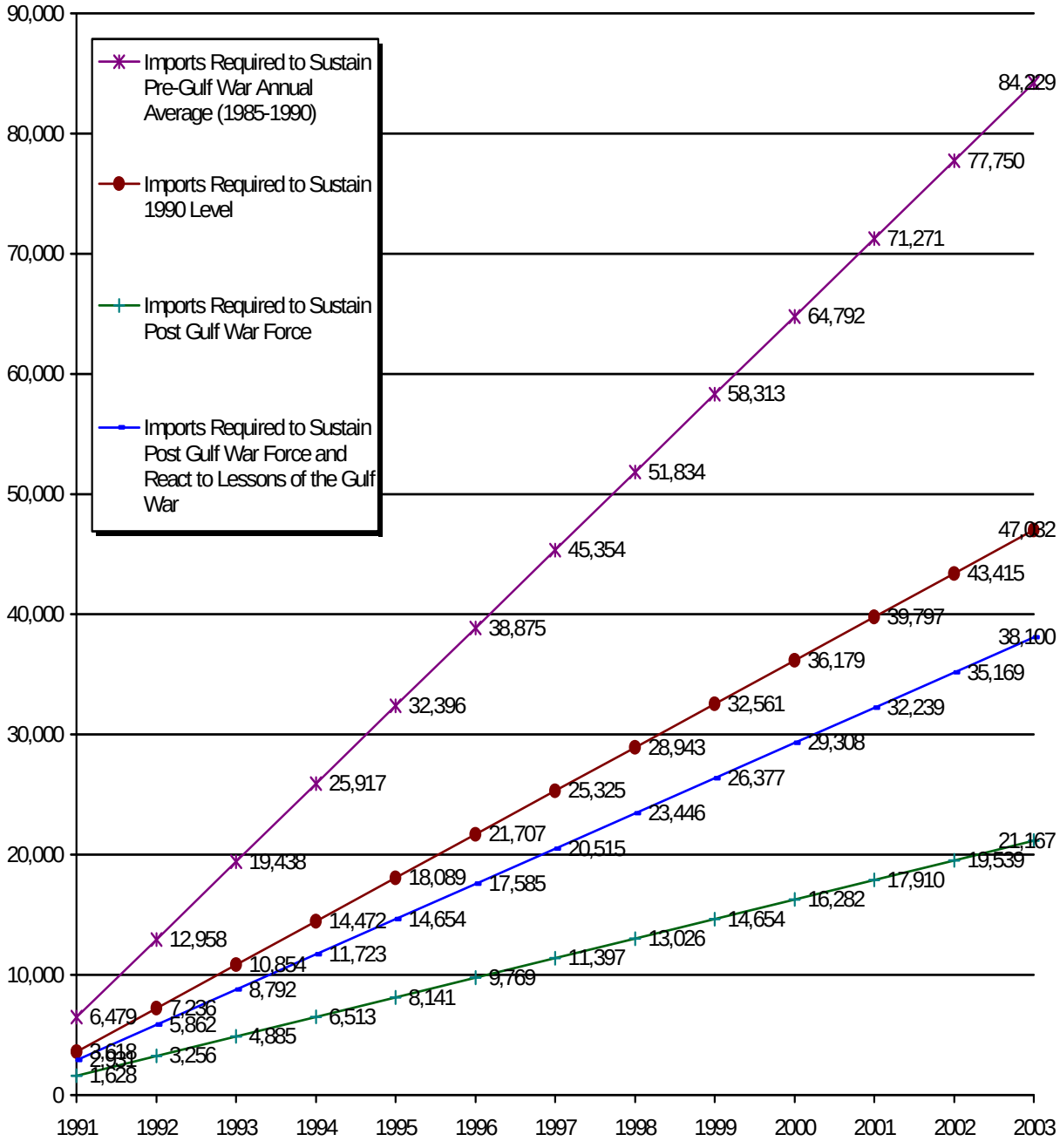
- *Ibn Khaldun*.
- Osa-class missile boat.
- 13 light combat vessels.
- 5-8 landing craft.
- *Agnadeen*.
- 1 Yugoslav Spasilac-class transport.
- Polnocny-class LST.

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

Figure 3.9

The Recapitalization Crisis before the Iraq War: Cumulative Arms Import Deficit Enforced by UN Sanctions

(Measured in $US 2003 Constant millions)



Source: Adapted by Anthony H. Cordesman from US State Department, World Military Expenditures and Arms Transfers, various editions.

Figure 3.10

Problems in Iraqi Military Production before the Iraq War

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

Figure 3.11

Major Iraqi Military Production Facilities before the Iraq War

- 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 Rabiyah.
- 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).

The Iraqi Military and Security Forces Since the Iraq War

There are five key elements to any kind of "victory in Iraq, both for the Iraqi people, and for the US and its Coalition allies:

- Establishing a pluralistic Iraqi government capable of both governing and providing security to the people of Iraq, and finding a new balance of political power acceptable to Arab Shi'ite, Arab Sunni, the Kurds, Turcomans, and other minorities. Must be capable of effective governance at the local, regional, and national level.

- Creating effective Iraqi military, security, and police forces capable of bringing security to the entire country, of eventually replacing all Coalition forces, and capable of conducting effective operations while winning the support of the vast majority of the Iraqi people.

- Providing effective aid, debt and reparations relief, and Iraqi economic reform efforts that – coupled to effective security -- move the nation back on the path to stable economic development where wealth and economic growth are distributed in ways that meet the needs of all of Iraq's people.

- Developing a new national consensus that legitimizes Iraq's post Saddam government and social structure, and that can find a "golden mean" between the different goals and expectations of its different ethnic and religious elements.

- Finding a new balance of relationships with Iraq's neighbors that will ensure that they do not threaten Iraq, or interfere in its affairs, while making it clear that Iraq no longer poses a threat to any neighboring state.

Building effective Iraqi military and security forces is only one of these elements, but it is an element that is critical to the creation of a legitimate government in Iraq and to establishing the stability and security vital to Iraq's political and economic development. It also, however, is an element of nation building that presents many practical problems.

The Contradictions in Iraq Expectations and the Steadily Growing Nature of the Security Problem

Survey after survey since the Coalition invasion has shown that the Iraqi people give their highest priority to two aspects of security. The first is adequate day-to-day security for themselves and their families. The second is the reduction or elimination of coalition military forces (now the Multinational Force or MNF), and particularly that of the US, by replacing them with Iraqi forces. Polls have shown that most Iraqi Arabs wanted and expected Coalition forces to withdraw from Iraq ever since the transfer of sovereignty to the Iraqi Interim Government took place in June 2004.

From the start, most Iraqis have failed to see the contradictions between these goals. They have wanted too much from the Iraqi military and security forces too soon, and they have seen security in nationalistic terms. They have failed to understand the weaknesses in the military, security, and police forces that existed under Saddam Hussein, the extent to which the military forces effectively disbanded themselves as the Coalition forces advanced during March and April of 2003, and the collapse that took place in Iraq's police force that accompanied the collapse of most aspects of Iraqi governance when Saddam's regime fell in April and May of 2003.

Iraqi Arab Sunnis have been particularly hostile to Coalition forces, and most have seen the Coalition invasion as humiliating and illegitimate. Iraqi Arab Shi'ites have been more accepting, particularly immediately after the invasion, but have also wanted Iraqi forces to provide security and the Coalition to withdraw as soon as possible. Only the Kurdish minority, some 15% of Iraq's population, has shown broad support for the Coalition's political efforts in Iraq and for its military presence.

At the same time, security has become a steadily more important concern. Iraq has become an increasingly violent country ever since the fall of Saddam Hussein. This violence originally was largely a matter of looting and crime, revenge, the settling of long-standing grudges, and limited Kurdish ethnic cleansing in the north. Since the summer of 2003, however, it has been dominated by a growing insurgency. This insurgency has been largely Sunni Arab, but has included powerful Arab Shi'ite elements as well, most notably the militia forces of the Moqtada al-Sadr.

While many areas in Iraq have been relatively secure, insurgent attacks have affected virtually every major city and their environs, and major incidents continue in such key cities as Baghdad and Mosul. The Sunni Arab elements of the insurgency have grown steadily in the so-called "Sunni triangle" and the largely Sunni areas of Al Anbar Province, but also in Sunni towns and villages to the north and south of Baghdad.

US, British, and Iraqi Interim Government (IIG) forces have scored significant military victories against both the Sunni Arab and Shi'ite Arab insurgents in cities like Najaf, Baghdad, Samarra, Fallujah, and Mosul. These victories, however, have not yet been translated into lasting security in any major city or region, and the fact that most such victories have been US-led and executed leaves many Iraqis with the impression their country is still dominated by Coalition "occupiers." It is clear that most Iraqi Arabs will only see a new government as fully legitimate if it can provide security and governance with Iraqi forces, and not those of the US and Britain. Most Sunni areas will remain actively hostile until most or all US and British security activity is replaced by Iraqi police and security forces, and this is true of many in Shi'ite areas as well.

Looking Towards The Future

As this analysis shows, however, the effort to create effective Iraqi military, security, and police forces has faced many problems, and few of these problems have been eliminated. The effort to provide effective force and mission goals, proper training, and adequate facilities and equipment, has been faltering and slow. The US made serious mistakes in its initial plans to deal with Iraqi military, security, and police forces, and failed to act effectively during the first year of the Coalition occupation.

Iraqi forces must now be created under the pressure of a "war after the war" where they have become a major target for insurgent forces. The numbers of Iraqi forces that are required are very high, and Saddam's forces have proved to be a weak foundation to build upon. For all the talk of "bringing back" the Iraqi Army, it is clear that Iraq's past military, security, and police forces require a massive retraining and reorganization effort, and that there is no alternative to a largely "zero-based" approach if Iraq's new forces are to be effective and supportive of a pluralistic government and the rule of law.

At the same time, the establishment of effective Iraqi military, security, and police forces is only one element of the changes necessary to provide security. Forces cannot be effective without effective governance at the local, regional, and national level, and the IIG has so far failed to provide such governance, to act decisively and quickly to provide governance when threatened areas are made more secure, and to establish an effective flow of coordinated activity at any level. It is true that there cannot be governance without security, but it is equally true that there cannot be security without governance.

Progress towards a political process that legitimizes the government in the eyes of all major ethnic and religious groups is equally important. So is providing economic hope and security, while moving Iraq towards sustained economic development. It is clear, however, that the creation of effective Iraqi military, security, and police forces is absolutely critical to giving Iraq the future it deserves and to allowing the Coalition to withdraw under conditions that give it a political victory to match its original military victory.

It is impossible to set deadlines for such success, or even to be certain that it is achievable. It is possible, however, to explore the progress made to date, to explain the strengths and weaknesses of that effort, and to draw some conclusions as to the priorities for future action. The key issues are what factors shape the current effort to create effective Iraqi military, security, and police forces; how successful have these efforts been to date; and what are the prospects for the future? The answers to these questions will be critical both to Iraq's future and the Coalition's success.

The Background to the Effort to Create Effective Iraqi Security Forces

One can argue over the US decision in May 2003 to formally disband the Iraqi military forces that existed under Saddam's regime. The Iraqi military had, however, largely disintegrated by mid-April 2003. Most of the regular forces dependent on conscripts had collapsed because of mass desertions; the heavier units in the regular army were largely ineffective and suffered from both desertions and massive looting. The Republican Guard and Special Republican Guard units had been defeated in the field and were too politicized to preserve. Additionally, much of the Iraqi police vanished during the collapse of virtually every aspect of governance. Few facilities survived intact, most equipment was looted, and what remained was generally unsuited to the needs of forces that could serve a post-Saddam Iraq.

It has since become all too clear from the performance of the personnel that served under Saddam that most Saddam-era force elements lacked the training, leadership, and motivation to act as the kind of military, security, and police forces Iraq needed in the post-Saddam era. There were outstanding elements in each service, but the vast majority was poorly trained, lacked effective leadership and organization, and were designed more to protect the regime – at the cost of corruption, self-interest, and inertia – and not the nation. The services were vastly overstaffed with senior officers who were used to getting privileges, but not to leading and taking initiative.

The fact remains, however, that the US-led Coalition was far too slow in trying to create effective Iraqi forces and police. It initially tried to restrict the development of Iraqi armed forces to a token force geared to defend Iraq's borders against external aggression. It did not try to create police forces with the capability to deal with serious insurgency and security challenges. As time went on, it ignored or did not give proper priority to the warnings from US military advisory teams about the problems in organizing and training Iraqi forces, and in giving them the necessary equipment and facilities.

The US failed to treat the Iraqis as partners in the counterinsurgency effort for nearly a year, and did not attempt to seriously train and equip Iraqi forces for proactive security and counterinsurgency missions until April 2004 – nearly a year after the fall of Saddam Hussein and two-thirds of a year after a major insurgency problem began to emerge.

The Difficulties of Building an Iraqi Army and Security Forces

- The problem of dealing with the Iraqi Army and security forces was handled largely by ideologues that had an unrealistic grand strategy for transforming Iraq and the Middle East. Their strategic assessments of Iraq were wrong in far more important ways than their assessment of the potential threat posed by Iraq's weapons of mass destruction. They were fundamentally wrong about how the Iraqi people would view the US invasion. They were wrong about the problems in establishing effective governance, and they underestimated the difficulties in creating a new government that was legitimate in Iraqi eyes. They greatly exaggerated the relevance and influence of Iraqi exiles, and greatly underestimated the scale of Iraq's economic, ethnic, and demographic problems.

  The end result was that they had no practical grand strategy beyond Saddam's fall, and their strategic assessments were slow to improve thereafter. Many "neoconservatives" wasted a year after the Coalition's apparent military victory, living in a state of ideological denial. The US effectively occupied Iraq as proconsuls, rather than rushing to create a legitimate government and effective Iraqi military and security forces. US aid efforts faltered in a mix of uncoordinated, ideologically driven plans to make the Iraqi economy "American," and bureaucratic fumbling. They failed to rush aid in where it might have bought acceptance and stability – a fault only partially corrected by the fact the US military did implement effective emergency aid as part of its Commander's Emergency Relief Program (CERP).

- The US military, however, must share part of the blame. The US military talked "asymmetric war," but it planned and organized for conventional war. It entered the Iraq War focused on conventional combat and high technology warfare, and short wars in which the use of decisive force was assumed to produce decisive results. At almost every level, it lacked training in grand strategy in any practical terms. It had failed to see the lessons of being unprepared for conflict termination in the Gulf War of 1991, and the practical problems of nation building in Bosnia and Kosovo. Its leadership largely saw stability operations,

nation building, creating security, and dealing with local military and security forces as secondary missions that diverted and locked down scarce military resources.

- A failure at a different level took place on the civilian side of the aid process. The State Department and USAID are organized around the idea that regular police forces should be created as soon as possible to replace reliance on outside forces and the armed forces. The Congress has also pressed hard to keep the US military role in training paramilitary forces to a minimum, largely as a legacy of problems in Latin America and elsewhere during the Cold War. This reflects a legitimate concern with the human rights abuses that sometimes occurred when military or paramilitary forces become involved in police functions.

  The difficulty is that such concepts are fundamentally unworkable when there are major threats to the police from militias, insurgents, organized terrorists, and large criminal elements. The transition to stability requires well-armed and well-protected security forces in large numbers that can coordinate directly with the military and handle serious threats. Trying to create regular police forces is a recipe for disaster or constant reliance on the military: A lesson that became brutally clear in the Balkans and Afghanistan long before the US became involved in Iraq.

- Creating the police, and forces like facilities protection service, was treated as a low level task that was as important in terms of employing Iraqis as creating effective units. The police and the bulk of the security forces were given grossly inadequate training, equipment, facilities, transport, and protection, and with a lack of the kind of structured leadership and emphasis on "unit integrity" necessary to equipment police units to protect themselves and fight.

  These problems were then compounded by recruiting US police advisors – some more for US domestic political reasons than out of any competence for the job -- with no area expertise and little or no real knowledge of the mission that the Iraqi security and police forces actually had to perform.

- Another set of problems have contributed to the difficulties in creating effective Iraqi military, security, and police forces since the fall of Saddam, and continue to this day. Effective forces require effective governance at every level. They require coordination at the central government level to ensure they are properly financed, given clear direction, and coordination takes place between the ministry leading the armed forces (Ministry of Defense) and the police and paramilitary security forces (Ministry of Interior). Effective planning and direction must take place at the regional and local levels, and more importantly, there must be local government to support, give direction to, provide effective services, and win the support of the local people.

- Iraq's pre-invasion police were largely timeserving instruments of regime security with little training and competence and who were largely passive. Its security forces were much better trained and equipped, but largely active instruments of regime repression. They did not go along to get along; they were key parts of the problem. The armed forces had many elements that were effective and were not regime loyalists, and that could later be recruited into the police and security forces. The Saddam-era police and security forces provided no solid foundation to build upon, even if de-Baathification had not been a problem.

- Debaathification did, however, block the US teams developing the military, security, and police forces from recruiting many of the most experienced leaders and military personnel for much of the first year of the occupation. Some of the best and most qualified personnel could not be recruited.

- This, in turn, ensured there were few stable unit elements with proven leaders and personnel, and no amount of training and equipment can substitute for experienced leadership and the level of unit integrity that creates mutual loyalty among those assigned. Essentially, the US and Iraqi government ended up emphasizing sheer throughput in terms of numbers of personnel going through a grossly inadequate training system without bothering to give them any place to go.

- The near collapse of much of Iraq's economy following the invasion, coupled to the disbanding of the armed forces and much of the government put tremendous pressure on young men to join the armed forces, security forces, and police regardless of their personal goals and ambitions. It then placed them in a society undergoing political, economic, and social turmoil – as well as a society experiencing a growing insurgency. Inevitably, large numbers of men joined for all the wrong reasons, often had no incentive to take risks, did not take training and discipline any more seriously than they were forced to, focused on

family and local problems, and had little reason to be loyal. Some became informers or supporters of the insurgency.

Criticizing Iraq forces – particularly the police and security forces -- for failing to perform under these conditions is both grossly unfair and misses virtually every relevant lesson for nation building.

The Importance of Iraqi Public opinion and Hostility and Distrust of Coalition Forces

Some elements of Iraq did greet the advancing Coalition forces as liberators, but scarcely with the fervor and broad popular base that the US officials shaping the invasion expected. Almost no Iraqis, however, wanted the Coalition to stay as occupiers or to be "transformed" from the outside. The nature of the Coalition efforts that followed almost ensured that much of its activity would be seen as imposing US goals and values, and the inevitable backlash was compounded by the fact that two critical groups had good reason to oppose the Coalition efforts. One was the Sunni Arab elements that suddenly lost the privileges and power they had had since the founding of Iraq, and especially under Saddam and the Ba'ath. The second were those Arab Shi'ites who wanted to create their own version of Iraq, especially those who wanted a more Islamic state in which they could play a dominant role.

At the same time, most Iraqis made it clear they had a strong nationalist resentment of any lasting Coalition military presence. From the start of the occupation, Iraqi public opinion made it clear that training effective Iraqi military, police, and security forces was not a luxury or sideshow. Regardless of how many Iraqis did or did not welcome the fall of Saddam Hussein, one public opinion poll after another show that Coalition forces quickly came to be seen by many Iraqis as occupiers, and as occupiers that could not bring security.

While many Iraqi expectations of what the Coalition should and could do for them were unrealistic, and many criticisms of the Coalition and Coalition forces were unfair, the reality was that Iraqis were all too aware that the US had failed to secure the country, key government offices, and key cultural centers. In their eyes, the US did not show it would reconstitute an effective Iraqi government and security structure, and police services and personal security remained at risk.

Coalition Operations = "Occupier" Operations = Anger and Friction

Moreover, the presence of Coalition forces created a natural friction with the population, particularly in Sunni Arab areas. Most had little experience with Iraqi culture and history or with Islam. They had limited training and equipment for counterinsurgency and counterterrorism missions.

US operations were initially often of limited effectiveness, frequently involved the detainment of innocent Iraqis and "collateral damage," and alienated otherwise friendly Iraqis. The US saw the insurgents as a limited force with limited popular support that could be defeated without creating strong and highly effective Iraqi armed forces, and badly underestimated the personal security problem.

Yet, the US and Coalition did not see the need to rush the creation of effective Iraqi military, police, and security forces in spite of the developing scale of the military problem, and in spite of polls showing 2/3 of Sunnis and 1/3 of Shi'ites oppose war, 33% of Sunnis and 11% of Shi'ites support attacks on the Coalition.

Trends in Iraqi Military and Security Force Levels from December 2003 to January 2005

The overall trends in the manning of the Iraqi security and military forces over the past 13 months are illustrated in the figures below:

- **Figure 3.12** shows the levels of manning in both the Iraqi Army and Iraqi National Guard from December 2003 to January 2005. The army's manning levels were erratic throughout 2004. They consistently fell towards the end of 2004 but saw an upsurge to 7,598 in January 2005. What would appear to be a

significant drop in the Intervention Force's manning levels from January 12th to January 19th is more likely the result of reassigning forces as opposed to desertion or dropout. The IIF is part of the Iraqi army and the listed numbers for the army increased during that time period by roughly the same amount as the IIF decreased. Therefore, it is likely that forces listed as part of the IIF January 12th were re-designated as part of the regular Iraqi army as of January 19th. The National Guard's manning level has remained relatively constant, though it is important to note a decrease in over 6,000 Guardsmen between December 2004 and January 2005. The number of trained and equipped soldiers dropped in November, but has gone up as more units have completed their training.

Reports from Fallujah and Samarra indicated that units of both the army and National Guard fought well. It is important to note, however, that the US was still doing the brunt of the fighting. It does appear that the quality of both the Guardsmen and soldiers is slowly improving. In one instance on January 18, 2005, four suicide bombs rocked Baghdad within 90 minutes. Yet, the loss of life was far less than it could have been because of Iraqi action. Col. Mike Murray, commander of the US 3rd Brigade, 1st Cavalry, stated that all of the bombers failed to reach their designated targets. He stated, "Out of four car bombs in Baghdad…in every case there was an Iraqi soldier either from the Iraqi army or the Iraqi National Guard or an Iraqi policeman that prevented that car bomb from getting to its intended target."[lxvi] The challenge to retain Army soldiers remains a concern.

The National Guard was "merged" with the army on January 6, 2005, but it is extremely difficult to understand what this will really mean in terms of combat effectiveness. Generating effective forces takes time, and experts involved in the US training effort caution that that requires synchronization of effort to train, equip, base, and to integrate training resources such as trainers and training locations.

As one expert put it, "One should not expect a constantly increasing generation of force given the complexity of the task and the requirement to use Coalition forces (i.e. those who sometimes conduct operations) to assist with the training process. The Coalition spent considerable time and effort to improve the capabilities of ING battalions, something this report overlooks because it focuses so much on the alleged weakness in the initial training program without any focus on the follow-on training the Coalition provides to ING units. Some 42 battalions of ING are conducting operations at the squad to battalion level (as of early January 2005). They are on the street, and elsewhere, providing security — often with strong effect. Some units are not as strong as we would like, but others are doing better than expected."

- **Figure 3.13** shows the levels of manning in both the Iraqi police and Iraqi border enforcement from December 2003 to January 2005. Police manning levels steadily decreased from the peak in June 2004 (92,227) until late November 2004 when the numbers slowly began increasing once more. The drastic drop in the numbers of police needs to be kept in perspective. While police units were frequently overrun, failed to report for duty, or joined the insurgency, newer reports indicate that some units in Samarra fought tenaciously when attacked. It should be noted that the Justice Department training team has been administering the International Criminal Investigative Training Assistance Program (ICITAP) since May 2003 and they claim that 400 women are employed as police officers in Iraq. The levels in the manning of the Border Enforcement Agency remain erratic and it is unclear as to how many individuals are actually out on patrol.
- **Figure 3.14** depicts the stated manning goals of the Iraqi Army in contrast with the actual manning levels of the army over the last year. In May 2004, the total required dropped by 5,000 and it dropped by a further 8,000 in July. The drop in the requirements for the army is likely caused by further specialization within the Iraqi military and security forces with regard to missions and roles. The Iraqi Intervention Force and the Iraqi Special Forces were created as separate entities with specific missions and the police and National Guard generally confront insurgents with US backing unless they are massed in some large force like in Fallujah. When they are in static positions, the army tends to have a larger role.
- **Figure 3.15** depicts the stated manning goals of the Iraqi National Guard in contrast with the actual manning levels of the Iraqi National Guard over the last year. Figure 3.12 shows that the Iraqi National Guard requirements increased slightly in May 2004 and July 2004 before skyrocketing in September 2004 with an increase of over 20,000 in the end goal strength. This increase is directly tied to the surge in

violence by the insurgents. National Guard manning has had a few setbacks but seems to be slowly improving, as is the quality of the Guard units.

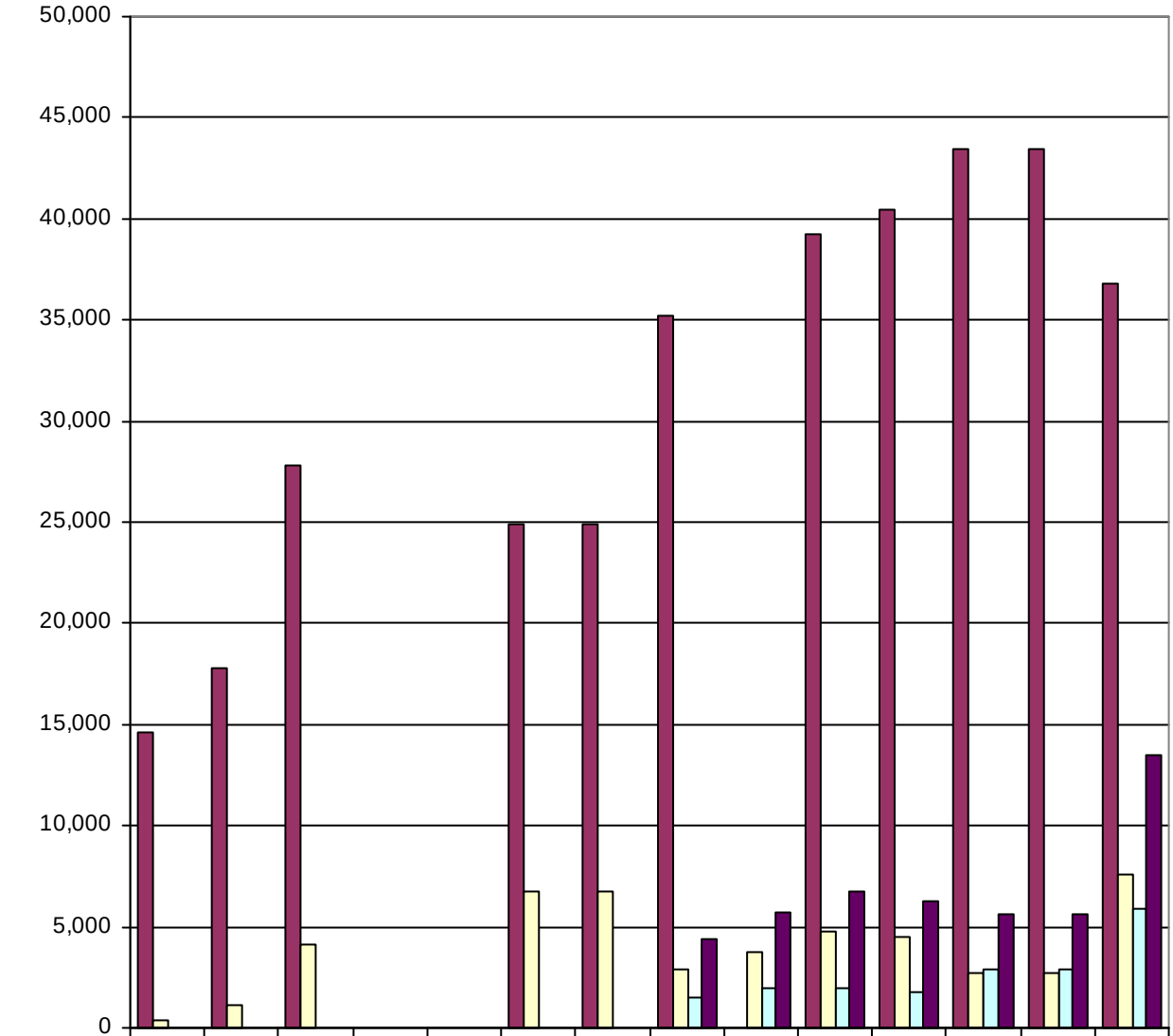
- Lastly, **Figure 3.16** illustrates the stated manning goals of the Iraqi police in contrast with the actual manning levels of the Iraqi police over the last year. **Figure 3.15** shows that police manning actually exceeded early estimates of the required numbers. Subsequent decreases are, in part, a result of Iraqis taking a larger role in the candidate screening process. The Iraqi Interim Government, while slow to do so, has begun to fire police that fail to show up for work, police that cooperate with insurgents, and police that are blatantly corrupt.

  It should also be noted, however, that the insurgent campaign of intimidation and attacks are likely affecting police manning levels. Since October 2004, manning seems to be slowly increasing, but it is nowhere near the estimated 135,000 that are needed. The requirements for police manning increased dramatically in May 2004 and then burgeoned in September 2004 as part of the response to the insurgency and its associated criminal elements.

Taken together, these figures reflect a level of progress that shows the overall manning and quality of the Iraqi security and military forces is slowly improving, and the effort to build up Iraqi forces has gathered serious momentum. However, Iraqi forces regularly suffer setbacks and quality varies drastically from unit to unit or station to station. It is also clear from the trend analyses in Figures 3.12 to 3.16 that the strength of the various Iraqi security and military forces will not be at anything like the levels necessary to provide effective security for the elections in January 2005.

Figure 3.12

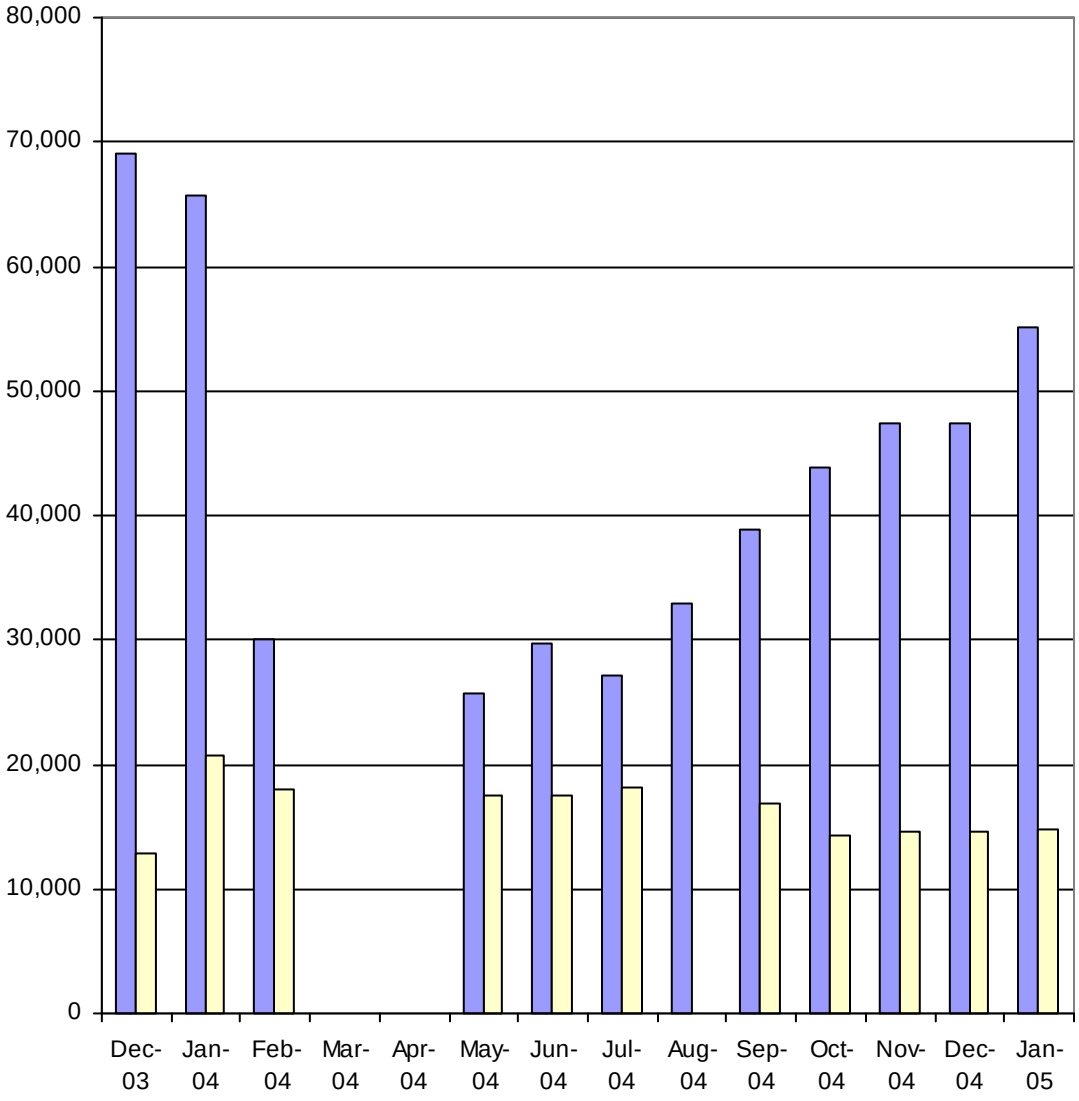
Levels of Iraqi Military Forces Over Time, 12/03-01/05*



	-22 -Dec 03	-20 -Jan 04	-23 -Feb 04	Mar	Apr	-25 -May 04	-01 -Jun 04	-Jul-20 04	Aug	-27 -Sep 05	-27 -Oct 04	-24 -Nov 04	-01 -Dec 04	-19 -Jan 05
Guard	14,600	17,800	27,854	-	-	24,874	24,874	35,178	-	39,272	40,457	43,445	43,445	36,827
Army	400	1,100	4,087	-	-	6,702	6,702	2,917	3,750	4,789	4,507	2,713	2,713	7,598
IIF	-	-	-	-	-	-	-	1,473	1,928	1,928	1,794	2,894	2,894	5,884
II & Army	-	-	-	-	-	-	-	4,390	5,678	6,717	6,301	5,607	5,607	13,482

* Breakouts of the numbers of National Guard on duty but not trained are not available prior to February 23rd, in May and June, and are not available after September 27th. The Army figures include only those soldiers considered trained and equipped. This graph uses the Iraq Weekly Status Reports released first by the Department of Defense and now the Department of State, available at http://www.defendamerica.mil as well as information provided by MNSTC-1. For consistency, the graph tries to use the reports that appear at the end of each month. There are no available numbers for March and April, and only the IIF and Army numbers are available for August. This graph does not include the Iraqi Air Force, Civil Intervention Force, Highway Patrol, or Iraqi Navy.

Figure 3.13
Iraqi Security Forces Over Time, 12/03-01/05*

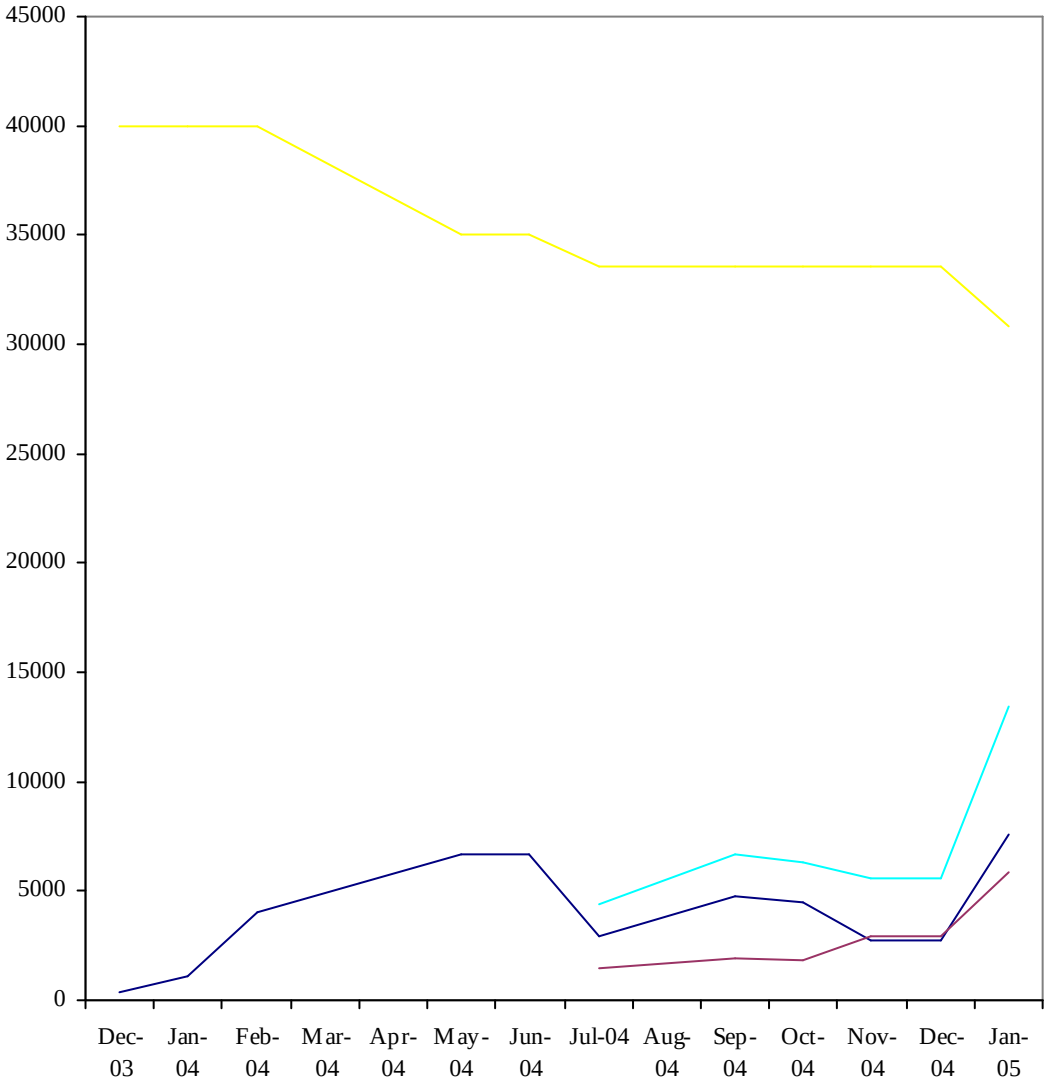


	22-Dec-03	20-Jan-04	23-Feb-04	25-May-04	01-Jun-04	20-Jul-04	23-Aug-04	22-Sep-04	27-Oct-04	24-Nov-04	01-Dec-04	19-Jan-05
Police	69,000	65,700	29,960	25,719	29,688	27,136	32,880	38,921	43,927	47,342	47,342	55,059
Border Police	12,900	20,700	18,044	17,573	17,573	18,223	?	16,798	14,313	14,593	14,593	14,786

*There are no data for Iraqi security force levels for March, April, and August 2003. From February 2003 on, the Border Police include the entire Department of Border Enforcement. This graph uses the Iraq Weekly Status Reports released by the Department of Defense, available at http://www.defendamerica.mil, as well as data provided by MNSTC-1. For consistency, the graph tries to use the reports that appear at the end of each month. Gaps in data reflect unavailable numbers.
The row for police (above) shows two different types of data.

- The numbers for police up until 23 February reflect police reported as being on duty.
- The numbers since 23 February reflect the number trained and equipped and from 27 October the total numbers reflect those trained and equipped either through the 8-week or 3-week program. Thus, the drop in numbers is not as significant as it first appears.

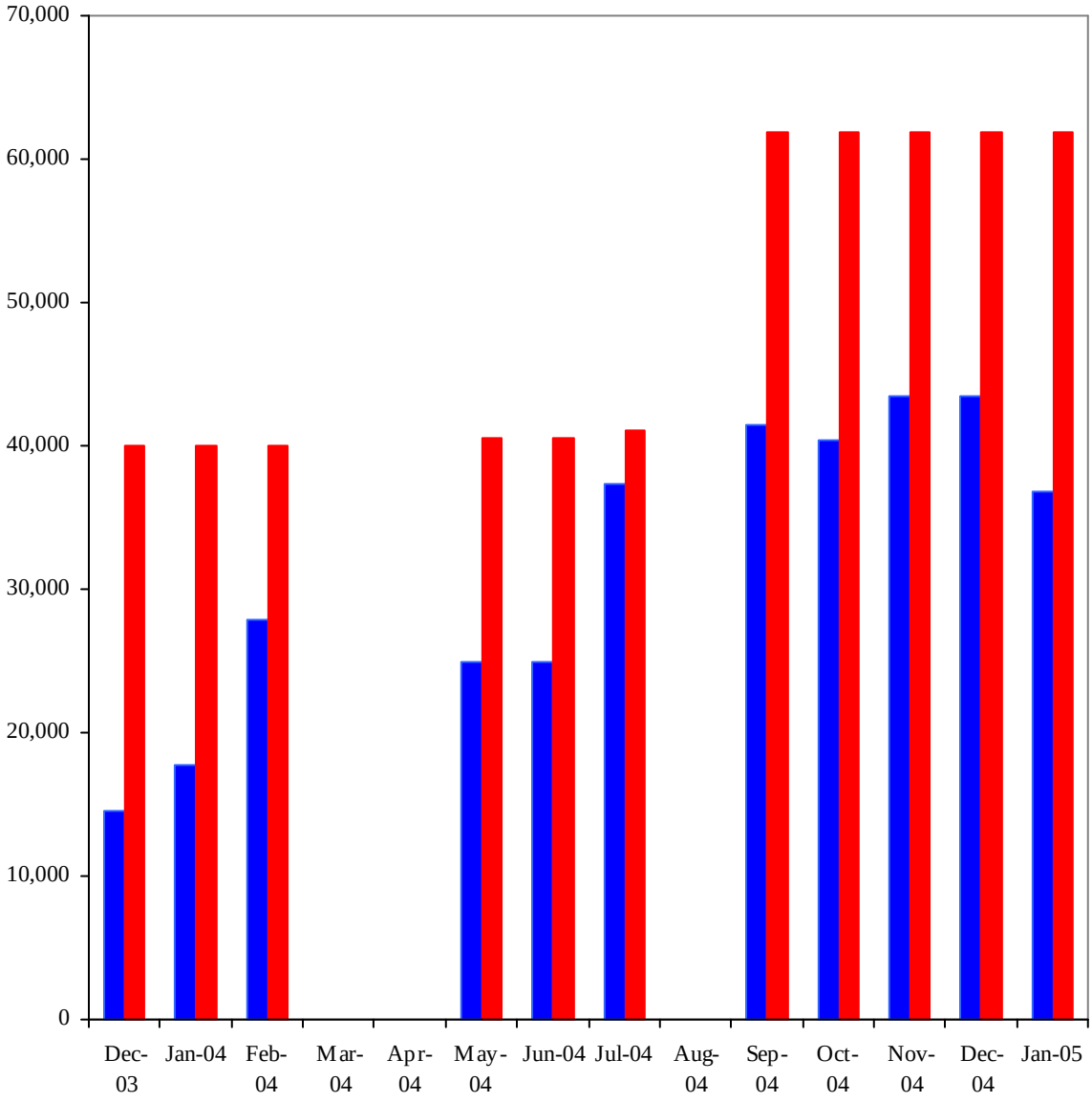
Figure 3.14
Trends in Iraqi Army vs. Required Total over Time as of 01/05



	22-Dec-03	20-Jan-04	23-Feb-04	25-May-04	1-Jun-04	20-Jul-04	22-Sep-04	27-Oct-04	24-Nov-04	1-Dec-04	19-Jan-05
Army manning	400	1,100	3,997	6,702	6,702	2,917	4,789	4,507	2,713	2,713	7598
IIF manning	-	-	-	-	-	1,473	1,928	1,794	2,894	2,894	5884
IIF & Army			-	-	-	4390	6717	6301	5607	5607	13482
Total req'd	40,000	40,000	40,000	35,000	35,000	33,589	33,589	33,589	33,589	33,589	30785

Source: Weekly Status Report available at http://www.defenselink.mil/la/iraq_stat.html, http://www.defendamerica.mil, and inquiries to MNSTC-1. These numbers include those in training and on hand up until July when numbers indicating those trained/equipped became available. The graph utilizes the figures available at the end of each month. Months have been omitted when data were not available. The "total required" column lists the total number of soldiers required by the army up until the creation of the Intervention Force. Following the creation of the Intervention Force, the "total required" column includes the soldiers needed by the regular army and the Intervention Force.

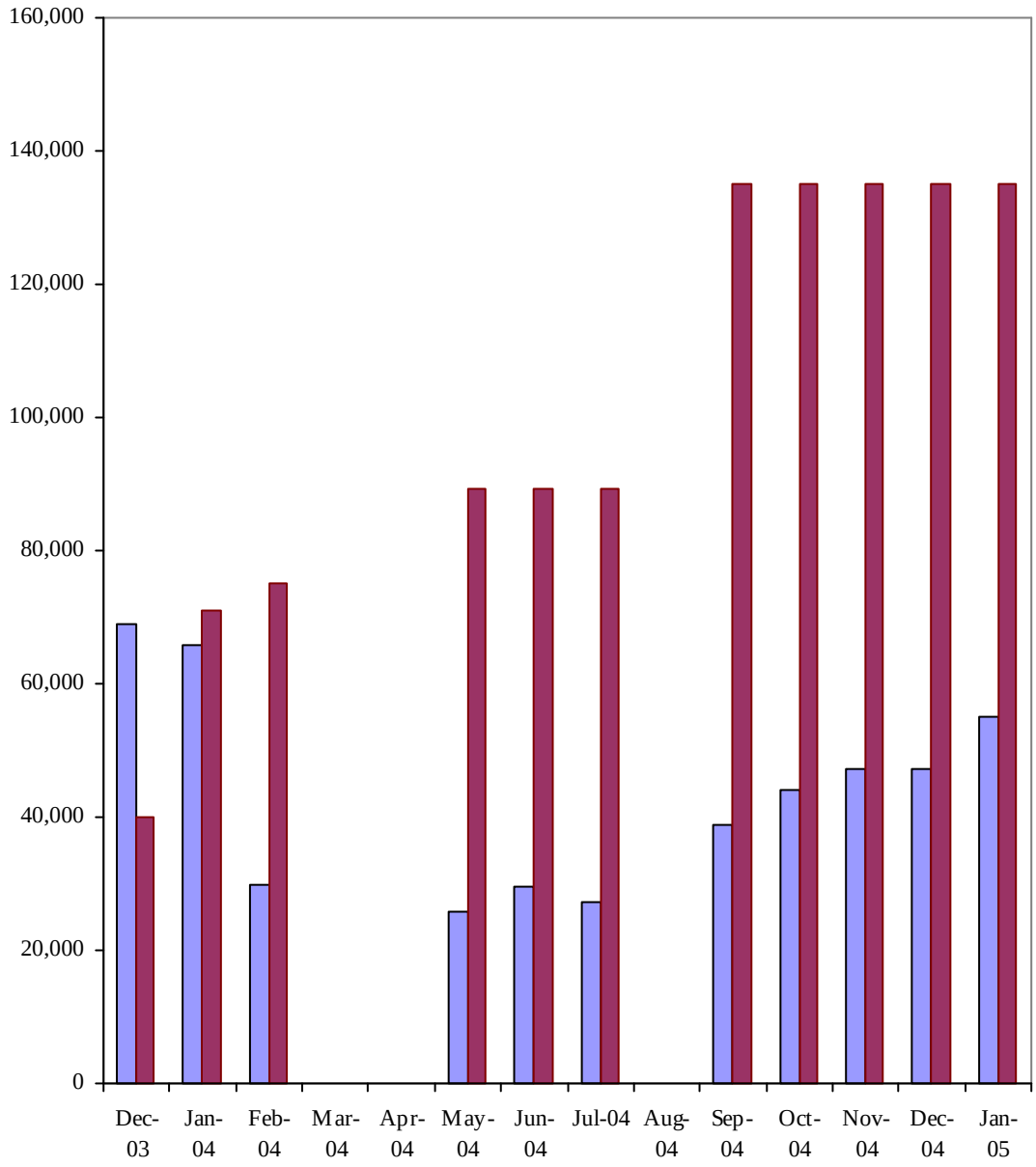
Figure 3.15
Trends in Iraqi Guard vs. Required Total over Time as of 01/05



	22-Dec-03	20-Jan-04	23-Feb-04	25-May-04	1-Jun-04	20-Jul-04	22-Sep-04	27-Oct-04	24-Nov-04	1-Dec-04	19-Jan-05
Guard man.	14,600	17,800	27,854	24,974	24,974	37,371	41,461	40,457	43,445	43,445	36,827
Total req'd	40,000	40,000	40,000	40,556	40,556	41,088	61,904	61,904	61,904	61,904	61,904

Source: Weekly Status Report available at http://www.defenselink.mil/la/iraq_stat.html and http://www.defendamerica.mil. This graph includes those in training and on hand as breakouts are unavailable. It utilizes the figures available at the end of each month. Months have been omitted when data were not given.

Figure 3.16
Trends in Iraqi Police vs. Required Total over Time as of 01/05



	12/22/03	1/20/04	2/23/04	5/25/04	6/1/04	7/20/04	9/22/04	10/27/04	11/24/04	12/1/04	1/19/05
Police Manning	69,000	65,700	29,960	25,719	29,688	27,136	38,921	43,927	47,342	47,342	55,059
Total req'd	40,000	71,000	75,000	89,369	89,369	89,369	135,000	135,000	135,000	135,000	135,000

Source: Weekly Status Report available at http://www.defenselink.mil/la/iraq_stat.html, http://www.defendamerica.mil, and data provided by MNSTC-1. The numbers for police up until 23 February reflect police reported as being on duty, not those on duty and trained as breakouts are unavailable prior to February.
The number since 23 February reflects the number trained and equipped and from 27 October the total number trained reflects those trained and equipped either through the 8-week or 3-week program. Thus, the apparent drop in numbers from January to February is not as drastic as it first appears.

Political and economic events also play a role in the insurgency, and reinforce the need for effective Iraqi forces. The Coalition's persistent inabilities to deliver a popular political message and its failures to use economic aid effectively have continued to aid the insurgents. So have the problems in the governance efforts of the Interim Iraqi Government, and its persistent inability to follow up US and Iraqi tactical victories with effective governance, aid, and government activity in areas like Samarra, Mosul, and Fallujah.

The lack of highly visible Iraqi forces, and the fact that US occupiers have both won virtually every such victory and still dominate most security activity have also reinforced the image of a nation where fighting is done by foreigners, non-Muslims, and occupiers.

The end result has been that many Coalition and Iraqi Interim Government tactical victories produce a costly political and military backlash. Even successful military engagements can lead to the creation of as many new insurgents as they kill or capture. The lack of popular support means that many existing insurgents disperse with their weapons or bury their weapons and supplies for later retrieval.

To return to points made earlier, US and Coalition-dominated actions are seen as actions by "occupier" forces; they are a source of constant propaganda and fuel conspiracy theories. Real and imagined civilian casualties, collateral damage, and the impact on civilians and shrines that these engagements cause remain a constant problem.

All of these points reinforce the need to create larger and more effective Iraqi forces as soon as possible, and to give them full force protection and counterinsurgency capability. No one can argue that Iraqi forces can deal with the current level of insurgency and terrorism in the near future. The threat may not be quantifiable in net assessment terms, but it is all too clear that Iraqi forces will remain a fraction of what is needed through at least mid-2005 and probably deep into 2006. They also will not have airpower, significant armor, or modern IS&R support for years to come.

The nature of both the insurgency in Iraq and Iraqi politics makes it all too clear, however, that only Iraqi forces can minimize the anger and resentment at US forces, give the emerging Iraqi government legitimacy, and support efforts to make that government and the Iraqi political system more inclusive. It is also clear that even the segments of Iraqi society that tolerate Coalition forces as a necessity today want them out as quickly as is practical.

Priorities for Iraqi Force Development

- Develop a coherent and practical plan for creating the kind of Iraqi forces that can stand on their own and largely or fully replace Coalition forces as independent units. Implement the plan as quickly as possible. Give Iraqi military, security, and police forces the equipment and facilities they need to take on insurgents without US or other support and reinforcement.

- Implement General Luck's plan to strengthen Iraqi forces with large numbers of US advisors as soon as possible, but clearly plan to phase out advisors and eliminate Iraqi dependence on such advisors as soon as is practicable.

- Keep up constant pressure on the Iraqi government to improve its effectiveness at the central, regional, and local level in supporting Iraqi forces and in providing aid and governance efforts that match the deployment and mission priorities of the security and police forces. Push the Iraqi government towards unified and timely action, towards promoting competence and removing incompetent personnel.

- Prepare and execute a transition plan to help the new Iraqi government that emerges out of the January 30, 2005 elections understand the true security priorities in the country, and ensure it acts as effectively as possible in developing effective governance and efforts to create Iraqi forces.

- Resist US and Iraqi government efforts to rush force development in ways that emphasize quantity over quality, and continue the focus on leadership, creating effective units, and ensuring that training and equipment are adequate to the task.

- Make efforts to ensure that the ethnic and religious makeup of all facets of the Iraqi military and security forces are ethnically and religiously diverse to prevent any one group or religion from feeling persecuted by the rest.

- Pay careful attention to the merger of the Army and National Guard, which risks creating a larger and lower quality force, rather than the effective forces that are needed.

- Focus on the importance of political security. Security for both Iraqi governance and Iraqi elections must come as soon and as much as possible from Iraqi forces. Iraqi forces will not be ready to undertake such missions though mid 2005 and probably well into 2006, but they must be given the highest possible visibility in the roles where they are most needed. They will not be ready for the January 30, 2005 election, but careful planning will be necessary to make them ready for the Constitutional referendum, and full national election at the end of 2005.

- Create command, communications, and intelligence systems that can tie together the Iraqi, US, and British efforts, and that will give the new Iraqi government and forces the capability they need once the US leaves.

- Make the supporting economic aid effort as relevant to the counterinsurgency campaign as possible, and link it to the development of Iraqi government and security activity effort in the field. The aid effort must become vastly more effective in insurgent and high threat areas. One of the most senior officers pointed out as early as mid-2003 that, "Dollars are more effective than bullets. Physical security is only a prelude to economic security."

- Take a much harder look at the problems in Iraqi governance at the central, regional, and local level. Force the issue in ensuring suitable Iraqi government coordination, responsiveness. And action. Tie aid carefully to the reality of Iraqi government civil efforts to put government in the field and follow-up military action with effective governance.

- Carefully review US military doctrine and guidance in the field to ensure that Iraqi forces get full force protection from US commanders, and suitable support, and that USA forces actively worth with, and encourage, Iraqi units as they develop and deploy.

- Reexamine the present equipment and facilities program to see if it will give all elements of Iraqi forces the level of weapons, communications, protection, and armor necessary to function effectively in a terrorist/insurgent environment. Ensure a proper match between training, equipment, facilities, and US support in force protection.

- Provide full reporting on Iraqi casualties and not simply US and Coalition forces. Fully report on the Iraqi as well as the US role in press reports and briefings. Treat the Iraqis as true partners and give their sacrifices the recognition they deserve.

Spending at the End of 2004

The Department of Defense weekly status report still showed relatively low levels of FY2004 aid spending as of December 8, 2004. The total apportionment for security and law enforcement was now shown as $5,045 million. A total of $4,278 million was committed, $2,930 million was obligated, and $961 million had been spent. This was less than 20% of the total apportionment months after the FY2004 year ended.[lxvii]

Manning at the Beginning of 2005

The manning levels of the Iraqi security and military forces at the beginning of 2005 were a key focus of the Senate confirmation hearings for Condoleezza Rice's nomination as Secretary of State. On January 18, Rice stated that there were 120,000 trained Iraqi troops.[lxviii] Several senators questioned that number, with one Democrat – Senator Biden – saying that he believed that the number of trained Iraqis was much closer to 4,000.

The reality is somewhere in between. There are certainly more than 4,000 trained troops. The army and the Intervention Force account for more than double that figure. The only way to arrive at an estimate near 4,000 was to only count the Iraqi Army, which had a total of 4,159 men as of January 11, 2005.[lxix] The Civil Intervention Force has another 2,862 men, the Emergency Response Unit has 205, the Bureau of Dignity Protection had 484, the Intervention Force had 9,159, and the Special Operations Force had 674. This is a total of 17,000 men and does not count any of the 40,063 men in the National Guard. While the Guard was just being integrated into the Army – January 6, 2005 – it did have 68 battalions and some had moderate effectiveness.

However, it is equally disingenuous to state that there are 120,000 adequately trained and equipped Iraqi troops. If one looks at the numbers provided by the State Department in the Iraq Weekly Status Reports, one can determine that that figure could only be arrived at if all of the Iraqi police were considered "troops." That, in itself, would be an inaccurate designation as many police receive only three weeks of training that does not approach the level of training the army receives.

Even if the police were counted as "troops," an estimate of 120,000 trained troops fails to take into account the fact that the National Guard has fought erratically at best and been unreliable at worst. By the end of 2004, there may not even have been the equivalent of 12,000 reliable, well-trained, well-equipped Iraqi troops that could engage serious insurgent resistance. There were only one or two battalions with any track record of operating on their own without extensive US support, and Iraq's first mechanized battalion did not become operational until mid-January 2005.[lxx]

Some reporting coming out of the military was equally misleading. According to US military assessments, there were approximately 69 Iraqi army battalions operating in the country at the end of the year, and the US military hoped to have 130,000 Iraqi forces – not just soldiers, but army, Guard, police, etc.– by the January 30th election date.[lxxi] The Embassy report on end of the year forces showed, however, that these "army" battalions were almost all low grade National Guard Battalions. In fact, the Army had a total of 21 battalions, many of which were inexperienced and lacking in combat effectiveness and it did not plan to deploy more than six more battalions before the elections. The Army – as distinguished from the National Guard – only built up to around 4,700 men by the end January 2005, and even if the National Guard was counted in the total for the Army, the tally would be around 45,000 men.[lxxii]

USCENTCOM commander Gen. John Abizaid addressed the ongoing concerns about the Iraqi forces in an interview in late January 2005. He stated:

> There's this debate, obviously, in Washington going on right now about the failure of Iraqi security forces, and I would say they're far from failure. It's a generational effort. It's not one that's going to happen within the next month…. I see failure in some places, but more successes than failures. So they'll ultimately be successful.[lxxiii]

It should be noted that the top Iraqi general, Gen. Babakir, stated at the end of 2004 that he expected Iraqi forces to number around 150,000 by summer of 2005. He expected that the US will withdraw its troops from the cities and withdraw to one or two major bases by the end of 2005.[lxxiv] Interim Prime Minister Ayad Allawi was more cautious, but stated that he had been speaking with US officials in Baghdad about ways to speed up the training and equipping of Iraqi soldiers. He said that such acceleration would allow the Coalition forces to slowly leave, but he reiterated that he would adhere to a "conditions-based withdrawal" as opposed to a "calendar-based withdrawal."[lxxv]

Equipment at the Beginning of 2005

As of January 21, 2005, MNSTC-I reported that Iraqi forces had the following major combat equipment:[lxxvi]

- The Iraqi Navy has five 100 ft patrol craft and 34 smaller boats.
- The Iraqi Air Force maintains three squadrons with nine reconnaissance aircraft and three US-supplied C-130 transport planes. At least two of the reconnaissance planes are Seabird SB7l-360 Seeker aircraft.

There is a fourth squadron made up of two UH-1 helicopters. The squadron will receive 14 more UH-1s as well as 4 Bell Jet Ranger helicopters, and should be operational by the end of January.

- One mechanized battalion with a tank company and transportation battalion. The tanks seem to be T-55s and T-72s. The battalion is listed as operational and the necessary equipment and training to form a full-mechanized brigade will be provided by summer 2005.

- Iraq's Mechanized Police Brigade is on patrol with 50 BTR-94 armored vehicles.

This is progress towards the heavier forces needed to deal with a serious insurgency, but scarcely the kind of progress that produces the strength and kind of forces capable of independent operations and replacing Coalition forces. Moreover, the forces created had cost some $1.71 billion out of the $1.91 billion in ongoing funding for security forces – a high price for such lightly equipped units. At the same time, only $1,208 million in US FY2004 IRRF II aid for security and law enforcement had been dispersed out of a total of $5,045 billion that had been apportioned.[lxxvii]

Problems with Equipment Procurement within the Iraqi Ministry of Defense

The Iraqi Defense Ministry has also been plagued by controversy over two separate incidents. One incident revolved around the death of two US contractors and questions over the involved contract.

Dale Stoffel, a consultant with CLI USA Inc., had negotiated an agreement with Iraqi officials to repair and renovate a number of Soviet-era armored vehicles including tanks and APCs. Stoffel became concerned that the officials would not honor the contract nor pay him for work already completed. He raised his concerns with the US Department of Defense and the Pennsylvania congressional delegation.[lxxviii]

Six days after returning to Iraq, Stoffel and Joseph Wemple were found shot to death ten miles outside of a US military base in Taj. Photos of their possessions were posted on an insurgent website.

The US Department of Defense has launched an investigation and the Iraqi government denies complicity in the deaths of the two contractors. Whether elements within the Ministry of Defense were involved or not, the story garnered wide US attention and is likely to discourage some companies from bidding for contracts in Iraq. This is likely to further complicate the Ministry of Defense's attempts to fully equip the Iraq security forces.

In a second incident, public concern surrounded a sizeable transfer of funds from the Iraqi Central Bank by the Ministry of Defense. Reportedly, $300 million in US currency was removed from the bank and put aboard a plane bound for Lebanon.

Mishal Sarraf, and aide to Iraqi Defense Minister Hazim al-Shalaan, asserted that the money was used to buy armored vehicles for Iraqi personnel, including tanks and APCs. There was no public bidding for the contracts and the entire Iraqi cabinet did not vote on the deal. Sarraf stated that the arms deal had been approved by the defense minister and by three other senior Iraqi officials, one of whom was Interim Prime Minister Ayad Allawi. The aide further stated that the arms dealers could not be named because it would endanger their lives and that the deal was concluded quickly so as to rush the vehicles to Iraqi forces as quickly as possible.[lxxix]

Critics challenge this explanation and level charges of corruption. Mowaffak al-Rubaie, the Iraqi national security adviser, was unaware of the deal. He stated, "I am sorry to say that the corruption here is worse now than in the Saddam Hussein era."[lxxx] The director of the Iraq Revenue Watch, Isam al-Khafaji, stated, "That's the tragedy of Iraq: Everyone runs their business like a private fiefdom."[lxxxi]

It should be noted that no wrong-doings have been uncovered and that the Iraqi government flatly denies any charges of corruption. One of the leading critics of the Defense Ministry, particularly with regard to the arms deal, is Ahmed Chalabi, the discredited member of the Iraqi National Congress who is running for a seat in the Iraqi

parliament. Chalabi and Shalaan are enemies, and it is possible that the charges are politically motivated. Shalaan has vowed to arrest Chalabi and turn him over to Interpol.[lxxxii]

Nevertheless, the allegations could still damage the Ministry of Defense's reputation further and hinder further attempts to rush equipment to Iraqi security forces.

The Military Forces of Kuwait

Kuwait's location on the western edge of the Upper Gulf, and at a point where it has common borders with Iraq and Saudi Arabia and is with a few minutes flight of Iran, has made this small country of some 2.1 million people uniquely vulnerable. Iraq has invaded it once, Iran threatened it repeatedly during the Iran-Iraq War, and its wealth and vulnerability continue to make it a potential strategic prize if more aggressive regimes should emerge in Iran and Iraq. At present, however, the fall of Saddam Hussein and a relatively moderate regime in Iran, have given it as higher level of security than it has enjoyed in many years. In addition, the Kuwaiti Deputy Prime Minister signed a memorandum of understanding with Iran's Minister of Defense, pledging military co-operation on numerous levels.[lxxxiii]

Kuwait is also making progress towards democracy, and while it has some Islamic extremists, it does not seem to face significant internal security threats. The threats are appearing more frequently. Kuwait seem to be in a "cultural delima," where it enjoys the US security blanket, it has to balance that with the social forces that are increasingly of an Islamist nature. Furthermore, experts note that the younger generation of Kuwaitis did not have to suffer Saddam Huessein's invasion of their country and do not appreciate the role the United States played in liberating their country. With exploding birth rates, the young people are increasingly anti-American for both the war in Iraq and the US' perceived unconditional support of Israel. It has been reported that among the insurgents in Iraq are Kuwaiti nationals. Furthermore, radicals in Kuwait have attacked US convoys on their way to Iraq, and there were investigations on a possible plot to assassinate the internm Iraqi Prime Minister, Iyad Allawi, who were visiting Kuwait on the 14th anneversy of the Iraqi invasion. [lxxxiv]

The social pressure by Islamist in Kuwait has been apparent through both the media and in Kuwaiti parliament. "Liberal commentators" in the Kuwaiti media have been threatened and vilified for "offending Islamic sensibilities." Furthermore, following the GCC summit, in which reforms in the educational systems were recommended, Kuwaiti legislators rejected the proposed changes and warned the government against bending to Western pressure. Some experts claim that Kuwait is after Saudi Arabia to be the most vaulnerable countries to the instability in Iraq and the radicalization of the reigon.[lxxxv]

Kuwait still enjoys the protection of the United States, and on April 2, 2004, Kuwait was granted major non-NATO ally (MNNA) status. Members of MNNA receive $3 million per year in counterrrosim financial assistance, and are provided with help in procurement in explosive detection and R&D projects in counterrorism.[lxxxvi]

Kuwait's military readiness and training levels have improved to moderate in recent years, and its training is now effective at the brigade and squadron level. Reports indicate that Kuwaiti defense spending increased by 30% by the end of 2003.[lxxxvii] It has, however, suffered from a past tendency to politicize arms sales, rather than seek the best and most interoperable systems to meet its needs. Recent major purchases include AH-64 attack helicopters and F/A-18E/F fighters. Kuwait was seeking to purchase several C4I systems, but the parliament blocked the move, claiming that the Ministry of Defense had improperly negotiated a specific C4I contract. It is unclear if an investigation is under way into the allegations and it is equally uncertain whether Kuwait will continue to pursue the systems in question.[lxxxviii]

The Kuwaiti Army

Kuwait has armed forces with some 15,500 actives. It has reserves with some 23,700 men, although few ever receive anything like their theoretical 30 days of training per year. Its army has 11,000 men and is organized into three armored brigades, 2 mechanized infantry brigades, one mechanized reconnaissance brigade, one artillery brigade, and engineer brigade. It has a commando battalion and Amiri Guard battalion, and one reserve brigade. In

practice, Kuwait barely has enough manpower for two brigades and its "brigades" are actually the equivalent of small regiments or large battalions. Kuwait's paramilitary force includes a 6,600 man national guard armed with light armored vehicles (20 VBL, 70 Pandur and some S-600 APCs) organized into five battalions, including a special force battalion.

The Kuwaiti National Guard received 8 German Rheinmetall Landsystem Condor 2 4x4 APC. They are equipped with VFI run-flat tyers, air conditioning system, a one-man turret armed with 12.7mm heavy and 7.62mm medium machine guns, and can go as fast as 95km/h. They will also have vision defices that allow the occupants of the APC to fire the weapons from inside the vehicle. Each car can carry as many as 10 people.[lxxxix]

Its army is equipped with 218 M-1A2 main battle tanks, plus 150 M-84s (well over half of which are in storage). It has a comparatively large number of AIFVs, including 76 BMP-2s, 120 BMP-3s, and 254 Desert Warriors. It has 230 M-113, %0 M-577 and 11 Tpz-1 Fuch APCs, plus 30-40 Fahds in storage. It has 23 M-109A2 18 F-3 and 54 PLZ 45 155mm self-propelled artillery weapons, plus 18 GCTs in storage. It also has 27 Russian-made Smerch long-range multiple rocket launchers and 78 mortars, some mounted in armored vehicles. It has comparatively large numbers of TOWs – many mounted on vehicles – and Dragons, plus 200 Carl Gustav unguided anti-tank recoilless rifles. Furthermore, according to IISS estimates, the Kuwaiti army has added to its arsenal 24 Hawk Phase III, 12 Aspide, and 48 Starburst surface to air missiles.

At least two brigades are now capable of deploying with their full equipment strength, although their maintenance and sustainment needs can only be met while operating in Kuwait and within relatively short range of their bases. Kuwait is seeking to purchase 60 heavy equipment transporters (HETs) to increase the mobility of its M-1A2s. The three vehicles under consideration are the T816-6VWN9T 8x8, the MAN 40.633 6x6 DFAETX, and the Actros 4160AS 8x8.[xc]

The Kuwaiti Air Force

The Kuwaiti air force consists of some 2,500 men, 80 combat aircraft, and 16 armed helicopters. Its forces include fighter-ground attack units equipped with 31 F/A-18C and 8 F/A-18D. It is phasing out a fighter unit with 14 Mirage F-1C/K/BK fighters, which are non-operational. It also has 11 Hawk 64 and 16 Tucanos in a combined light attack and training unit. It has 16 SA-342 attack helicopters with HOT. Purchases of the Ah-64 and F/A-18 E/F should significantly increase its strength in the near future. Kuwait purchased 16 AH-64D Longbow helicopters in 2003, though the dates of delivery and timetable for deployment are unknown.[xci] It has a small transport force and 12 utility and other unarmed helicopters. The air force operates four IHawk batteries with a total of 24 launchers, and Patriot surface-to-air missile forces with 40 launch units. Its lighter air defense forces include 6 Amoun batteries, each with a Skyguard radar, a 2 Aspide launchers, and two twin Oerlikon 35mm AA guns. Training and readiness are good by Gulf standards, although Kuwait would have to depend on US aid for effective AEW, battle management, reconnaissance and intelligence, and targeting support.

The Kuwaiti Navy

The Kuwaiti Navy has some 2,000 men, including 500 Coast Guards. It is based at Ras al Qalaya. It has 10 surface combatants – all missile patrol boats. They include 8 French-made Ubn Almaradin-class. These are comparatively new 245-ton vessels, armed with 4 Sea Skua missiles and 40mm gun, and are fitted for launchers for 6 Sadaral air-to-surface missiles. The crews are French trained and Kuwait has sought to develop a strength of 10 crews to allow the boats to be kept at sea. All were delivered during 1998-2000.

It also has one Istiqlal class (Lurssen FPB-57) missile patrol boat, armed with two twin MM-40 Exocet launchers. The ship was extensively refitted in 1995. It has one Al Sanbouk class (Lurssen TNC-45) missile patrol boat, armed with two twin MM-40 Exocet launchers. This boat escaped to Bahrain in 1990, during Iraq's invasion of Kuwait. It has been laid up since 1997, and is awaiting a major refit or decommissioning. Kuwait also has four Inttisar 150-ton gun patrol boats and 3 104-ton Al Shaheed class gun patrol boats in its Coast Guard, and plans to buy nine more Shaheeds. It has 12 Manta class inshore patrol boats that are inoperable due to design defects, and 23 operational light inshore patrol craft, and plans to buy three more. It has two LCU 215-ton amphibious ships, and two support craft.

These are small naval forces, with limited capability and readiness, but Iraq is no longer a threat. The US makes extensive use of basing facilities in Kuwait and prepositions a brigade set and air equipment there. Kuwait can count on US military support against any threat from Iran.

The Kuwaitis have committed to significantly upgrading their communication and surveillance capabilities. Kuwait will spend $50 million to acquire the Advanced Tactical Communications System VHF radio.[xcii] The Kuwaiti Defense Ministry has procured an aerostat, along with the necessary components, that will provide low-altitude airborne surveillance.[xciii]

It has been reported that the Ministry of Defense in Kuwait was in the process of launching an international competition for shipbuilders to build 2 Fast Missile Strike Craft for the Kuwaiti Navy. In November 2004, the Kuwaiti MoD announced a budget of approximately $340 million for 57-72 m class ships, and that by mid January 2005; all the requests will be in. If this acquisition goes throught, Kuwait will add to its arsenal of 42m Um Almaradim-class fast attack craft that are armed with Oto Melara 40mm gun and MBDA ea Skua SL lightweight anti-ship missile, and which form the foundation of its Navy since 1998.[xciv]

The Military Forces of Oman

Oman has a strategic location in the lower Gulf. It controls the Mussandam Peninsula and its base at Goat Island is on the edge of the key tanker routes from the Indian Ocean to the Gulf. It has a 1,129 nautical mile coastline, and is the only member of the GCC with meaningful ports on the Indian Ocean. Oman has long had close ties to Britain and the US, and has granted the US extensive prepositioning facilities on the Island of Masirah. Iran is the major potential threat to Oman, although relations have improved steadily since the mid-1990s, and there are few signs of current tensions. Yemen too is a potential threat, although both countries have resolved their border issues, and again there have been few signs of recent tension.

Omani Army

Oman has 41,700 actives in its armed forces, plus some 2,000 foreign advisors – largely British. It has maintained relatively large armed forces, with a moderate degree of readiness, ever since the Dhofar Rebellion. It also has exported military manpower to other Southern Gulf states like the UAE. In spite of a comparative large military spending effort, however, it has made comparatively limited equipment purchases and has been relatively slow to modernize its forces.

Oman's army now has 25,000 actives, plus a small contingent of Royal Household troops. Its army is organized into one armored and two infantry brigades, two armored regiments, one armored reconnaissance regiment, eight infantry regiments, one infantry reconnaissance regiment, one airborne regiment, four artillery regiments, an air defense regiment, and a field engineer regiment. These regiments are small and are largely battalion equivalents. It has a number of independent company sized formations, including the Musandam Security Force. The Royal Household has an additional 6,400 troops include two special forces regiments (1,000 men) and a 5,000 man Royal Guard Brigade. There is a small 150 man Royal Yacht Squadron, and a 250 man Royal Flight.

The Army's equipment includes 6 M-60A1, 73 M-60A3, and 38 Challenger 2 main battle tanks. It has 37 aging Scorpion light tanks, 139 VBL armored reconnaissance vehicles, and more than 204 APCs, including 175 variants of the Piranha, 6 Spartans, 13 Sultans, 10 Stormers and up to 50 WZ 551s.[xcv] It has 10 TOWs, some on armored vehicles, and at least 32 Milan manportable anti-tank guided weapons, and a mix of RPG-7 and LAW rocket launchers. It has 25 G6 155mm self-propelled artillery weapons and 108 towed weapons, including 42 ROF 105mm, 30 D-20 122mm, 12 M-46 130mm, and 12 Type 59-1 155mm plus some FH-70s. It has a mix of roughly 100 81mm, 107mm, and 120mm mortars. Its air defense assets include 20 Javelin, 34 SA-7, and vehicle mounted Mistral surface to air weapons; plus 4 ZSU-23-2 3mm, 10 GDF-005 35mm with Skyguard, and 12 Bofors 40mm AA guns. The Royal Household has an additional 9 VBC-90 armored fighting vehicles, 14 VAB-VCIs, 50 WZ-551s, and 9 VAB-DDA. It has 6 Type 90A multiple rocket launchers, Milan anti-tank guided weapons, and 14 Javelin light surface-to-air missiles.

Omani Air Force

The Omani air force has some 4,100 men, with 40 combat aircraft and no armed helicopters. Its aircraft are aging and have limited capability although a number are being upgraded. It has two fighter-attack squadrons with 24 Jaguars that are being upgraded to the GR-3 standard. It has a fighter-reconnaissance unit with 12 Hawk 203s plus a small light attack and training unit with 12 PC-9s and 4 Hawk 103s. It has three fixed wing transport squadrons, with 3 BAC-11s, 3 C-130H and 10 Skyvans, and two medium transport helicopter squadrons with 30 aircraft: 19 AB-205, 3 AB-206, 3 AB-2123, and 5 AB-214. The Royal Flight has 2 B-747s, 1 DC-8, 2 Gulfstream IV transports 3 AS-330s, 2 AS-332Cs, and 1 AS-332L.

The Omani Air Force has sought advanced US combat aircraft for some years and ordered 12 F-16C/D Block 50 fighters from the US in November 2003. Oman, by mid-2006, will receive the 12 F-16s.[xcvi] Two of these F-16s are be fitted with F-9120 Advanced Airborne Reconnaissance Systems, or AARS.[xcvii] The air force will upgrade seven of its attack aircraft with Precision Attack Navigation and Targeting for Extended Range Acquisition, or PANTERA pods, enhancing their strike capabilities.[xcviii] Given the importance of Oman's airfields to the US, it can almost certainly count on effective training and support for these aircraft.

The Omani Navy

The Omani Navy has a critical strategic location because Oman controls the Strait of Hormuz and has a long coast and important ports on the Indian Ocean. It is a 4,200 to 4,500-man force that is headquartered at Seeb, and with bases at Ahwi, Ghanam Island, Mussandam on the Mussandam Peninsula, and Salalah on Oman's south coast. It has 13 surface vessels. These include two 1,450-ton Qahir-class corvettes, each armed with eight MM-40 II Exocets, Crotale air-to-surface missiles, and one 76mm gun. They have a helicopter platform and can be fitted with ASW gear. The ships are nearly new and were delivered in 1996 and 1997. It has one old 900-ton patrol ship formally used for training, which it has classified as a corvette.

Oman has 7 oceangoing patrol boats. These include four Dhofar class missile patrol boats, armed with twin 3 or four MM-40 Exocet missiles and one 76mm gun, which we delivered in the early and mid-1980s. They also include three 475-ton Al Bushra class, armed with 76mm guns and delivered in the mid-1990s. They have no ASW capability. Oman has four Seeb 74-ton coastal patrol craft, plus 15 light inshore patrol boats in its police force. The navy has placed an order for 12 9.5m high-speed rigid assault boats, though the date of delivery is unclear.[xcix]

The Omani Navy has one 2,500-ton Nasr al Bahr class LSL (240 troops, 7 tanks) with a helicopter deck. It under went a limited refit in 1997 and is fully operational. It also has four landing craft: 3 230-ton LCMs and 1 85-ton LCU, as well as a number of support ships and survey craft..

Oman must rely on the US and Britain for anti-mine and ASW warfare, and in any major confrontation with Iran. It has shown, however, that it will confront Iran over any infringement of its waters and maintains relatively high readiness by Gulf standards.

The Military Forces of Qatar

Qatar is a small country whose location as a peninsula located in the center of the Southern Gulf places it in a critical strategic location. It shares a massive offshore gas formation with Iran. While Iran is the primary potential threat, there have never been serious recent tensions between the two countries. In contrast, Qatar had several clashes with Saudi Arabia before the two countries finally agreed on a border settlement, and Qatar accused several of its Southern Gulf neighbors of supporting a coup attempt by the present Emir's father, who made an attempt to return to power.

It has limited military forces with a total of only 12,400 men, plus reserves, and some 6,540 USs forces. It makes no pretense to be a major Gulf military power, but maintains just enough forces to provide minimal border defense against Saudi Arabia and some deterrent to Iran. Qatar is now the site of the main US air base and headquarters in

the Gulf, however, and of the equipment for one US prepositioned brigade. It is defended by US power projection forces for all intensive purposes.

The Qatari Army

Qatar's small 8,500 man army has a force structure with a Royal Guard regiment, a tank battalion, four mechanized infantry battalions, a special forces company, a field artillery regiment, a mortar battalion, and an anti-tank battalion. These formations are very small, and Qatar's entire army is equivalent to about one brigade slice by the standards of most other armies.

Its equipment includes 30 obsolescent AMX-30 main battle tanks and 40 AMX-10P armored infantry fighting vehicles. It also has armored reconnaissance forces equipped with 16 VBL, 12 AMX-10RC, 8 V-150, 20 EE-9 Cascaval, and 12 obsolete Ferrets. It has 36 Piranha light armored vehicles as well as 160VAB and 30 AMX-VCI APCs. Its artillery strength consists of 28 F-3 155mm self-propelled artillery weapons, 12 towed GS 155mm artillery weapons, 4 ASTROS II multiple rocket launchers, 30 L16 81mm mortars (some on vehicles), and 15 Brant 120mm mortars. It has 48 HOT (24 on VABs) and 100 Milan anti-tank guided weapons. Its forces are equipped with rocket launchers and small arms. Land-based air defense weapons are held by the air force.

This is not a bad mix of equipment for a small force, but it includes so many different types that it presents support and sustainment problems even when based near its peacetime casernes. The Qatari Army has shown that it can project small forces, and played a small role in the Gulf War. It is, however, not capable of engaging any significant Iranian or other land force.

The Qatari Air Force

Qatar has a small 2,100-man air force with 18 combat aircraft and 19 armed helicopters. These include two fighter-attack squadrons with 6 Alpha Jets 9 Mirage 2000-5 EDA, and 3 Mirage 2000 DDA. Its attack helicopters include 11 SA342L with HOT air-to-surface missiles, and 8 Commando Mark 3 armed with Exocet anti-ship missiles. Qatar has no heavy surface-to-air missiles, but has 9 Roland 2 fire units, 24 Mistrals, and a mixture of older manportable surface-to-air missiles including Stingers, 30 Sa-7s, and 10 Blowpipe (may not be operational).

Its transport units include 2 B-707, 1 B-727, 2 Falcon 900, and one Airbus A340. Its transport and support helicopters include four Commandos.

The air force's small air units have low to moderate readiness, with reasonable pilot training for basic missions and foreign support for most ground activities.

The Qatari Navy

Qatar has a small 1,800-man navy, including its marine police force. It is headquartered at Doha and has a base at Halul Island. Its forces include three 396-ton Damsah (Combattante III) class missile patrol boats. Each is equipped with 8 MM-40 missiles and 1 76mm gun. They vessels were delivered in the early 1980s, but were refitted in 1997.

It also has 4 376-ton Barzan (British Vita) class vessels. Each is equipped with 8 Exocet MM-40s, 1 76mm gun, a six round Matral Sandral launcher carrying Mistral surface-to-air missiles, and four torpedo tubes. They have modern electronics and radars and were delivered in mid-1996. Qatar is still training their crews and bringing them to full readiness.

The navy recently purchased four DV 15 fast interceptor craft, armed with unknown machine guns, from a French shipbuilder.c It has some 20 small craft, which are operated by the Marine police. Its coastal defense forces have four batteries with three quad Exocet MM-40 missile launchers.

The Military Forces of Saudi Arabia

The Saudi armed forces now dominate the Southern Gulf forces. The regular forces now total some 124,500 men, plus some 75,000 actives in the National Guard, and another 15,500 men in various paramilitary forces: Some 10,500 in the Frontier force, 4,400 in the Coast Guard, and some 500 in a special security forces. These totals do not include massive additional internal security, intelligence, and police forces in the Ministry of the Interior.

Saudi forces must now deal with two significant potential threats -- Iran and Yemen -- and must still deploy forces to cover its border with Jordan and Syria. It must defend a territory roughly the size of the US east of the Mississippi, and this mix of potential threats means that the Saudi Army cannot normally concentrate its forces to meet a single threat and must disperse its forces over much of the Kingdom. Saudi Arabia has, however, reached a full border settlement with Yemen, no longer is threatened by Iraq, and has established good diplomatic relations with Iran. As a result, the primary threat it now faces comes from internal Islamic extremists, which have been a growing problem since the Gulf War, and which became far more violent in 2003.

Saudi Arabia faces a major threat from both al Qaeda and independent extremist groups. It also has experienced increasing tension with the US over the fact 15 Saudis were involved in the terrorist attack on the US on September 11, 2001, because of a US response that often seemed harshly anti-Saudi, and because Saudi Arabia feels the US has often uncritically backed Israel in the Israel-Palestinian War. Saudi Arabia cooperated closely with the US and Britain during the Iraq War, providing extensive basing facilities and other support, but did so as quietly as possible. It also did so with the agreement that the active US Air Force combat forces, and Patriot units, based near Riyadh would leave the country after the war, which they did in the summer of 2003. A major US military assistance mission still operates in Saudi Arabia, and the US and Britain would certainly support Saudi Arabia in dealing with any threat from Iran or Yemen. Saudi Arabia and the US also now cooperate far more closely in the war on terrorism. Nevertheless, Saudi Arabia's military relations with the US are substantially less close than in the early 1990s.

Like most MENA states, Saudi Arabia faces major problems because of the massive population growth, and a failure to diversify its economy. Saudi Arabia now has a population of nearly 23 million. Its real per capita oil income dropped to $2,296 per person in 2002, versus $23,820 in 1980, in constant dollars. Saudi Arabia still has vast oil wealth, and had extremely high oil export earnings in 2003, giving it its first major budget surplus in recent years. It still, however, faces major problems in reforming its economy, already has official levels of unemployment approach 12% and disguised levels of unemployment in excess of 20%, and faces a "youth explosion" that will double the number of young men and women entering its labor force over the next two decades.

In spite of its recent high oil export earnings, Saudi Arabia has growing problems in funding both its normal civil expenditures, and the longer term investments it must make in infrastructure, energy export capabilities, and economic growth and reform. Military expenditures are a major burden on the Saudi economy, and Saudi Arabia has had to cut back significantly on its new arms orders. It still, however, continues to import significant combat equipment, including new ships, LAVs, helicopters, and munitions. Reportedly, the country is close to signing a massive contract to provide vastly increased border surveillance in an effort to restrict possible infiltration by terrorists.[ci] Saudi Arabia has allocated more than $18 billion in its budget to be spent on defense each year until at least 2007.[cii]

The Saudi Army

The Saudi Army has about 75,000 actives, an inventory of 1,055 medium tanks on-hand or in delivery, plus over 3,000 other armored vehicles, and 500 major artillery weapons. It is headquartered in Riyadh, and has five staff branches**:** G1 Personnel, G2 Intelligence and Security, GS Operations and Training, G4 Logistics, and G5 Civil and Military Affairs. It also has field commands organized into eight zones under Military Zone Commanders.

The combat strength of the Saudi Army consists of three armored brigades, five mechanized infantry brigades, one airborne brigade, and one Royal Guards regiment. It also had five independent artillery brigades and an aviation command. The Saudi Army deployed the 12th Armored Brigade and 6th Mechanized Brigade at King Faisal Military City in the Tabuk area. It deployed the 4th Armored Brigade and the 11th Mechanized Brigade at King Abdu al-Aziz Military City in the Khamis Mushayt area. It deployed the 20th Mechanized Brigade and 8th

Mechanized Brigade at King Khalid Military City near Hafr al Batin. The 10th Mechanized Brigade is deployed at Sharawrah, which is near the border with Yemen and about 150 kilometers from Zamak.

A typical Saudi armored brigade has an armored reconnaissance company, three tank battalions with 42 tanks each, two tank companies with a total of 30 tanks, three tank troops with a total of 12 tanks, a mechanized infantry battalion with 54 AIFVs/APCs, and an artillery battalion with 18 self-propelled guns. It also has an army aviation company, an engineer company, a logistic battalion, a field workshop, and a medical company. A typical Saudi mechanized brigade has an armored reconnaissance company, one tank battalions with 37-42, three mechanized infantry battalion with 54 AIFVs/APCs each, two infantry companies with a total of 33 APCs, three infantry platoons with a total of 12 APCs, and an artillery battalion with 18 self-propelled guns. It also has an army aviation company, an engineer company, a logistic battalion, a field workshop, and a medical company. It has 24 anti-tank guided weapons launchers and four mortar sections with a total of eight 81mm mortars.

The Airborne Brigade and Royal Guard Brigade are normally deployed near Riyadh. The Airborne Brigade has two parachute battalions and three Special Forces companies. The Special Forces companies report directly to Prince Sultan. The Royal Guard Brigade has three battalions, and is equipped with light armored vehicles. It reports directly to the King and is recruited from loyal tribes in the Najd. The Army also has an Army Aviation Command, which was formed in 1986, and that operated Saudi Arabia's Bell 406 armed helicopters and AH-64s. There also were security garrisons at most major Saudi cities, including Dhahran, Jeddah, and Riyadh.

This is an impressive order of battle but the Saudi Army only has around 75,000 full time actives for a force structure and equipment holdings that requires up to twice as many men. This level of manpower is adequate to man about two US division "slices," with minimal manning for combat, combat support, and service support units. In the US Army, it could support a total force with a maximum of around 600 tanks and 1,000 other armored vehicles. In practice, however, the Saudi Army's manpower must be divided into force structure has an order of battle equivalent to around three heavy divisions, and with an equipment pool at least that size. This requires more manpower than Saudi Arabia has available.

The Saudi Army's problems in expansion, planning, manpower, organization, and deployment have been compounded by the need to absorb the massive equipment build-up that took place before and after the Gulf War. The Army faces the need to operate a complex mix of equipment supplied by many nations, and then be able to operate effectively with the equipment mixes in the forces of regional allies, the USA, and Britain. The diversification of the Saudi Army's sources of army equipment has reduced its dependence on the United States, but it has also increased its training and support burden, and has raised its operations and maintenance costs.

Saudi Arabia has also made some purchases of army equipment from its major oil customers that do not serve the Army's needs. Saudi Arabia still operates three types of tanks and five different types of major armored fighting vehicles and armored personnel carriers, with an inventory of more than 20 subtypes. It has major artillery holdings from five different countries, anti-tank weapons from four, and helicopters from two. This equipment is broadly interoperable, but each additional type increases the Army's training and sustainability problems.

Saudi Arabia's unique weather, terrain, and desert warfare conditions create special demands in terms of support and sustainability. Much of the equipment the Saudi Army has purchased has required modification, or extensive changes to its original technical and logistic support plan, before it could be operated in large numbers. As a result, most new systems present major servicing and support problems, and will continue to do so until new maintenance procedures are adopted and modifications are made to failure-prone components. These problems will increase strikingly the moment the Saudi Army is force to operate away from its bases, conduct sustained maneuvers, and deal with combat damage.

Contractor support is not a substitute for uniformed Saudi combat support and service support capabilities that can deploy and fight in the field, and the Saudi Army's standardization and interoperability problems are compounded by the need to support equipment in remote and widely dispersed locations. The Saudi Army has tried to reduce such problems by creating an advanced logistic system, but some experts feel this effort has been overly ambitious and has lacked proper advisory management.

Fortunately, Saudi equipment numbers are more than adequate now that Iraq has ceased to be a threat. Saudi Arabia has an inventory of 1,055 main battle tanks and more than 300 tank transporters. Its tanks included 315 M-1A2s, 450 M-60A3s, and 290 French-made AMX-30s. About half of the AMX-30s were in storage, however, and only about 700-765 of Saudi Arabia's main battle tanks were operational. Saudi Arabia was also experiencing major problems in converting to the M-1A1 tanks and this left it with a core strength of around 380 well-manned M-60A3s, about 100-175 M-1A2s that were combat ready with good crew proficiency, and a residual force of around 160-170 AMX-30s.

Saudi Arabia has a large inventory of other mechanized armored equipment. It has roughly 2,600 armored vehicles in addition to its tanks (300 reconnaissance, 970 armored infantry fighting vehicles, and 1,900 armored personnel carriers), and has a ratio of about 27 actives per other armored vehicle. In contrast, Iran has 1,455 other armored vehicles for 325,000 actives (450,000 if the Revolutionary Guards are included), and Iraq has about 2,700 for 375,000 men. These comparisons are shown in more detail in Charts 4.10 to 4.13. The Saudi Army also has large numbers of French and US-made armored recovery vehicles, armored bridging units, and large numbers of special purpose armored vehicles

It is not possible to separate all of the Saudi Army's holdings of other armored vehicles (OAFVs) from those of the National Guard, Frontier Force, and other paramilitary forces. As of early 2002, however, the Saudi Army's holdings of armored infantry fighting and command vehicles seem to have included 400 M-2A2 Bradleys, 150 M-577A1s, and 570 AMX-10Ps, It had 300-330 AML-60, AML-90, and AML-245 reconnaissance vehicles, of which roughly 235 remained in active service.

The Saudi Army had 3,000 variants of the M-113, including 950-850 M-113A1s and M-113A2s. Saudi Arabia had 250 to 300 armored mortar carriers, including M-106A1s and M-125s. It also had 110 German UR-416s, 140 Spanish BMR-600s, and 270-290 Panhard M-3/VTT armored personnel carriers in inventory, but only 150 Panhard M-3s, however, remained in active service.

It is obvious from these totals that the Saudi Army's holdings of OAFVs include enough US-supplied equipment to provide reasonable levels of standardization for all of the Saudi army's full-time active manpower, as well as a high degree of interoperability with US forces. At the same time, the Saudi Army's total inventory of such weapons still includes far too many types of weapons bought from far too many suppliers over the years. It presents serious problems in operability, standardization and modernization. Many types are highly specialized and difficult to properly integrate into Saudi forces in small numbers. Some purchases are also the result of political efforts to give foreign suppliers a share of the Saudi market, regardless of military need. The end result is that the Saudi Army has so many different types of other armored vehicles that many are no longer in active service – or even useful as spare parts – and even the equipment which is active is still so diverse that it presents training, maintenance, logistic, maneuver, and readiness problems.

The Saudi Army has a good mix of small arms, light weaponry, and anti-tank weapons. These include massive stocks of mobile, crew-portable, and man-portable TOW, HOT, and Dragon anti-tank guided missiles. Saudi Arabia has a total of some 950 TOW launchers with some 200 TOW launchers mounted on VCC-1 armored fighting vehicles, and an additional 300 mounted on M-113A1s or other US supplied armored vehicles. It had 100 HOT launchers and 90 HOT launchers mounted on AMX-10P armored fighting vehicles. The Army also has large numbers of TOW crew-portable and roughly 1,000 Dragon man-portable anti-tank guided weapons systems.

It also has 300 Carl Gustav rocket launchers, 400 M-20 3.5" rocket launchers, thousands of M-72 LAWs, and extensive numbers of 75mm, 84mm, 90mm (100) and 106mm (300) rocket launchers and recoilless rifles. Unlike the older anti-tank guided weapons in some Gulf armies, the Saudi Army TOW-2A missiles can kill T-72A, T-72M1, T-80 and other modern tanks.

The Saudi Army has large numbers of modern artillery weapons. The Saudi Army inventory includes 60-70 Astros II multiple rocket launchers, and 110-120 M-109A1/A2 and 90 GCT 155 mm self-propelled howitzers.[ciii] The Army had 24 Model 56 and 90-100 M-101/M-102 105mm towed howitzers; and 40 FH-70 105mm towed howitzers, in storage. It had 40 M-198 and 50 M-114 155mm towed howitzers in service and 5-10 M-115 203mm towed howitzers and some other older towed weapons in storage. Its total mortar strength included over 400 120mm and

4.2" weapons, over 1,000 81-mm weapons, and large numbers of light 60mm weapons. It had 70 81mm, and 150 M-30 4.2” mortars on M-106 and M-125A1 armored vehicles, and roughly 200 81mm-120mm towed mortars.

Many Saudi artillery units, however, lack key targeting, command and control, and battle management capabilities and suffer from manpower quality, mobility, and support problems. Training is poor, and many units only shoot in serious training exercises every 1 1/2 years. The Saudi Army needs more and better ballistic computers, mobile fire control and ammunition-supply equipment, and desperately needs new target acquisition radars -- such as the AN/PPS-15A, MSTAR, or Rasit 3190B. It also needs a modern and fully integrated mix of counter battery radars and fire control systems to rapidly mass and shift fires.

The Saudi Army has limited-to-moderate ability to use artillery in maneuver and combine arms warfare, to target effectively in counter-battery fire or at targets beyond visual range, and to shift and concentrate fires. Unless the Kingdom takes combined arms and maneuver warfare far more seriously in the future than it has to date, Saudi artillery units will continue to seriously degrade the overall war fighting and defense capabilities of Saudi land forces.

Saudi Arabia has relatively large numbers of modern air defense weapons by Gulf standards. It is not easy to separate the Saudi Army's air defense assets from those in the Saudi Air Defense Force, and sources disagree over which force operates given systems. However, the Saudi Army seems to have had 17 anti-aircraft artillery batteries, and is organized and equipped to protect its maneuver forces in combat. Total Saudi holdings of short-range air defenses include 73 Crotale (Shahine) radar guided missiles on tracked armored vehicles and 19 shelter-mounted firing units, 36 AMX-30 self-propelled and 10 shelter-mounted Shahine acquisition units. Saudi Arabia also had large holdings of man-portable surface-to-air missiles. Its holdings included 700 Mistrals, some 200-500 Stingers (reporting on numbers is unusually uncertain), and 570 obsolescent Redeye man portable surface-to-air missiles. Saudi Arabia may have an unknown number of Kolomna KBM Igla (SA-16 Gimlet) weapons. Saudi Arabia bought 50 Stinger launchers and 200 Stinger missiles on an emergency basis in August 1990, and ordered additional Crotales and 700 French Mistral launchers and 1,500 missiles.

It is equally difficult to separate the Army's air defense gun holdings from those of the National Guard, but Saudi Arabia’s total holdings of light anti-aircraft weapons seems to include 10 M-42 40mm, and 92 Vulcan M-163 20mm anti-aircraft guns. It also seems to have 150 Bofors L-60/L-70 40mm and 128 Oerlikon 35mm towed guns, and possibly 15 M-117 90mm towed anti-aircraft guns.

This is a reasonable mix of air defense assets, but training and readiness levels are moderate to low. The separate Saudi Air Defense Force – which controls Saudi Arabia heavy surface-to-air missiles and fixed air defenses -- is also a relatively static force that cannot easily support the army in mobile operations. The Army’s air defense units also consist largely of independent fire units, rather than an integrated system of netted C^4I/BM capabilities, although such capabilities are planned.

Saudi Army helicopter forces are important areas for future force improvement. Much of the Saudi Army is now deployed at least 500 miles from the Kingdom's main oil facilities in the Eastern Province, although a brigade is stationed in the new King Fahd military city in the Eastern Province, and combat elements of another brigade are deployed to the new Saudi Army base at King Khalid City, near Hafr al-Batin, in 1984. For the foreseeable future, the Saudi Army will be dispersed so that much of its strength will be deployed near Saudi Arabia's borders with the angles located at Tabuk, Hafr al-Batin, and Sharurah-Khamis Mushayt. Helicopters offer a partial solution to these deployment problems. They can provide rapid concentration of force and allow Saudi Arabia to make up for its lack of experience in large-scale maneuver. These factors first led the Saudi Army to seek attack helicopters in the early 1980s.

Saudi Arabia initially experienced political problems in obtaining such helicopters from the US, and this led the Saudi Army to obtain an option to buy 88 Sikorsky-designed S-70 Blackhawk helicopters from Westland in Britain. Roughly 80 of these Westlands were to be attack helicopters equipped with TOW-2. The rest were to be configured for SAR missions. The order was divided into batches of 40 and 48 aircraft. The Gulf War changed this situation and created the political conditions in which Saudi Arabia could buy the AH-64 from the US. Saudi Arabia ordered 12 AH-64 Apache attack helicopters, 155 Hellfire missiles, 24 spare Hellfire launchers, six spare engines and associated equipment from the US.

The AH-64s began to enter Saudi service in 1993, and the Saudi Army now has a helicopter strength that includes 12 AH-64 attack helicopters, 15 Bell 406CS armed helicopters, 12 S-70A1 Sikorsky Blackhawk transport helicopters, six SA-365N medical evacuation helicopters, and 10 UL-60 Blackhawk medical evacuation and 12 UH-60 transport helicopters. The Saudi Army has had maintenance problems with its helicopter fleet, although standards seem to be much higher than in Iran and Iraq. It also tends to use helicopters more for service and medical evacuation functions than to achieve tactical mobility. This again presents problems in compensating for the dispersal of the Saudi Army and in deploying forward defenses.

The Saudi Army has the facilities, infrastructure, and equipment to support its forces in peacetime and some of its ongoing construction of facilities near Yemen may prove to be superfluous because of the improvement in Saudi-Yemeni relations. The Army has excellent support facilities, although it has progressively under funded logistic and support vehicles and equipment since the mid-1990s. Nevertheless, the Saudi Army has made major purchases of support equipment, along with the purchase of its M-1A2s and M-2A2s. It is improving its field support vehicle strength and ordered 10,000 support vehicles from the US on September 27, 1990, including 1,200 High Mobility Multipurpose Wheeled Vehicles (HMMWVs). The Saudi Army still has extensive foreign support in spite of cutbacks in foreign manpower and support contracts.

The Saudi Army has not, however, created the sustainment and support capabilities necessary to support mobile combat operations in the field. While it made progress towards converting to maneuver warfare during the Gulf War, it then reverted to a largely static and caserne-oriented pattern of peacetime behavior, and it has failed to give sustainability the same priority as firepower and mobility. The lack of standardization within the Saudi Army adds to these problems, as does excessive dependence on base facilities and foreign civilian support. So does the lack of progress in these areas in the rest of the Southern Gulf, and the lack of an effective and integrated organization for the defense of Kuwait and the Saudi border with Iraq. There are exceptions like attack helicopters and long-range artillery, but the Saudi Army needs the specialized training, organization, and manpower necessary to improve its support structure, and ability to sustain its existing forces in combat, far more than it needs more weapons.

The Saudi Army showed during the Gulf War that it could fight well against Iraqi armored forces, and the kind of threats it faces in the Gulf region. Nevertheless, the previous analysis has shown that the Saudi Army faces continuing problems in many areas. It does not have the manpower and training necessary to operate all of its new major equipment orders properly. It is also still an army that normally operates near its peacetime casernes, and which will experience serious problems in redeploying its major combat forces unless it has extensive strategic warning.

While Saudi Arabia can move a brigade set of armor relatively rapidly, it would take the Saudi Army a minimum of 7-10 days to redeploy a combat sustainable brigade to a new front. The Saudi Army does not have a single combat brigade that is now truly combat ready in terms of the ability to rapidly deploy at full strength and then sustain operations at any distance from its peacetime casernes. Every brigade has shortfalls in its active combined arms strength, usually in artillery and mechanized elements, or both. Every brigade is short with some elements of combat and service support capability.

These are issues the Saudi Army must now address in the light of the fact Iraq has ceased to be a threat. It should be possible to consolidate Saudi forces around the mission of defending against any incursions by Iran or Yemen, cut major equipment purchases and eliminate older and less capable equipment, and stress training and readiness. The Saudi Army also needs to focus on developing lighter and heavily mobile forces, and on creating special forces and counterterrorism units.

The Saudi National Guard

Saudi Arabia divides its land force manpower between the Army and the Saudi Arabian National Guard (SANG). The National Guard is the successor of the Ikhwan or White Army. It is a tribal force forged out of those tribal elements loyal to the Saud family. It was created in 1956, and was originally administered directly by the king until King Faisal appointed Prince Abdullah its commander in 1962. A year later, Abdullah requested a British Military Mission to help modernize the Guard. Since the late 1970s, however, the U.S.-Saudi Arabian National Guard Program (SANG) and US contractors have provided most of the SANG's advisory functions.[civ]

The National Guard is sometimes viewed as a counterweight to any threat from the regular military forces, and a counterbalance within the royal family to Sudairi control over the regular armed forces. Over time, however, it has become a steadily more effective internal security force, as well as a force that can provide rear area security for the Army and can help defend Riyadh. The five major current missions of the Guard are:

- Maintain security and stability within the Kingdom,
- Defend vital facilities (religious sites, oil fields),
- Provide security and a screening force for the Kingdom's borders.
- Provide a combat ready internal security force for operations throughout the Kingdom.
- Provide security for Crown Prince Abdullah and the royal family.

Estimates of the current full time strength of the National Guard differ sharply. The IISS reports it has 75,000 actives and 25,000 tribal levies in 2000. A senior US expert quoted a strength of 105,000 in February 2001. Regardless of the exact numbers, it is clear that the Guard is now far larger than it was at the time of the Gulf War, and that it has a full-time active strength approaching that of the Saudi Army.

The Guard is organized into four mechanized brigades with a fifth forming. These brigades had modern Light Armored Vehicles (LAVs), and each brigade had some 800 men each and some 360 vehicles. There were also five light infantry brigades, equipped primarily with V-150s. These forces were deployed so that there were two mechanized brigades, and another forming, near Riyadh, plus one light infantry brigade. The Western Sector had three light infantry brigades, and the Eastern sector has one mechanized and one light infantry brigade.

The Guard does not have a complex or sophisticated mix of equipment, but has chosen to standardize on some of the best wheeled armored weapons available. The Guard's forces operational forces are equipped with about 1,117 LAV light armored vehicles in its mechanized units. According to the IISS, these include 394 LAV-25s, 184 LAV-Cps, 130 LAV-Ags, 111 LAV-AT, 73 LAV-Ms, 47 LAV, plus 190 LAV support vehicles. It also has 290 V-150 Commando armored vehicles in active service in its light infantry forces, plus 810 more V-150s in storage. The Guard prefers wheeled vehicles because of their superior speed, endurance, and ease of maintenance. The Guard also had a significant number of towed artillery weapons.

The Guard is in the midst of a major modernization campaign. Saudi Arabia recently agreed to a contract that could total over $900 million to supply the Guard with replacement parts for its LAVs and APCs, as well as additional vehicles, artillery pieces, and training. The goal is for the Guard to become a modernized, 75,000-man force.[cv]

The major problem with the National Guard is that it must now adapt to more demanding security missions, to counter terrorism, and internal security operations on a far more demanding level in the past. The defeat of Iraq means there is little point in building up the Guard as a supplement to the regular army. At the same time, the growth of a serious terrorist threat, the critical importance of Saudi petroleum facilities and civil infrastructure, and the problem of securing the Yemeni border create a clear set of new and more demanding mission priorities for the Guard.

The Saudi Navy

The Saudi Navy has slowly improved its readiness and effectiveness, but still has major problems. Only its fleet on the Gulf coast, however, is regarded as making significant progress as a war fighting force. Its force on the Red Sea is seen more as a symbol than a warfighting force. Joint warfare capabilities are limited, and the Navy is not integrated into either a GGC or Saudi-US-UK concept of operations. It must also restructure is plans and capabilities to focus on Iran, now that Iraq has ceased to be a threat, and on defense of the Red Sea.

The Saudi Navy has a nominal strength of 15,500 men including 3,000 Marines. It is headquartered in Riyadh and has major bases in Jeddah, Jizan, Al-Wajh in the Red Sea, and in Jubail, Dammam, Ras al Mishab, and Ras al Ghar

in the Gulf. Its combat strength includes four Madina-class (F-2000) frigates, three Arriyad-class (F-3000S) guided-missile frigates (JDW 7 August 2002 p. 16 labeled 49), four Badr-class missile corvettes, and nine Al Siddiq-class guided missile ships. It includes 3 Dammam-class (German Jaguar) torpedo boats, 20 Naja 12 inshore fast craft, 17 Halter-type coastal patrol craft (some in the Coast Guard), and three Al Jawf (British Sandown) and four Safwa (Addriyah)-class (ex-US MSC-322 Bluebird) mine warfare ships. The Sawari-IIs are to be fitted with Oto Melara stealth 76/62 guns.[cvi]

It has four Afif-class LCU amphibious craft, 4 LCMs, two other amphibious craft, 2 10,500-ton Boraida-class (French Durance) support ships, 4 smaller support vessels, 14 tug boats, and large numbers of small patrol boats including 40 Simmoneau Type 51 inshore patrol boats. Auxiliary ships included 3 Radhwa-class ocean-going tugs, 3 Radhwa-class coastal tugs, 2 Buraida-class replenishment oilers (French Durance-class), 1 Al Riyadh royal yacht, and the Al Azizah hydrofoil yacht tender. The royal yachts are based at Dammam. Saudi Arabia is considering acquiring up to four diesel-electric submarines. Reportedly, the Saudis are looking into the Swedish Kockums Type 471, the German IKL 200, and an undetermined French submarine.[cvii]

The 3,000-man Saudi marine forces are organized into one regiment with two battalions. It initially was equipped with 140 BTR-60Ps. It is now equipped with 140 Spanish Santa Barbara SBB BMR-600 6x6 amphibious APCs. It seems to have received nearly 100 Al Fahd 8x8 Armored personnel carriers during 2001.

Saudi naval aviation is based at Al Jubail. Various sources report different holdings for Saudi naval aviation. It seems to have included 15 operational SA-565F Dauphin ASW and anti-ship missile helicopters with AS-15TT missiles, and four SA-565s equipped for the search and rescue mission. The SA-365Fs have only limited ASW capability, and are configured primarily for the surface search and attack roles. Each combat-equipped SA-365F carries four missiles and has an Agrion search/attack system. They have Crouzet MAD systems and can carry two Mark 46 torpedoes. The Saudi Navy also has 3 Westland Sea King Mark 47 ASW helicopters, and 12-21 land-based AS-332SC(B/F) Super Puma helicopters. Some reports indicate the AS-332s included 12 aircraft with Omera search radars, nine with Giat 20mm cannon, and 12 with Exocet or Sea Eagle air-to-ship missiles. Other reports indicate the AS-332s included only six transport aircraft, plus another six with Exocet air-to-ship missiles. The Saudis are pursuing the sale of ten NH 90 helicopters with anti-submarine warfare capabilities for the new Arriyad-class frigates.[cviii]

The Saudi Coast Guard has up to 4,500 men and has its main base at Azizam. Its equipment includes two large Yarmouk-class patrol boats, two fast missile attack craft with AS-15TT missiles, four large Al-Jouf-class patrol boats, two large Al Jubatel-class patrol boats, 25 Skorpion-class patrol boats, 13 other coastal patrol boats and four SRN-6, Model 4 Hovercraft, 16 Slingsby SAH 2200 Hovercraft, large numbers of inshore patrol craft, three royal yachts, three small tankers, fire fighting craft, and three tugs. Its primary mission is anti-smuggling, but it does have an internal security mission as well. [cix]

The Saudi Air Force

The Saudi Air Force is the most advanced air force in the Gulf, but it still has major defects. These defects include:

- An over-emphasis on air defense at the expense of offensive air capabilities, and particularly capabilities designed to deal with advancing Iraqi armor or the naval threat from Iran.
- A failure to develop effective joint warfare capabilities, realistic joint warfare training capabilities, and transform joint warfare doctrine in to effective war fighting plans to support the Army, National Guard, and Navy.
- A failure to develop a truly integrated air defense and war fighting capability with other Southern Gulf states.
- A failure to rapidly modernize the RSAF C^4I/SR and battle management system and to develop high capacity secure communications, and to expand the role of sensor, electronic warfare, and intelligence aircraft to support offensive and joint warfare missions.

- A lack of overall readiness, and poor aircrew and maintenance to aircraft ratios, which has forced the near-grounding of its F5s, and has severely reduced the effectiveness of its F-15s and Tornados. Since 1994, the poor leadership of the air force, the mishandling of overall training and readiness, underfunding, and poorly managed Saudisation, have brought readiness to the point of near-crisis and led to a severe increase in the Air Force's accident rate.

- A failure to modernize training to support realistic offensive and joint warfare missions.

- A decline in leadership since the Gulf War, and particularly in focusing the modernization of the RSAF on key missions. Slow promotion and turnover, coupled with corruption in the highest ranks, have compounded these problems.

The RSAF has about 18,000 men, not including another 16,000 men in the Air Defense Force. USCENTCOM estimates the Air Force's strength at a total of 16,500 men. According to one source, the RSAF's combat forces were organized into six wings with a total of 15 combat squadrons and about 259 operational first-line, fixed-wing combat aircraft, and 39 combat capable trainers. The IISS estimated that Saudi Arabia had a total inventory of about 291 active combat aircraft. The Saudi Army operates an additional force of 12 AH-64 attack helicopters, and the Navy has 21 more armed helicopters. These armed naval helicopters include 19 AS-56 helicopters, of which four are equipped for the search and rescue mission and 15 has AS-15TT anti ship missiles, six AS-332B transports, and six AS-332Bs equipped with Exocet anti-ship missiles.[cx]

Saudi Arabia's total inventory of major combat aircraft includes 71 F-15Ss, 66 F-15Cs, 18 F-15Ds, 85 Tornado IDSs (10 Tornado GR.1 recce-attack equipped), 22 Tornado ADVs, and 5 E-3A AWACS. Until recently, the RASF also had 56 F-5Es, 21 F-5Fs, 10 RF-5Es, and 14 F-5Bs. By early 2001, however, most of the F-5s were grounded and in storage. Only 14 F-5B still seem to be operational in a combat-capable training unit.[cxi]

While the Kingdom continues to upgrade its AWACS, *Defense News* has reported that Saudi Arabia and Pakistan are considering the purchase of 14 AEW&C planes based on Sweden's Saab 2000, and equipped with the Erieye radar and sensor suite by Ericsson Microwave Systems. Saudi Arabia may find this option more attractive than going to the US for a new AWACS deal. Pakistan needs AEW&C aircraft to counter the recent Indian purchase of Israeli planes, the Phalcon.[cxii]

Combat aircraft strength includes four fighter-attack squadrons, three with 85 Tornado IDS, and one with 14 F-15B/F/RFs. In theory, there were still three squadrons with 53 F-5Es, but virtually all of these aircraft were grounded. The IDS squadrons had dual-capable trainer aircraft, and 10 had a dual-mission in the reconnaissance role. These squadrons were equipped with a wide range of attack munitions, including AS-15, AS-30, AGM-45 Shrike, and AGM-65 Maverick air-to-surface missiles and the Rockeye, Sea Eagle, and Alarm air-to-ground weapons. Saudi Arabia has MQM-74C Chukar II and Banshee remotely piloted vehicles for reconnaissance and target acquisition.

The Tornado squadrons provide much of the offensive strength of the Saudi Air Force, but are configured more for bombing against fixed targets than joint warfare or operations against armor. The Tornado does, however, have superior low altitude flight performance in attack missions to the F-15S, and was specifically designed to fly nap of the earth missions, while the F-15S is subject to buffeting because of its large wing area. The Tornado also has superior air-to-surface missile armament. It can deliver the ALARM anti-radiation missile and Sea Eagle anti-ship missile while the Saudi F-15S is currently limited to the Maverick, which only has a strike range of around 10 miles. Both aircraft can deliver laser-guided bombs and self-illuminate their targets.

The RSAF has nine interceptor squadrons for defensive missions. There were five squadrons with a total of 84 F-15C/Ds (6167 F-15C and 18 F-15Ds), and more squadrons with 71 F-15Ss. F-15Ds were deployed to each F-15 squadron to perform both training and operational missions. There was one Tornado ADV squadron with 22 aircraft, which also included dual-capable trainer aircraft. Saudi fighters were equipped with modern air-to-air missiles, including AIM-9L and AIM-9P infrared guided missiles, AIM-7F Sparrow and Skyflash radar guided missiles. The RSAF is acquiring the AMRAAM air-to-air missile, which will give it substantial beyond visual range (BVR) all-weather air combat capability. Saudi F-15 fighter units are capable in the air defense role, but most aircrews now

lack adequate advanced fighter combat training. The Tornado ADS has not proved to be an effective fighter except in a stand-off missile defense role and is being shifted to other missions.

During the mid and late 1990s, the training of Saudi aircrews became weak to the point where it presented serious safety problems in advanced mission profiles, and led to a number of fatal accidents. Saudi Arabia's remaining active F-5 units present particular problems. They have poor readiness and proficiency levels and their aircraft have little combat capability. This loss of the F-5E led Saudi Arabia to obtain US permission to deploy some of its F-15s to Tabuk in western Saudi Arabia in 2003, although it had previously agreed not to do so because of Israel concerns over security. This deployment has little, if any, practical impact on Israel's security.

Saudi Arabia has been the only Southern Gulf air force with meaningful numbers of reconnaissance aircraft. Until recently, the RSAF had two aging reconnaissance squadrons with a total of 10 RF-5Es. These aircraft have reached obsolescence in terms of their sensors and survivability, however, and most are now deadlined or in storage. The 10 Tornado IDS-Rs in the fighter-ground attack force could probably perform most missions, and Saudi Arabia is acquiring reconnaissance and electronic warfare pods for its F-15s and has deployed some of this equipment.

The RSAF has an airborne early warning squadron with five E-3As. These aircraft now have Saudi crews, but the crews have shown only limited capability to manage complex air battles and the RSAF must rely on the USAF for help in such missions. The Saudi E-3As also lack adequate secure communications and data links, and need an upgrading of their software and improved electronic support measures. The remaining multipurpose squadron with 14 F-5Bs has both a training and a combat mission, but had little real operational capability. Most aircraft were "parked" and without real operational capability.

The RSAF has 25 armed Hawk Mark 65 jet trainers, and 20 armed Hawk Mark 65A jet trainers. Saudi holdings of 36 BAC-167 turboprop COIN and training aircraft were phased out of service in the late 1990s. The Hawk units were technically capable of performing COIN and light attack functions with machine guns, cannons, and rockets, as well as training missions but the combat mission training of the Hawk aircrews is limited RSAF does not plan to use them in that role. The RSAF also had 13 Cessna 172s, one Jetstream, and 50 PC-9 aircraft in training units that were not armed for combat.

The RSAF is the only Gulf air force with an effective mid-air refueling capability. Its support units included a tanker squadron with 8 KE-3A tanker/transports, and 8 KC-130H tankers. It had three transport squadrons with 38 C-130 cargo-transports (7 E, 29 H, and 2 H-30), 1 KE-3B (EW), 3 L-100-30HS hospital aircraft, and 4 CN-235s. There were also two helicopter squadrons with 22 AB-205s, 13 AB-206s, 17 AB-212s, 40 AB-41EP (SAR) and 10 AS-5323A2 (SAR). There AS-532A2 Cougar search and rescue helicopters were ordered from France in September 1996, at a cost of $590 million.[cxiii] The Royal Flight provided substantial additional airlift assets, including 2 B-747SP, 1 B-737-200, 4 Bae 125-800, two Gulfstream III, 2 Learjet 35, 4 VC-130H, and 5 utility helicopters.

Saudi Arabia has moderate but aging inventories of air munitions and spares -- a marked decline from the large inventories of cutting edge munitions and high inventories it had at the time of the Gulf War. The Kingdom has not continued to properly maintain and modernize its munitions inventory, however, and has not procured all of the air-to-ground and anti-ship ordnance it needs for joint warfare.

Up until the mid-1990s, the Saudi Air Force had excellent foreign support. There have, however, been growing financing and payment problems since the mid 1990s, and they grew worse after the "oil crash" of late 1997. Saudisation has not helped, nor has adequate use been made of the offset program. Foreign contractors have often been replaced with Saudis selected more for their contacts than their skills, and training programs for Saudis nave not enforced the proper qualification standards. Saudi air forces facilities remain excellent. No US or NATO base has sheltering or hardening equal to the Saudi bases at Dhahran and Khamis Mushayt, and similar facilities will be built at all of Saudi Arabia's main operating bases.

The Saudi Air Force's most important challenges are to improve its readiness, training, and capability for joint operations. Fortunately, Iraq's defeat has great reduced the potential threat, as has the slow rate of Iranian air modernization. As a result, Saudi Arabia has not immediate need to replace its F-5Es, or for any other form of major procurements. It can consolidate around its most advanced aircraft, creating a smaller and more effective force.

Saudi Land-based Air Defenses

The Saudi Air Defense Force had a nominal strength of 16,000 men in 2005, and some 33 surface-to-air missile batteries. Some reports indicated its total major surface-to-air missile strength included 16 Improved Hawk batteries with 128 fixed and mobile fire units, 9 Crotale batteries with 40 Crotale fire units (currently being modernized), 16 air defense batteries with 73 Shahine fire units, and 50 AMX-30SA 30 mm self-propelled guns. The IISS reported a strength 16 Improved Hawk batteries with 128 fire units, 17 air defense batteries with 68 Shahine fire units and AMX-30SA 30 mm self-propelled guns, and 73 Crotale and Shahine fire units in static positions. It reported a total inventory of 50 AMX-30 SAs, 141 Shahine launchers, and 40 Crotale launchers. It also reported 92 M-163 20mm Vulcan anti-aircraft guns and 50 AMX-30SA anti-aircraft guns, plus 70 L/70 40mm anti-aircraft guns in storage.

Most of Saudi Arabia's Shahine units were deployed in fixed locations for the defense of air bases and key targets. All of the Shahine systems have been upgraded as the result of an agreement with France signed in 1991. These units provide close-in defense capability for virtually all of Saudi Arabia's major cities, ports, oil facilities, and military bases.

Total Saudi Army holdings of man-portable surface-to-air missiles include 500-700 Mistrals, 400 Stingers, and 500 Redeyes. The number and type of antiaircraft guns currently operational is uncertain. Some reports state it has 35 35mm Oerlikon-Contraves twin AA guns with Skyguard fire control systems, 72 40mm L-70 AA guns, 53 30mm AMX-30 DCA twin antiaircraft guns, and an unknown number of 20mm Vulcan M163 guns. Other reports indicate it had had 92 M-163 Vulcan 20 mm anti-aircraft guns, 30 V-150s with Vulcan 20 mm guns, 30 towed 20 mm Vulcans, 128 35 mm AA guns, and 70 L/70 40 mm guns (most in storage).

Reports differed as to whether Saudi Arabia had two or three major operational Patriot fire units, and there was one report it had a fourth. The US deployed an additional Patriot battalion near Riyadh in 2001, and some reports indicate equipment was prepositioned for a second. Another source cites only 8 active MIM-104 fire units. There seems to be agreement that operational readiness is limited. Live fire exercises only really began to improve in the fall of 2000, and mobile operations have taken years to develop. The first mobile deployment approaching a combat exercise was a road march from Dhahran to a site near King Khalid Military City in the fall of 2000.

The Saudi Air Defense force still needs to improve its capability for joint operations with the Saudi Air Force and Army, and the fact active US air forces and army forces has left Saudi Arabia mean that it must develop far more effective Air Defense Force and Air Force capabilities to use its C4 and IS&R assets effectively. The end of an Iraqi threat greatly eases the potential burden on both the Saudi Air Force and Army, however, and Saudi IHawk and Patriot units have improved Saudi Arabia's low to high-level air defense capability along Gulf coast, while providing some defense against medium-range and theater ballistic missiles.

The Military Forces of the UAE

The UAE is a small and extremely wealthy nation. Much of this wealth is due to its position as a major oil exporter and trading nation in the lower Gulf. It is composed of seven Emirates, and while its unity has steadily improved over time, questions still exist about its unity and stability. Sheik Zayed of Abu Dhabi died on November 2, 2004. While the transition to this son, Khalifah, has been smooth, it is still unclear if Khalifah has the ability to keep Al-Nahayan family together wihle maintaining the support to the other six familes rulling the emirates. Zayed left behind 19 sons from many wives, and the competition for power between them might threaten the stability of largest emirate, Abu Dhabi, and eventually the union. Some experts have argued that Khalifah lacks the leadership skills of his father, and that he will be overshadowed by his younger half brother, Mohammad, whom his father named as deputy crown prince in 2003.[cxiv] Mohammad bin Zayed is also the Chief of Staff of the UAE Armed Forces and is competing with the crown prince of Dubai and the UAE defense minister, Mohammad bin Rashed Al-Maktoom. While the friction has been kept civil during Zayed life, it is unclear how the two Mohammads relationship develops following the passing of Zayed.

The competition within and between the families was apparent in June 2003 when the ruler of Ras Al-Khaimah replaced crown prince Khalid, who apposed the US led war in Iraq with another son. Crown prince Khalid and his

supporters refused apposed the decision and the situation almost got violence, which led the government in Abu Dhabi to send APC to protect the ruler of Ras Al-Khaimah and break up the protest.[cxv]

Like Bahrain, Qatar, and Oman, the UAE has cooperated closely with the US and Britain militarily, and it agreed to provide prepositioning facilities for a US brigade before the Iraq War. The UAE also provided facilities and some support for the US and Britain during the Iraq War, although Sheik Zayed and most of its leaders opposed the conflict.

These links to the US and Britain give it the same de facto assurance it will receive protection in the event of invasion by other Gulf states. At the same time, that does not mean it will receive military support in its dispute with Iran over Iran's seizure of full control over three islands in the Gulf that are claimed by the UAE: Abu Musa and the Greater and Lesser Tunbs. Similarly, the other GCC states have backed the UAE politically in this dispute but are not likely to risk military confrontation with Iran. There also is a history of low-level tension between the UAE, Oman, and Qatar, although such tensions seem to have largely faded in recent years. The end result is that the UAE has pursued its own military development, and not without tension among its member emirates, in spite of the formal unification of its forces.

The UAE has a small native population and has encountered political problems in its attempts to retain foreign manpower in its military. It claims to have 50,500 actives, about 30% of which are expatriates. In practice, its active manpower is significantly smaller. This is typical of the UAE's military behavior. It has very limited real-world military capabilities, but its large cash resources allow it to buy the shell of an impressive military capability that it cannot man, sustain, or transform into an effective warfighting capability.

The UAE has been a major and often over-ambitious arms importer, possessing far too little manpower to properly use all its equipment, and has little ability to organize its forces into an effective and combat ready structure, and project and sustain them at any distance. Recent purchases include 390 LeClerc main battle tanks, nearly 150 other armored vehicles, a number of combat ships, 80 F-16C/D Block 60s with advanced air and air to surface munitions, 10 AH-64s and the upgrade of 30 to the Apache-Longbow, and what may come to total over 90 Mirage 2000 fighters.

The UAE Army

The army has a claimed strength of 44,000 men, which makes it large by Southern Gulf standards. This total includes 15,000 men in the forces of Dubai, which has two brigades that are not fully integrated into the other forces. The integrated army is dominated by Abu Dhabi and includes a Royal Guard brigade, two armored brigades, three mechanized infantry brigades, and an artillery brigade. Both a number of the UAE's combat units and support units are badly understrength, and army training and readiness quality is low to moderate by regional standards. There is a large total army equipment pool, although of very mixed quality. It includes 45 aging and worn AMX-30s, 36 OF-40 Mark II, and 388 modern LeClerc main battle tanks – which are either being delivered or converted. The UAE would like to acquire 120 heavy equipment transporters (HETs) to boost the mobility of the LeClercs.[cxvi]

There are 76 Scorpion light tanks; 49 AML-90, 20 Saladin (in storage), 20 Ferret (in storage), and 24 VBL armored reconnaissance vehicles; 15 AMX-10P and 415 BMP-3 armored infantry fighting vehicles; and 750 APCs and variants: 370 Panhard M-3, 100 EE-11 Urutu, 136 AAPC, 80 VCR, and 64 Tpz-1 Fuchs. The UAE is close to placing an order for armored nuclear, biological, and chemical detecting reconnaissance vehicles. The front-runner is the Transportpanzer 1 Fuchs NBC.[cxvii] This is a very diverse mix of armor, is hard to support, and a number of vehicles are deadlined. The UAE also has 230 Milan, 25 TOW, and 50 HOT anti-tank guided weapons (a number on armored vehicles), and 250-300 Carl Gustav 84mm and 12 M-40 120mm anti-tank rocket launchers.

Artillery assets include 181 self-propelled 155mm weapons – 18 F-3, 78 G-6 and 85 M-109A3;and 90 towed weapons: 70 105mm ROF and 20 130mm Type 59. The UAE has some 76 operational multiple rocket launchers and an inventory with 18 LAU-97 70mm, 48 FIROS-25 and Type 90, and 6 Smerch 9A52 300mm weapons. The UAE has about 155 81mm and 120mm mortars. It also has 6 Scud-B surface-to-surface missile launchers. Its anti-aircraft weapons include some 20 Blowpipe and 20 Mistral light surface-to-air missiles, 42 20mm M-3VDA, and 20 30mm GCF-BMs self-propelled AA guns.

The UAE has requested the purchase of 1,000 Javeline 127mm ATGW missiles with 100 Javeline command launching units from the United States. Furthermore, the UAE Army was also interested in acquiring simulators along with training, logistical, and spare parts support. The request will be under the US' government Foreign Military Sales program. The goal is to replace the Euromissile MILAN ATGW system and the 84mm Carl Gustaf recoilless rifle systems.[cxviii]

The UAE Air Force

The air force has a claimed strength of 4,000 men, including the police air wing. It has 106 combat aircraft and 59 armed helicopters. There are three fighter ground attack squadrons with a total of 9 Mirage 2000Es, 17 Hawk 102s, 17 Hawk 63 trainers, and a reconnaissance squadron with 8 Mirage 2000 RADs. There is one fighter squadron with 27 Mirage 2000EADs, a light training attack squadron with 8 MB-326 and 5 MB-339A, and a mixed combat unit with 5 Hawk Mk 61, 4 MB-339, and 6 Mirage 2000 DAD trainers. There is a transport squadron with 14 fixed wing aircraft, including 4 C-130Hs and 4 leased IL-76s.

The UAE recently ordered an additional 33 Mirage 2000-9 and 80 F-16 Block 60s. The first F-16s the Mirages will be delivered by mid-2005. The UAE may immediately experience problems with the F-16s as the supplying company has demanded a new contract before any upgrades will be made available.[cxix] To compliment this influx of new aircraft, the air force is looking to purchase approximately 12 jet aircraft trainers to replace its older Hawk trainers. The UAE's 30 Pilatus PC-7 turboprop trainers are also earmarked for retirement, with the Swiss PC-21 the likely successor.[cxx] The UAEAF believed that its Hawk trainers are old and wanted to purchase a training aircraft that would prepared its pilots for more complicated aircrafts such as the F-16 Block 60 jets.[cxxi]

The air force wanted to acquire up to three E-2C Hawkeye 2000s to for electronic warfare and warning purposes.[cxxii] However, the UAEAF has canceled the E-2C Hawkeye deal, and is in the process of opening the bidding for an early warning system. Furthermore, the UAE is also looking for a tanker aircraft, and it was reported that the list was narrowed to the Boeing 767 tanker transport and Airbus A330 Multi Roler tanker Transport. Both Airbus and Boeing are schedueled to submit their proposals in mid-2005.[cxxiii]

Its attack helicopter assets include 5 AS-332F anti-ship helicopters with Exocet, 10 SA-342K with HOT, 7 SA-316/319 with AS-11 or AS-12s, 7 AS-565 Panther, and 30 AH-64As. The UAE bought approximately 18 CH-47 Chinook helicopters from Libya. The helicopters, which will be utilized by the special forces, but they are in dire need of a complete overhaul. They will not be operational for some time.[cxxiv] Lastly, there are 71 utility and transport helicopters.

There are two air defense brigades with a total of six battalions. These include three IHawk battalions, and three light air defense battalions with Rapier, Crotale, Mistral, RBS-70, Javelin, and Igla fire units. Reportedly, the UAE air defense commander stated that the UAE, along with the rest of the GCC, had been studying the possible deployment of both a low and high-level ballistic missile interception system. The potential provider and other specifics remain unknown. A study, due by the end of 2003, was interrupted by the Iraq war. However, it is believed that the expenses incurred by such a system would be prohibitive despite the GCC's oil revenue.[cxxv]

There also have been some improvements in C4I/BM, on February 25, 2001, the development of a joint air defense system, named Hizam Al-Tawaun (HAT), was commissioned. This system, which is linked to the GCC air defense structure, would include tacking capabilities that enable the council countries to track any airplane in their air space to help them synchronize defensive actions.

The head of the UAE Air Force, Brig. General Khalid Abu Ainnain, has introduced a proposal to improve warning of attack by missile through the deployment of S-band radars on three fronts: northern Saudi Arabia, the UAE, and Oman.[cxxvi]

Pilot training standards are good by regional standards, as are most aspects of readiness. It was reported that the Gulf Air Warfare Center at Al-Dhafa Air Base will become a training center for fighter pilots for the GCC air forces with the support of the US. The center will train fighter pilots in joint tactics and the operations of aircrafts. *Janes*

Defense Weekely has quoted Lt. General Walter Buchanan, CENTAF commander, as saying that the center will be "the flagship for the future" for the US-GCC air force cooperation.[cxxvii]

The UAE should improve strikingly in combat strength and capability once its F-16C/D Apaches and additional Mirage 2000s are delivered. The air force lacks modern AEW and AC&W assets, as well as adequate electronic warfare and maritime patrol capabilities. It has discussed buying three E-2C Hakeye early warning and air control aircraft, but it has insisted of buying the latest and most advanced US technology, and the purchase has presented problems because of the need to add special communications systems to transfer data and commands to the UAE's French-made Miraged fighters. The UAE earlier insisted on a similar hardware and software package as part of its F-16 purchase, and got it, although at a considerable extra cost. The UAE lacks the readiness, technical sophistication, and operating skills necessary to need such technology for the E-2C, but buy on the basis of "glitter factor" and prestiage and not only the basis of military need or necessity.

In a positive development, the UAE will boost the capabilities of 11 air surveillance radar systems at the cost of $23.8 million.[cxxviii] However, the lack of a true, integrated air battle management and sensor system, adequate airborne battle management, sensor, and electronic warfare systems now seriously undermines the UAE's ability to use its other air and air defense assets with maximum effectiveness.

This situation may be changing. The recently built Air Warfare Center at the Al-Dhafra Airbase could have a major impact on the military balance in the Middle East. Built by France, the US, and Britain, the facility could become the center of coalition operations for the Gulf countries, Egypt and Britain. Such missions would be limited in scope as the three countries that helped build the center would have to take part. In this manner, though a greater integration of Middle Eastern forces is likely, operations will still be dependent on the West.[cxxix]

The UAE Navy

The UAE Navy has approximately 2,500 men and is based at Abu Dhabi with facilities at Dalma, Mina Zayed. There are also facilities at Mina Rashid and Mina Jabal in Dubai, Mina Sakr in Ras al-Khaimah and Mina Khalid and Khor Fakkan in Sharjah. Its combat strength consists of two frigates, two corvettes, eight missile patrol craft, 6 coastal patrol craft, 5 amphibious craft, 2 support ships, a small naval aviation branch with 4 SA-316 Alouette , 7 AS-585 Panther, and 7 AS-332 Super Puma in ASuW role helicopters.

Its two Kortenaer class frigates are 3,630-ton Dutch vessels recommissioned and refitted in the late 1990s. They have 2X4 Harpoon launchers, and Sea Sparrow anti-air missiles. Their radars, fire control, and battle management systems are relatively modern. The crews were trained in the Netherlands and the ships are active and participate in exercises. The two Muray Jib class corvettes are 630-ton ships commissioned in the early 1990s. They have eight MM40 Exocet ship-to-ship missiles, and a 1X8 Crotale surface-to-air missile launcher, plus a helicopter hanger. They are well equipped modern ships, although they lack ASW capability. Both are active.

The UAE has two 260-ton Mubarraz class and six 2350-ton Ban Yas class missile patrol boats, with 4 MM-40 Exocet missiles each. They were delivered in the early 1980s and are operational. The Ban Yas class vessels are being modernized. The UAE is acquiring six Bayunah class missile patrol boasts with Harpoon or MM40 ship-to-ship missiles and RAM or Sigma surface-to-air missiles. There are six 175-ton gunned patrol craft, and 20 light 4-ton patrol craft. The UAE has four 850-ton LCTs, and is considering buying three more. It has three 650-ton LCUs, and is buying 12 Transportbat 43-ton ships. The Abu Dhabi Shipyards are supplying the navy with 12 Ghannatha-class amphibious troop transports. The transports can carry up to 42 personnel or can be used to deliver mines. Additionally, Abu Dhabi will deliver three landing crafts and will upgrade the Ban Yas missile boats with Block 3 Exocet 2 missiles.[cxxx] Support ships include one dividing tender and three tugs. The coast guard has 37 inshore patrol craft and 35 harbor patrol craft. The navy has placed an order for an additional 30 9.5m high-speed rigid assault boats.[cxxxi]

The UAE Navy is not capable of fleet operations without British or US support, and has little joint warfare training or readiness. It is slowly improving in training and readiness, however, and has considerable anti-surface ship firepower.

The UAE has reportedly finished the selection of four new 70mm Baynunah-class corvettes to be built by Construction Mecaniques de Normandie (CMN), a French company, and will be all delivered in 2008. The goals for these corvettes are to provide the UAE navy with the capability of patrolling their shores, intelligence gathering, anti-surface opertions, maritime interdiction, and minelaying.[cxxxii]

The ships will be able to accommodate up to 45 personnel and will afford to give support for medium size helicopters such as the AS565—operated currently by the UAE Navy. Each will be equipped with N-25XM (a fire-control radar), and Sea Giraffe Agile Multiple Beam (a 3D surveillance radar) While, the local and point area defense will be provided by Raytheon's RIM-162 Evolve SeaSparrow Missile, the infra-red search function will performed by Sagem's VIGY-EOMS electro-optical system. It is still uncertain the kind of a guided surface-to-surface weapon or mine avoidance and detection sonar the vessels will have, but space has been reserved for each system.[cxxxiii]

A radar-band electronic support measures system and a Naval Laser Warner System, NLWS310, will be provided by South Africa's Avitronics for $1.73 million on the new 4 corvettes. *Janes Defense Weekely* reported that:

> The system provides full hemispherical coverage using 90º LAS310 laster detectors for voer-lapping azimuth coverage and and LWS500 laster detector for vertical coverage and refelection cancellation. It detects direct laser energy incidence from dazzlers, deignators, range finders and command guidance pulse trains, and uses pulse-width filtering techniques to discriminate between laser sources and non-coherent sources of radiation to minimize ther risk fo a fasle alarm.[cxxxiv]

The Military Forces of Yemen

Yemen is the wild card in the Southern Gulf. In strict terms, it is not a southern Gulf power. It has coasts and islands on the Indian Ocean and Red Sea, and occupies a strategic position at the Bab el Mandab – the narrow strait that controls the entrance to the Red Sea and which every ship passing through the Suez Canal must also traverse. It does, however, share borders with Oman. While Yemen has resolved its border disputes with Oman and Saudi Arabia, there has been a long history of tension between Yemen and its neighbors. Yemen sponsored a violent Marxist insurgent movement and provided it with military support and sanctuary during the Oman's Dhofar rebellion. The Saudi-Yemeni border has a long history of clashes, and smuggling from Yemen to Saudi Arabia – including the supply of arms and explosives for Islamic terrorists – is a continuing problem.

Although Yemen is making progress towards democracy and stability, it has a long history of civil war and violence. It also has a large and rapidly growing population of over 20 million, which its economy cannot support. Only remittances from workers oversea and foreign aid allow the nation to function. This economic and demographic instability, coupled with a long history of tolerating the presence of extremist and terrorist movements when they do not directly threaten the regime, makes Yemen a potential threat to both Oman and Saudi Arabia. Yemen's economic problems have also severely limited its military development, although it has continued to import T-72 (35) and T-55 tanks (100) as well as Su-27 (14) and Mig-29 (50+) combat aircraft.

The Yemeni Army

The Yemeni army has a nominal strength of 60,000 men, many of which are two year conscripts. It has some 40,000 reserves, with little or no meaningful reserve training. Its force structure includes 8 armored brigades, 16 infantry brigades, 9 mechanized brigades, 2 airborne and commando brigades, 1 special forces brigade, a central guard force, 3 artillery brigades, and 6 air defense brigade with 4 AA gun and 1 surface-to-air missile battalions. It has 1 surface-to surface missile brigade with 12 FROG, 10 SS-21, and 6/33 Scud missiles. The operational status of most of these missiles is uncertain.

The army has a mix of a wide variety of equipment types, many of which are obsolete or worn. It has 790 main battle tanks, including 30 T-34, 450 T-54/55, 200 T-62, 50 M-60A1, and 60 T-72. Its other armored fighting vehicles include 130 reconnaissance (80 AML-90 and 50 BDRM-2), 200 AIFV (200 BMP-1/2), and 210 operational APCs out of a pool of over 700 (60 M-113s plus a mix of BTR 40, 60, and 152.) Yemen has 12 TOW, 24 Dragon,

and 35 AT-3 anti-tank guided weapons, large numbers of rocket launchers, and 75mm, 82mm, and 107mm recoil rifles. Armor and anti-armor training is limited, while armored maneuver warfare capability and sustainability are low.

Yemen has only 25 2S1 122mm self-propelled artillery weapons, plus 30 worn and obsolescent SU100 100mm assault guns. It has 310 towed artillery weapons, including 25 M-101a1 105mm; 30 M-1931/1937, 40 M-1938, and 130 D-30 122mm weapons; 60 M-46 130mm, 10 D-20 152mm, and 15 M-114 155mm weapons. It also has 36 SM-4-1 coastal defense guns. It has roughly 160-170 operational multiple rocket launchers, including 150 BM-21 122mm and 14 BM-14 140mm weapons. Yemen is capable of using artillery effectively in static massed fires, but have very limited capability to rapidly shift fires or target effectively beyond visual range. It has little or no modern fire control, counterbattery radar, and fire management capability.

It has some 302 81mm, 82mm, 107mm, 120mm, and 160mm mortars. It has several hundred AA guns include 50 M-167 and 20 M-163 20mm, 100 ZSU-23-2 and 50 ZSU-23-4 23mm, 150 M-1939 37mm, 120 S-60 57mm, and 40 KS-12 85mm weapons. It has large numbers of SA-7, Sa-9, SA-13, and Sa-14 light surface-to–air missiles. Air defense training and maneuver warfare capability is minimal to limited.

Yemen has sought ballistic missiles since the 1970s. The Soviet Union was the traditional supplier, but with its eventual break up, North Korea became the primary source. It is believed that Yemen has bought missiles and related items from North Korea for the last ten years. Most recently, Spain intercepted a North Korean ship on December 9, 2002 that was loaded with 15 complete scud missiles (possibly Scud Cs) as well as fuel and additional warheads. The shipment did not break international law, and the vessel was released after officials stated that the missiles would not be transferred to a third party. Though it is unclear exactly how many and what type of ballistic missiles Yemen possesses due to the secretive nature of their procurement and the use of many in the 1994 civil war, it is believed that it maintains a variety of weapons. It is believed that Yemen has up to 12 9k21 FROG 7-TELs, approximately 10 9P129 SS-21 TELs, around 12 9P117 TELs, and up to 75 Scud B/C missiles. Some of these weapons were delivered in the 1970's, and their effectiveness, especially in light of their performance in the 1994 civil war, is uncertain. A Russian firm has inspected many of Yemen's SS-21s, but both the results and Yemen's upgrade plans remain unknown.[cxxxv]

Yemen has large internal security forces, indicative of a country with many internal divisions and tensions. The Ministry of the Interior has some 50,000 men and there are at least 20,000 tribal levies.

The Yemeni Air Force

The Yemeni air force has a nominal strength of 4,500-5,000 men, including its air defense element. It has suffered badly from a lack of modernization and foreign support in recent years. At least 40 of its aircraft are in storage, and large numbers of the 72 aircraft counted as active combat aircraft have limited or no real operational capability. It will not be able to recover as an effective force unless it receives the MiG-29s and Su-17s said to be on order. Pilot training is limited, and Yemen lacks anything approaching a modern command and control, battle management, or air control and warning system for either its air units or land-based air defenses.

Yemen's air assets include 10 F-5E and 30 Su-20/22 attack fighters, and 16 MiG-21 and 10 MiG-29 fighters. A total of 2 F-5B and 4 Mig-21 training aircraft are said to be combat capable. It has 8 Mi-35 attack helicopters of unknown readiness and sustainability. Its transport assets include 2 AN-123, 6 An-26, 3 C-130H, 4 IL-14, and 3 IL-76, and its utility and transport helicopters include 2 AB-212, 1`4 Mi-8, and 1 AB-47

Its land based air defense units have a nominal strength of some 1,500-2,000 men. They are equipped with SA-2, SA-3, and Sa-6 heavy surface-to-air missiles, but it is unclear how many are operational or sustainable in combat and few – if any -- have been modernized to improve their resistance to jamming and detection. Yemen also has large numbers of AA guns and lighter SA-7, SA-9, SA-13, and SA-14 manportable and vehicle mounted light surface-to-air missiles, but their operational status is unknown.

The Yemeni Navy

The Yemeni Navy has 1,700 men and is based on the Indian Ocean and Red Sea at Aden and Hodeida, with smaller bases at Al Mukalla and at the islands of Perim and Socotra. It is a relatively small navy with six missile patrol boats, six minewarfare ships, one amphibious ship (LCM), and five support ships. Yemen has ordered ten additional patrol boats for the purposes of interdicting traffickers and disrupting terrorists.[cxxxvi] Readiness, training, and warfighting capabilities are minimal. Yemen is establishing a small coastguard, but it will only be capable of light patrol duties.

Two of the missile patrol boats – Osa II class vessels are probably not operational at all. A Tarantul 1 class vessel is operational, but without missiles. The Huganfen class missile patrol boats are equipped with C-801 ship-to-ship missiles, but only one is fully operational with missiles on board. One of the mine ships', a Natya class minesweeper, operational status is uncertain. At least two of the other five Yevgenya class minehunters are operational, but probably can only be used for minelaying purposes. The smaller patrol boats – two 39-ton Zhuck class, and 6 12-ton Baklan class are operational. The LCM is a new, 1,388-ton ship, delivered in 1999, and is an update of the Polnochny class. The support ships include two 165-ton LCUs dating back to the 1980s, and three modern Polish-made 221-ton LCUs.

The navy is not capable of independent operations against a regional naval power like Iran, Oman, Saudi Arabia or Egypt, but could mine the Strait of Bab el Mandab or shipping routes in the Red Sea. It could also harass shipping traffic.

[i] Richard Nield, "Steady as she goes," Middle East Economic Digest, Volume 48 No 48, November 26, 2004, pp4-6.

[ii] Richard Nield, "Steady as she goes," Middle East Economic Digest, Volume 48 No 48, November 26, 2004, pp4-6.

[iii] Brad Bourland, "Saudi Arabia's 2005 Budget; 2004 Performance." Saudi American Bank Economy Watch, December 11, 2004.

[iv] "Iran-Iraq War, 1980-1988," Global Security, Available at http://www.globalsecurity.org/military/world/war/iran-iraq.htm 01/03/2005.

[v] Riad Kahwaji, "Bahrain to Scrutinize Future Defense Buys," Defense News, February 2, 2004, p. 3.

[vi] IISS, The Military Balance, various editions; Jane's Sentinel: The Gulf States, "Iran", various editions, p. 24.

[vii] There are reports that the lighter and smaller formations in the regular army include an Airmobile Forces group created since the Iran-Iraq War, and which includes the 29th Special Forces Division, which was formed in 1993-1994, and the 55th paratroop division. There are also reports that the regular army and IRGC commando forces are loosely integrated into a corps of up to 30,000 men with integrated helicopter lift and air assault capabilities. The airborne and special forces are trained at a facility in Shiraz. These reports are not correct. Note that detailed unit identifications for Iranian forces differ sharply from source to source. It is unclear that such identifications are accurate, and now dated wartime titles and numbers are often published, sometimes confusing brigade numbers with division numbers.

[viii] No reliable data exist on the size and number of Iran's smaller independent formations.

[ix] The estimates of Iran's AFV and APC strength are based on interviews with Israeli, British and US civilian experts, and the IISS, Military Balance, "Iran"; Jane's Sentinel: The Gulf States, "Iran."

[x] Foss, Christopher, "Iran Reveals Up-Armoured Boraq Carrier," Jane's Defence Weekly, April 9, 2003, http://jdw.janes.com, Accessed January 8, 2004. Labeled 42.

[xi] Pronina, Lyubov, "U.S. Sanctions Russian Firm for Alleged Iran Sales," Defense News, September 22, 2003, p. 12. Labeled 43.

[xii] Jane's Missiles and Rockets, "Iran's Raad Cruise Missile Enters Production", by Dough Richardson.

[xiii] Jane's Defence Weekly, January 15, 2003, http://jdw.janes.com, Accessed January 8, 2004.Labeled 45.

[xiv] International Defense Review, 7/1996, pp. 23-26; Anthony H. Cordesman, Iran's Weapons of Mass Destruction, CSIS, April, 1997.

[xv] Amir Taheir, "The Mullah's Playground," Wall Street Journal, December 7, 2004, p. A10.

[xvi] This assessment draws upon a number of sources. Key sources include Global Security, "Shehab 3. Zelzal 3," http://www.globalsecurity.org/wmd/world/iran/shahab-3.htm; last Modified: November 23, 2004 - 10:57; Global Security, Shahab-4, http://www.globalsecurity.org/wmd/world/iran/shahab-4.htm, last Modified: November 23, 2004 - 10:57; Missilethreat.com, a project of the Claremont Institute, http://www.missilethreat.com/missiles/shahab-3_iran.html, accessed November 25, 2004; Missilethreat.com, "Shahab 4," Project of the Claremont Institute, http://www.missilethreat.com/missiles/shahab-4_iran.html, accessed November 25, 2004; and Federation of American Scientists, "Shahab-3/Zezal-3" Last Updated May 13, 2003 03:38:11 A.M. http://www.fas.org/nuke/guide/iran/missile/shahab-3.htm/

[xvii] Spacewar.com, "News," September 20, 2004; Haaretz, September 20, 2004

[xviii] Jane's Missiles and Rockets, "Iran Boasts Shahab-3 is in Mass Production," November 19, 2004.

[xix] Jane's Islamic Affairs Analyst, "Iran threatens to Abandon the NPT," September 29, 2004

[xx] Douglas Jehl, "Iran Reportedly Hides Work on a Long-Range Missile, New York Times, December 2, 2004.

[xxi] Douglas Jehl, "Iran is Said to Work on New Missile," International Herald Tribune, December 2, 2004, p. 7; Douglas Jehl, "Iran Reportedly Hides Work on a Long-Range Missile, New York Times, December 2, 2004.

[xxii] Jane's Missiles and Rockets, "Iran Enhances Existing Weaponry by Optimising Shahab-3 Ballistic Missile", January 20, 2004.

[xxiii] Bill Gertz, "US Told of Iranian Effort to Create Nuclear Warhead," Washington Times, December 2, 2004, p. 3.

[xxiv] Carla Anne Robbins, "As Evidence Grows of Iran's Program, US Hits Quandary," The Wall Street Journal, March 18, 2005, p.1.

[xxv] BBC News, "Cruise missile row rocks Ukraine," March 18, 2005. http://news.bbc.co.uk/go/pr/fr/-/2/hi/europe/4361505.stm 03/22/2005

[xxvi] Bill Gertz, "US Told of Iranian Effort to Create Nuclear Warhead," Washington Times, December 2, 2004, p. 3.

[xxvii] See Time, March 21, 1994, pp. 50-54, November 11, 1996, pp. 78-82. Also see Washington Post, November 21, 1993, p. A-1, August 22, 1994, p. A-17; October 28, 1994, p. A-17, November 27, 1994, p. A-30, April 11, 1997, p. A-1, April 14, 1997, p. A-1; Los Angeles Times, November 3, 1994, pp. A-1, A-12; Deutsche Presse-Agentur, April 17, 1997, 11:02; Reuters, April 16, 1997, BC cycle, April 17, 1997, BC cycle; The European, April 17, 1997, p. 13; The Guardian, October 30, 1993, p. 13, August 24, 1996, p. 16 April 16, 1997, p. 10; New York Times, April 11, 1997, p. A1; Associated Press, April 14, 1997, 18:37.

Jane's Defense Weekly, June 5, 1996, p. 15; Agence France Press, April 15, 1997, 15:13; BBC, April 14, 1997, ME/D2892/MED; Deustcher Depeschen via ADN, April 12, 1997, 0743; Washington Times, April 11, 1997, p. A22..

[xxviii] For typical reporting by officers of the IRGC on this issue, see the comments of its acting commander in chief, Brigadier General Seyyed Rahim Safavi, speaking to reporters during IRGC week (December 20-26, 1995). FBIS-NES-95-250, December 25, 1995, IRNA 1406 GMT.

[xxix] Interviews and Washington Times, May 12, 1997, p. A-13, October 11, 1997, p. A-6; Jane's Defense Weekly, June 25, 1997, p. 14, October 1, 1997, p. 19; Reuters, July 3, 1997, 0452, July 9, 1997, 1655, September 28, 1997, 0417, October 6, 1997, 1600..

[xxx]. The reader should be aware that much of the information relating to the Quds is highly uncertain and is drawn from Israeli sources. Also, however, see the article from the Jordanian publication Al-Hadath in FBIS-NES-96-108, May 27, 1996, p. 9, and in Al-Sharq Al-Awsat, FBIS-NES-96-110, June 5, 1996, pp. 1,4; A J Venter, "Iran Still Exporting Terrorism," Jane's Intelligence Review, November, 1997, pp. 511-516.

[xxxi] New York Times, May 17, 1998, p. A-15; Washington Times, May 17, 1998, p. A-13; Washington Post, May 21, 1998, p. A-29.

[xxxii] A J Venter, "Iran Still Exporting Terrorism," Jane's Intelligence Review, November, 1997, pp. 511-516.

[xxxiii] Jane's, "Iran", 29 October 2001.

[xxxiv] World Missiles Briefing, Teal Group Corporation.

[xxxv] Jane's Defense Weekly, June 25, 1997, p. 3; Associated Press, June 17, 1997, 1751; United Press, June 17, 1997, 0428; International Defense Review, 6/1996, p. 17.

[xxxvi] Jane's Fighting Ships, 2002-2003, London, Jane's Information Group, pp 336-343.

[xxxvii] Jane's Fighting Ships, 2002-2003, London, Jane's Information Group, pp 336-343.

[xxxviii] Washington Times, March 27, 1996, p. A-1.

[xxxix] Defense News, January 17, 1994, pp. 1, 29.

[xl] Jane's Fighting Ships, 2002-2003, London, Jane's Information Group, pp 336-343

[xli] Only two torpedo tubes can fire wire guided torpedoes. Defense News, January 17, 1994, pp. 1, 29.

[xlii] Jane's Fighting Ships, 2002-2003, London, Jane's Information Group, pp 336-343,

[xliii] See David Miller, "Submarines in the Gulf," Military Technology, 6/93, pp. 42-45 David Markov, "More Details Surface of Rubin's 'Kilo' Plans," Jane's Intelligence Review, May 1997, pp. 209-215.

[xliv] In addition to the sources listed at the start of this section, these assessments are based on various interviews, various editions of the IISS Military Balance; the Jaffee Center Middle East Military Balance, Jane's Sentinel: The Gulf States, "Iran;" and Jane's Defense Weekly, July 11, 1987, p. 15.

[xlv] Central Asia's Affairs, No: 3, "The Military Political Situation in the Caspian Region", by A. Kozhikhov, D. Kaliyeva

[xlvi] ibid

[xlvii] Jane's Sentinel Security Assessment-The Gulf States, Armed Forces, Iran, October 7, 2004.

[xlviii] The range of aircraft numbers shown reflects the broad uncertainties affecting the number of Iran's aircraft which are operational in any realistic sense. Many aircraft counted, however, cannot engage in sustained combat sorties in an extended air campaign. The numbers are drawn largely from interviews; Jane's Intelligence Review, Special Report No. 6, May, 1995; Jane's Sentinel - The Gulf Staffs, "Iran," various editions; the IISS, Military Balance, various editions, "Iran;" Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Dr. Andrew Rathmell, "Iran's Rearmament: How Great a Threat?," Jane's Intelligence Review, July, 1994, pp. 317-322; Jane's World Air Forces (CD-ROM).

[xlix] Wall Street Journal, February 10, 1995, p. 19; Washington Times, February 10, 1995, p. A-19.

[l] Jane's All the World's Aircraft, 2002-2003, London, Jane's Information Group, pp 259-263

[li] Hewson, Robert, "Iran's New Combat Aircraft Waits in the Wings," Jane's Defence Weekly, November 20, 2002, p. 15. Labeled 43; Jane's All the World's Aircraft, 2002-2003, London, Jane's Information Group, pp 259-263.

[lii] Jane's All the World's Aircraft, 2002-2003, London, Jane's Information Group, pp 259-263.

[liii] Periscope, Nations/Alliances/Geographic Regions/Middle East/North Africa, Plans and Programs. Labeled 69.

[liv] Reports that the IRGC is operating F-7 fighters do not seem to be correct.

[lv] Reuters, June 12, 1996, 17:33.

[lvi] Jane's Defence Weekly, "Iran Reveals Shahab Thaqeb SAM Details," September 4, 2002, http://jdw.janes.com, Accessed January 9, 2004. Labeled 44.

[lvii] Based on interviews with British, Israeli, and US experts, and Anthony H. Cordesman, Iran and Iraq: The Threat from the Northern Gulf, Boulder, Westview, 1994; Anthony H. Cordesman and Ahmed S. Hashim, Iran: the Dilemmas of Dual Containment, Boulder, Westview, 1997; IISS, Military Balance, various edtions, "Iran"; Jane's Sentinel: The Gulf States, various edtions, "Iran;" USNI Data Base; Anoushiravan Ehteshami, "Iran's National Strategy," International Defense Review, 4/1994, pp. 29-37; Military Technology, World Defense Almanac: The Balance of Military Power, Vol. XVII, Issue 1-1993, ISSN 0722-3226, pp. 139-142; and working data from the Jaffee Center for Strategic Studies; Dr. Andrew Rathmell, "Iran's Rearmament: How Great a Threat?," Jane's Intelligence Review, July, 1994, pp. 317-322; Ahmed Hashim, "The Crisis of the Iranian State," Adelphi Paper 296, London, IISS, Oxford, July 1995, pp. 7-30 and 50-70; Andrew Rathmell, The Changing Military Balance in the Gulf, London, RUSI, Whitehall Series, 1996, pp. 9-23; Michael Eisenstadt, Iranian Military Power, Capabilities and Intentions, Washington, Washington Institute, 1996, pp. 9-65; and Anoushiravan Enreshami, "Iran Strives to Regain Military Might," International Defense Review, 7/1996, pp. 22-26.

[lviii] Jane's Defense Weekly, September 4, 1996, p. 4.

[lix] Forecast International Inc, "Annual Military Spending in Middle East Projected to Rise to $55 billion" , http://www.forecast1.com/press/press99.htm 11/20/2003.

[lx] Jane's Defense Weekly, June 5, 1996, p. 15.

[lxi] Robin Hughes, "Iran Denies Shahab 4 Development," Jane's Defense Weekly, November 12, 2003, http://jdw.janes.com, 01/08/2004. Labeled 46.

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