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**Saudi Military Forces
Enter the 21st Century**

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Introduction

This draft analysis is to be circulated for comment as part of the CSIS “Saudi Arabia Enters the 21st Century Project.” It will be extensively revised before final publication.

Those interested in commenting, or in participating in the project, should contact Anthony H. Cordesman at the address shown on the cover sheet at Acordesman@aol.com.

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The CSIS “Saudi Arabia Enters the 21st Century Project”

The CSIS is undertaking a new project to examine the trends shaping the future of Saudi Arabia and its impact on the stability of the Gulf. This project is supported by the Smith Richardson Foundation and builds on the work done for the CSIS Strategic Energy Initiative, the CSIS Net Assessment of the Middle East, and the Gulf in Transition Project. It is being conducted in conjunction with a separate – but closely related -- study called the Middle East Energy and Security Project.

The project is being conducted by Anthony H. Cordesman, the Arleigh A. Burke Chair in Strategy. It uses a net assessment approach that looks at all of the major factors affecting Saudi Arabia’s strategic, political, economic, and military position and future implications of current trends. It is examining the internal stability and security of Saudi Arabia, social and demographic trends, and the problem of Islamic extremism. It is also examining the changes taking place in the Saudi economy and petroleum industries, the problems of Saudisation, changes in export and trade patterns, and Saudi Arabia’s new emphasis on foreign investment.

The assessment of Saudi Arabia’s strategic position includes a full-scale analysis of Saudi military forces, defense expenditures, arms imports, military modernization, readiness, and war fighting capability. It also, however, looks beyond the military dimension and a narrowly definition of political stability, and examine the implications of the shifts in the pattern of Gulf, changes in Saudi external relations such changes in Saudi policy towards Iran and Iraq. It examines the cooperation and tensions between Saudi Arabia and the other Southern Gulf states. It examines the implications of the conventional military build-up and creeping proliferation of weapons of mass destruction in the Gulf, the resulting changes in Saudi Arabia’s security position. It also examines the security and strategic implications of the steady expansion of Saudi Arabia’s oil, gas, and petrochemical exports.

This project is examining the succession in the Royal Family, the immediate political probabilities, and the generational changes that are occurring in the royal family and Saudi Arabia’s technocrats. At the same time, it examines the future political, economic, and social trends in Saudi Arabia, and possible strategic futures for Saudi Arabia through the year 2010.

This examination of the strategic future of Saudi Arabia includes Saudi Arabia’s possible evolution in the face of different internal and external factors -- including changes in foreign and trade policies towards Saudi Arabia by the West, Japan, and the Gulf states. Key issues affecting Saudi Arabia’s future, including its economic development, relations with other states in the region, energy production and policies, and security relations with other states will be examined as well.

A central focus of this project is to examine the implications of change within Saudi Arabia, their probable mid and long-term impacts, and the most likely changes in the nature or behavior of Saudi Arabia’s current ruling elite, and to project the possible implications for both Gulf stability and the US position in the Gulf.

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Work on the project will focus on the steady development of working documents that will be revised steadily during the coming months on the basis on outside comment. As a result, all of the material provided in this section of the CSIS web page should be regarded as working material that will change according to the comments received from policymakers and outside experts. To comment, provide suggestions, or provide corrections, please contact Anthony H. Cordesman at the CSIS at the address shown on each report, or e-mail him at Acordesman@aol.com.

Related material can be found in the “Gulf and Transition” and “ Middle East Energy and Security” sections of the CSIS Web Page at CSIS.ORG.

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VI. Saudi Military Forces

Saudi Arabia's military development presents serious problems for the Kingdom. It faces major strategic challenges from Iran and Iraq, and its strategic position may deteriorate significantly if these powers obtain major new supplies of modern conventional arms or succeed in large-scale proliferation. Saudi Arabia has made significant progress in a number of areas, but there are serious weaknesses in its army, navy, and air force. It needs to restructure its force development plans and put its modernization and sustainment funding on a sounder financial footing. It needs to forge a better approach to collective security with its Gulf allies, and create a more stable long-term security arrangement with the US and the West.

While Iran is showing growing signs of political moderation, it is still a major proliferator and continues to build up its capability to threaten Gulf shipping. It is also far too soon to know whether Iran will be a true moderate state or will seek to become the kind of military power that can intimidate or dominate its neighbors. Iraq remains a major threat, and is covertly building-up its capability to use weapons of mass destruction. If Saddam Hussein continues to survive, and sanctions weaken, Iraq is certain to rearm and acquire significant stock of chemical, biological, and possibly nuclear weapons. Saudi Arabia also faces problems with its allies. The Southern Gulf has failed to make serious progress towards collective defense, and Saudi Arabia's security ties to the US present growing problems because of the near-breakdown in the Arab-Israeli peace process and Islamic extremism in Saudi Arabia.

These external problems are compounded by the fact the Kingdom has mismanaged some aspects of its security development. It has made real progress at the tactical level, but it has failed to manage all of its equipment purchases effectively, and has sometimes overspent on the wrong equipment. When it has made the right equipment purchases, it has then failed to support many with adequate manpower management, operations and maintenance, training, and sustainability. It has failed to effective capabilities for joint action with Kuwait and to redeploy and concentrate truly combat-capable land forces to defend against Iraq. Its Army modernization program has been crippled by the slow development of its armor, artillery, and maneuver forces. It has failed to develop a more modern concept of the relative roles of the Army and National Guard. Its Air Force readiness has deteriorated to the crisis point in recent years. It has not succeeded in developing a suitable overall battle management concept for its air force and has failed to develop offensive air capabilities that match its defensive capabilities. Its Navy is making real progress, but remains small and has only limited funding priority.

None of these developments seriously threaten the Kingdom's security as long as relations with Iran continue to improve, Iraq stays weak, and the US maintains a strong military presence in the region. All of Saudi Arabia's current military problems can be corrected by focusing on the proper strategic priorities, and by giving higher priority to manpower management, and funding operations, maintenance, and sustainability. In fact, the Kingdom's motto should be "train, maintain, and sustain," not "buy, buy, buy." The Kingdom could accomplish more if it spent less on major additional equipment purchases, and shifted its resources to fund improved readiness and combat capability using existing systems. Saudi Arabia could also accomplish a great deal by slowing consolidating its current manpower, equipment, and support activity to support high priority missions. This "mission-oriented planning" would improve the Kingdom's overall military effectiveness, and reduce the strain that military spending is putting on the Saudi budget and economy.

Saudi Strategic Challenges

Table 6.1 provides a brief overview of Saudi Arabia's strategic position relative to other Gulf states, and Table 6.2 provides a detailed picture of its force strength in comparison with that of each of its neighbors. It is clear from the data in these tables that Saudi Arabia is a major military power by Gulf standards and that Saudi forces make up a great deal of the total military strength of the Gulf Cooperation Council. At the same time, it is clear that Saudi Arabia cannot hope to match the total force strength of Iran or Iraq.

The main strategic challenges Saudi Arabia faces are the need to plan its forces to deal with two major threats in the Northern Gulf, and a continuing low-level threat in the south from Yemen. In addition, it must defend the security of its imports and exports, and find ways to help ensure the security of its Southern Gulf neighbors.

Saudi relations with the US pose another strategic challenge. Saudi Arabia is caught up in the dilemma that it has no current prospect of being able to develop forces strong enough to meet its regional strategic challenges. This makes it dependent on a foreign power -- the United States. The US, however, is non-Muslim and Israel's closest ally. The US view of how to deal with the political and security issues in the Middle East often differs from that of Saudi Arabia, and a US military presence in Saudi Arabia presents problems in terms of cultural differences and a hostile reaction from those Saudis who oppose a Western presence of any kind.

At the same, the US is located half a world away from Saudi Arabia, and cannot keep its forces "over-the-horizon." It needs access to Saudi bases, as much standardized and

interoperability with Saudi forces as possible, common training, interoperable command and control systems, and some level of prepositioning. Rapid power projection is only possible with a forward presence in the Gulf, and effective coalition warfare capabilities cannot be suddenly improvised in a crisis. Furthermore, Saudi Arabia needs US support for its military modernization and joint training.

The US is not the Kingdom's only Western military partner. Saudi Arabia has turned to Britain for help in modernizing its air forces in order to help reduce its dependence on the US, and the risk that friction with Israel might lead the US Congress to limit arms transfers to the Kingdom. It has turned to France as a major supplier of naval weapons. The fact remains, however, that the US is the only country with sufficient power projection capability to deter Iran and Iraq and provide Saudi Arabia with security, and there are problems in both the British and French advisory efforts. Neither Britain nor France put the same kind of controls on their arms sales as the US does when they are conducted under the Foreign Military Sales program managed by the Department of Defense. While US FMS are not perfect – and there has been some corruption in the handling of transportation arrangements and offset programs – there is substantially more corruption and waste in non-US programs. This is particularly true of the massive Al-Yamamah program.

The lack of effective military cooperation within the Southern Gulf presents another strategic challenge and makes Saudi Arabia over-dependent on the US and the West. The Gulf Cooperation Council is nearly two decades old, but it has made little real progress in integrating and improving the war fighting capabilities of its member states. The present GCC rapid deployment force, which is stationed in Saudi Arabia near the Iraqi Saudi border, has little or no warfighting capability, and the GCC agreement in 2000 and 2001 to increase it sharply in size was largely symbolic. Countries simply agreed to assign more forces to the contingency mission. Saudi Arabia's security is heavily dependent on the security of neighbors like Bahrain, Kuwait, Oman, Qatar, and the UAE. Saudi Arabia, however, cannot provide these states with more than limited additional defense capability and they are far too weak to defend themselves.

Kuwait's weakness was demonstrated in 1990, and no improvement has taken place in that situation since the Gulf War. Bahrain and Saudi Arabia cooperate closely, but Bahrain is too small to develop a meaningful self-defense capability against Iran or Iraq and is even more dependent on the US than Saudi Arabia. Qatar presents problems in terms of political friction with both Bahrain and Saudi Arabia, and has little self-defense capability. The UAE has an ongoing dispute with Iran over the control of islands in the Gulf, and its military forces are little more than a "Potemkin village." It has large stocks of modern equipment which are not

supported by proper manning, training, and sustainment and which have little real military effectiveness. Oman is critical to ensuring the security of the Strait of Hormuz, but there are still residual tensions between Oman and Saudi Arabia and Oman lacks both the size and financial resources to compete with Iran.

Saudi planners are realistic. They fully recognize that any talk of a Gulf or Arab security structure is likely to be an exercise in political symbolism as long as these problems exist. They are fully aware that neither Egypt nor Syria has serious power projection capabilities. They know that any Iraqi rhetoric about friendship and peaceful relations cannot be trusted, and that it will be years before it will be possible to tell if Iran is truly emerging as a stable and moderate regime.

At the same time, Saudi Arabia must look beyond the current challenges posed by Iran, Iraq, and Yemen. Two major new challenges are emerging. The first is proliferation, and the growing risk that Iran and eventually Iraq will have significant numbers of long-range missiles and other delivery systems armed with chemical, biological, and nuclear weapons. This is now a creeping threat, but it means Saudi Arabia must eventually face the problem of developing suitable counterproliferation capabilities, providing missile and civil defenses, and redefining its security relationship with the US to provide a different kind of deterrence and warfighting capability.

The second is unconventional or asymmetric warfare. The terrorist attacks on the US Marine Corps barracks in Lebanon, the Saudi National Guard headquarters, and the Al-Khobar Towers; sporadic sabotage of ARAMCO facilities; and occasional Yemeni infiltration across the Saudi border illustrate the fact that Saudi Arabia may face enemies that use special forces, terrorist proxies, and other unconventional means to attack the Kingdom, which are sometimes allied with the extremist opponents of the Saudi regime. These threats are scarcely critical to the Kingdom's survival, and may diminish if Iran continues to moderate. At the same time, Saudi Arabia must consider the risk that terrorism or proxy warfare that leads to serious US casualties might undermine its security relations with the US. Further, it must consider the risk that unconventional or terrorist attacks may eventually use chemical, biological, and nuclear weapons.

Table 6.1The Size and Military Capabilities of the Gulf States in 2001

<u>Country</u>	<u>Total Active Manning</u>	<u>Total Active Army Manning</u>	<u>Tanks</u>	<u>OAFVs</u>	<u>Artillery</u>	<u>Combat Aircraft</u>	<u>Armed Helicopters</u>
Iran	513,000	475,000	1,410	1,105	3,224	304	100
Iraq	387,500	350,000	2,700	3,400	2,200	353	120
Bahrain	11,000	8,500	106	411	107	24	26
Kuwait	15,300	11,000	385	455	68	76	20
Oman	43,500	31,500	141	219	109	40	0
Qatar	11,100	8,500	44	284	44	18	12
Saudi Arabia	162,500	127,000	1,055	4,285	568	432	33
UAE	64,500	59,000	237	1,138	289	99	49
Yemen	66,300	61,000	1,030	1,290	702	89	8
Djibouti	9,600	8,000	0	31	6	0	0
Eritrea	200,000	180,000	-	-	-	-	-
Ethiopia	325,500	300,000	500	220	300	71	24
Somalia	-	-	-	-	-	-	-
Sudan	94,700	90,000	280	598	806	51	9
Turkey	639,000	525,000	4,205	2,515	4,453	440	37

Source: Adapted by Anthony H. Cordesman, CIA World Factbook and IISS, Military Balance.

The Organization and Leadership of Saudi Forces

More is involved than the challenges of pursuing the right strategy. Saudi Arabia also faces problems in the organization and leadership of its armed forces. The Kingdom faces the traditional problems all states face in organizing and commanding large military forces, and in shaping and funding the future structure of its armed forces. The Kingdom's military forces are currently divided into five major branches: the Army, the National Guard, the Navy, the Air Force, and the Air Defense Force. The size of these forces, and Saudi Arabia also has large paramilitary and internal security forces, and a small strategic missile force.

The Saudi military forces are directly under the control of King Fahd who is prime minister and commander-in-chief. Prince Abdullah, the Crown Prince and First Deputy Prime Minister is now the de facto commander, however, and also commands the National Guard. Prince Sultan, the Second Deputy Prime Minister and Minister of Defense and Aviation, is responsible for the regular armed forces. Prince Naif, the Minister of the Interior, controls the Frontier Force, Civil Defense force, and police. Prince Turki al-Faisal directs Saudi General intelligence. A number of other members of the royal family play key roles in the military. For example, Prince Abd al-Rahman, Deputy Minister of Defense and Aviation; Prince Turki bin Nasr, Deputy Commander of the Royal Saudi Air Force; and Prince Badr bin Abd al-Aziz, Deputy Commander of the National Guard.

The Saudi command structure still lacks some of the elements necessary for a modern command structure, and does not encourage combined arms operations or "jointness" in the form of close cooperation between the services. Its operations are highly personal, informal relationships often define real authority and promotion, and the Saudi royal family maintains tight control.

Many senior commanders are from families with long ties to the Saudi royal family, and many officers come from families and tribes that are traditionally loyal to the Saud family. At the same time, the level of education and experience of Saudi officers has improved strikingly since the mid-1950s -- when most officers had a traditional background. It was also more political, and a handful of officers supported Nasser and other Arab radicals while others were more interested in politics and careerism than military professionalism.

The Saudi officer corps may still have a traditional cultural background, but it is increasingly well educated and has considerable technical proficiency. The Saudi military services have evolved relatively modern headquarters and management systems, with the support

of Western advisors and technicians. As a result, there is a relatively high degree of military proficiency in many areas, particularly at the tactical level and at the junior to mid-level positions where professionalism is more important in defining power and status than political contacts and family or tribal background.

The royal family has kept a moderate profile. Some Al Sauds have been given senior command positions, but others have deliberately been given lower ranks to allow officers outside the royal family to hold command slots. Saudi Arabia still promotes for political reasons and because of nepotism. It has been slow to develop systems of rotation that retire senior officers and systems that modernize the higher levels of command. There are many good high-ranking officers, but there are also many mediocre and overcautious ones. Senior officers serve far too long, and often block the promotion of younger and more capable officers below them

Prince Sultan, the Second Deputy Prime Minister and Minister of Defense and Aviation, has made a major contribution to the Kingdom's military development, but he has not always provided the kind of leadership Saudi Arabia needs. There is no doubt that he is active, intelligent, and often supports the West. At the same time, he sometimes seems obsessed with new equipment purchases, and to have insufficient patience to deal with the manpower management, operations and maintenance, and sustainability issues that shape real-world military effectiveness. In general, he seems to find it easier to talk about strategy and make dramatic new arms buys than take the kind of hard, consistent, and systematic decisions necessary to translate strategic ideas into operational and mission-oriented capability. The end result is that Saudi arms purchases have sometimes done more to disorganize the Saudi military, and create conversion problems, than they have done to improve it.

In a speech in 1996, Prince Sultan announced plans to modernize the Saudi armed forces: "We have great plans to modernize the armed forces during the next five-year plan. The broad headlines have been made starting with the training of the individual to securing modern equipment. The sixth plan for our armed forces, which may begin next year, will be, God willing, a plan of expansion not only in purchases but in men and attracting Saudi school and university graduates."¹ Perhaps fortunately, the financial constraints imposed by low oil revenues curbed such modernization plans for the time being.

There are a number of high level Saudis, including members of the royal family, who hope that when Prince Abdullah becomes King, he will reduce Saudi new equipment buys, concentrate on military effectiveness, fund the sustainment that Army and Air Force so band minimize waste. Prince Abdullah may find this difficult because of his natural rivalry with his

half brother and putative successor. Saudi Arabia does, however, need to reshape its priorities. It needs to shift from a focus on force build-up to a focus on force effectiveness, and introduce tight top-down budget and program management.

There is a similar need for better direction and leadership in the upper echelons of the Saudi military, and for changes in command and doctrine that will make Saudi military thinking and operational plans less static, improve every aspect of force planning and management, and prune the upper levels of command. Saudi Arabia needs to move from a nation whose military forces are static and defensive in character to one with military forces that are oriented towards maneuver and speed of concentration, and joint warfare. It also needs to match its close collective security ties to the United States with much more effective efforts to developing coalition war fighting capabilities with the other Southern Gulf states -- most notably Bahrain and Kuwait.

These problems in organization and high command are compounded by the fact that Saudi Arabia has one of the most complex force postures of any developing nation, and it operates some of the most advanced military technology in the world. In several cases, this technology is more advanced than that in developed NATO countries. Furthermore, Saudi Arabia has just completed the final stages of massive infrastructure programs that have created some of the world's most modern facilities out of empty desert. It is beginning to produce its second generation of ranks with modern military training. Only a little more than generation ago most of its troops were Bedouin with only limited education and technical background.

Still, these problems need to be kept in perspective. The Saudi military forces have often been criticized by those who have little appreciation of the challenges they face and how much they have already accomplished. Saudi Arabia's military planning and management may have been imperfect, but so has that of every other country that has tried to cope with the on-going revolution in military affairs. Saudi Arabia has already overcome massive challenges in terms of manpower, infrastructure, and technology transfer. It has a very solid mix of infrastructure and existing equipment holdings to build upon, and relatively high level of overall tactical proficiency for a developing nation.

The Kingdom's basic security position is secured by its ties to the West. Iran has never fully rebuilt its conventional forces since it experienced massive losses at the end of the Iran-Iraq War. Iraq suffered a devastating defeat in the Gulf, and UN sanctions have blocked any major arms imports since the summer of 1990. Yemen's forces have been weakened by civil war, and

Yemen has had few major arms imports since the end of the Cold War. Saudi Arabia may have its problems, but it is potential enemies have had disasters.

Table 6.1Gulf Military Forces in 2001 - Part One

	<u>Iran</u>	<u>Iraq</u>	<u>Bahrain</u>	<u>Kuwait</u>	<u>Oman</u>	<u>Qatar</u>	<u>Saudi</u>	<u>UAE</u> <u>Arabia*</u>	<u>Yemen</u>
Manpower									
Total Active	545,600	429,000	11,000	15,300	43,500	11,800	162,500	64,500	66,300
Regular	420,600	429,000	11,000	15,300	37,000	11,800	105,500	64,500	66,300
National Guard & Other	125,000	0	0	0	6,500	0	57,000	0	0
Reserve	350,000	650,000	0	23,700	0	0	20,000	0	40,000
Paramilitary	40,000	50,000	10,150	5,000	4,400	0	15,500	1,100	70,000
Army and Guard									
Manpower	450,000*	375,000	8,500	11,000	31,500	8,500	127,000	59,000	61,000
Regular Army Manpower	350,000	375,000	8,500	11,000	25,000	8,500	70,000	59,000	61,000
Reserve	350,000	450,000	0	0	0	0	20,000	0	40,000
Active Main Battle Tanks									
Total Main Battle Tanks***	1,410	2,700	106	385	141	44	1,055	237	1,320
Active AIFV/Recce, Lt. Tanks	555	1,600	71	355	78	112	1,655	578(20)	650
Active APCs	550	1,800	340	100	103	172	2,630	570	640
Total APCs	550	2,000	340	140	103	172	3,440	570	640
ATGM Launchers	420+	480+	15	118	68	124+	480+	275	71
Self Propelled Artillery									
Towed Artillery	2,170	1,800	36	0	91	12	318(58)	46	452
MRLs	764+	150	9	27	0	4	60	66 (24)	220
Mortars	6,500	2,000+	18	50+	89	39	510+	135	600
SSM Launchers	46	36?	0	0	0	0	10	6	30
Light SAM Launchers									
AA Guns	1,700	5,500	24	0	26	0	10	62	442
Air Force Manpower									
Air Defense Manpower	25,000	17,000	0	0	0	0	4,000	0	0
Total Combat Aircraft									
Bombers	0	6?	0	0	0	0	0	0	0
Fighter/Attack	140	130	12	40	12	18	160	43	27
Fighter/Interceptor	114	180	12	8	0	0	191	22	16
Recce/FGA Recce	15	8	0	0	12	0	10	8	0
AEW C4/BM	0	0	0	0	0	0	5	0	
MR/MPA**	5	0	0	0	0	0	0	0	0
OCU/COIN/CCT	0	18	0	28	16	0	21	26	0
Other Combat Trainers	5	155	0	0	0	0	50	0	6
Transport Aircraft****									
Tanker Aircraft	5	2	0	0	0	0	15	0	0
Total Helicopters									
Armed Helicopters****	100	120	26	20	0	12	33	49	8
Other Helicopters****	113	380	7	12	31	6	151	47	17
Major SAM Launchers									
Light SAM Launchers	65	200	0	60	28	9	309	134	120
AA Guns	-	6,000	-	60	-	-	270	-	-

Table 6.1Gulf Military Forces in 2001 - Part Two

	<u>Iran</u>	<u>Iraq</u>	<u>Bahrain</u>	<u>Kuwait</u>	<u>Oman</u>	<u>Qatar</u>	Saudi	<u>UAE</u> <u>Arabia*</u>	<u>Yemen</u>
Total Naval Manpower	40,600*	2,000	1,000	1,800	4,200	1,800	13,500	1,500	1,800
Regular Navy	20,600	2,000	1,000	1,800	4,200	1,800	10,500	1,500	1,800
Naval Guards	20,000	0	0	0	0	0	0	0	0
Marines	2,600	-	-	-	-	-	3,000	-	-
Major Surface Combatants									
Missile	3	0	3	0	2	0	8	4	0
Other	2	1-2	0	0	0	0	0	0	0
Patrol Craft									
Missile	20	1	4	6	4	3	9	8	5
(Revolutionary Guards)	5	-	-	-	-	-	-	-	-
Other	42	5	6	5	7	4	17	9	8
Revolutionary Guards (Boats)	40	-	-	-	-	-	-	-	-
Submarines	3	0	0	0	0	0	0	0	0
Mine Vessels	7	4	0	0	0	0	7	0	6
Amphibious Ships	9	0	0	0	1	0	0	0	1
Landing Craft	17	-	4	2	4	1	8	5	2
Support Ships	25	3	5	6	5	-	7	2	2
Naval Air	2,000	-	-	-	-	-	-	-	-
Naval Aircraft									
Fixed Wing Combat	0	0	0	0	0	0	0	0	0
MR/MPA	8	0	0	0	(7)	0	0	0	0
Armed Helicopters	9	(6)	0	0	0	0	21	(8)	0
SAR Helicopters		0	0	0	0	0	4	(6)	0
Mine Warfare Helicopters	2	0	0	0	0	0	0	0	0
Other Helicopters	-	-	2	-	-	-	6	-	-

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

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

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

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

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

***** Includes in Air Defense Command

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

Saudi Military Manpower

The quality and quantity of military manpower is the most important single challenge that Saudi Arabia has faced since it first decided to create modern military forces in the 1960s, and it is a challenge that it will continue to face until well after the year 2010. Saudi Arabia can buy modern military equipment and infrastructure from other countries. It must rely on its own manpower base to make these assets effective and develop deterrent and war-fighting capabilities.

This challenge is not easy to meet. The Saudi military faces all of the problems in recruiting a suitable manpower that are faced by the Saudi civil sector. Advanced military equipment requires steadily higher levels of education and experience, and military forces require tight discipline and a strong work ethic. Military forces that rely on civilian support for routine military tasks in peacetime have no capability to perform them in war. And, it is far easier to train soldiers at the tactical level than it is to develop suitable cadres of specialists and technicians and the kind of middle to senior officers that can lead in peacetime and command in war.

Total Population and Manpower Pool

Saudi Arabia's total population is limited relative to that of its Northern Gulf neighbors, but it has reached the point where Saudi Arabia's ability to recruit and train qualified manpower should be a diminishing problem. The details of Saudi Arabia's demographics have been discussed earlier, and it has been made clear that there have long been debates over the size of Saudi Arabia's native population.

During much of the 1980s, Saudi Arabia issued figures that exaggerated its total population because it felt a higher number gave it strategic and political value in dealing with the rest of the Arab world. In 1992, however, Saudi Arabia completed a more accurate census that estimated its population at 16.9 million, with a population growth rate of 3.5% to 3.7% per year. Saudi Arabia estimated that 12.3 million residents out of this total were native Saudis, and that 6.2 million were male. The Central Department of Statistics of the Ministry of Planning estimates that the total population rose to 19.9 million in 1999, that 14.9 million were native Saudis, and that 7.5 million were native Saudi males. A total of 1.3 million of these males were in the key 15-29-year old age group.²

Western sources still differ sharply over Saudi Arabia's population, and the numbers from given sources often fluctuate unpredictably from year to year. The recent trends in CIA estimates have been relatively consistent:

- The CIA estimate for 1996 was 18 million, and it estimated that roughly 4 million of this total consisted of foreign workers.
- The estimate for 1997 was 20.1 million, with 5.2 million foreign workers.³
- The CIA estimate for 1998 indicated a population of 20.785 million, 5.244 million of which are non-nationals.⁴ The CIA estimated that 187,000 males reached age 17 each year, when they become eligible for military service.⁵
- The CIA estimate for 1999 indicated a population of 21.504 million, 5.322 million of which are non-nationals.⁶ It also estimated that 197,000 males reached age 17 each year, when they become eligible for military service.⁷
- The CIA estimate for 2000 indicated a population of 22,023,506, including 5,360,526 non-nationals (July 2000 est.), and that the population was about 90% Arab and 10% Afro-Asian. This population was extremely young, providing a high proportion of potential military manpower. Some 43% of the population was 14 years of age or less, with 4,781,695 males and 4,607,038 females. A total of 55% was in the age group from 15-64, which is normally counted as potential work force, and there were 7,093,567 males and 4,969,848 females. The CIA estimated military manpower availability at 5,786,089 in the age group from 15 to 49, and that 3,225,809 males out of this pool were fit for military service. It estimated that 221,000 males reached age 17 each year, when they become eligible for military service.⁸

The estimates of the International Institute for Strategic Studies (IISS) contrast with those of the CIA, and illustrate the uncertainties in any estimate of Saudi Arabia's population and potential military manpower:

- In 1998-1999, the IISS estimated the current total population of Saudi Arabia was 17.450 million, of which 12.74 million -- or 73% -- was native. The IISS estimated there were 1,260,000 males between the ages of 13, 1,043,000 between the ages of 18 and 22, and 1,561,000 between the ages of 23 and 32.⁹
- In 1999-2000, the IISS estimated the current total population of Saudi Arabia was 18.0 million, of which 73% was native (10% Bedouin and 6% Shi'ite), 20% was Asian, 6% was Arab, 1% was African, and less than 1% was Western. The IISS estimated there were 1,304,000 males between the ages of 13, 1,088,000 between the ages of 18 and 22, and 1,615,000 between the ages of 23 and 32.¹⁰
- In 2000-2001, the IISS estimated the current total population of Saudi Arabia was 21.7 million, of which 73% was native (10% Bedouin and 6% Shi'ite), 20% was Asian, 6% was Arab, 1% was African, and less than 1% was Western. The IISS estimated there were 1,348,000 males between the ages of 13, 1,133,000 between the ages of 18 and 22, and 1,670,000 between the ages of 23 and 32.¹¹

Regardless of which figures are correct, this is a substantial pool of manpower to draw upon, and is the largest pool of military manpower of any state in the region except Iran. Table Ten shows that Saudi Arabia's total pool of around 5.7 million men of military age compares with roughly 17.8 million males of military age in Iran, 5.6 million males of military age in Iraq, and 3.9 million males of military age in Yemen.¹²

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Manpower Problems

Saudi Arabia has not mobilized this manpower as effectively as Iran and Iraq, both of which were able to place nearly one million men under arms during the Iran-Iraq War. Saudi Arabia only had about 126,500 men in its regular forces in early 2001, plus 100,000 full time regulars in its National Guard.¹³ These totals compare with 513,000 for Iran, and with 429,000 for Iraq, which has a total population that is not that much greater than that of Saudi Arabia.¹⁴ The broader trends in Gulf military manpower levels are shown in Chart 6.1, and it is clear that Iran and Iraq's regular forces have a much larger active strength than Saudi Arabia.¹⁵

Saudi Arabia's manpower problems are changing. The Saudi military manpower base has been limited by continuing tribal and regional rivalries. Saudi Arabia has had to be cautious about recruiting from regions, such as the Hijaz, that opposed the Saudi conquest in the 1920s and 1930s, and from rival tribes. The rise of Islamic fundamentalism among the poorer and more tribal Saudis, coupled with long-standing hostility among a number of tribes and the Hijaz, have placed additional limits on the Saudi recruiting base and the groups it can conscript. As a result, the armed forces drew heavily on most of the tribal and regional groupings on which they can count for political support.

In the past, Saudi Arabia tried to compensate for these manpower problems by:

- A heavy dependence on foreign support and technicians (now around 14,000 personnel);
- Using small elements of foreign forces in key specialty and technical areas--such as combat engineers--to "fill in" the gaps in Saudi land forces. It formerly had some 10,000 Pakistani troops to fill out one brigade (the 12th Armored Brigade) at Tabuk. These Pakistani forces have not been replaced, although some contingency arrangements may exist with Egypt.¹⁶
- Selective undermanning while it builds its training and manpower base;
- Concentrating on building a fully effective air force as a first line deterrent and defense; and,
- A de facto reliance on over-the-horizon reinforcement by the US and Western allies--to deal with high-level or enduring conflicts.

The broad growth of Saudi Arabia's military-age population has eased these problems in terms of sheer demographics. The economic and unemployment problems of the 1990s, and a sharp reduction in the growth of the number of other government jobs, have also reduced the Kingdom's recruiting problems. Far more Saudis are now willing to volunteer for military service than in the past, and far more Saudi young men now apply for each vacancy in the all of the military services, and in the service economies, than can be accepted. In 2000, there were more than 2,100 qualified applicants for 300 seat in the National Guard Academy, and a Saudi Army effort to recruit 600 more enlisted men led to thousands of qualified applications.

Steady military employment has also become more important to the families of those who do serve. Some Saudi units estimate, for example, that every enlisted man now supports an average of 11 dependents. Although most Saudi recruits tend to make the military a career once they join (there is only about a 10-15% loss after the first full enlistment), Urbanization, labor migration, and intermarriage have also done a great deal to break down traditional tribal and regional recruiting problems. Even the National Guard now mixes Saudis from a wide range of tribes and areas in the Kingdom.

At the same time, some problems remain and new problems are arising. Saudi military forces are well paid, but the armed forces cannot compete with the civilian economy in attracting and recruiting the most educated and skilled personnel. Moreover, the regular services still over-invest in equipment at the expense of investing in men and advanced training. Recruiting has been erratic – and had to be suspended during the “oil crash” in the late 1990s at a time when Crown Prince Abdullah was also forced to freeze hiring for civil departments. As a result of funding constraints, many units are still well short of their authorized levels of manpower. The systematic underfunding of operations, maintenance, training equipment, and sustainment since the mid-1990s has also meant that Saudi officers and technicians have not gotten the exposure they need in the form of on-the-job training and work activity.

Despite the expansion of Saudi educational facilities, truly skilled manpower is at a premium. The Kingdom has steadily reduced its overall dependence on foreign manpower over time, and has accelerated this process since 1997 as part of its Saudisation policy. This Saudisation has been a mixed blessing. It has often replaced competent foreign technicians and support personnel with Saudis who are not competent to do the job. A lack of proper training and education abroad also affects armed forces that depend heavily on Western equipment, and foreign language skills are becoming a key issue. Saudi training in the US, for example, now averages about 15% of the levels in the early 1990s. Senior US advisors feel this lack of training in the US is becoming a critical problem in the Air Force and believe that the US needs to both

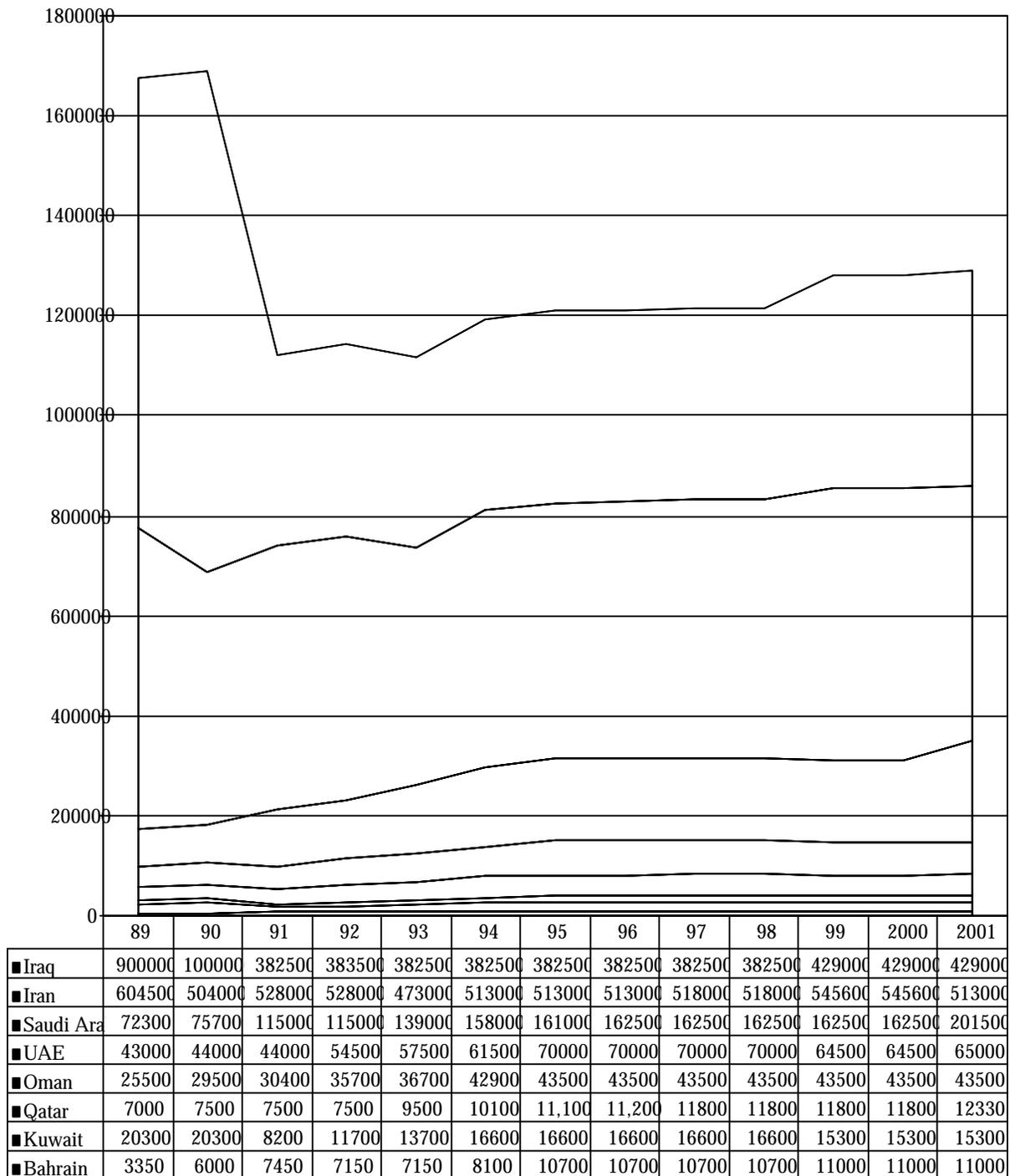
provide International Military Education and Training aid, and reduce the premiums it has charged Saudi military personnel training in the US to recognize the Kingdom's growing economic problems and encourage better language and technical training.

These problems are made much worse in the regular military services by nepotism and favoritism in hirings and promotions, and by a cultural unwillingness to insist on competence. As one Saudi general put it, "You have to understand that one of our most basic problems in training and promotion is that no Saudi officer will ever fail another Saudi officer, and that reject the son or nephew of a friend is an insult." The result is that Saudisation is sharply undercutting the quality and competence of the Saudi regular military forces, they remain over-dependent on foreign technicians and support personnel, and fewer foreign support personnel are being asked to do more and more. One long-term British military advisor put it this way: "Saudi military forces have always threatened to become a static display. Now they are threatening to become a static display with rust."

The situation in the National Guard is better for several reasons. The National Guard has become the prestige service among the more traditional elements of Saudi society. The Guard has much simpler equipment, has placed more emphasis on internal sustainment efforts. The Guard has underfunded its support contractors and has bought the support and sustainment equipment it needs. And, the Guard suffers less from poor management of support contractors, nepotism, and favoritism than the regular services.

Chart 6.1

Trends in Total Gulf Military Manpower



Source: Estimated by Anthony H. Cordesman using data from various editions of the IISS Military Balance, Jane's Sentinel, and Military Technology. Note that Saudi includes full-time active National Guard, Oman includes Royal Guard, Iran includes Revolutionary Guards, and Iraq includes Republican Guards and Special Republican Guards.

Table 6.2

Saudi Military Demographics Versus Those of Neighboring States in 2001

Country	Total Population	Males Reaching Military Age Each Year	Males Between the Ages of			Males Between 15 and 49	
			13 and 17	18 and 22	23 and 32	Total	Medically Fit
Iran	65,620,000	801,000	4,587,000	3,827,000	5,771,000	17,762,000	10,546,000
Iraq	22,676,000	260,000	1,498,000	1,281,000	1,894,000	5,675,000	3,177,000
Bahrain	634,000	5,699	33,000	26,000	40,000	221,000	121,000
Kuwait	1,974,000	17,919	120,000	103,000	147,000	749,000	447,000
Oman	2,553,000	25,527	131,000	106,000	154,000	763,000	425,000
Qatar	744,000	6,471	25,000	21,000	35,000	307,000	161,000
Saudi Arabia	22,024,000	221,000	1,348,000	1,133,000	1,670,000	5,786,000	3,226,000
UAE	2,369,000	24,506	86,000	84,000	143,000	785,000	422,000
Yemen	17,479,000	234,000	974,000	788,000	1,293,000	3,936,000	2,209,000
Afghanistan	25,839,000	244,958	1,451,000	1,178,000	2,014,000	6,402,000	3,432,000
Djibouti	451,000	-	41,000	34,000	55,000	106,000	62,000
Eritrea	4,136,000	-	246,000	205,000	311,000	-	-
Ethiopia	64,117,000	687,000	3,842,000	3,083,000	4,617,000	14,184,000	7,393,000
Somalia	7,253,000	-	607,000	494,000	707,000	1,773,000	984,000
Sudan	35,080,000	386,000	1,940,000	1,644,000	2,471,000	8,144,000	5,014,000
Turkey	65,667,000	664,000	3,266,000	3,254,000	6,098,000	18,524,000	11,228,000
Egypt	68,360,000	704,000	3,634,000	3,218,000	5,067,000	18,164,000	11,767,000
Gaza	1,132,000*	-	-	-	-	-	-
Israel	5,842,000	50,348	281,000	270,000	526,000	1,499,000	1,227,000
Jordan	4,999,000	55,742	274,000	245,000	444,000	1,399,000	994,000
Lebanon	3,578,000	-	213,000	195,000	391,000	958,000	592,000
Palestinian	2,900,000*	-	163,000	140,000	233,000	-	-
Syria	16,306,000	197,000	1,042,000	853,000	1,210,000	4,221,000	2,359,000
West Bank	2,020,000*	-	-	-	-	-	-

Source: Adapted by Anthony H. Cordesman, CIA World Factbook, and IISS, Military Balance

Current and Future Saudi Military Manpower Levels

Comparative estimates of the build-up of Saudi active military manpower are shown in Chart 6.2. The build-up of total full time active manpower by service is shown in Chart 6.3. According to the IISS, Saudi Arabia had approximately 75,000 full time uniformed actives in its army in 2001, plus 15,500 in its navy, 20,000 in its air force, and 16,000 in its air defense force. It has 100,000 more full-time actives in its Royal Guards and National Guard, 10,500 in its Frontier Forces, 4,500 in its Coast Guard, and up to 500 more men in its Special Security Forces and other special units. These figures produce a maximum of about 178,000 active men, although Saudi Arabia reports another 20,000 part time levies in the National Guard – an estimate confirmed by US advisors in the Kingdom. The data in Charts 6.2 and 6.3 understates the true nature of the Saudi manpower build-up because Saudi regulars and National Guardsmen are now far more reliable and less likely to take unauthorized leave.¹⁷

The US State Department provides the following estimate of Saudi military manning, including irregulars:¹⁸

- 191,500 uniformed troops in the armed forces, including:
 - Royal Saudi Navy (RSNF)(including Marines) --- 15,500
 - Royal Saudi Air Force (RSAF) --- 20,000
 - Royal Saudi Air Defense Forces (RSADF) --- 16,000
 - Royal Saudi Land Forces (RSLF) --- 75,000
 - Reservists --- None
- Saudi Arabian National Guard (SANG):
 - Uniformed troops --- 65,000
 - Paramilitary/Irregular Troops --- 35,000
 - Total, Including Irregulars --- 226,500

These are far larger forces than Saudi Arabia maintained in the past. Its regular active forces only totaled 65,700 men before Iraq invaded Kuwait, with some 38,000 in the army, 6,000 in the Navy, an additional 1,200 marines, 16,500 in the air force, and 4,000 in the air defense

forces. The National Guard had a nominal strength of 56,000, but only 10,000 men were active, another 20,000 were assigned to the regular reserve, and 26,000 in the part-time tribal irregulars.¹⁹

A force of full time regulars under 130,000 men, however, simply is not enough active manpower to meet Saudi needs or properly fight and sustain the equipment and weapons that Saudi Arabia has already purchased for its regular forces. Saudi Arabia has a force structure equivalent to about three divisions, a navy with some 17 major surface combatants plus seven mine countermeasure vessels, an air force with 417 combat aircraft, and air defense forces with some 33 surface-to-air missile batteries. There are no magic formulas that set manpower requirements, but Saudi Arabia probably needed some 200,000-250,000 actives to make its force structure fully effective. The alternatives are to (a) increase the manpower pool, (b) re-structure its National Guard to take over some of the functions of the army, (c) shift men from the National Guard into the Army, and/or (d) abolish many of its units with older equipment.

Saudi Arabia talked about doubling its forces and expanding its total regular military forces to 200,000 men shortly after the Gulf War. Prince Sultan reiterated this goal in May 1996. He stated that, "The sixth plan for our armed forces, which may begin next year, will be, God willing, a plan of expansion not only in purchases but in men and attracting Saudi school and university graduates."²⁰ It is far from clear, however, that Saudi Arabia can reach 200,000 full time actives of reasonable quality by the year 2005, and it is virtually certain that it cannot do so with men of the proper quality. While Saudi Arabia certainly has a large enough manpower pool to draw upon, it has emphasized new equipment purchases over recruiting and training, and its budgetary problems between 1991 and 1999 led to sacrifice manpower numbers and quality in order to pay for arms imports.

Saudi Arabia also still has problems in properly educating and training its existing manpower pool. It needs to make reforms in its entire recruiting and training base to compensate for past neglect and may find it difficult to deal with these problems before 2005-2010 unless it restructures its present pattern of defense investment. One particularly serious problem is cultural. Men are selected for skilled positions, or appointments as officers, on the basis of nepotism or family contacts. This, however, does not seem to be a key problem relative to a cultural reluctance to promote on the basis of merit, and limit tours of duty.

Saudi officers are the first to say that the officer corps suffers badly because "Saudi do not fail Saudis" in training programs, and promotion often comes through seniority. One officer made a comment about the promotion process which goes against the grain of much of the

Western thinking on this issue, but which was supported by a number of other officers: “You (US observers) always ask if the royal family interferes in promotions. They are not the problem. In fact, they often force the promotion of younger and more competent officers. The problem is that no one is really selected out because they are not good enough, people stay far too long in positions at the top, and promotion is a matter of age and seniority. Our problem is not interference from Princes or outsiders. It is what we do to ourselves.”

Saudi Arabia faces fewer problems with the Saudi National Guard. The Guard does not use advanced weapons and requires less technical skills and ability to deal with advanced tactics, joint operations, and combined arms. Ironically, the Guard may be more traditional in some respects, but is more demanding in terms of performance in training and has a more merit-based promotion system. It probably has the basic manpower numbers it needs today, but it does need more trained manpower, and it will have problems obtaining all of the skilled career manpower necessary to make it fully effective as it becomes more technically sophisticated. Creating new National Guard brigades and filling out its support forces will require a further build-up of skilled manpower and any such effort would compete directly with recruiting for the regular armed forces.²¹

Some of these manpower constraints may ease during the next decade. Saudi Arabia's high population growth rate is rapidly increasing the number of eligible men, its educational system is becoming better, and younger Saudis now realize that the days of guaranteed jobs and high salaries in the civil sector are over. Military service is relatively popular, at least among young males with rural and tribal backgrounds. Saudi Arabia has begun to pay more for new entrants and the expectations of young Saudis are more modest than they were in the 1970s and 1980s. During the late 1990s, for example, unemployment among Saudi men entering the working force approached 30% and recruiting and retention improved to the point there were more qualified applicants than the National Guard could absorb.

Nevertheless, it will take a sustained and expensive recruiting drive, backed by better training and retention incentives, to give Saudi Arabia the manpower it needs. Much will also depend on popular perceptions of the threats to the Kingdom, and of the real-world value of the Saudi military in defending it. The Gulf War showed that Saudi Arabia could expand its manpower base in an emergency. It called for volunteers for the first time, expecting some 25,000 volunteers at most. It got 200,000 to 250,000. This is an indicator that Saudi Arabia can probably expand its manpower significantly in future years if it can convince Saudi youth that a military career is rewarding and that military service is really necessary to defend and help the country.²² The situation will be very different, however, if young Saudis feel the military forces

are hollow sinecures, if they do not believe they are combat effective, and if they believe the Kingdom relies on US forces to defend it, rather than on the US as a partner.

Reliance on Foreign Manpower

Reliance on foreign manpower does offer a partial solution – at least in training, rear area maintenance, and some service support roles – but it is also extremely expensive. The Kingdom has cut back steadily on such support since the early 1990s – both for cost reasons and as part of its Saudisation policies. As a result, it is difficult to make any estimate of the degree to which Saudi Arabia currently offsets its manpower shortages by the use of foreign troops and advisors. Further, the separation between formal military advisors and Western contractors is often more a matter of clothing than function.

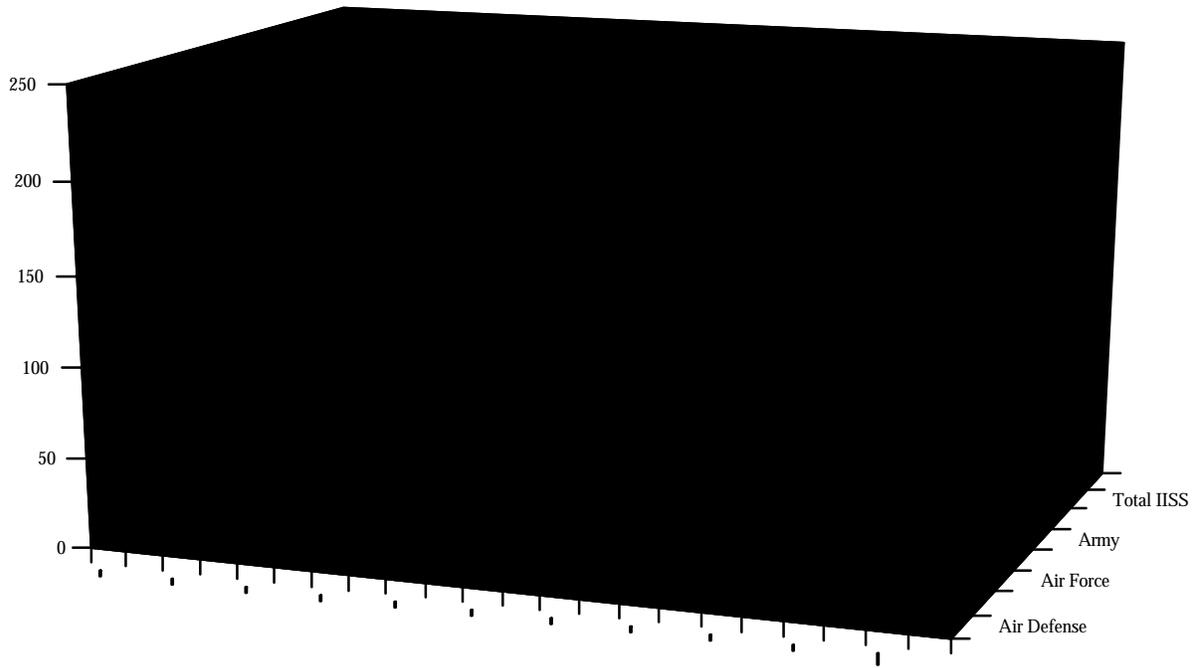
There are still significant numbers of US, British, and French military advisors, and there are still much larger numbers of Western contract personnel -- many handling critical service and support functions for Saudi Arabia's most modern weapons. There are small cadres from Brazil and other arms sellers, and at least several hundred PRC personnel servicing and operating Saudi Arabia's CSS-2 long- range surface-to-surface missiles. There are no longer Pakistani troops operating at the battalion level in the army, and one lesson the Kingdom feels it learned from the Iran-Iraq and Gulf Wars is that foreign manpower cannot be trusted to fight and that foreign contract manpower must be carefully chosen if is expected to maintain and sustain combat forces in a war where Saudi bases and facilities are at risk.²³

There are other problems in relying on foreign manpower. The use of Western manpower is increasingly sensitive because of the hostility of Islamists and Saudi nationalists. Manpower from other Arab or Islamic states is hard to train to the levels needed for skilled military jobs and hard to retain once it is trained. The Kingdom also lacks the kind of surplus funds it had in the past to buy the level of foreign contractor support it needs to perform routine force-wide functions like maintenance and training, and there is broad agreement among both Saudis and foreign support personnel that it has already had to make cuts in foreign support in areas like maintenance and training that have seriously hurt the readiness.

As a result, Saudi Arabia again has reason to examine its current force plans. The answer is not to pretend the manpower Saudi Arabia needs will somehow appear. It is rather to create a force structure that Saudi Arabia can actually man with manpower with the right training and skills, and where manning sustainment is given the same priority as combat arms.

Chart 6.2

Saudi Active Military Manning – 1980-2000
(1,000s of Personnel)



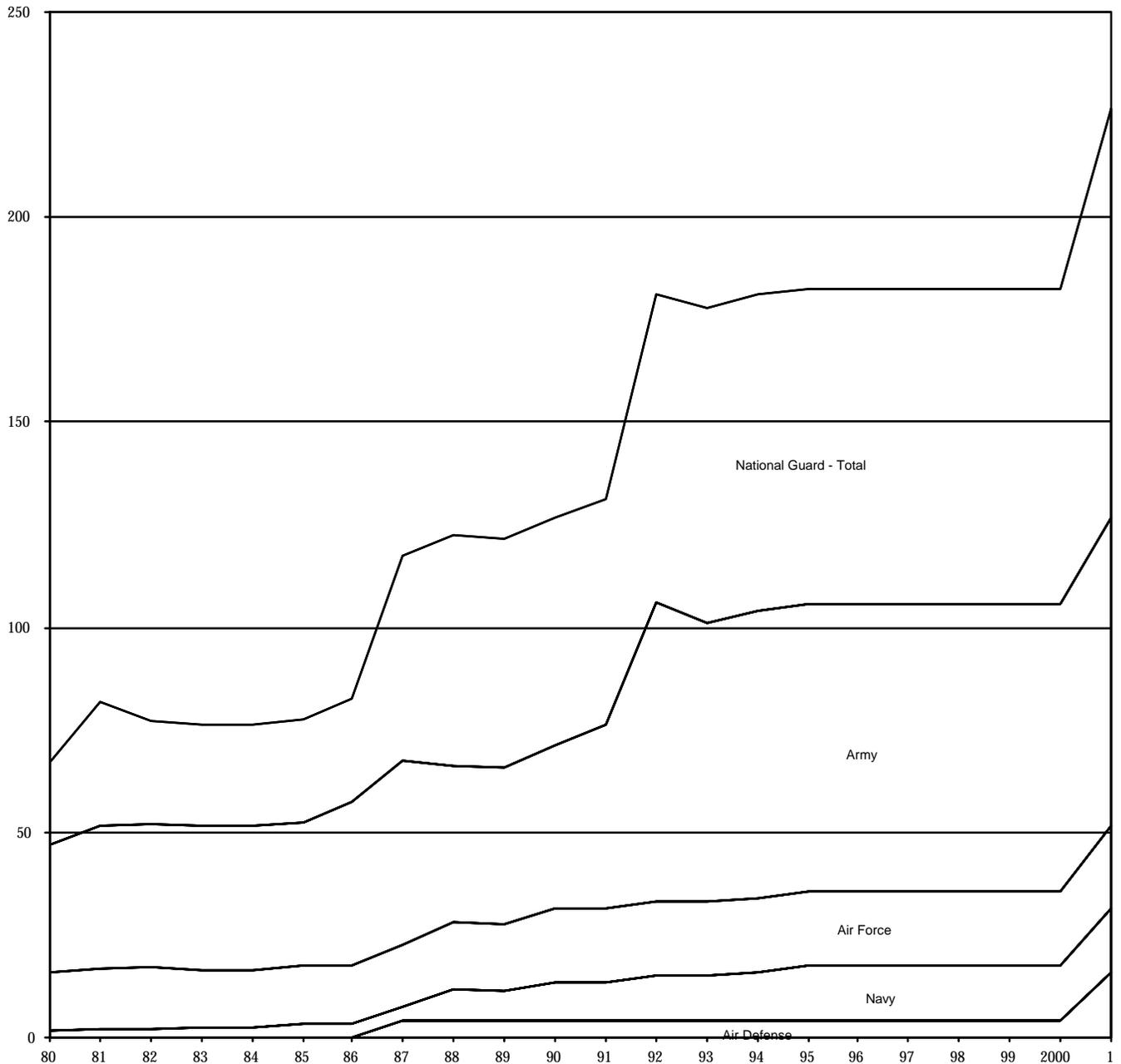
	80	81	82	84	85	86	87	89	90	91	92	93	95	96	97	98	2000	1
■ Air Defense							4	4	4	4	4	4	4	4	4	4	4	16
■ Navy	1.5	2.2	2.2	2.5	3.5	3.5	3.5	7.2	9.5	9.5	11	11	13.5	13.5	13.5	13.5	13.5	15.5
■ Air Force	14.5	14.5	15	14	14	14	15	16.5	18	18	18	18	18	18	18	18	18	20
■ National Guard -Active	8	10	10	10	10	10	10	10	35	35	55	57	57	57	57	57	57	75
■ Army	31	35	35	35	35	40	45	38	40	45	73	68	70	70	70	70	70	75
■ National Guard - Total	20	30	25	25	25	25	50	56	55	55	75	77	77	77	77	77	77	100
■ Total IISS	55	66.7	67.2	61.5	72.5	77.5	73.5	75.7	113	112	157	158	163	163	163	163	163	202
■ Total ACDA	79	79	80	80	80	80	80	82	146	191	172	172	172	164	175	-	-	

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, 1998, Bureau of Arms Control, Washington, 1999; various editions of the IISS, Military Balance, the JCSS, Military Balance in the Middle East, and material provided by US experts.

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Chart 6.3

Total Saudi Active Military Manning by Military Service – 1980-2000
 (1,000s of Personnel)



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, 1998, Bureau of Arms Control, Washington, 1999; various editions of the IISS, Military Balance, the JCSS, Military Balance in the Middle East, and material provided by US experts.

Saudi Military Expenditures

Saudi Arabia faces equally difficult challenges in terms of military spending. Uncertain oil revenues and steadily expanding civil demands for entitlements, civil investment, and energy investment have greatly reduced the ease with which the Kingdom can make expenditures on defense. At the same time, Saudi Arabia can still afford to spend far more than the other Southern Gulf states, Iran's military spending has been severely restricted by UN sanctions, and Iran's economic problems have sharply limited what Iran can spend on military forces.

Comparing Saudi Military Expenditures with Those of Other Gulf States

Chart 6.4 provides a US government comparison of Saudi military expenditures with those of other Gulf states, in constant 1997 US dollars. One thing is very clear. Saudi Arabia has spent far more on military forces than any other Gulf state, and is the only country to have sustained high levels of expenditure since the mid-1990s. A similar comparison of Saudi expenditures with those of its two main threats -- Iraq, and Iran -- is shown in Chart 6.5. An IISS estimate of more recent expenditures by Gulf states, as measured in current US dollars, is shown in Chart 6.6.

All of these charts show that Saudi military spending dwarfs that of the other Gulf states, although the comparability of the data are somewhat more uncertain than the figures provided by the US government. Since the mid-1990s, Saudi Arabia has spent almost four times as much of military forces as Iran and nearly ten times more than Iraq. It has spent roughly eight times as much as any of its Southern Gulf allies.

Chart 6.7 extends this comparison to the burden military spending imposes as a percentage of GNP and of total central government expenditures (CGE). It also shows arms imports as a percent of total imports. Saudi Arabia does not have the highest percentages in every category, and these figures are a "snapshot" for 1997 -- not an average over an extended period of time. Nevertheless, Saudi Arabia clearly has the highest overall military spending burden of any nation in the Middle East. While these estimates illustrate the extent to which Saudi Arabia has been able to buy its way out of its military problems in the past, they also show that Saudi military expenditures have placed a massive burden on the Saudi budget. Only the UAE compares with the Saudi level of effort and it has done so only in recent years.

Different Estimates of Saudi Military Expenditures and Their Burden on the Economy

There are a number different estimates of Saudi expenditures, and the burden they impose on the Saudi economy, but they agree in terms of broad pattern. Chart 6.8 shows US State Department and IISS estimates of total spending in current US dollars. Chart 6.9 shows a Saudi estimate, along with the trends in the total Saudi national budget and the trends in the GDP. The massive military and civil costs of the Gulf War emerge quite clearly in both charts, and Chart 6.9 shows that Saudi figures indicate that defense and security expenditures remain a very high percentage of the total national budget and GNP.

More recent reporting by the US State Department indicates that Saudi Arabia spent \$8.3 billion on defense during January 1 to December 31, 1999.²⁴ It notes, however, that the Saudi government does not have separate line items budgets for defense and national security. Because they do not identify them separately, defense spending includes Ministry of Interior expenditures and is therefore somewhat misleading. According to this estimate, Saudi Arabia spent 13% of its GDP and 41.65% of its national budget on military forces during this period.²⁵

The State Department estimates that 1999 defense spending was 12 percent lower than in 1998. Defense spending as a percentage of the budget increased, however, because the overall budget decrease (from \$52.3 billion in FY 1998 to \$44 billion in 1999) was greater than the decrease in the military budget. This trend reversed sharply in FY2000 because significant recovery in oil prices, beginning in April 1999. This contributed significantly to a rise in SAG budgetary spending, and the nominal GDP, as well as a moderate decrease in the 1999 budget deficit. As yet, however, the US government has not provided unclassified estimates.²⁶

It is hard to go beyond these gross numbers and assess how Saudi military expenditures are spent in detail. The Saudi budget has never fully reported all purchases of military equipment, construction, and services. Saudi Arabia does not report all of the relevant costs in its budget documents -- particularly costs relating to the purchase of foreign defense goods and services. Saudi Arabia has also often increased its defense expenditures after the budget was issued without reporting them, and has never publicly reported the actual cash flow it has spent on arms imports or on the value of the oil it has sometimes used in complex barter deals.

Additional data are available, however, on the burden that Saudi military expenditures place on the entire national budget and the economy. Chart 6.10 supplements that data provided in Chart 6.9 by providing an unclassified estimate by US government experts of how Saudi military spending in constant dollars compares with the trends in the Saudi gross national

product, central government spending, total exports, and arms imports. This chart shows that the trend patterns in US estimates do not differ radically from those of the Saudi government. It also shows that the Saudi GNP plunged after the “oil crash” that occurred in 1986, but has since grown faster than total central government expenditures and much faster than military spending and arms purchases.²⁷

Chart 6.11 highlights these same data to provide a clearer picture of how Saudi military spending competes with civil spending, and the impact of arms imports on total Saudi trade. These data also show that Saudi Arabia increased central government expenditures and military spending as a result of the Gulf War, but this increase was far smaller as a percent of total GDP than in the case of Kuwait. The burden of paying for the Gulf War -- while significant -- did not have a massive long-term impact on the Saudi economy. The level of military spending has dropped relative to total central government expenditures and the level of arms imports has not increased significantly in real dollars since the mid-1980s. At the same time, the trends in total exports shown in this reflect the major swings in oil revenues that make it so difficult for Saudi planners to bring expenditures and revenues into balance.

These trends and figures lead some Saudi and Western defense planners tend to ignore the growing limits on Saudi oil wealth when they discuss the future expansion of Saudi forces and Saudi arms purchases. Saudi Arabia’s demographic and economic problems are, however, putting growing limits on Saudi Arabia ability to simultaneously fund its economic and energy development, provide the services and grants to maintain internal economic stability, and modernize its military forces.

As Charts 6.12 to 6.14 show, the demographic pressures on the Saudi economy, a lack of economic diversification, and major unpredictable swings in oil export revenues have increasingly limited Saudi ability to fund both “guns” and “butter.” They also show that Saudi Arabia has paid exceptional costs to convert a nomadic society into one capable of operating modern armor, ships, and aircraft.

- Chart 6.12 analyzes the military spending burden as a percent of GNP and CGE. It shows military manning as a percent of 1,000s in the total population, and arms imports as a percent of total imports. As might be expected, spending as a percent of CGE shows the same upward “spike” as in Chart 6.9. At the same time, Chart 6.12 shows that the rise in oil prices and the volume of Saudi oil exports that occurred during the war help limit the increase in military spending as a percent of GNP.

- The percentages for military manpower per 1,000 in the population are interesting. They increased from a little over 5 men per 1,000 in the population before the Gulf War to around 9 per thousand in the late 1990s. On the one hand, the Saudi figures compare with well over 30 men per 1,000 in Israel and 20 in Iraq. On the other hand, Saudi military manpower per 1,000 has nearly doubled since the Iraqi invasion of Kuwait and the Saudi manpower percentages are almost exactly the same as Iran's.
- Chart 6.13 provides additional insight into a critical period in Saudi military spending – the Gulf War – and shows that the popular perception that the cost of the war to Saudi Arabia was driven by massive arms imports is completely wrong. It was the cost of Saudi aid to the US and other Gulf War coalition members, the cost of building up Saudi forces, and aid to Kuwait that drove up costs. This pattern is also shown in Chart 6.9, but more of the expenditures are shown outside the national security sector because Saudi definitions differ from those used by the US.
- Finally, Chart 6.14 shows how the pressures Saudi Arabia faces in terms of guns and butter affected the trends in per capita income and spending. The burden of military spending in per capita terms has not increased since the mid-1980s. However, the era in which Saudi Arabia had a vast surplus of per capita income relative to per capita military spending ended with the “oil crash” in 1986. Since that time, military spending has taken up a significant share of total per capita income even though it is lower in real terms.

The key message that emerges from this complex mix of trends is that Saudi Arabia does need to carefully examine the burden military spending now puts on its economy and society and to seek to reduce that spending if it can possibly do so. It also needs to accept that fact that its force structure is maturing, that the pressure on spending is for force quality and not increased force quantity, and that spending on modernization and “recapitalization” needs to be carefully balanced against manpower and sustainment. More than the oil boom is over; Saudi military development needs to transition from its “boom” days of expansion to a stable and affordable structure.

The total cost of Saudi military efforts since the early 1970s has exceeded several hundred billion dollars, even if one excludes the cost of the Gulf War. The Kingdom spent from \$14 to \$24 billion a year on defense during the later 1970s and the 1980s, although its full-time active military manpower only increased from 79,000 to 84,000. Much of this expenditure -- probably on the order of 60-65% -- was spent on infrastructure, foreign services and maintenance, and basic manpower training. Saudi Arabia had to create entire military cities, new

ports, and major road networks. It had to create modern military bases in the middle of its deserts, and pay for far more extensive training than most of the military manpower in the Third World receives.

There were good reasons for many of these costs. Saudi recruits, whether nomad or townee, had to be brought to the point where they could operate modern military equipment, and buy a pool of equipment and munitions large and modern enough to give Saudi Arabia the ability to deter Iran and Iraq. Since the mid-1980s, Saudi Arabia has been able to shift from creating basic military capabilities and infrastructure to a slower and less expensive build-up of combat capabilities. The cost of the Gulf War placed a massive new burden on the Kingdom, however, and such expenses had to take place at the cost of “butter,” and helped lead to chronic Saudi budget deficits.²⁸

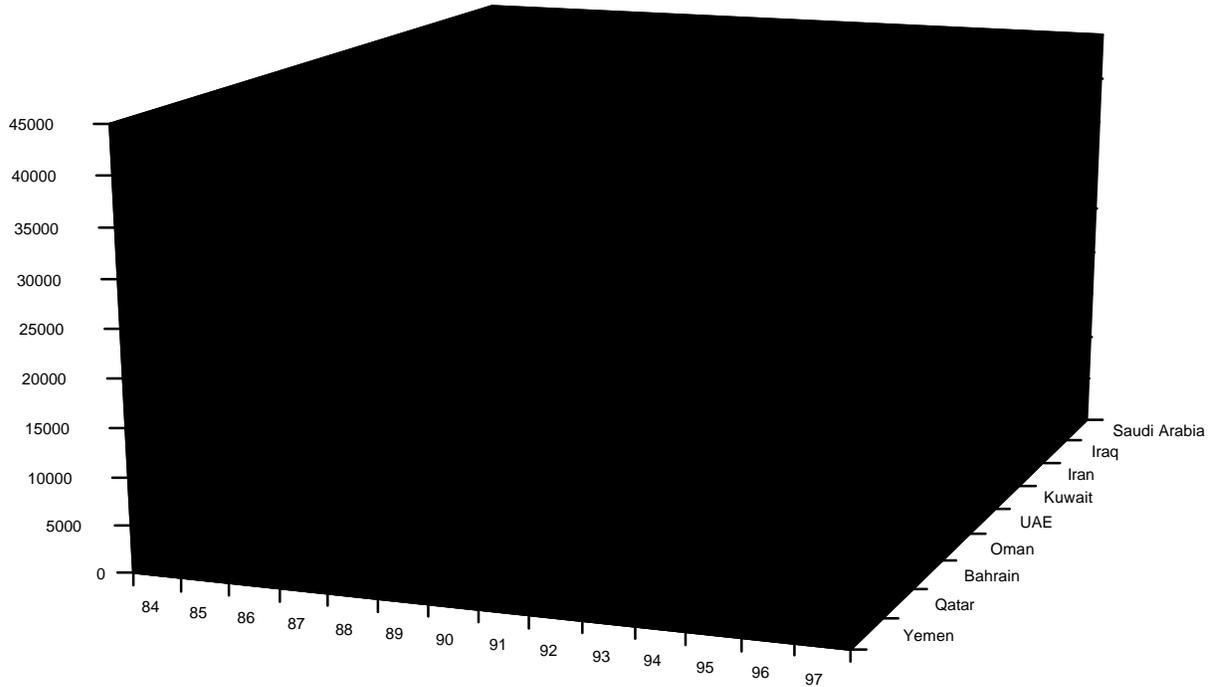
As has been discussed earlier, the Gulf War pushed Saudi military and security expenditures to the crisis level. Saudi security expenditures rose from 36% of the total national budget in 1988, and 39% in 1989, to nearly 60% in 1990 -- although any such estimate are highly dependent on exactly what aspects of the cost of Saudi support to allied military forces during the Gulf War are included. The percentage was around 70% in 1991-1992 -- including the cost of aid to allied governments during Desert Storm. It has since declined to around 30% after 1992, and has remained at the 30-40% level ever since, but there is no question that Saudi military expenditures have continued to contribute to the Saudi deficit, to limit expenditure on civil development, and limit funds for social services.²⁹

Saudi military expenditures have also been high as a percent of GDP. US estimates indicate that Saudi Arabia spent about 20% of its GDP on defense during 1983-1986. They ranged from 16% to 23% of the GNP during the 1980s, peaked at 27-29% in 1990-1992, and have since dropped to around 14%. The percentage was only about 8.5% in 1996, however, if GDP is measured in purchasing power parity.³⁰ Saudi military expenditures averaged around 40% of all central government expenditures (CGE) before the Gulf War, and rose to a peak of 60-73% during the Gulf War. They then dropped back to around 35%-40%, but this was still an exceptionally percentage for a Saudi government that must fund so large a mix of welfare, entitlement, and civil investment expenditures. At the same time, Saudi military expenditures per capita dropped at roughly the same rate as the Saudi per capita GNP. US officials estimate that Saudi expenditures accounted for approximately 40% of all Central Government Expenditures, and 14% of the GNP, in 2000.³¹

There is no way to establish a "golden rule" as to what share Saudi military and security expenditures should consume of the total budget. It is clear that the recent spending has placed an increasing strain on the Saudi budget and economy. At the same time, these percentages are not easy to cut. Saudi Arabia must spend about \$13 to \$15 billion a year, in 2001 dollars, if it is to maintain its present forces and rate of modernization. It should be noted that the military is making an effort to save some money by taking such steps as increasing its repair capabilities, which would reduce the number of spares normally required to be stockpiled while systems are enroute for overseas repair.³²

Chart 6.4

Comparative Military Expenditures of the Gulf Powers - 1984-1997
(\$97 Constant Millions)

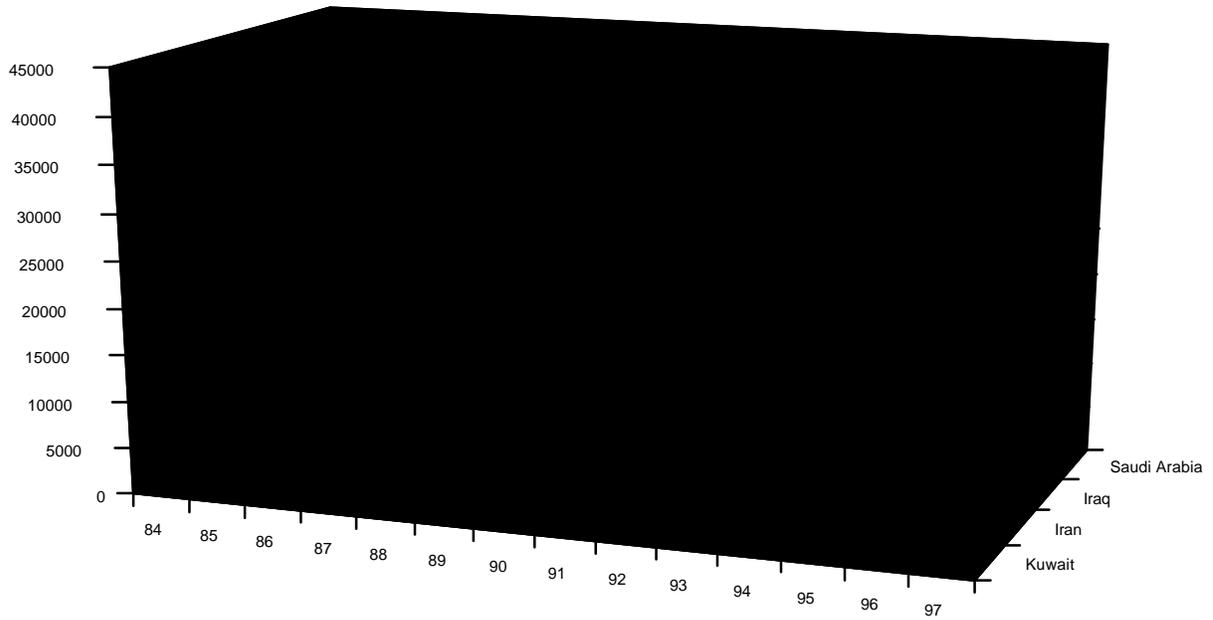


	84	85	86	87	88	89	90	91	92	93	94	95	96	97
■ Yemen	192	179	183	89	161	183	372	403	430	431	536	419	379	411
■ Qatar	109	117	113	145	119	111	209	1032	284	346	310	330	700	755
■ Bahrain	235	225	218	214	237	238	253	315	414	505	508	519	531	533
■ Oman	2911	2855	2389	2020	1710	1890	2230	1890	2230	2060	2130	2080	1940	1820
■ UAE	3000	2666	2187	2120	2010	1930	3030	5550	2330	2290	2270	2250	2250	2310
■ Kuwait	2190	2160	1768	1630	1560	2310	1520	1780	2070	3810	3190	3550	3900	2760
■ Iran	9386	1268	1532	9350	8330	6820	7160	6710	4170	4950	4770	3640	3940	4730
■ Iraq	2589	1867	2005	3500	3320	2550	2640	3500	2800	2000	1750	1750	1500	1440
■ Saudi Arabia	3050	3090	2401	2160	1720	1790	2710	4020	3880	2210	1840	1910	1880	2110

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, 1998, Bureau of Arms Control, Washington, 1999.

Chart 6.5

Comparative Military Expenditures of the High Expenditure Gulf Powers: 1983-1997
 (\$97 Constant Millions)



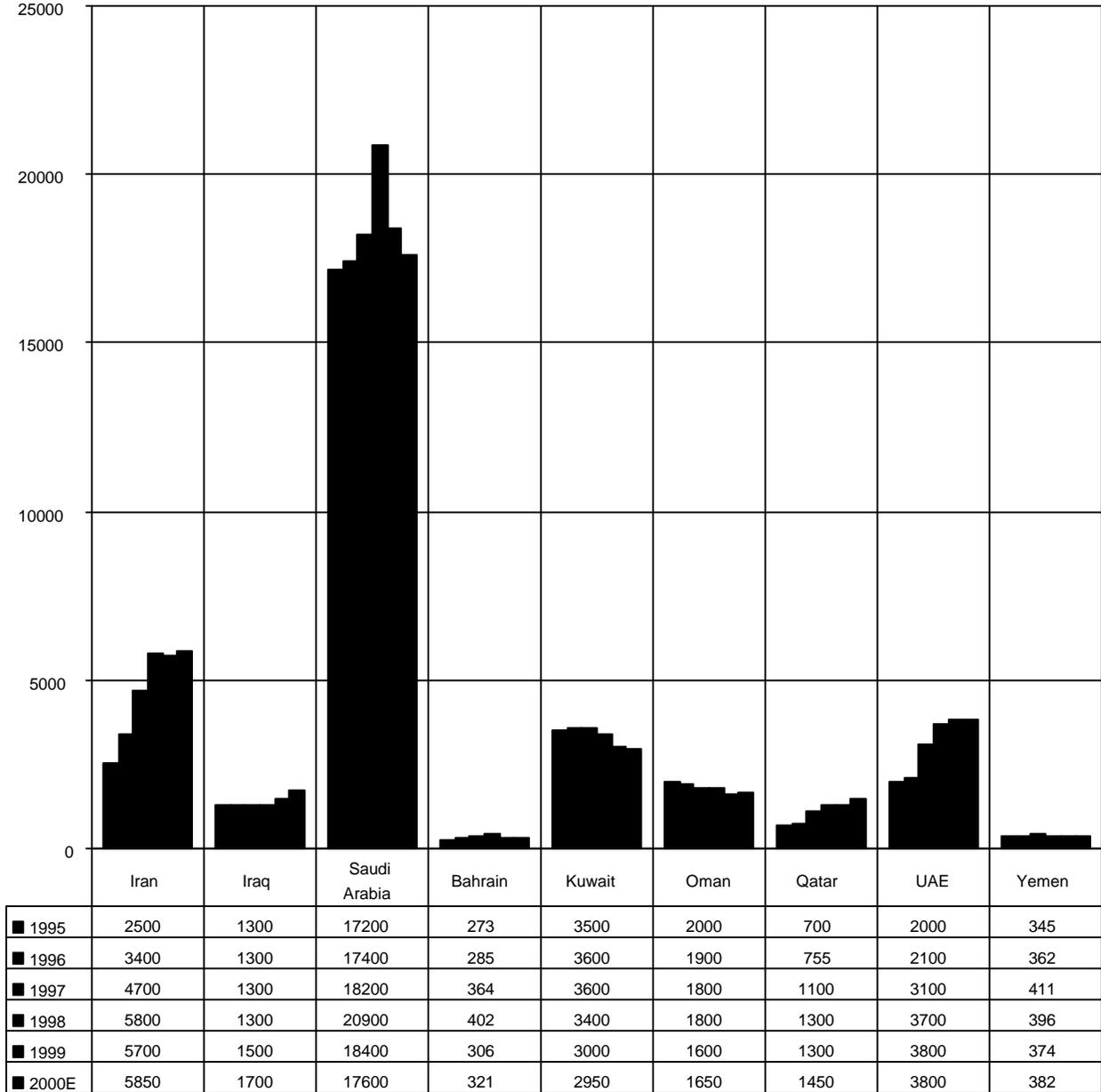
	84	85	87	88	89	90	92	93	94	95	97
■ Kuwait	2190	2160	1630	1560	2310	15200	20700	3810	3190	3550	2760
■ Iran	9386	12680	9350	8330	6820	7160	4170	4950	4770	3640	4730
■ Iraq	25890	18670	35000	33200	25500	26400	2800	2000	1750	1750	1440
■ Saudi Arabia	30500	30900	21600	17200	17900	27100	38800	22100	18400	19100	21100

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, 1998, Bureau of Arms Control, Washington, 1999.

Chart 6.6

Comparative Military Expenditures in the Gulf Region: 1995-2000

(\$Current US Millions)

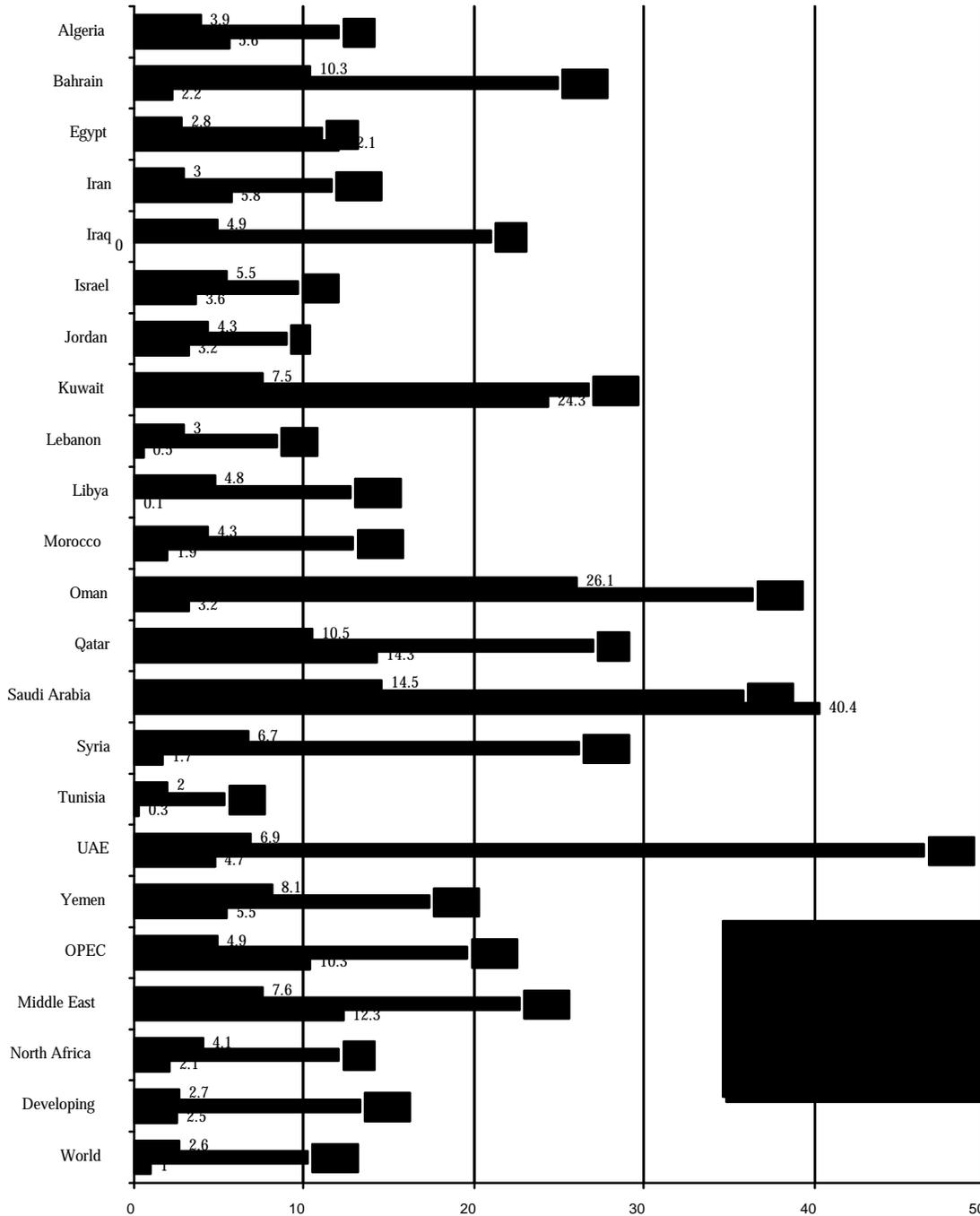


Source: Adapted by Anthony H. Cordesman from various editions of the IISS, Military Balance. The author has adjusted a number of figures and has provided trend estimates for the year 2000.

Chart 6.7

Military Expenditures and Arms Transfers as an Aspect of "Statism"

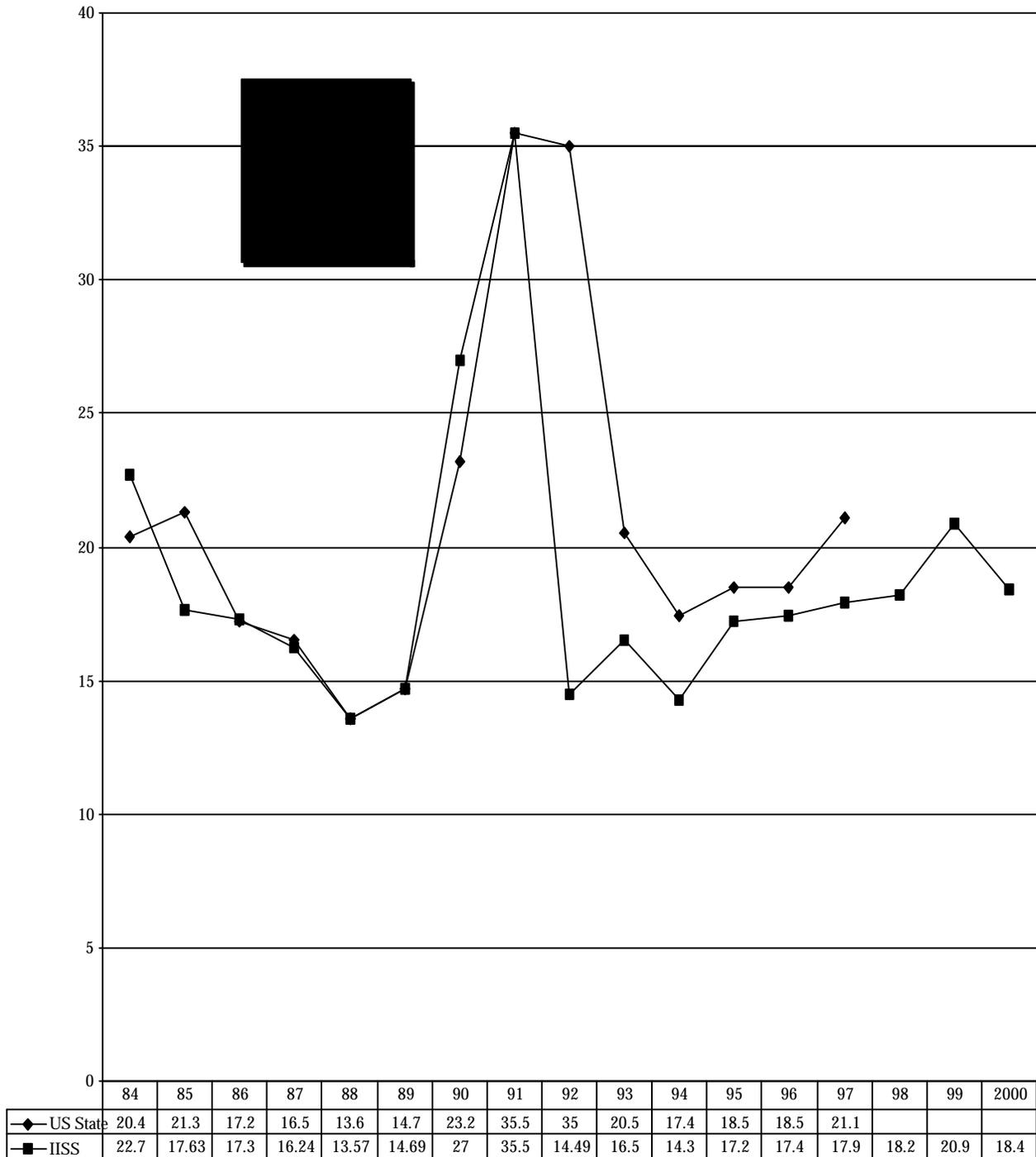
(Military spending as a percent of Central Government Expenditures (CGE) and Gross National Product (GNP), and Arms Imports as a Percent of Total Imports)



Source: Adapted by Anthony H. Cordesman from US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

Chart 6.8

Comparative Estimates of Saudi Military Spending: 1984-2000
(Current \$US Billions)

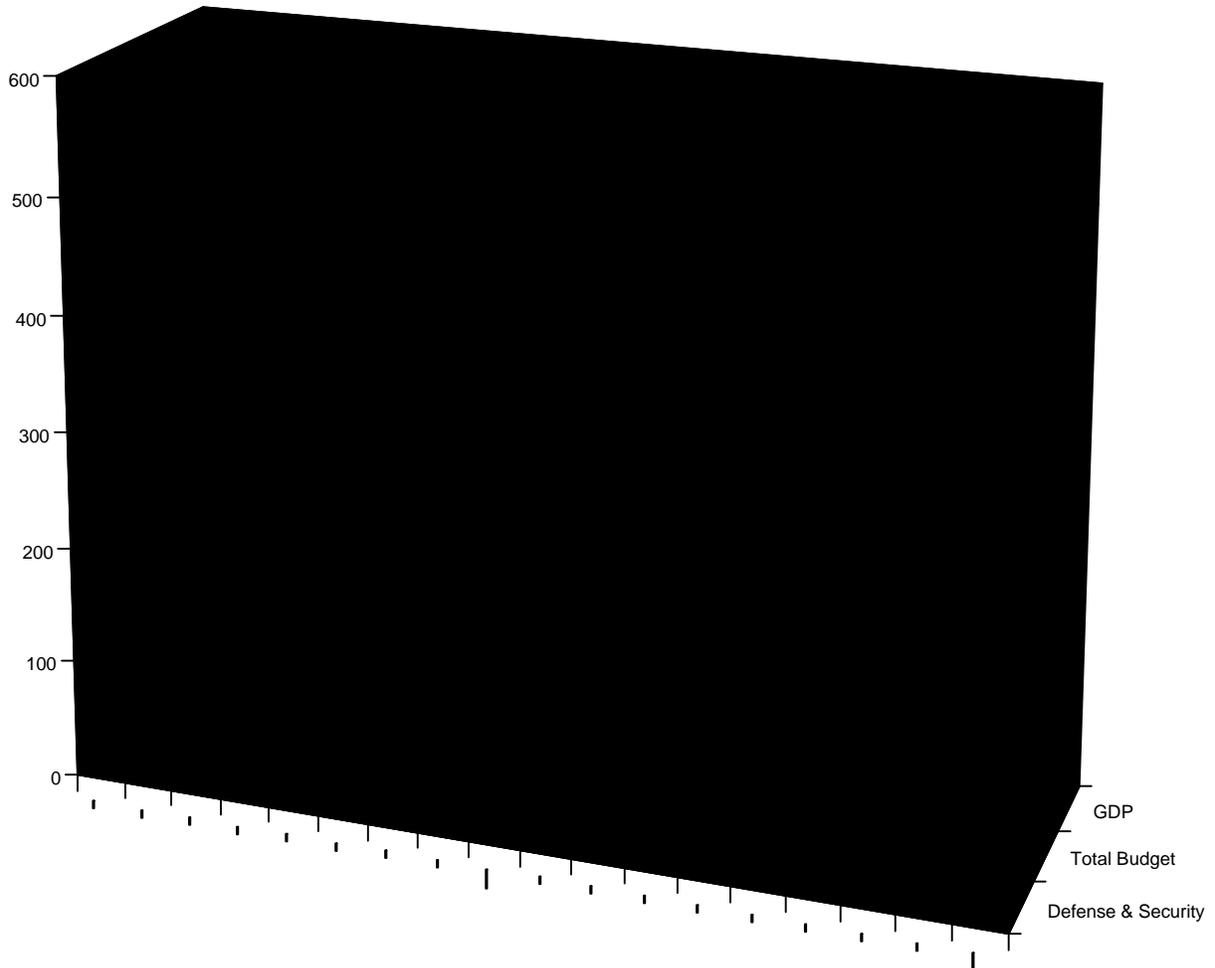


Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996; US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999, and various editions of the IISS, Military Balance.

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Chart 6.9

Saudi Estimates of Saudi National Security Spending: 1981-2000
(Current Millions of Saudi Riyals)

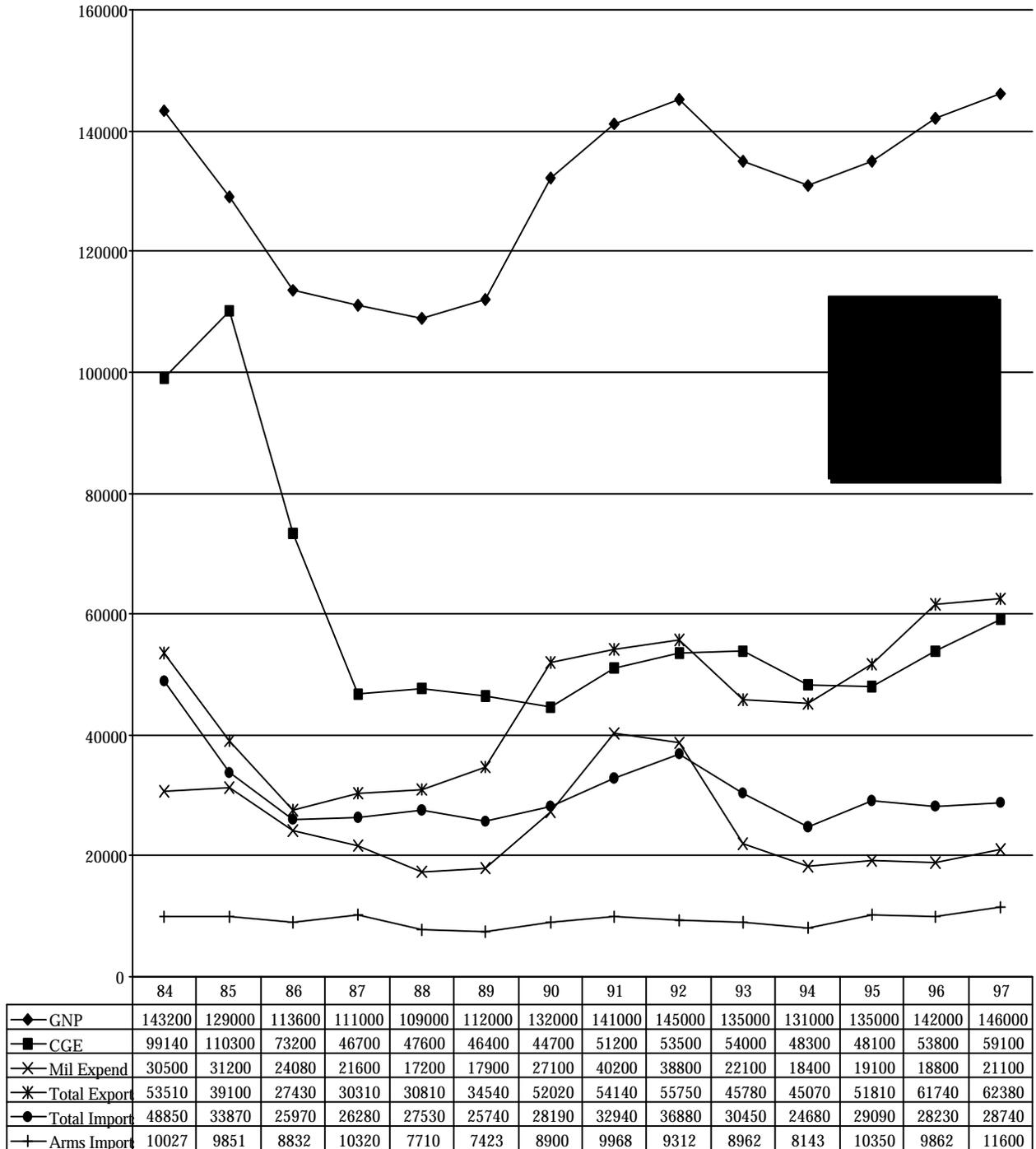


	81	82	83	84	85	87	88	89	90/91	93	94	95	96	97	98	99	2000
■ Defense & Security	82.5	92.9	75.6	79.9	64.9	54.2	50.1	47.8	122.7	61.7	53.5	49.5	50	68	78.2	68.7	74.9
■ Total Budget	298	313.4	260	260	200	159.6	141.2	140.5	359.6	197	160	150	150	181	196	165	185
■ GDP	524.7	415.2	372	351.4	313.9	275.5	285.1	310.8	392	461.4	443.8	450	478.7	529.3	548.6	480.8	522

Source; Adapted by Anthony H. Cordesman from material provided by the Saudi Arabian Monetary Agency

Chart 6.10

Saudi Gross National Product, Central Government Expenditures, Military Expenditures, Total Exports, Total Imports and Arms Import Deliveries: 1984-1997
(Constant \$97 millions)

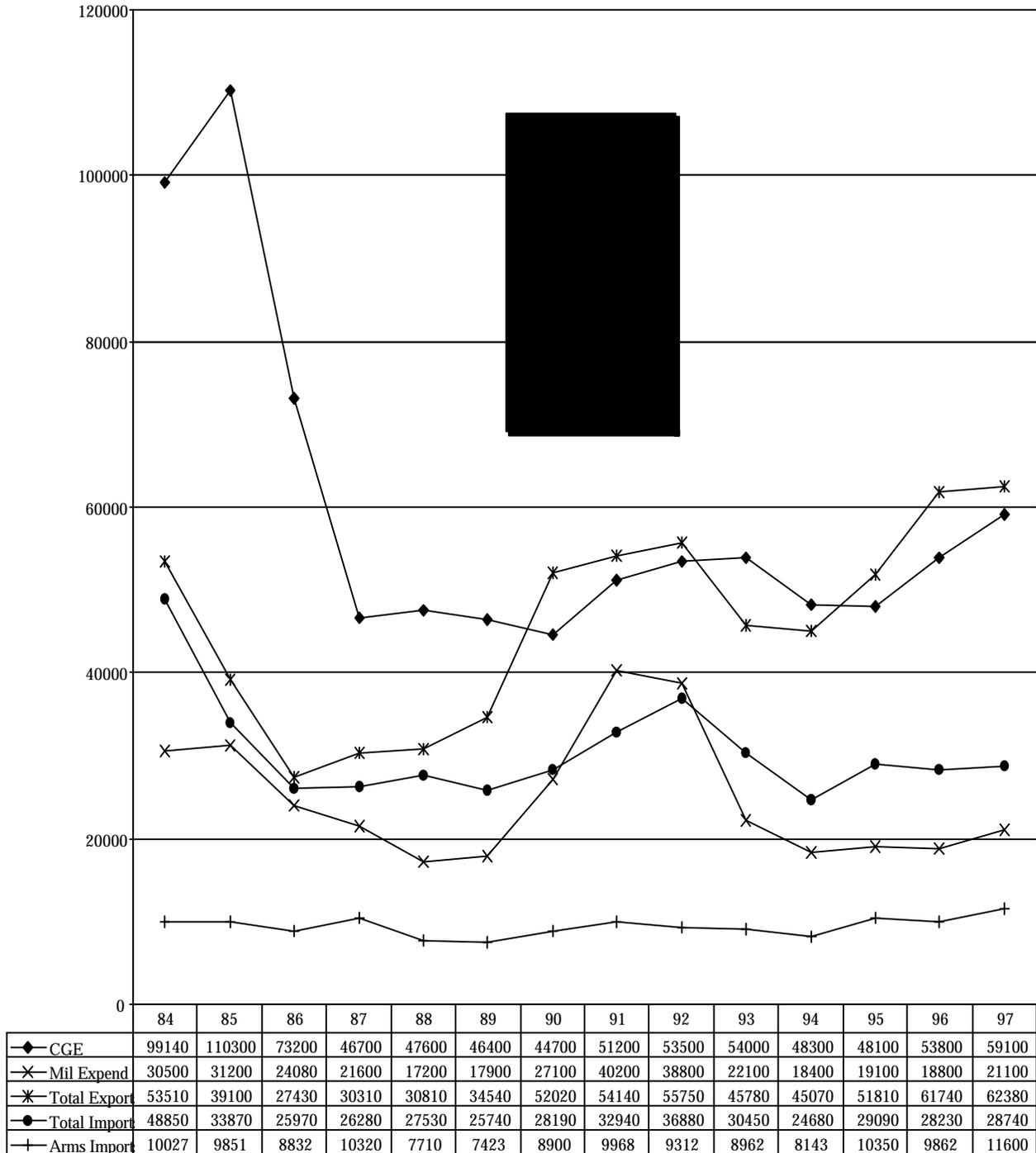


Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996 and US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

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Chart 6.11

Saudi Gross National Product, Central Government Expenditures, Military Expenditures, Total Exports, Total Imports and Arms Import Deliveries: 1984-1997
(Constant \$97 millions)



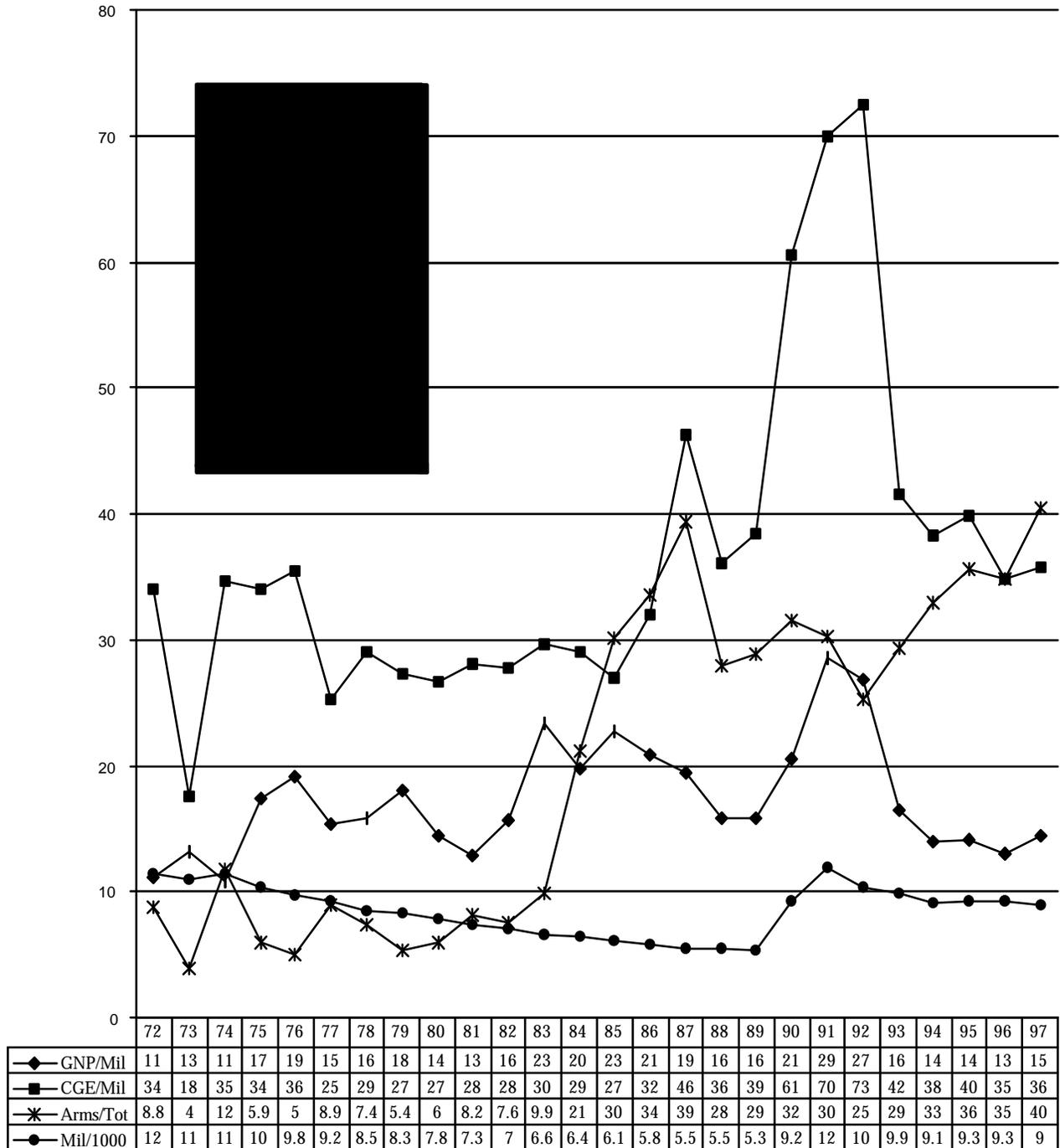
Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996 and US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

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Chart 6.12

Saudi Military Efforts as a Percent of GNP, Government Expenditures, and Imports and Military Personnel per 1,000 in Total Population: 1972-1997

(All percentages are measured in absolute manpower and constant 1997 US dollars)

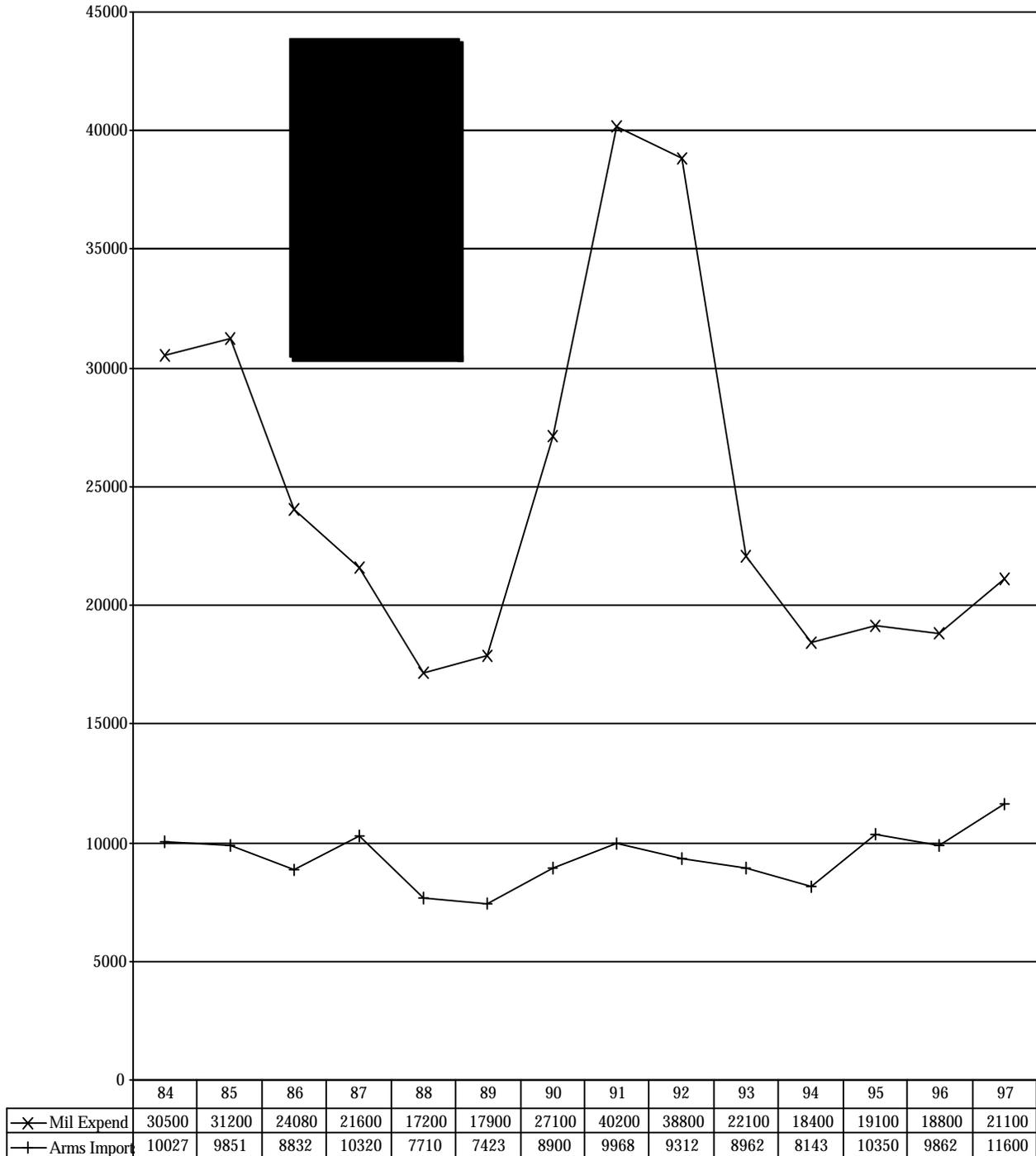


Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996 and US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

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Chart 6.13

Shift in Saudi Military Expenditures and Arms Deliveries as a Percent of 1984 Total: 1984-1997
(Constant \$US 1997 millions)

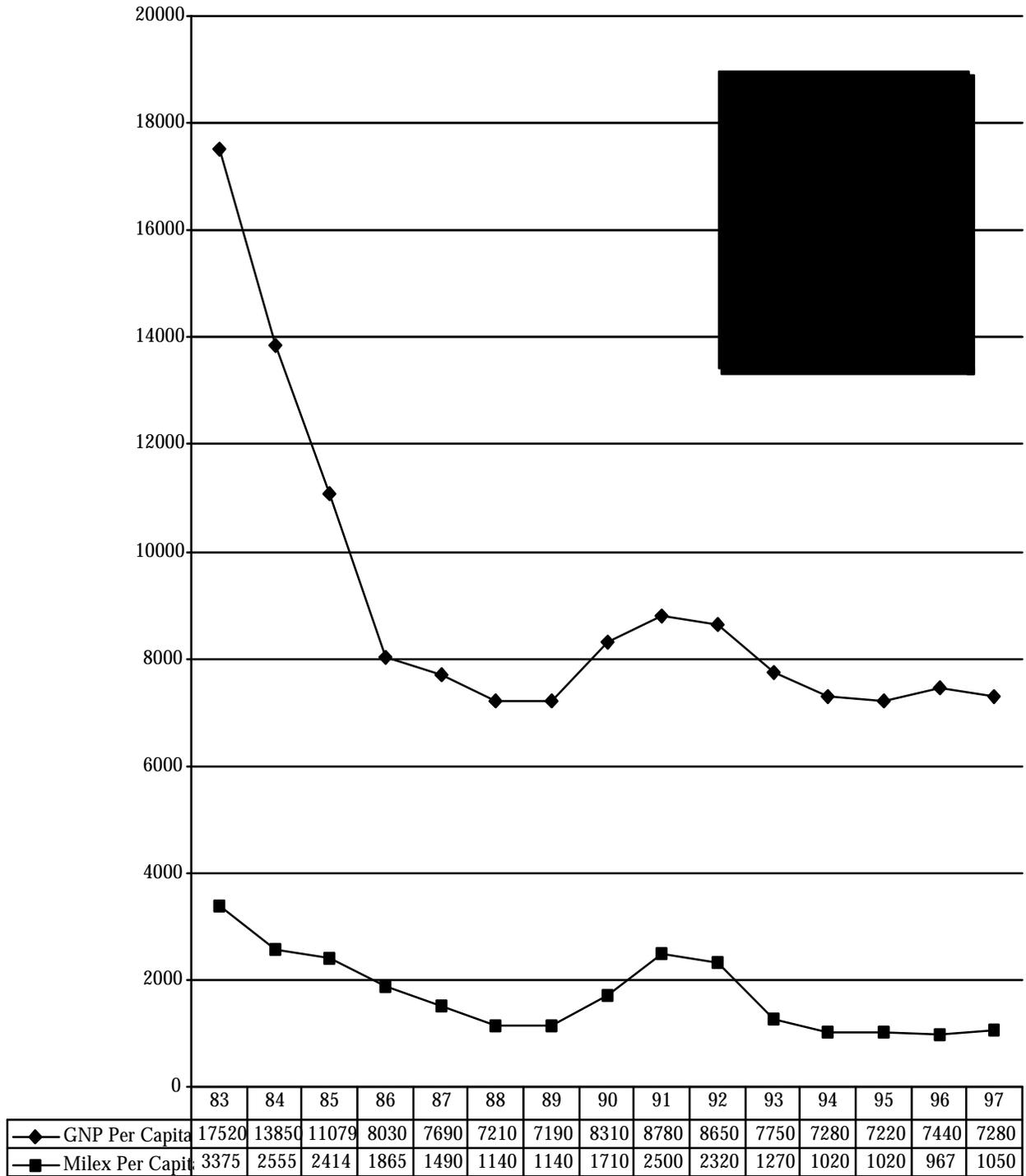


Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996 and US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

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Chart 6.14

Saudi GNP Per Capita Versus Military Expenditures Per Capita: 1983-1995
(Constant \$95)



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, 1998, Bureau of Arms Control, Washington, 1999.

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Saudi Arms Imports

Saudi Arabia has long been dependent on other nations for virtually all of its arms and military technology. Saudi Arabia is making slow progress in developing an indigenous arms industry. It can produce some small arms, automatic weapons, and munitions, but much of the Saudi portion of the work consists of assembling imported parts rather than real manufactures. A number of other programs consist of efforts where a foreign arms supplier has agreed to set up a defense-related industrial efforts in Saudi Arabia to “offset” Saudi spending on arms imports. Some of these “offset” efforts have been useful in reducing the need to import technology, services, and parts, but many others are more symbolic efforts to employ Saudis than substantive efforts to aid the Saudi military or industrial base. However, Saudi Arabia has made progress in the support, supply, and operations and maintenance areas.

It is scarcely surprising, therefore, that Saudi Arabia’s military build-up and modernization has led to massive expenditures on military imports.³³ These spending patterns also help explain why Saudi Arabia has ranked as one of the world’s ten largest military importers in every year for the last two decades. It ranked first in both new arms agreements and in actual arms deliveries during 1989-1992, and 1993-1996, It ranked first in arms deliveries during 1996-1999, although it ranked third in terms of new orders – behind the UAE and India and only marginally above Egypt.³⁴

Until the late 1980s, however, the dollar value of Saudi military imports did not involve as high a proportion of expenditures on actual weapons as did the arms imports of most other countries. Much of the total cost of Saudi military imports included an exceptionally large percentage of construction services, service support costs, and goods other than weapons and munitions that were imported from other nations. These expenditures are still classified as arms imports in the estimates made by the US government even when they do not include weapons.

The Volume of Saudi Arms Imports

It is not easy to make an accurate analysis of Saudi arms buys. Saudi Arabia does not provide statistics on its military imports, and most outside estimates are of limited analytic reliability. Two useful sources of unclassified intelligence estimates are, however, available from the US government: The Bureau of Arms Control in the US State Department (formerly the Arms Control and Disarmament Agency (ACDA), and the Congressional Research Service. These estimates are based on unclassified intelligence data that make a detailed effort to include all weapons and produce comparable estimates. While they still present uncertainties, they

provide a much more reliable picture than academic and non-governmental organization (NGO) estimates of arms sales.

These data are certainly accurate in reflecting the steady increase in Saudi arms imports that has taken place in reaction to the massive build-up of Iraqi and Iranian forces, the threats and uncertainties posed by the Iran-Iraq War, the cost of fighting the Gulf War, and other current threats.³⁵

Patterns in Saudi Arms Imports: 1973-1990

Chart 6.15 shows the patterns in total arms deliveries to Saudi Arabia from 1973 to 1997. It is clear that the Kingdom embarked on a major military build-up following the October War in 1973, although it is important to note that this build-up was driven by the arms race in Iran, Iraq, and Yemen, and was made possible by the leap in their oil revenues that took place after early 1974. Saudi Arabia never took part in the Arab-Israeli arms race or attempted to create significant military forces on its Western border.

Chart 6.15 also shows a major further leap in Saudi arms imports after the fall of the Shah in 1979, and the start of the Iran-Iraq War in 1980, then created a very different threat from the north. The growing risk that Iran would defeat Iraq between 1984 and 1987 led to another massive surge in Saudi arms deliveries during 1987-1991, which was caused by orders placed earlier in the Iran-Iraq War, but many of which were delivered after the war's end in 1988. A similar lag in deliveries explains another surge in arms deliveries in 1995-1997. Although the Gulf War with Iraq took place in 1990-1991, the surge in orders during and immediately after the war did not result in massive deliveries until the mid-1990s.

If one looks at total transfers to the developing world, Saudi Arabia was the largest "arms" importer during 1984-1987 (\$27.5 billion), during 1988-1991 (\$26.8 billion), during 1991-1994 (\$29.8 billion), and during 1995-1998 (\$67.8 billion).³⁶ It must again be stressed, however, that these figures for Saudi Arabia included substantial amounts of services, and the value of actual weapons transfers was around half the total reported.

One other striking aspect of Chart 6.15 is the number of different countries that Saudi Arabia purchased from. There were good reasons to diversify the Kingdom's arms purchases. Saudi Arabia found it could not rely on the US because of US ties to Israel, and internal political pressure from Israel's supporters. It made sense for the Kingdom not to become too dependent on one supplier. Second, major arms purchases were a diplomatic tool in ensuring support from

supplier nations. Finally, arms imports were a way of “recycling” oil export revenues and preserving market share.

At the same time, the Kingdom did fail to pay proper attention to interoperability and standardization. Like most Gulf countries, it often focused on buying the most effective or advanced system, and paid little attention to the practical problems of integrating weapons from different suppliers into overall force structures that minimized the problems in operating systems designed by different countries, the maintenance problems involved, and the difficulties in supplying and sustaining systems with different maintenance and ammunition needs in combat.

Aside from the National Guard, it paid too little attention to the training burden involved, problems in combined arms and joint operations, and difficulties in command and control. It also underestimated the inevitable rivalry between foreign military advisory teams and the natural competitive bias of foreign contract support teams towards favoring systems made by their companies or countries. Saudi Arabia also underestimated the tendency of supplier countries to focus on sales per se and ignore the Kingdom’s strategic interests, even though most supplier countries were dependent on the security of Saudi oil exports.

The Impact of the Gulf War

Chart 16.16 shows the patterns in Saudi arms orders and deliveries before and after the Gulf War. It also shows that Saudi Arabia’s investment in arms imports peaked well before Iraq invaded Kuwait. In fact, if one looks further back into the 1980s, Saudi Arabia took delivery on \$48.1 billion worth of arms during 1983-1989, and purchased 14.1% of all Third World military import agreements during 1982-1989.³⁷

The Gulf War did, however, lead Saudi Arabia to make major additional purchases of military imports. Chart 6.17 shows the size of Saudi Arabia’s annual new orders and actual arms deliveries during 1990-1999, and traces the rise in deliveries from the orders placed during the Gulf War. At the same time, it reflects the decline in new orders after the early 1990s caused by the Kingdom’s growing economic problems.

Saudi Arabia ordered \$18.6 billion worth of military imports in 1990, and took delivery on \$6.749 billion worth. Saudi Arabia cut its new orders to \$7.8 billion in 1991, but deliveries rose to \$7.1 billion as its backlog of increased orders began to raise deliveries. Both new orders and deliveries dropped to \$4.5 billion in 1992. Saudi military imports then began to rise again because of the perceived threat from Iran and Iraq. Saudi Arabia ordered \$9.6 billion worth of

arms in 1993, and took delivery on \$6.4 billion. In 1994, it ordered \$9.5 billion worth of military imports and took delivery on \$5.2 billion.

The end result of these orders was a bill that strained Saudi Arabia's financial capabilities at a time its oil revenues were declining, and a massive "pipeline" of ongoing arms deliveries that Saudi Arabia could not effectively absorb. The Kingdom had problems it meeting its payment schedules for both US and British arms. Saudi Arabia had signed a multi-stage deal with Britain and France called Al-Yamamah that costs the Kingdom up to three billion dollars per year, but which was not integrated into its normal budget process. While the Kingdom could meet some of its obligation with oil, the deal still imposed a major financial burden. The US had to be paid in cash, which imposed even more of a burden. The program is a large financial burden, particularly in view of Saudi Arabia's structural budget deficits.

The Kingdom's problems in paying for its existing arms orders in 1994 led it to make much more modest new purchases after this time. The Kingdom ordered \$2.1 billion worth of arms in 1995, and took delivery on \$2.1 billion. New orders totaled \$1.9 billion in 1996, and deliveries totaled \$6.3 billion. Saudi Arabia placed \$2.7 billion in new orders in 1997, and took \$11.0 billion worth of deliveries.

The "oil crash" in late 1997 then reinforced the need for Saudi Arabia to limit its new arms imports. As a result, it placed \$2.9 billion in new orders in 1998, and took \$8.7 billion worth of deliveries, and placed \$1.6 billion in new orders in 1999, and took \$6.9 billion worth of deliveries.³⁸ The scale of the decline in new Saudi arms import agreements is indicated by the fact that new orders during 1991-1994 were only about two-thirds of the total during 1987-1990. Saudi new orders for the four-year period from 1994-1997 were substantially less than half the new orders Saudi Arabia placed during the four-year period before the Gulf War, even measured in current dollars.³⁹

The strains the Kingdom faced are illustrated by the fact that Saudi Arabia missed a major FMS payment to the US in March 1999. Although Pentagon officials insisted that Saudi Arabia had enough funds to cover its future bills as they became due, the Kingdom was slow in making its \$150 million monthly deposits as was stipulated in the earlier payment restructuring deal it had made in 1994. In May 1999, the U.S. government also had to devise new financing options to justify the renewal of the \$850 million Peace Sun F-15 support contract and the estimated \$300 million Peace Shield airspace command and control program after.⁴⁰

The situation improved greatly after a major rise in oil prices began in the spring of 1999, and a massive increase in oil revenues in 2000. Chart 6.18 also shows that Saudi arms imports have become a steadily smaller share of its total export revenues and total imports, and have declined sharply as a percent of total imports since their peak in the mid-1980s. Even so, the Kingdom concluded in drafting its FY2001 budget that it now needs to keep its arms imports under very tight control.

This history also explains why Saudis outside the Ministry of Defense often had a very different impression of the Kingdom's arms import policy from the actual pace of new orders. They are not aware of the difference between new orders and deliveries and during the late 1990s, many Saudis confused deliveries with orders felt the Kingdom was making massive arms purchases at a time when its oil revenues and export earnings were limited.

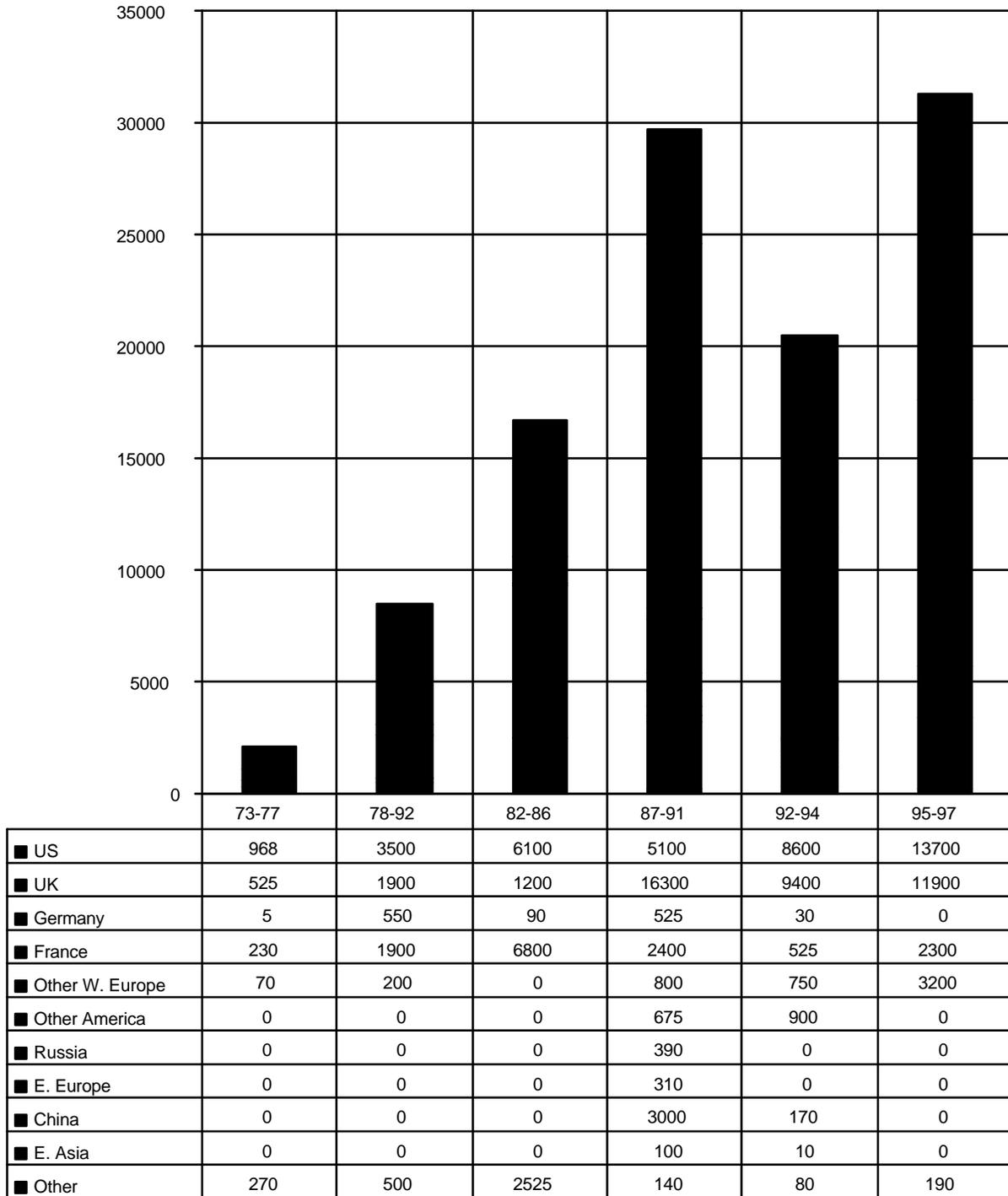
At the same time, it is important to note the decline in new Saudi arms orders was poorly managed, and reinforced several major problems in Saudi military sustainment and modernization.

- First, the Kingdom focused on major new arms purchases during the period immediately after the Gulf War, rather than sustainment and did not shift its purchases to focus on sustainment when it had to make major cutbacks after the mid-1990s. As a result, Saudi Arabia was flooded with weapons but seriously underfunded the investment in maintenance and sustainment that was necessary to keep its existing weapons effective and properly absorb its new ones.
- Second, the flood of new deliveries during the 1990s added to the Kingdom's problems in effectively recapitalizing and maintaining its overall force posture. As a rough rule of thumb every major weapons system costs at least as much in terms of the arms imports needed to maintain and upgrade it during its life cycle as it does to buy, and often twice as much. The Kingdom now faces a major future cost problem in making and in keeping its new weapons effective that will add to the problem of sustaining its existing weapons. While no precise figures are available, some US advisors estimate that the Kingdom needed to restructure its arms import program to focus on sustainment half a decade ago, and needs to spend three to four times more on support equipment, training systems, etc. than it does today, even if this means major additional cuts in spending on new arms.
- Third, the Kingdom never really developed a clear strategy for both improving interoperability and setting affordable long-term force goals. It went from year to year,

solving its payments problems as they occurred. It did not develop effective future year plans and the spending fixes it adopted for any one year tended to compound its overall problems in standardization and interoperability.

Chart 6.15

Trend in Arms Deliveries to Saudi Arabia: 1973-1997
(In \$US Current Millions)

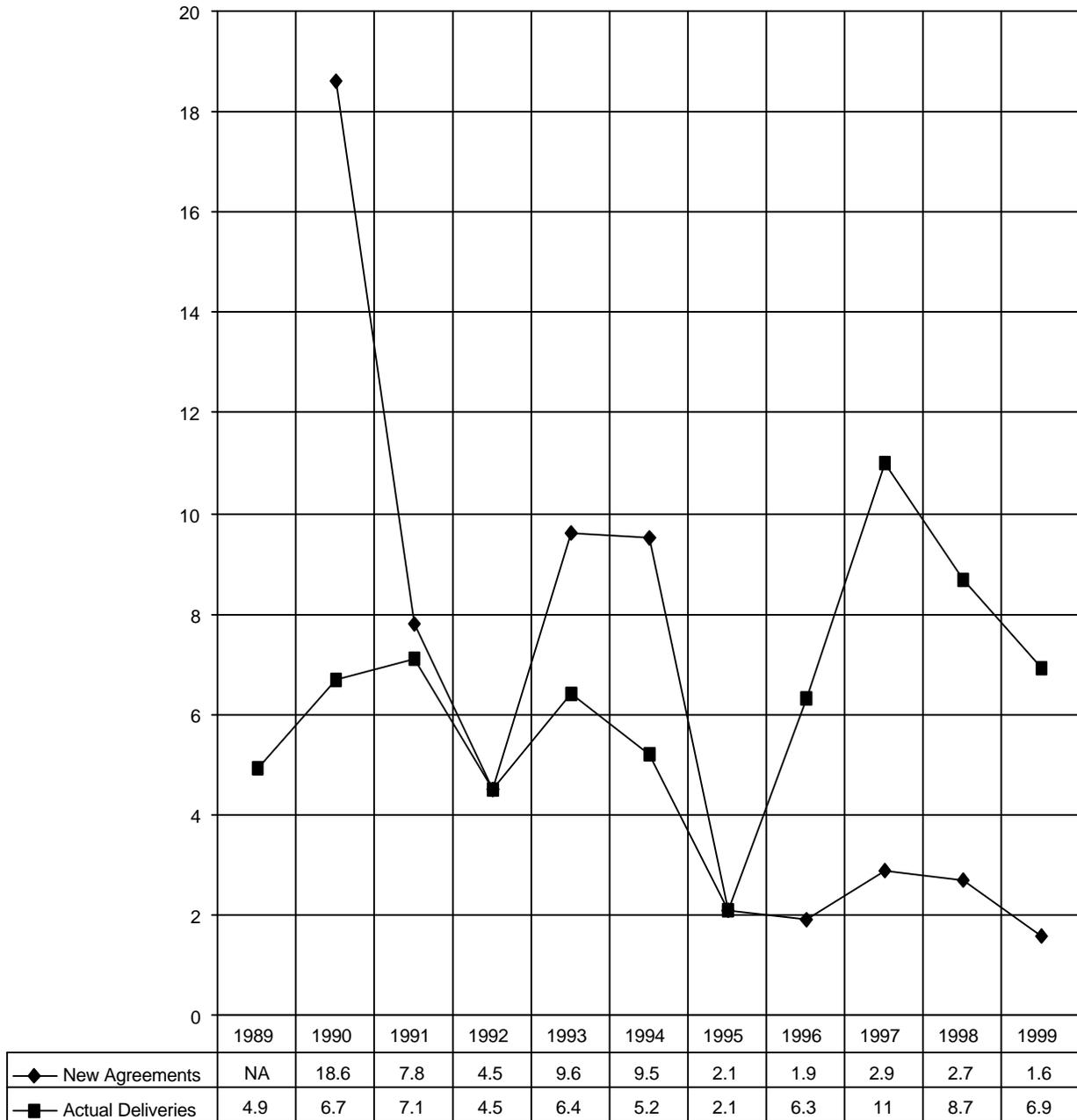


Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, various editions, and US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

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Chart 6.17

Saudi Arabian New Arms Agreements versus Arms Deliveries: 1990-1999
 (\$Current Millions)

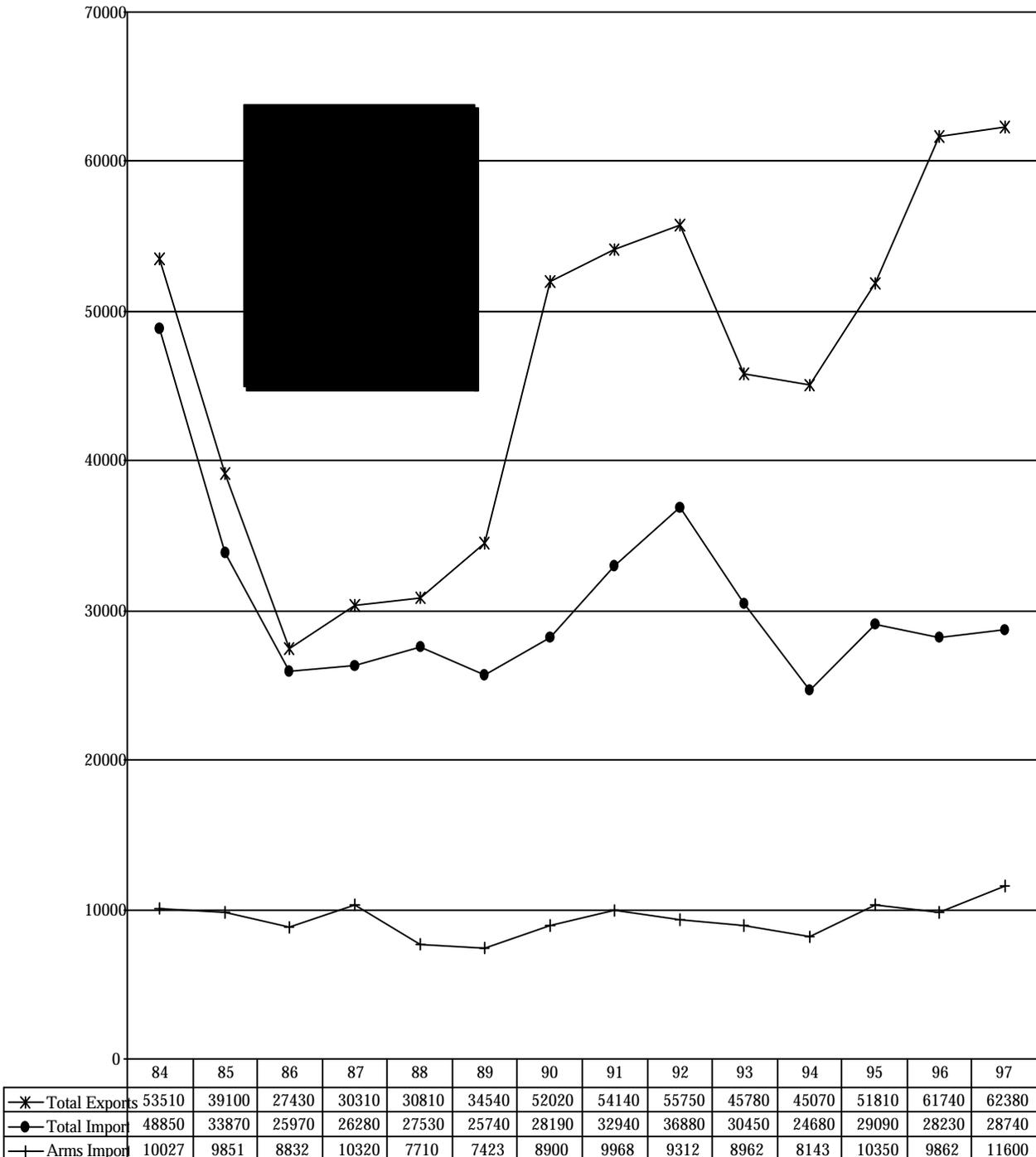


Source: Adapted by Anthony H. Cordesman from Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

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Chart 6.18

Saudi Total Exports, Total Imports, and Arms Import Deliveries: 1984-1997
(Constant \$97 millions)



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, 1998, Bureau of Arms Control, Washington, 1999.

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Comparisons of Saudi and Other Gulf Arms Buys

Saudi Arabia's difficulties should not be exaggerated. No country in the world has yet succeeded in creating a highly efficient system to manage military procurement and modernization. Success is also relative, and Saudi Arabia's arms import problems during the 1990s were minor in comparison to those of its three greatest potential threats: Iran, Iraq, and Yemen.

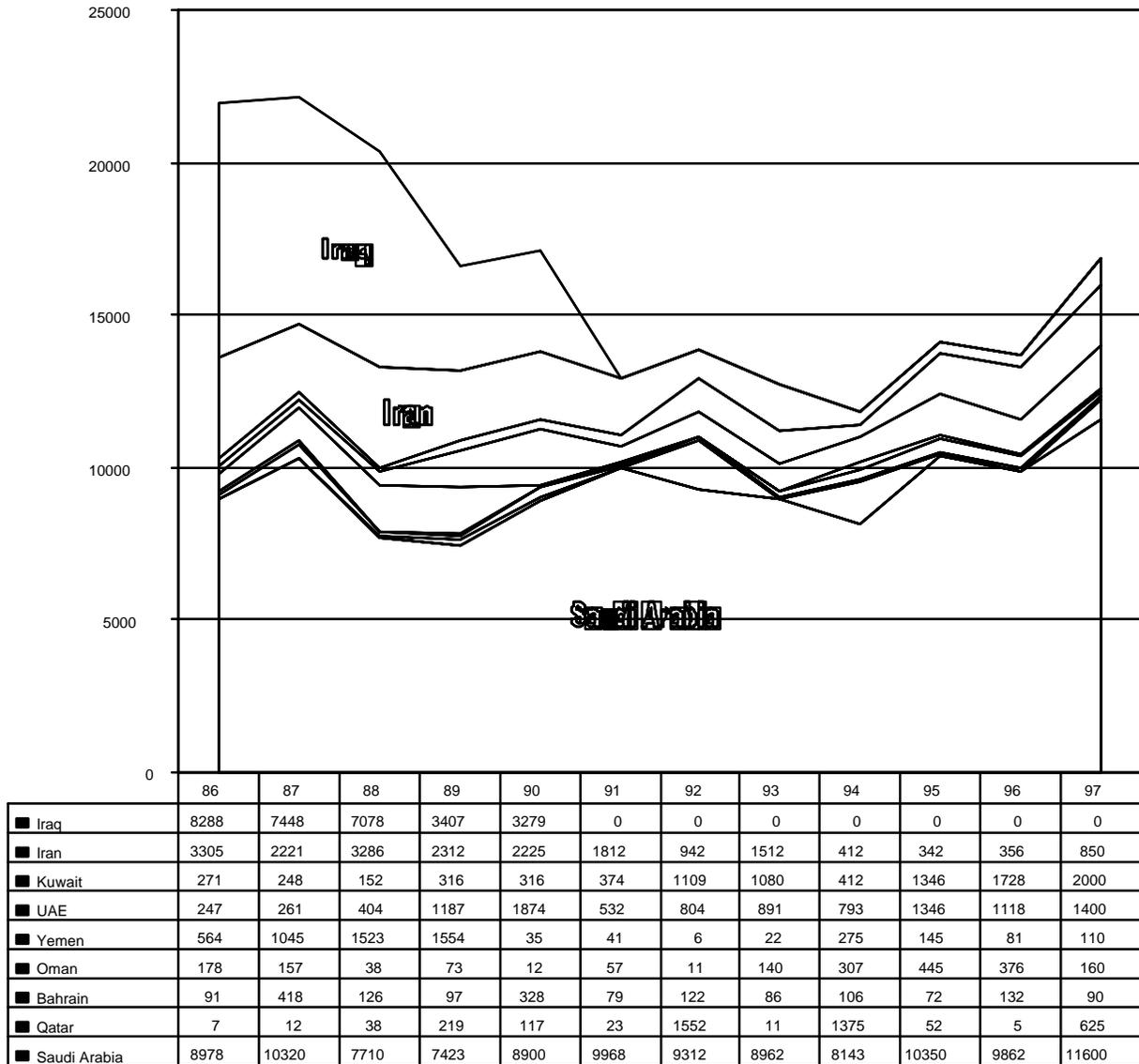
The overall patterns in Gulf arms imports are shown in Charts 6.19-6.21. Chart 6.19 compares Saudi total arms deliveries to the total deliveries of all of the other Gulf countries. It shows that Saudi arms imports came to dominate the total level of Gulf arms imports during years after the Iran-Iraq and Gulf Wars. If conventional arms imports alone were a measure of warfighting capability, it is clear that Saudi Arabia would be the superpower of the Gulf.

Chart 6.20 compares Saudi arms import deliveries to those of Iran, Iraq, and Yemen. It shows a virtual halt to Iraqi arms imports, and a massive decline in Iranian and Yemeni imports. The trend is even more striking in terms of new agreements. Saudi Arabia signed some \$21.8 billion worth of new arms agreements during 1992-1995, while Iran signed \$1.1 billion worth of new agreements, Iraq signed none, and Yemen signed \$300 million. Saudi Arabia signed some \$7.1 billion worth of new arms agreements during 1996-1999, while Iran again signed \$1.1 billion, Iraq signed none, and Yemen signed \$600 million.⁴¹ Chart 6.21 does show, however, that Saudi arms imports make up a far higher percent of total imports than those of any other Gulf state.

Chart 6.19

Cumulative Saudi Arms Imports Relative to Those of the Other Gulf States - 1984-1997

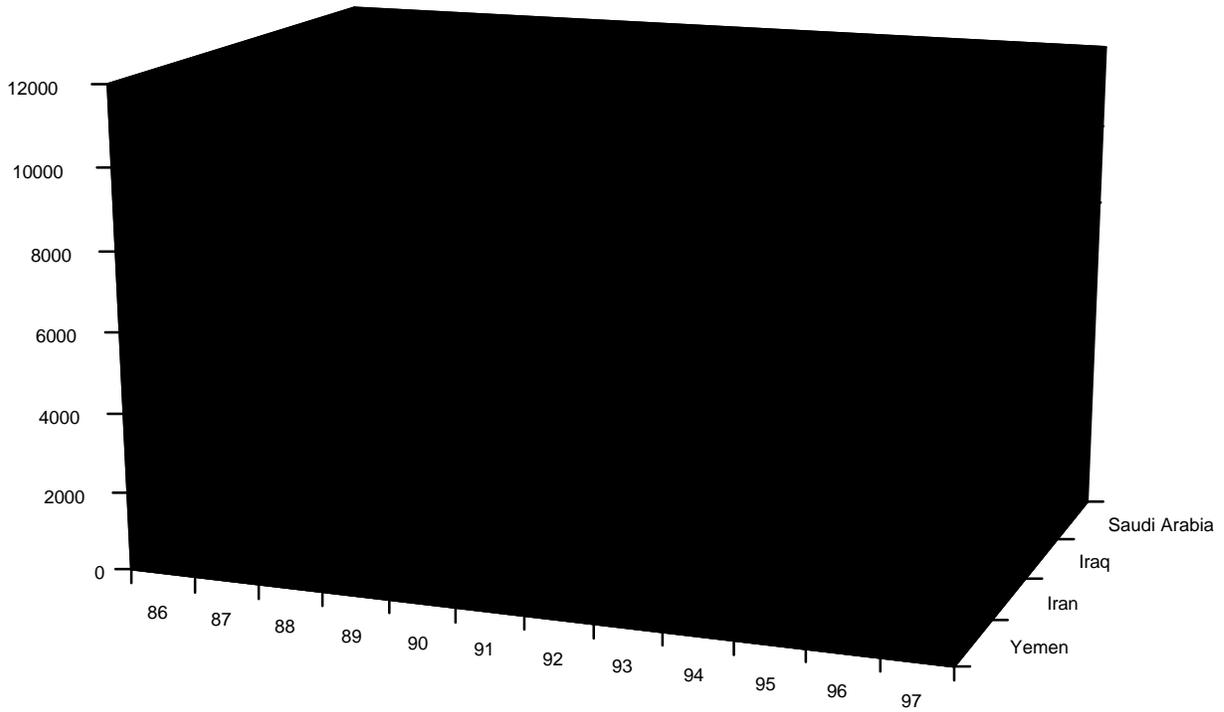
(Value of Deliveries in Constant \$1997 Millions)



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

Chart 6.20

Saudi Arms Deliveries versus Deliveries to Iran and Iraq: 1986-1997
 (\$97 Constant Millions)



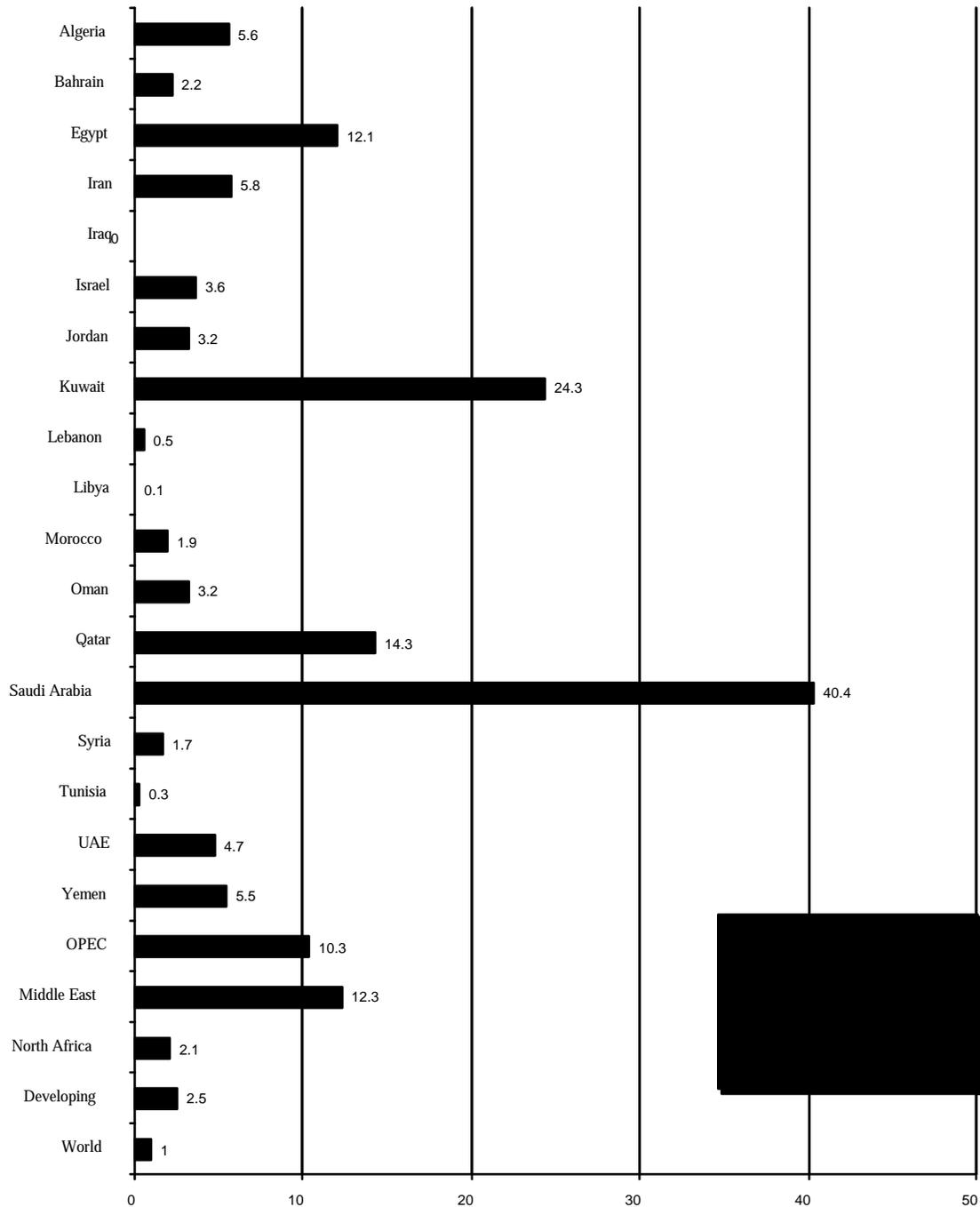
	86	87	88	89	90	91	92	93	94	95	96	97
■ Yemen	564	1045	1523	1554	35	41	6	22	275	145	81	110
■ Iran	3125	2221	3289	2312	2225	1812	942	1512	412	342	356	850
■ Iraq	8288	7448	7078	3407	3279	0	0	0	0	0	0	0
■ Saudi Arabia	8832	10320	7710	7423	8900	9968	9312	8962	8143	10350	9862	11600

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

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Chart 6.21

Arms Imports as a Percent of Total Imports in Middle Eastern Countries



Source: Adapted by Anthony H. Cordesman from US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

Sources of Saudi Arms Imports

Chart 6.15 has already shown that Saudi Arabia has depended on the West for virtually all of its military modernization, and it is not surprising that its main suppliers are the US and Europe. Similarly, it has developed close military relations with the US, while balancing its dependence on the US with major imports of arms from Britain and France. Britain has been a major supplier of aircraft while France has been a major supplier of ships and naval weapons.

Chart 6.22 shows deliveries by major supplier from 1973-1977. What is most striking about this chart is the variation in suppliers over time, which has created many of the interoperability and standardization problems discussed earlier. Part of these patterns was driven by the reluctance of the US Congress to sell the Kingdom arms at a time when Saudi Arabia was perceived as a threat to Israel. This encouraged Saudi Arabia to turn to France as a major supplier to its Navy, and led the Saudi Air Force to make its massive Al Yamamah buy of Tornados and Hawks instead of the F-15. It is interesting to note that in terms of total sales in current dollars, Britain sold more arms to Saudi Arabia during 1973-1997 than did the United States.

- If one examines ACDA reporting for the period from 1979-1983, which covers the period from the fall of the Shah of Iran through the early years of the Iran-Iraq War, Saudi Arabia took delivery on \$12.125 billion worth of military imports. This included \$5.1 billion worth of military imports from the US, \$2.5 billion from France, \$1.9 billion from the UK, \$525 million from West Germany, \$200 million from Italy, and \$1.9 billion from other countries.⁴²
- Saudi Arabia took delivery on \$19.530 billion worth of military imports during 1984-1988. This included \$5.8 billion worth of military imports from the US, \$7.5 billion from France, \$2.5 billion from the PRC, \$2.1 billion from the UK, \$30 million from Italy, and \$1.6 billion from other countries.⁴³
- During the period from 1985-1989, which covers the period from the most intense fighting in the Iran-Iraq War through the cease-fire in 1988, Saudi Arabia imported \$23.04 billion worth of military goods, including \$5.0 billion from the US, \$7.0 billion from France, \$7.7 billion from the UK, \$2.5 billion from the PRC, \$40 million from West Germany, \$250 million from other European countries, \$140 million from other East Asian states, \$390 million from Latin America, and \$20 million from other countries in the world.⁴⁴

- During 1992-1994, the period immediately after the Gulf War, Saudi Arabia imported \$20.465 billion worth of military goods, including \$8.6 billion from the US, \$525 million from France, \$9.4 billion from the UK, \$170 million from the PRC, \$30 million from Germany, \$670 million from other European countries, \$10 million from other East Asian states, \$70 million from Russia, and \$90 million from other countries in the world.⁴⁵ These totals are somewhat misleading, however, because they only reflect deliveries and were heavily influenced by past orders of British aircraft. Most new Saudi orders were placed with the US.
- During 1995-1997, Saudi Arabia imported \$31.32 billion worth of military goods, including \$13.7 billion from the US, \$2.3 billion from France, \$11.9 billion from the UK, \$1 billion from other NATO countries, \$2.2 billion from other Western countries, and \$190 million from other countries in the world.⁴⁶ These totals are again somewhat misleading, however, because they only reflect deliveries and were still heavily influenced by past orders of British aircraft. Once again, most new Saudi orders were placed with the US.

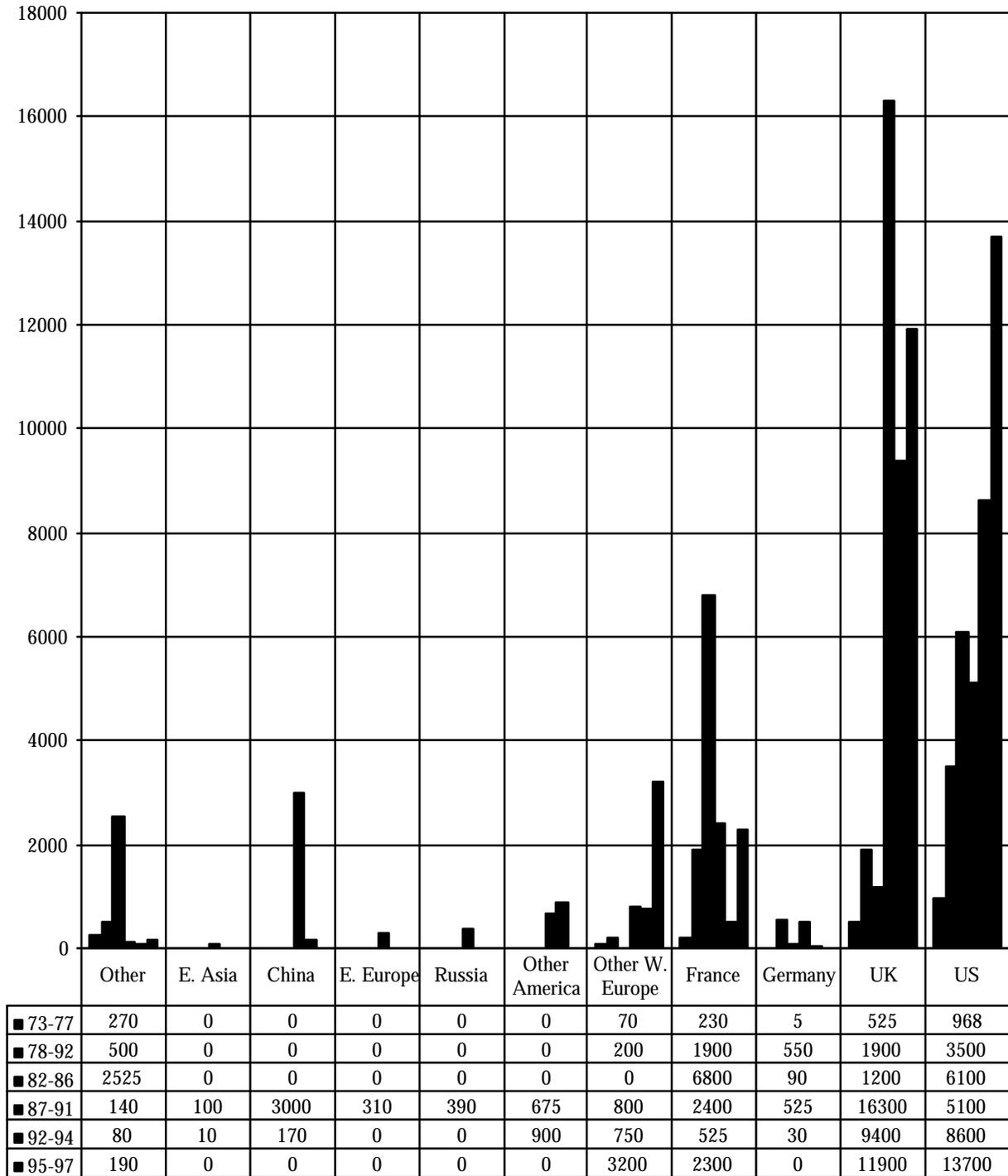
More recent reporting by Richard F. Grimmett, which is summarized in Charts 6.23 and 6.4 indicates that Saudi Arabia bought most of its arms from Europe during the four years before the Gulf War, and that its new agreements with the US during this period only amounted to about 31% of the total. This was partly the result of the political difficulties the US faced in selling to Saudi Arabia at a time when US supporters of Israel still opposed the sale of advanced weapons. This situation changed significantly after Iraq's invasion of Kuwait, however, and many supporters of Israel suddenly came to see Saudi Arabia as more of any ally than a threat to Israel. At the same time, both the US and Saudi Arabia had every possible incentive to cooperate in both building up Saudi forces and making them as interoperable with US forces as possible. Saudi Arabia placed major orders in the US, and Saudi orders from the US rose from \$14.3 billion during 1987-1990 to \$20.2 billion during 1991-1994, and reached 67% of total Saudi new agreements. New orders from Europe dropped from \$25.7 billion during 1987-1990, to only \$9.5 billion during 1991-1994 – 31% of the total.⁴⁷

The sources of Saudi arms deliveries were different – reflecting the lag between orders and deliveries. Saudi Arabia received a total of \$38 billion in deliveries of military imports during 1995-1998. These deliveries were still dominated by Europe (\$21.6 billion versus \$16.4 billion from the US) because of the long lead times in the delivery of past orders. Saudi Arabia only ordered a total of \$7.9 billion worth of new arms during 1995-1998, however, and most of these new orders were placed in the US (\$5.1 billion versus \$2.5 billion from the US). If one

compares the slightly different four-year period from 1996-1999, Saudi new orders from the US totaled \$5.5 billion while orders from Europe only totaled \$1.3 billion. In contrast, European deliveries totaled \$16.6 billion versus \$15.5 billion from the US. Saudi Arabia only received minor deliveries from other countries, and the only major weapons system they supported were the Chinese long-range missiles that Saudi Arabia had bought before the Gulf War.

Chart 6.22

Arms Deliveries to Saudi Arabia by Major Supplier: 1973-1997
(In \$US Current Millions)

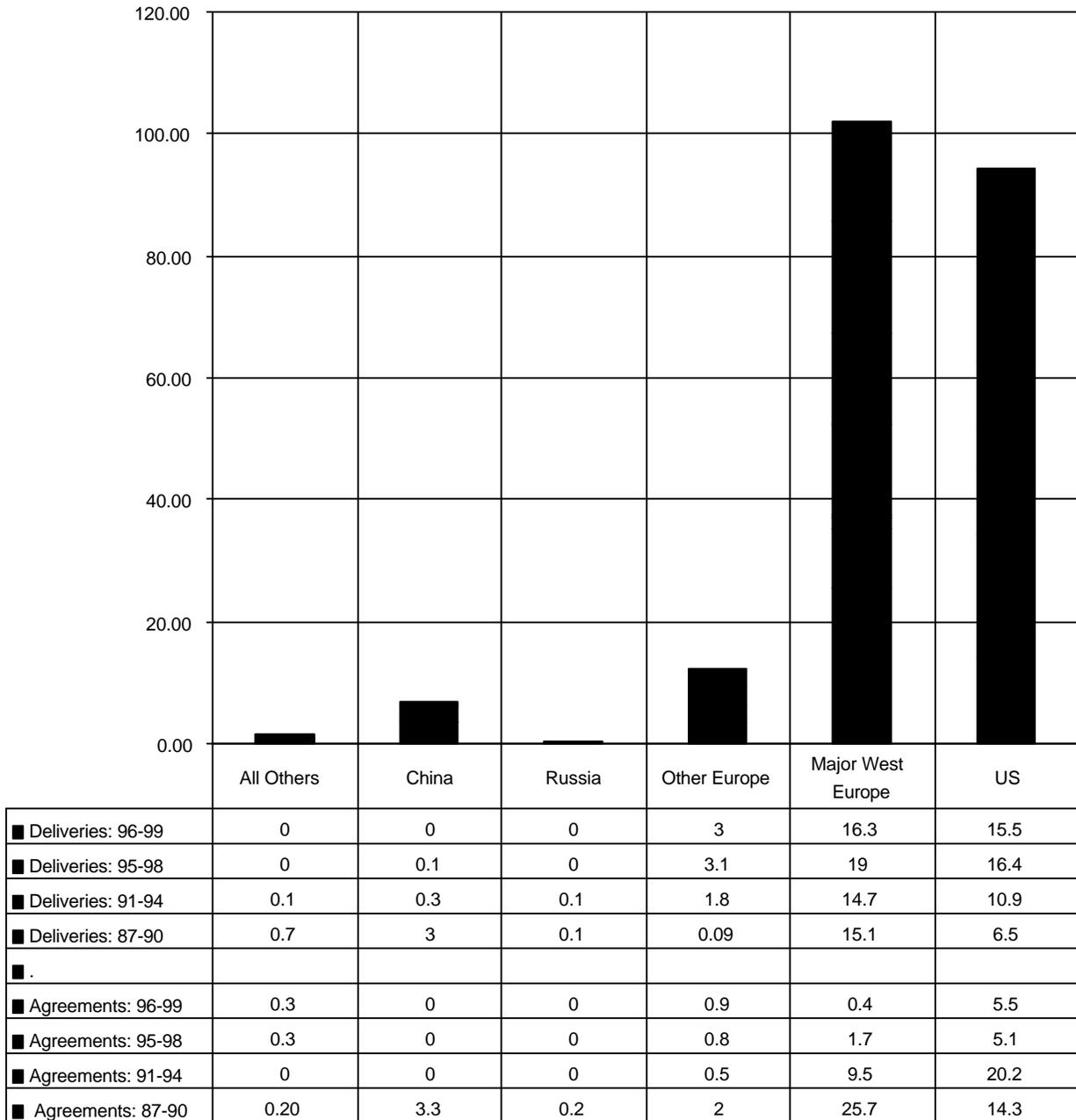


Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, various editions, and US State Department, World Military Expenditures and Arms Transfers, 1998, Bureau of Arms Control, Washington, 1999.

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Chart 6.23

Total Saudi Arabian Arms Agreements and Deliveries Before and After the Gulf War: 1987-1999
(\$Current Millions)

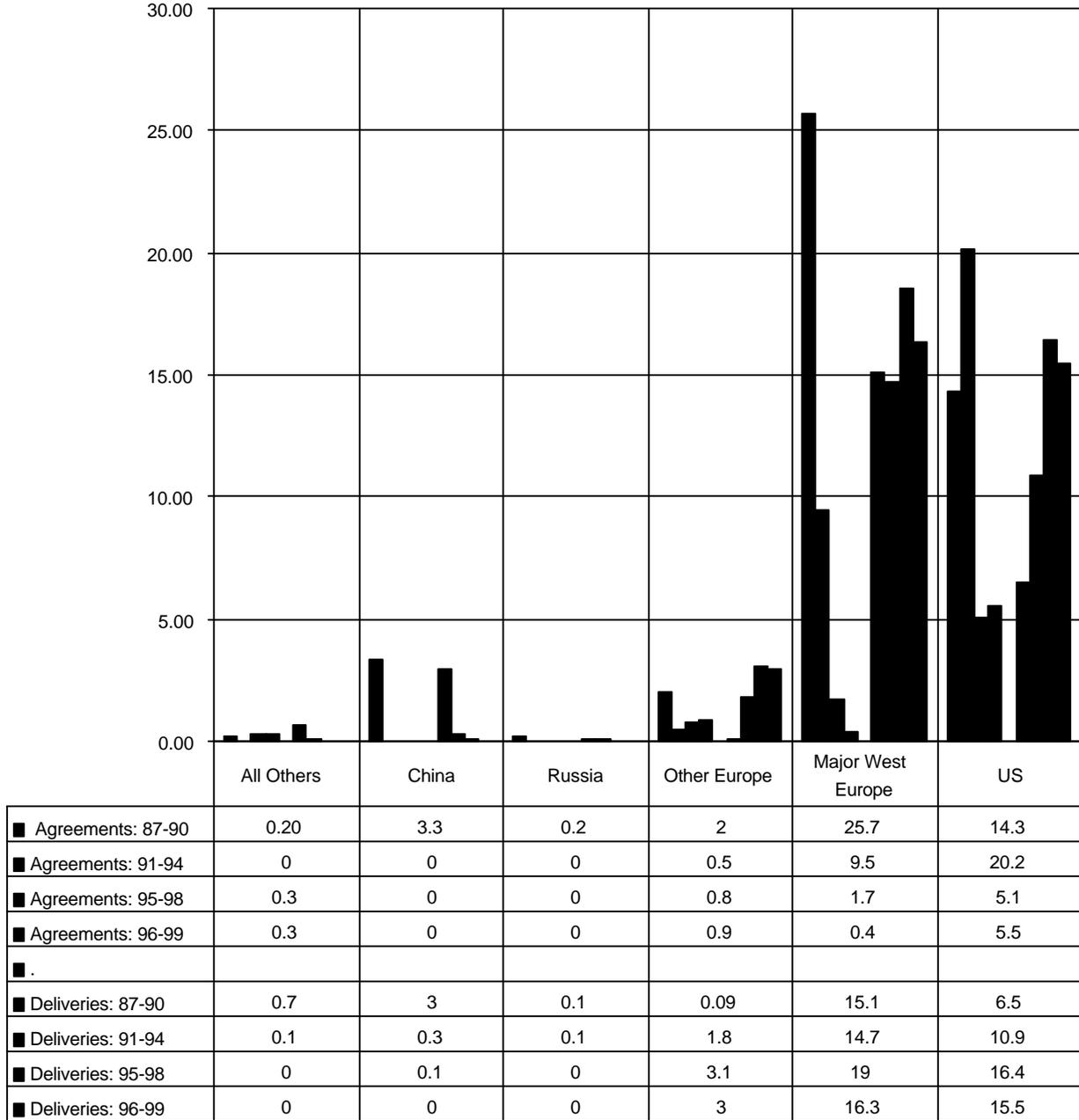


0 = less than \$50 million or nil, and all data rounded to the nearest \$100 million.

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

Chart 6.24

Declining Orders, Rising Deliveries: Saudi Arabian New Arms Agreements and Deliveries by Major Supplier Before and After the Gulf War: 1987-1999
(\$Current Millions)



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

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

The Changing Nature of Saudi Arms Imports

There have been major qualitative changes in Saudi military imports since the mid-1980s, which have been further accelerated since the Gulf War. Until the mid-1980s, Saudi Arabia concentrated on building up its military infrastructure and basic military capabilities. While it is impossible to make precise estimates, weapons, munitions, and specialized military support equipment probably made up less than one-third of Saudi military imports during this period.

Since the mid-1980s, Saudi military imports have shifted to include a steadily increasing number of first line weapons systems. Furthermore, many military construction and support activities are now carried out by Saudi firms or the equivalent of joint ventures. As a result, about 60% of Saudi military imports now include weapons, munitions, and specialized military support equipment.

Some of Saudi Arabia's recent major arms imports are summarized in Table 6.3. It is clear that Saudi military modernization is still broadly based. At the same time, the rate of new procurement has dropped sharply, and there are problems in each service. There are major uncertainties in Saudi Arabia's modernization of its armored forces. While the Kingdom continues to discuss buying two types of advanced modern tanks, it cannot yet effectively operate its present mix of M-60s and M-1s, and its French-made AMX-30s are obsolete and many are in storage. It needs to rationalize its mix of other armored vehicles more than it needs new ones. As is the cases with its other regular services, it needs to emphasize training and sustainment purchases over new weapons. The army does, however, need more long-range, self-propelled artillery firepower and advanced anti-tank weapons of the kind that can best help Saudi ground forces defend against an attack by Iraq.

The modernization of the Saudi air and air defense forces has been very ambitious, as is the modernization of Saudi Arabia's land-based air defense forces. It has created a relatively modern air force, and is upgrading its five E-3A AWACS. It is also taking delivery only a total of 12 AB-412TP search and rescue helicopters. At the same time, but it has underfunded the support of its F-15 force to the point where its readiness is seriously undermined. It has had to ground its aging F-5s. As a result, it is considering selling them, and buying much smaller number of F-15s to compensate for its losses in training.

Its main requirement for its air defense forces is the need to fund theater ballistic missile defenses at some point in the early 2000s. The Kingdom has obtained shared early warning with the US, but the Patriot is the only system with anti-missile capabilities in Saudi inventory, but the anti-ballistic missile systems Saudi Arabia would need to deal with more advanced Iranian and

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Iraqi missiles are not yet available from the US and are not funded it is projections of its military expenditures.

Saudi Arabia plans only a limited naval modernization program once it takes delivery on the three French Lafayette-class frigates in 2001-2005 that it ordered during the 1990s. Some officers still want to buy submarines, although it is far from clear that the navy can afford to buy and sustain them. Others would like to shift the navy's modernization priorities to areas like mine warfare and to concentrate on filling in the gaps in US Navy mission capabilities in the Gulf. This is an important change. Past Saudi naval imports often reflected more interest in prestige and in the "glitter factor" of having the best-armed large ships than in Saudi Arabia's mission priorities or real-world military effectiveness.

One problem in all of these efforts, however, is that Saudi modernization planning and spending lacks central direction and tends to lurch from year-to-year, and from major deal to major deal, rather than be part of a coherent future year plan and program budget. The quality of programming, planning, and budgeting within the Ministry of Defense and Aviation (MODA) is extremely poor, and the MODA lacks the authority to control the services. The Minister of Defense often makes personal decisions, and force modernization tends to focus on major weapons buys without coherent plans to provide suitable support, training, and sustainment. While Saudi Arabia has long had reasonably well-drafted five year plans in its civil sector, the MODA is decades behind in practical planning skills, and it is uncertain that it has the practical authority to implement coherent plans even if they are drafted.

Table 6.3

Key Saudi Equipment Developments - Part One

- During Gulf War bought 315 M-1A2s, 30 M-88A1 tank recovery vehicles, 175 M-998 utility trucks, 224 heavy tactical trucks, 29 heavy equipment transporters, 268 five ton trucks, spares and support equipment, logistics support, ammunition, facilities design and construction, training aids and devices, and US military training services.
- Has discussed plans to buy 235-350 additional M-1A2s, Challenger 2s, or Le Clercs, but funding plan unclear.
- Bought 400 M-2A2s, 200 M-113 armored personnel carriers, 50 M-548 cargo carriers, 17 M-88A1 recovery vehicles, and 43 M-578 recovery vehicles.
- Has talked about replacing 110 M-109A/A2s with M-109A6, VSEL AS90, and Giat GCT-1. Funding plan even more uncertain.
- Considered order for 9 Multiple Launch Rocket Systems (MLRS), including vehicle mounted rocket launchers, 2,880 tactical rockets, 50 practice rockets, 9 MV-755A2 command post carriers, training and training equipment, but canceled in 1993. Need to supplement present strength of four 180 mm SS-40s and 127 mm SS-30s.
- Army has 12 AH-64 Apache attack helicopters, 155 Hellfire missiles, 24 spare Hellfire launchers, six spare engines and associated equipment. Has discussed possible total of 48 AH-64s.
- Army aviation formed in 1986, and now has 12 S-70As, 22 UH-60s, 6 SA-356Ns, and 15 Bell \$06CSs - addition to AH-64s. Considering buy of 88 Westland WS-70 Black Hawks or similar lift helicopters.
- Building new a military city near Jizan, which is on Red Sea coast near border with Yemen. Some cost estimates range up to \$8 billion.
- Has negotiated a deal with Spain for the purchase of 200 BMR-600 6x6 armored personnel carriers at a cost of up to \$440 million.
- Has ordered 12 AS-532 A2 Cougar Mk II search and rescue helicopters from Eurocopter, all due to be delivered by the end of 2001 at a cost of \$589 million.

Table Twelve

Key Saudi Equipment Developments - Part Two

- Saudi National Guard (SANG) has bought 400 to 450 versions of the Piranha light armored vehicle.
- SANG bought 1,117 LAV-25s (light armored vehicles) from General Motors of Canada through the US Army Tank Automotive Command (TACOM) at cost of \$3.4 billion. Package included 116 TOW launchers with 2000 missiles, 27 M-198 155mm howitzers, support systems, training, and facilities.
- The SANG took delivery of the first of 73 120 mm armored mortar systems in 1998.
- Refitting four F-2000 frigates with roughly 50 “item” changes, 40 minor. Are adding NBC protection and improving Otomat missile system to enhance search patterns and add re-attack capability. Not improving Crotale to use latest VT1 rounds, but improving Airsys Castor 2B X-band fire control radar to Castor 2C standard. Will complete during 1997-2001.
- Buying two new Lafayette-class F-3000 frigates as part of \$3.5 billion November 1994 agreement. To complete delivery by 2005.
- Ordered a third La Fayette class anti-aircraft frigate equipped with the new Aster 15 missile
- Four Sandown minelayers entering service, beginning in 1995.
- Considered buy of several AEGIS-class warships to give it advanced battle management, Harpoon anti-ship missiles, Tomahawk strike capability, ASW, anti-aircraft, and anti-ship missile defense capabilities. Too expensive.
- Refitting two logistic replenishment tankers.
- Has considered buying coastal submarines.

Table 6.3

Key Saudi Equipment Developments - Part Three

- Bought 24 F-15S aircraft designed for air combat, and 48 F-15S aircraft dual-capable in both the air defense and strike/attack missions: 24 spare engines, 48 targeting and navigation pods, 900 AGM-65D/G Maverick air-to-surface missiles, 600 CBU-87 bombs, 700 GBU-10/12 bombs, and special mission planning systems.
- Bought 1,500 upgraded AIM-9 air-to-air missiles for use on the F-15 Eagle at a cost of \$115 million.
- Bought 20 more Hawk 65 jets and 20 more Swiss Pilatus PC-9 turboprop trainers. Needs better trainers than either Hawk or Pilatus.
- Examining replacement for roughly 100 F-5s. Reports considered funding 12-24 F-15s in an initial buy, and 1 selling F-5s to help fund its new F-15s. Boeing offer included a major depot maintenance facility involving significant offsets, and hires of Saudis. The facility might improve Saudi capability to service its F-15s, and US F-15s, in combat.
- Longer term requirements for replacement for 60 F-15s in 2005-2010 timeframe. F-22, EF-2000, Rafael possible candidates.
- Examined plans to buy up to 70 C-130J-like transports during next decade, and up to 10 additional airborne tankers to supplement its 8 KC-130Hs.
- Examined buying up to 21 Patriot batteries (2 training) with 1,055 missiles. Two units funded.
- New Peace Shield system becoming fully operational, and installation was completed in November 1995. Has central C⁴I center, five regional centers, and 17 long-range radars.
- Upgrading 17 MIM-23B I-Hawk batteries.
- Considering upgrade of 170 Shahine mobile and static light SAMs. Possibly with Crotale NG.
- Examining replacement of French AMX-30 SA air defense guns.

Military Imports from the US

As the previous discussion has shown, the US is scarcely Saudi Arabia's only military supplier. Nevertheless, the US has been a key supplier and the interoperability between Saudi and US forces can be of critical importance in any future war against Iraq. The US releases a substantial amount of data on these sales through the Defense Security Cooperation Agency. While these data are not directly comparable to the previous intelligence data on arms sales, they are available in considerably more detail, and provide considerable insight into both Saudi Arabia's military development and its military future.

Many of the patterns in US sales during the per-Gulf War period (1950-1989) reveal the fact that Saudi Arabia had to build up modern forces from a very limited base. For example, Saudi Arabia signed some \$16.0 billion worth of foreign military construction agreements with the US during 1950-1989, and took delivery on \$15.1 billion worth of construction services. This was largely a product of the fact that Saudi Arabia lacked both a modern construction industry and experience with the design and construction of military facilities. As a result, it largely phased out US military construction by the early 1980s. During the period from 1989-1999, it signed only \$1.8 billion worth of new foreign military construction agreements with the US during 1950-1989, and took delivery on only \$1.5 billion worth of construction services.⁴⁸

Saudi Arabia has not received any significant US military assistance since oil prices rose following the embargo after the October War in 1973. Even before that time, it received only minor levels of aid. It received only \$1.8 million in excess article from the US Military Assistance program during the entire period from 1950-1989. Total grant assistance only equaled \$29.9 million over the same period, and Saudi Arabia only drew down on \$25.9 million of these funds. Saudi Arabia did receive larger assistance under the Foreign Military Financing program, but the funds now seem miniscule compared to Saudi arms buys since 1973. Total financing during 1950-1989 was \$254.2 million, with \$65 million in direct financing and \$189.9 million in guarantees. The Kingdom repaid all of this money. Saudi Arabia received only \$12.5 million in aid under the International Military Education and Training Program.⁴⁹

The patterns in US government-managed Foreign Military Sales (FMS), and US commercial arms sales have been very different. The combination of the rise in oil revenues after 1973, the arms race in the Northern Gulf, the fall of the Shah in 1979, and the Iran-Iraq War of 1980-1988, led Saudi Arabia to buy \$30.98 billion worth of FMS during 1950-1989, and to take delivery on \$22.6 billion worth of these orders. A further \$1.5 billion worth of commercial arms

sales were licensed to Saudi Arabia. To put these orders in perspective, they totaled roughly twice the value of US FMS sales to Israel during the same period,⁵⁰

There were many problems in the course of US arms transfers to Saudi Arabia before the Gulf War that limited the value of these transfers. The US sometimes declined to sell key weapons to Saudi Arabia because the US Congress objected to the potential risk to Israel, or because the US proposed arms sales packages that met US needs without meeting Saudi needs. Examples of such problems include a covert US arrangement with Britain where the US pressured Saudi Arabia into buying British Lightning fighters and surface-to-air missiles so that Britain could afford to buy US F-4 fighters. Other problems included a refusal to sell more US tanks, which led Saudi Arabia to buy low-grade French AMX-30s; a naval advisory and sales effort that sold Saudi Arabia low-grade, used US Navy ships that the US failed to properly support; and a series of long, bitter debates over the sale of the E-3A AWACS and F-15S. At the same time, the Saudi purchases went on to play a vital role in helping to support the US in Desert Storm.

The close alliance between the US and Saudi Arabia during the Gulf War, and the fact that Saudi Arabia was clearly not a military threat to Israel, removed the last vestiges of the problems the Saudis faced in US arms exports. At the same time, the flow of FMS and commercial sales came to include some of the most advanced conventional arms in US inventory.

During and after the Gulf War, Saudi Arabia received no aid or FMS financing from the US. Saudi Arabia did, however, place very large arms orders. Saudi Arabia ordered \$38.2 billion worth of new FMS agreements during 1990-1999, and took delivery on \$29.9 billion. This means the Kingdom signed 1.2 times more new FMS agreements during the decade from 1990-1999 than it had in the previous three decades, and took delivery on 1.3 times more new FMS goods. Saudi Arabia also requested a little under \$400 million in additional commercial arms export licenses during 1990-1999. It ordered \$1.8 billion worth of new military construction agreements, and took delivery on only \$1.5 billion in new military construction services.⁵¹

The recent trends in Saudi orders of US military equipment are summarized in Table 6.4. This table shows a major rise in new FMS orders during the first half of the 1990s, followed by a decline after 1994 – reflecting the overall patterns in Saudi arms sales discussed earlier. Similarly, Table 6.1 shows a predictable rise in deliveries after 1994, stemming from the delay between orders and actual deliveries. The patterns in FMS construction largely reflect highly

specialized construction of facilities associated with specific major arms purchases. Saudi Arabia had long been able to carry other construction activity on its own.

One interesting aspect of the data in Table 6.4 is the low level of Saudi direct commercial arms sales. The Kingdom initially sought to reduce its level of FMS purchases and to make commercial purchases. It soon became apparent, however, that the fees the US government charged for managing the FMS program were minor compared to the management and planning burden associated with Saudi direct purchases. Moreover, the FMS program was under tight US government control and limited corruption and commissions to a minimum.

Limiting corruption and commissions became a growing issue for the Saudi government during the 1990s, as it came under acute pressure from sellers that were not under direct government control and audits to make sales that often led to grossly excessive profit margins, kickbacks, and other problems. It should be noted in this regard that major European governments and military firms were the source of many of these problems, not the Saudi purchasers and that virtually no such corruption occurred in the arms buys of the Saudi National Guard. Because of US law and controls, most of the abuses in FMS sales were limited to transport costs and some aspects of the offset programs the Kingdom demanded as part of its terms for making arms buys.⁵²

Chart 6.25 shows the content and value of recent Saudi FMS arms purchases and deliveries from the US. Once again, the gap between purchases and deliveries is clear. At the same time, a detailed look at the data in Chart 6.25 – and discussions with US and Saudi military experts – reveal a number of other patterns:

- Saudi Arabia has eased the debt burden that presented major problems in the mid-1990s. It paid down its FMS debt burden from a peak of around \$24 billion to less than \$3 billion in early 2001. It reduced its annual FMS payments to around \$1.8 billion.⁵³
- There is a steady growth in “services” to keep equipment maintained and combat capable. The same is true of maintenance, spare parts and modifications. Even so, there is broad agreement that Saudi Arabia has not ordered anything like the total pool of services, spare parts, and maintenance capabilities from the US it now needs. This has helped lead to critical readiness problems in some aspects of the Saudi military forces, especially the Air Force. Similar problems affect the equipment provided by other countries and are often worse.

- While training expenditures are significant, they are far too low to ensure suitable training. The problems are compounded by Saudisation of a kind that has replaced skilled manpower with underskilled Saudi personnel, and by a decline in performance standards: “Saudis will not fail Saudis.”
- The modernization of land combat vehicles and tactical and support vehicles have been underfunded since a surge of purchases shortly after the Gulf War.
- Other support equipment has been a major part of Saudi purchases and deliveries, reflecting the increasing sophistication of the Saudi equipment pool and the rising investment necessary to keep it operating.
- Communications equipment and military electronics has been modernized, but not at the rates necessary to support advanced combined arms and maneuver warfare.
- The US does not provide major new naval systems, virtually all of which come from France.
- There have been virtually no new US aircraft orders, but deliveries of past orders have been a major part of all Saudi arms deliveries.

In summary, Saudi purchases from the US have provided Saudi Arabia with much of the advanced equipment it needs to deter and defend against Iran and Iraq. They have also ensured a higher degree of standardization and interoperability between Saudi and US forces and strengthened Saudi capability for coalition warfare and US contingency capabilities in the Gulf. These advantages, however, are not a valid argument for further massive Saudi purchases, or for issuing Saudi Arabia a “blank check” it can use to buy any US weapon or technology. Saudi Arabia is now buying more arms than it can absorb, and has many other social and economic priorities. A stable Saudi Arabia is far more important than a well-armed Saudi Arabia. Saudi Arabia already has so many arms in delivery that it cannot absorb them properly, and it needs to emphasize to training, conversion, and sustainability.

Table 6.4

The Pace of US Arms Sales Before and After the Gulf War: Annual US Foreign Military Sales (FMS), Commercial Arms Export Agreements, Military Assistance Programs (MAP), and International Military Education and Training (IMET) Programs With Saudi Arabia: FY1985-1996

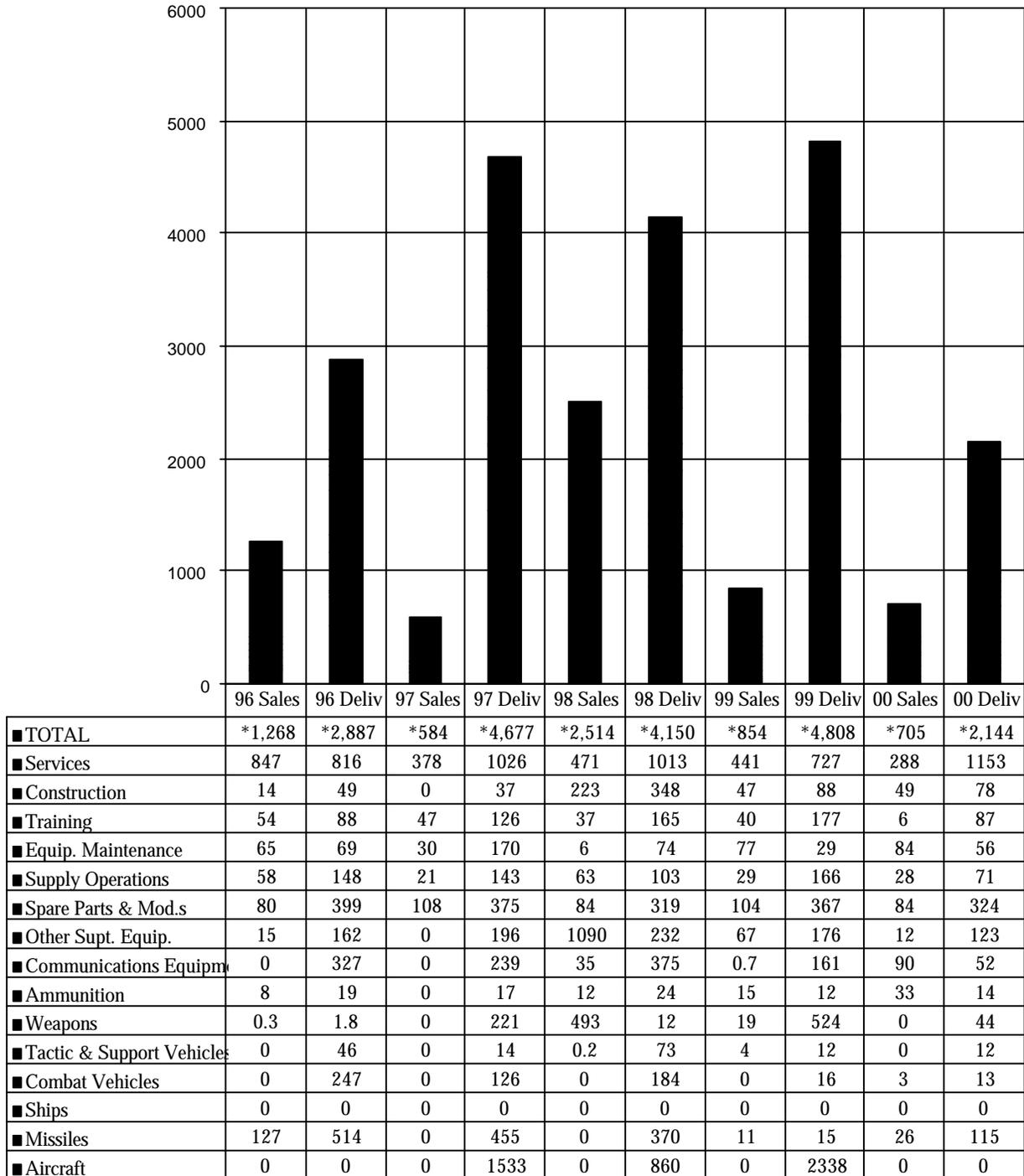
(Current millions)

	86	87	88	89	90	91	92	93	94	95	96	97	98	
99														
Foreign Military Financing Program														
Payment Waived	-	-	-	-	-	-	-	-	-	-	-	-	-	
DoD Direct	-	-	-	-	-	-	-	-	-	-	-	-	-	
DoD Guarantee	-	-	-	-	-	-	-	-	-	-	-	-	-	
FMS Agreements	682	6350	1,671	1,140	9,120	9,175	936	11,379	1,627	445	1,275	742	2,153	1,369
Commercial Sales	814	183	168	68	912	67	89	53	8	27	48	12	12	8
FMS Construction Agreements	6	-	19	-	563	394	4	632	6	6	14	-	187	20
FMS Deliveries	2,199	2,872	938	619	874	2,742	2,387	3,453	1,992	3,568	3,854	4,660	3,959	3,445
FMS Construction Deliveries	na	na	na	na	263	273	216	121	91	108	49	37	349	88
MAP Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAP Deliveries	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAP Excess Defense Articles Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAP Excess Defense Articles Deliveries-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IMET Program/ Deliveries	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: Adapted from data provided by the US Defense Security Assistance Agency (DSAA), "Foreign Military Sales, Foreign Military Construction Sales and Military Assistance Facts as of September 30, 1996", Department of Defense, Washington, 1997 and by the Defense Security Cooperation Agency on March 19, 2001.

Chart 6.25

Shaping the Mid to Late 1990s: US Arms Sales and Deliveries Transfers to Saudi Arabia by Category from US Fiscal Year 1996-2000
(\$US Current Millions)



Total

Source: Adapted from data provided by the Defense Security Cooperation Agency on March 19, 2001

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Creating a Balanced and Sustainable Flow of Arms

US sales are only part of the problem. Saudi Arabia can afford to continue to be a major arms importer. The previous charts have shown that Saudi Arabia can afford to fund larger arms imports and modernization expenditure than any potential threat. At the same time, they have communicated another message: Unless Saudi oil export revenues are extremely high, Saudi Arabia will not be able to afford to buy and support the kind of massive weapons purchases it made in the past.

The mid-1990s provide a good case example. As has been touched upon earlier, overspending and periods of moderate oil revenues have already forced Saudi Arabia to reduce its new arms purchases. In 1994, Saudi Arabia had to delay several major potential military import contracts -- including purchases of \$64 million worth of US multiple rocket launchers and a \$1 billion contract for 150 more M-1 tanks. Saudi Arabia had to reach an agreement with the US to restructure and defer some of its payments for past military imports, partly because of unexpectedly low oil revenues and partly because it faced unanticipated major payments to the US to cover the costs of deploying US forces during the Gulf War.⁵⁴ Saudi Arabia faced projected payments for US arms of about \$4.1 billion in 1994 and \$6 billion in 1995. This would have cost Saudi Arabia \$10.1 billion over a period of only two years.

These pressures led to negotiations where the US and Saudi Arabia agreed to restructure the Saudi military sales program on January 29, 1994. They did so in ways that avoided the cancellation of any weapons programs, but stretched some purchases out and reduced the monthly procurement rate of F-15 fighters from two to one. This cut Saudi Arabia's total arms purchases during 1994-1995 from \$10.1 to \$9.2 billion, and Saudi Arabia's payment for 1994 to \$3.35 billion. In April, Saudi Arabia also arranged to borrow \$1.85 billion of this total from three Saudi banks.⁵⁵ The Kingdom was also forced to delay or defer a contract with Britain for the purchase of some aviation equipment and the construction of a new air base.⁵⁶

Several senior US officers involved in the US military sales and advisory program privately welcomed this cutback. They had growing concerns about Saudi Arabia's failure to provide the manpower, training, facilities, and sustainability to make proper use of all of its arms purchases, and were concerned that the US would get the blame for "pushing" arms on Saudi Arabia. They advocated capping the accumulated balance of US arms sales to Saudi Arabia at \$10 billion, and some pushed for levels as low as \$8 billion.

The practical problem was that US manufacturers continued to push sales; no other foreign supplier showed any interest in controlling the pace of sales, and key Saudis like Prince
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Sultan kept pushing for more arms purchases and threatened to turn to other suppliers if the US did not sell. Furthermore, the Clinton White House showed a continued willingness to intervene on the side of higher sales when it came under political pressure from US manufacturers or the sale involved exports with desirable political visibility.

The total Saudi FMS debt dropped in FY1997, but Saudi Arabia still owed the US a great deal for a number of major cases. In mid-1996, it still owed \$6.5 billion out of a total of \$9.0 billion for the 72 F-15Ss, \$500 million out of \$3.1 billion for 315 M-1A2s, \$500 million out of \$1.5 billion for 400 M-2A2s, and \$2.2 billion out of \$4.0 billion for 20 Patriot batteries. Saudi Arabia had not succeeded in bringing its total debt down to \$10 billion in FY1988, and still owed the US over \$13 billion. This meant it owed the US \$3.5 billion during the course of calendar 1997, plus \$300-\$400 million more for maintenance and support on existing contracts.⁵⁷

The “oil crash” that began in late 1997 -- and which continued through the spring of 1999 -- forced Saudi Arabia to cut back even further on its arms purchases, and reduce its backlog of new orders. It also created new cash flow problems until Saudi oil revenues began to rise in the summer of 1999. In May 1999, the U.S. government had to devise financing options to justify the renewal of the \$850 million Peace Sun F-15 support contract and the estimated \$300 million Peace Shield airspace command and control program after Saudi Arabia missed a payment in March 1999. These two programs, which were due to expire at the end of May 1999, comprised only a fraction of the \$60 billion worth of FMS contracts signed between Saudi Arabia and the U.S. However, the suspension of these high-profile contracts could have damaged the relationship between the U.S. and its largest FMS customer, as well as jeopardize broader geopolitical and strategic cooperation between the two countries.⁵⁸

The rise in Saudi oil revenues that began later in 1999 eased these pressures, but the Kingdom cannot count on revenues remaining at high levels, and it has many competing civil needs, as well as other military funding priorities. Several senior Saudi officers, as well as long-experienced USCENTCOM and British experts, made it clear during interviews that they felt Saudi Arabia should limit its future major arms buys and focus on financing the training, facilities, and sustainment capabilities it needs to make them effective. US officers used the slogan “train, maintain, and sustain” At the same time, these same officers pointed out that much of Saudi Arabia’s equipment is now aging, and military technology continues to evolve. They noted that Saudi Arabia needs to reequip improve its interoperability with US power projection forces, and with the forces of its Gulf allies. They stressed that it needs to maintain qualitative superiority over the equipment in Iranian and Iraqi forces. It is clear from such interviews that limiting major new arms purchases in no way means no major new arms purchases.

The practical challenge Saudi Arabia faces is how to best restructure its arms purchases to create a balanced and sustainable flow of arms, services, and other equipment to both maintain balanced combat forces and support a reasonable degree of modernization. This should not be a problem at levels of annual arms imports that are under \$3 billion a year *if* Saudi Arabia limits its force expansion and modernization to the levels it can actually man, maintain, and integrate into an effective joint warfare capability. The issue is whether Saudi Arabia can adapt its arms buys to emphasize force quality over force quantity, and mission-effectiveness over the “glitter factor” and prestige provided by buying the most advanced equipment available.

Commissions and Special Fees

There is another aspect of Saudi arms purchases that needs close attention. The Saudi Ministry of Defense and Aviation (MODA), and its Western suppliers, needs to be more sensitive to the political image of arms imports inside in Saudi Arabia. Many Saudis, including some by Saudi ex-ministers and junior members of the royal family, feel that Saudi Arabia is being forced to buy arms it does not need and its arms purchases involve massive favoritism and corruption. Many such charges are unfair. The Saudi National Guard has long had a reputation for managing its arms buys with a very high degree of integrity. The MODA has improved its accounting and fiscal controls.

Favoritism and corruption are also scarcely unique to Saudi arms purchases. For example, a detailed cross-cultural comparison of Saudi and French military procurement might well favor Saudi Arabia. The US has had plenty of arms scandals over the years, and so has Britain. There has also often been Western political pressure on Saudi Arabia to buy equipment at the highest levels of Western governments, and much of this pressure had to have gone on with the knowledge that the proposed sales did not provide the best way of meeting Saudi Arabia’s military needs. Moreover, commissions and special fees are scarcely unusual in the region and developing world. Every Gulf state engages in such practices to some degree, including Iran and Iraq. Commissions and special fees are a normal practice in foreign arms sales to the rest of the Middle East, most of the developing world, and even some European countries.

Nevertheless, the larger the volume of sales, the larger the problem. In the case of Saudi Arabia, arms sales involve such massive sums that any problems risk tainting all Saudi military purchases with the image of corruption. It is hardly surprising, therefore, that extremist opposition groups -- and many moderate Saudis -- are convinced that Saudi arms purchases are often made as a result of commissions and bribes and charge that many of Saudi Arabia’s arms buys are simply a waste of money. This has rarely been the case, and Saudi Arabia’s arms buys

have generally bought highly quality and combat-effective equipment, but the politics of such buys have often disguised this fact.

Hidden commissions, special fees, inflated transport contracts, and profiteering through offset arrangements remain a problem. In spite of efforts to eliminate profiteering in arms sales, many European arms sales to Saudi Arabia involve at least some special payments, kickbacks, commissions and fees, or open bribes. In spite of US law, US companies and firms also find ways to make such payments -- sometimes by rigging the offset programs required as part of arms sales to favor firms or agents favored by given princes, or by allowing special transport and delivery contracts that go to firms run by members of the royal family. These commissions and fees are virtually the rule with European arms sales, and sales that are not controlled as part of the US Foreign Military Sales program.

These problems are compounded by the fact that the Saudi national budget -- like that of most countries in the developing world -- does not provide any detailed public information on Saudi military expenditures and arms purchases, and by agreements that trade oil for arms, or which are funded by state funds that are not integrated into the Saudi national budget. These "off-book" arms buys make orderly accounting extremely difficult, and lead to still further charges of corruption. Further, there is no doubt that many offset programs are overstaffed and too expensive, regardless of whether they are actually corrupt. In at least some cases, four Saudis or more are hired for every real job while foreigners do the actual work. While it must be stressed that some programs are real success, other offset programs may seem impressive on paper, but are little more than a waste of state funds.

Saudi offset programs present an additional problem. Saudi arms purchase contracts require the seller to provide an offset equal to 35% of the technical value or cost of the hardware purchased. There have been some striking successes like AEC, but the practical problem is that there is no way to create effective offset programs or staff them with skilled Saudi labor at the required rate.

Since the mid-1980s, US contractors alone have incurred offset obligations totaling over \$1.7 billion and only 16% have been realized. British contractors have only realized 8% of some \$2 billion in offsets, and French firms have only realized about 6% of \$700 million in sales.⁵⁹ Worse, some programs that have been created are dummy firms or "sweetheart" deals set up under retired officers, and/or the friends of princes and senior officers. Such programs only make an illusory contribution to the Saudi economy and/or Saudi defense. While offsets are desirable in principle, over ambitious programs simply create the illusion of aiding economic development

while encouraging corruption. The present Saudi offset program is little more than a hollow shell and needs massive restructuring.

Both Saudi Arabia and the West need to pay more careful attention to this aspect of Saudi arms sales. Commissions and special fees damage the credibility and integrity of the Saudi armed forces, the Saudi Royal Family, and Western governments and arms sellers. They waste state funds at a time when Saudi Arabia can no longer afford such waste, and they encourage political arms buys of a kind that undercut Saudi efforts at interoperability and standardization. There is an urgent need to improve Saudi military accounting and contracting procedures at a far more rapid rate than is currently the case, to ruthlessly prosecute Saudis and Westerners who engage in such practices, and to integrate every aspect of Saudi arms purchases fully so they are visible in the regular Saudi national budget and subject to normal Saudi audit procedures and fiscal controls.

VII. The Saudi Army

The Saudi Army has grown steadily since the 1960s, and has become an increasingly modern force. At the time of the October War in 1973, the Saudi Army had some 36,000 men, 25 medium tanks, and 260 other armored vehicles. By the time the Iran-Iraq War took place in 1980, the Saudi Army had 31,000 men, but had 380 main battle tanks, 600 other armored vehicles, and a significant strength of self-propelled artillery. The year the Gulf War began, the Saudi Army had 40,000 actives, 550 main battle tanks, 1,840 other armored vehicles, and 275 self-propelled artillery weapons.

The Saudi Army emerged as a significant regional military force during the Gulf War. Both Arab task forces -- Joint Forces Command (East) and Joint Forces Command (North) -- were organized under the command of Lt. General Prince Khalid Bin Sultan al-Saud.⁶⁰ By the time the AirLand phase of the war began, the Saudi ground forces in the theater totaled nearly 50,000 men, with about 270 main battle tanks, 930 other armored fighting vehicles, 115 artillery weapons, and over 400 anti-tank weapons.

The Saudi Army must also defend a territory roughly the size of the US east of the Mississippi. It also cannot concentrate its forces to meet a single threat and must normally disperse its forces over much of the Kingdom. This explains why it has a base and major combat elements at Khamis Mushayt and Shahrurah in the southeast, a garrison at Najran and Jazan in the south, and base and major combat elements at King Khalid City in the north, plus elements at Tabuk in the West and Dammam in the East. The Gulf Cooperation Council Peninsular Shield Force is located at King Khalid City, which is near the border with Kuwait and Iraq. These deployments were originally designed to preserve internal security as well by keeping Saudi Army forces away from key political centers of power, but there have been few signs of unrest in the Army for well over a decade, and the current deployments now largely reflect the fact that the Saudi Army cannot leave any of its border areas undefended.

Saudi Combat Unit Strength and Deployments

Today, 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.

In 2001, Saudi Army combat strength consisted 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 11th Mechanized Brigade at King Abd 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 had an armored reconnaissance company equipped with Panhard M3s, 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 had an army aviation company, an engineer company, a logistic battalion, a field workshop, and a medical company.

A typical Saudi mechanized brigade had 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 had 24 anti-tank guided weapons launchers and four mortar sections with a total of eight 81mm mortars.

The Airborne Brigade and Royal Guard Brigade were deployed near Riyadh. The Airborne Brigade had two parachute battalions and three Special Forces companies.⁶¹ The Special Forces companies report directly to Prince Sultan. The Royal Guard Brigade had three battalions, and was equipped with light armored vehicles. It reports directly to the King and is recruited from loyal tribes in the Najd. There was 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.

The Army has a number of major educational facilities. It operates the King Abd al-Aziz Military Academy near Riyadh, and an Army Staff College at Riyadh. There are numerous specialized training centers for NCOs and technicians in Saudi Arabia, and Saudi junior officers and other ranks train in specialized areas in Britain, France, and the US.

The Manpower Issue

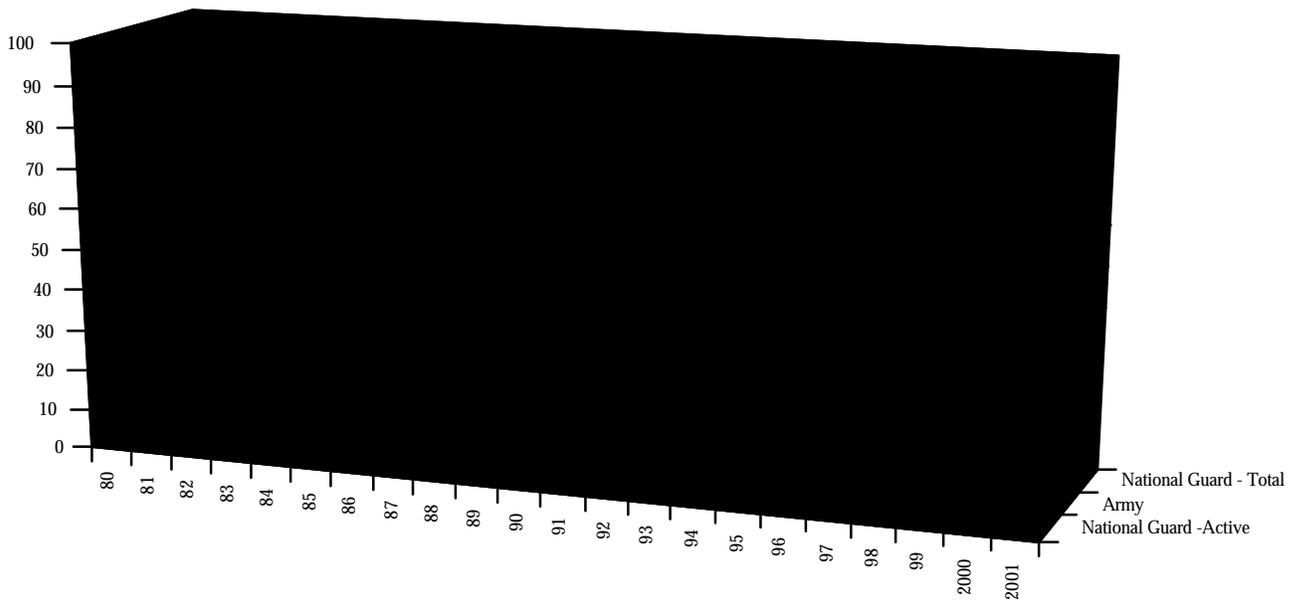
The trends in the build-up of the manpower in Saudi land forces is shown in Chart 7.1, and the Saudi Army has encountered growing problems in expanding to the force levels required to secure Saudi Arabia's northern borders, to help ensure the security of Kuwait, and to deal with potential problems in the south. Its most serious problem is manpower. The Saudi Army only had a total of 38,000-43,000 men in late 1988, with another 56,000 full-time and part-time men in the National Guard. Despite crash efforts to build up the army's manpower during the Gulf War -- efforts which sometimes raised combat unit manning by as much as 20% -- the army's force structure was still undermanned in 1991 by about 20-35%. Many individual units had even worse manning levels. As of 2001, the Saudi Army had still only reached a total of around 75,000 full time actives for a force structure that required up to twice as many men.

This level 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, they would total a force with a maximum of around 600 tanks and 1,000 other armored vehicles. In practice, the Saudi Army's force structure has an order of battle with a mix of brigade-sized forces equivalent to around three heavy divisions, and an equipment pool at least that size and requires more manpower than Saudi Arabia has available. The Saudi Army needs a minimum of 90,000-110,000 men to man its existing bridges, major equipment and support forces-- a substantial increase over the present total.

Saudi young men do have a growing financial incentive to join the military and the Saudi Army may be able to build up to these numbers during the next few years -- if it has the authority to do so and if it is given the proper funds. It can do so only quickly, however, at the cost of manpower quality. Training and merit-based promotion are serious problems, and it will be hard for to build up to more than 100,000 fully trained and combat capable men by the year 2005. Such a build-up would also cause turbulence and manpower allocation problems. Without such a build-up, however, the Saudi Army will have limited ability to sustain casualties, and will remain heavily dependent on contractor support for many service support, maintenance, and logistics functions.

Chart 7.1

Saudi Active Land Force Manning – 1980-2001
 1,000s of Personnel)



	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	2000	2001
■ National Guard - Active	8	10	10	10	10	10	10	10	10	10	35	35	55	57	57	59	60	62	65	69	70	75
■ Army	31	35	35	35	35	35	40	45	38	38	40	45	73	68	70	70	70	70	72	73	74	75
■ National Guard - Total	20	30	25	25	25	25	25	50	56	56	55	55	75	77	77	80	84	86	90	93	95	100

Note: Statistical base differs somewhat from that used for Charts 6.2 and 6.3.

Source: Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, 1995, ACDA/GPO, Washington, 1996; US State Department, World Military Expenditures and Arms Transfers, 1999, Bureau of Arms Control, Washington, 2000; various editions of the IISS, Military Balance, the JCSS, Military Balance in the Middle East, and material provided by US experts.

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Saudi Army Force Expansion

Saudi Arabia's manpower problems raise serious doubts about the kind of more ambitious force expansion that Saudi Arabia has discussed since the Gulf War, and which the Kingdom would need to deal with the Iraqi threat to its border area and Kuwait if Iraq should succeed in breaking out of UN sanctions. After the Gulf war, Saudi Arabia and the US carried out a secret Saudi-US Joint Security Review in August 1991 called the Malcor Report, and which was completed in August 1991. The resulting plan called for a three corps Saudi force of seven divisions by the year 2000. One option called for a nine-division force of 90,000 men.⁶²

The Saudi Army was soon forced to adopt more modest goals, but even these goals called for the Saudi Army to expand to a total of five divisions by the year 2000. The expansion also called for a conversion from a brigade-oriented command structure to a division-oriented structure. It would provide the ability to deploy up to three divisions in the north to defend Saudi Arabia's Gulf Coast and border with Iraq. Another division was to be deployed near Al-Kharj or the capital, and a fifth division in the south, although some sources indicate that one brigade of this latter division was to be in the south and the other would be at Tabuk.

These Saudi force expansion plans were somewhat more realistic than the Malcor plan, but still presented a major challenge in terms of available manpower and called for a relatively unwieldy division structure, rather than the brigade-oriented command structure that better suited the Kingdom. They required a minimum of 105,000 men to create a force that had limited combat endurance and sustainability, and required at least 130,000 men to provide a full mix of sustainability and support forces. At the times these plans were made, Saudi Arabia did not have the necessary manning to create additional combat units, and did not take any steps to add a mobilization component to its support forces.

Saudi Arabia faced other serious problems.

- First, the only way Saudi Arabia could shift to a true divisional force structure with five divisions was to create two-brigade units instead of the planned three-brigade forces, and leave them without adequate combat support and service support forces. This change, however, threatened to waste manpower and financial resources on administrative staff. A brigade structure remains the most efficient way of organizing Saudi forces as long as they are going to be dispersed widely to the borders of the country.

- Second, the Saudi command structure did not progress to the point where it could carry out the battle management for integrated combat operations at the divisional level.
- Third, even if Saudi Arabia was to make adequate progress in providing even lightly manned divisions, the total manning of the combat units in the Saudi Army had to expand from about 40,000 full time regulars in 1995 to over 100,000 men by the year 2000.
- Fourth, Saudi Arabia would have needed more than nine heavy brigades to provide the combat elements for such a force. A total Saudi force structure of about 10 brigades, plus some lighter independent formations, may be as large a force as Saudi Arabia can properly create and sustain until well beyond the year 2000.
- Fifth, Saudi Arabia considered creating two to three additional light divisions and adding a mobilization or reserve component to its support forces.⁶³ Such support forces would be had to have limited manning in peacetime, but would use temporary duty civilians in their support forces in a major crisis. The Saudi Army failed to create such forces and lay the groundwork for a rapid build-up in a crisis.
- Sixth, Saudi forces lacked the independent combat support and service support forces necessary to sustain and support the existing strength of the Saudi Army.
- Finally, much of Saudi maintenance continued to be performed by foreign contractors, and the quality of much of this work was mixed. Over-stretching Saudi military manpower meant further delaying Saudi Army ability to provide an adequate Saudi ordinance corps and Saudi forces that can properly sustain combat equipment away from major bases, in extensive maneuver, or under conditions where combat repair and recovery are needed.

Saudi Arabia would also have needed substantial additional purchases of equipment to equip such a force at a time when funds were becoming increasingly tight. Expansion required additional tanks, infantry fighting vehicles, self-propelled artillery and mobile air defense systems. Funding these items presented potential conflicts with the priorities of both existing Army units and the different funding priorities of the Saudi the National Guard. The National Guard had requested equipment and upgrades worth one billion dollars from the US by the early 1990s.

It is not surprising, therefore, that the Saudi Army kept its brigade-oriented force structure, and that its total forces remains at roughly three division equivalents. Even this force structure now has serious manpower quality, equipment maintenance and upgrade, sustainability, support, and training problems. Stretching limited manpower, equipment, and support capabilities to create added combat units serves little purpose. In fact, many US advisors feel that the Saudi Army should focus on improving its current force structure of nine brigades, although some elements of the leadership of the Saudi Army would like to add two more light brigades.

Regardless of what the Saudi Army decides, it will not be able to create a force structure that can meet regional threats like Iraq without help from its neighbors, allies like the US and Britain, and the West. Regardless of how Saudi plans develop, no foreseeable expansion of Saudi forces will enable the Saudi Army to defend its territory in the upper Gulf from an all-out attack by Iraq, or to concentrate its forces quickly and effectively to aid Kuwait, unless Saudi Arabia has extensive US support. Further, the threat from the northern Gulf is only part of the threat that Saudi Arabia must deal with. It must provide forces sufficient enough to guard against the emergence of an Iranian threat, defend its Western border area and Red Sea coast, while maintaining forces in the south to deal with a continuing low-level border conflict with Yemen.

The Saudi Army Equipment Build-Up and the Need for Improved Standardization and Interoperability

The Saudi Army's problems in expansion, planning, manpower, organization, and deployment are compounded by the sheer size of its equipment build-up. This build-up is shown in Chart 7.2. It should be stressed that the figures in this table are based on unclassified data, and that the trends shown are not precise. At the same time, they are unquestionably correct in broad terms and the build-up through the mid-1990s is extremely large and rapid.

The Saudi Army also 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 supplied by the US and France. It has holdings of five different types of major armored fighting vehicles and armored personnel

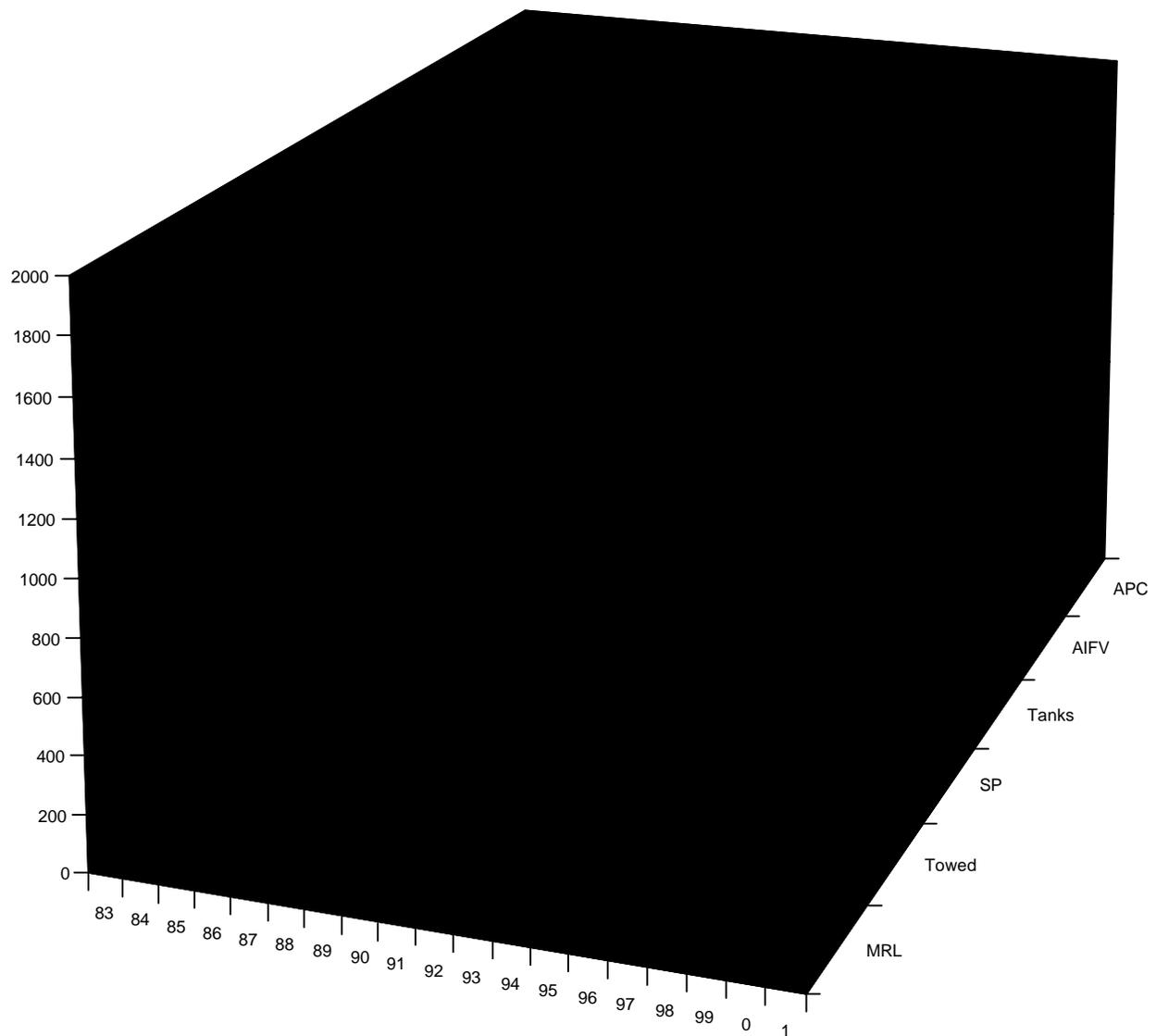
carriers, and an inventory of more than 20 subtypes. It has major artillery holdings from five different countries, anti-tank weapons from four, and helicopters from two. This equipment is broadly interoperable, but each additional type increases the Army's training and sustainability problems.

Saudi Arabia's unique weather, terrain, and desert warfare conditions also 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 Saudi Combat and service support capabilities, and all of 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 Saudi and US advisory management.

Chart 7.2

The Growth in Saudi Army Weapons Strength - 1979-2001



	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1
■ MRL	0	0	0	0	0	6	6	12	50	60	60	60	60	60	60	60	60	60	60
■ Towe	160	171	171	171	230	230	168	180	210	224	230	230	238	248	248	248	248	248	248
■ SP	170	185	185	275	275	275	275	275	275	275	170	170	200	200	200	200	200	200	200
■ Tanks	450	450	450	450	450	550	550	550	700	700	696	770	1055	1055	1055	1055	1055	1055	1055
■ AIFV	550	570	570	550	550	550	750	800	860	940	1005	1005	1205	1205	1205	1205	1205	1270	1270
■ APC	600	800	800	880	760	960	1300	1450	1600	1880	1880	1850	1850	1850	1850	1850	1900	1900	1900

Source: Adapted by Anthony H. Cordesman from various editions of the IISS, Military Balance, the JCSS, Military Balance in the Middle East, and material provided by US experts.

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Saudi Tanks

Saudi Arabia has made a massive investment in armor. The growth of Saudi armor strength is shown in Chart 7.3, and the trends shown in this Chart reflect a massive increase in total inventory, although Saudi Arabia has not been able to crew or support all of this inventory, and has had to retire its older types like the AMX-30 from service or put them in storage. Saudi holdings are compared to those of other Gulf states in Chart 7.3. It is clear from this chart that Iraq remains the largest armored power in the Gulf, although Iran has a high tank strength and Saudi Arabia has the highest overall level of mechanization.

In 2001, Saudi Arabia had a physical 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.

The M-60A3

Charts 7.4 through 7.7 show comparative armor and tank strength in the Gulf region. Saudi Arabia's M-60A3s and M-1A2s are the only part of its tank force that really meet Saudi needs, and the M-1A2 is one of the most advanced tanks in the world. At the same time, the M-1A2 is demanding in terms of crew training and maintenance, and sets an equally demanding standard in terms of artillery and mechanized infantry support in conducting combined arms operations and maneuver warfare. It.

The M-60A3 is not as advanced as the M-1A1, but Saudi Arabia has found the M-60A3 to be a significant advance over the M-60A1 and converted all of its existing M-60A1s to the M-60A3 by 1990. Saudi Arabia's other M-60A3s are relatively new. Saudi Arabia bought 150 M-60A3s, along with 15,000 depleted uranium 105mm anti-tank rounds, as part of an emergency order in August 1990.

The M-60A3 has shown it is still capable of engaging any tank currently deployed in the region. Although it lacks a decisive technical superiority over the T-72 and the other first-line tanks in potential threat forces, M-60s easily outperformed the export versions of the T-72 in Iraqi forces during the Gulf War. The M-60 is likely to remain in the Saudi force structure through the year 2000. The M-60A3s have thermal sights, modern fire-control computers, laser

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range finders, and engine and air intake improvements. The M-60A3 does, however, present some operational problems -- the crew compartment cannot be cooled effectively in extremely hot weather, and it can develop internal temperatures of well over 120 degrees.⁶⁴

The AMX-30

Saudi Arabia's inventory of 290 French AMX-30s is a different story. The AMX-30 lacks the armor, firepower, and operational availability to be kept in service against threats armed with T-62s, T-72s, and modern tanks like the T-80, M-60, Khalid, Merkava, Chieftain, and Challenger.

While the adoption of newer anti-armor round technology has made up for the lack of penetrating power in the Obus G rounds that France originally sold the Saudi Army, the AMX-30's fire control and range-finding capability is not able to help Saudi tank crews make up for their lack of experience. The AMX-30 also lacks the power, cooling, and filtration for desert combat. Saudi Arabia has needed to phase the AMX-30 out of its force structure for nearly half a decade.

A substantial number of its AMX-30s are evidently now in storage, but Saudi Arabia is unlikely to fully phase the AMX-30 out of its forces before the late 1990s. According to some reports, it is considering selling its AMX-30s and replacing them with the Le Clerc as part of the Al Yamamah deal.

The M-1A2 Upgrade Program

Saudi Arabia has sought improved armor since the mid-1980s. It began by seeking to re-equip and expand its armored forces with US-made M-1 tanks. The M-1 offered the Saudi Army one of the world's most effective weapons systems, and one that could be fully supported and upgraded over time by the US Army. It not only offered Saudi Arabia a tank superior to any tank in Iranian and Iraqi forces, but also offered improved interoperability and standardization with the US Army and improved US rapid deployment capabilities. Saudi Arabia faced major uncertainties, however, over whether the US Congress would permit such sales.

As a result, Saudi Arabia examined alternative tanks -- including Brazilian, British, French, and German models. It announced in February 1988 that it had short-listed the M-1A1 and EE-T1 Osoro for some form of co-production in a purchase that might involve some 315 vehicles and a \$1 billion contract. Two issues that then delayed a Saudi decision were

uncertainty over whether the US was willing to sell the M-1A2 with a 120mm gun, and whether Brazil could actually mass-produce the Osoro, which then only existed in prototype form.

Saudi Arabia finally decided to buy 315 M-1A2s for a total cost of \$3.1 billion in September 1989.⁶⁵ (One US experts indicates that a total 395 were in country in 2001, including spares and war reserves.) The reasons for the Saudi decision become clear from an examination of the M-1A2's performance characteristics. The Saudis bought an advanced version of the 68.5-ton M-1 with a 120mm gun, advanced armor, and thermal sights. It has full line-of-sight gun stabilization that provides full shoot-on-the-move capability. A digital ballistic computer provides quick aiming correction, based on automatic and manual inputs, such as wind velocity, vehicle cant, and gun tube deflection. A laser range finder provides target data for the ballistic computer. The thermal imaging sight improves target acquisition during both day and night at ranges in excess of 3,000 meters.

The M-1A2 does consume large amounts of fuel, but its 1,500 horsepower engine, automatic transmission, and two final drives give it a top speed of 43 mph on hard surfaced roads. An advanced torsion bar and long-stroke rotary shock absorber suspension give it cross-country speeds of up to 33 mph. Crew survivability is enhanced by the compartmentalized storage of fuel and ammunition, and an automatic fire extinguisher system. The tank has a comparatively low profile and noise signature, and has external grenade launchers for rapid concealment.

Other key features of the M-1A2 tank include:⁶⁶

- Added appliqué armor to protect it against future Soviet-made weapons systems, and potential upgradability to active armor.
- A commander's independent thermal viewer that allows him to acquire targets in the dark or haze, while the gunner is engaging other targets, and hand off such targets independently to the gunner.
- An improved commander's weapon station with excellent visibility and ballistic protection, an enlarged hatch, and protection against directed energy weapons.
- Precise position navigation and use of the satellite global positioning system (GPS).

- A carbon dioxide laser range finder that allows all-weather target engagement, reduces the risk of blinding friendly forces, and allows rapid enough calculation to engage helicopters.
- A systems integration package of features to reduce workload and crew fatigue.

Saudi Arabia bought other modifications of the M-1A2 that improved its capability for desert warfare. These included use of a Jaguar radio to improve inter-tank communication, instead of a single channel ground/air system, a driver's thermal viewer to improve visibility through smoke and dust, a two-kilowatt external auxiliary power unit, countermine equipment, and hardware and software capable of displaying English and Arabic text, and Arabic labels.

The Kingdom now has all 315 M-1A1s in service, and they have a 95% operational readiness rate. It is training using advanced systems like MILES, and is sending some commander to the National Training Center in the US. According to a number of experts, this element of the Saudi Army is now the only major element of its combined arms forces with moderate to high effectiveness.

Supporting the M-1A2 with Additional Armor and Equipment

This first M-1A2 sale was part of a package that included 30 M-88A1 tank recovery vehicles, 175 M-998 utility trucks, 224 heavy tactical trucks, 29 heavy equipment transporters, 268 five ton trucks, spares and support equipment, logistics support, ammunition, facilities design and construction, training aids and devices, and US military training services.⁶⁷ It involved substantial offset programs, including the manufacture of radios, circuit boards, and wiring assemblies for the tank.⁶⁸ The US Congress approved this sale after it became clear that Israel did not view it as a threat.⁶⁹

Saudi Arabia bought advanced gunnery trainers like the EEC M-1A2 gun trainer, and began to train crews at the US Army armored warfare training center at Fort Knox. This training project was called Project Sword and cost \$16.7 million. The first of the 178 Saudi troops to be trained in the US to act as instructors in Saudi Arabia arrived in the US early in 1993. These Saudi troops received language training in San Antonio and exercise training at the US Army proving ground at Aberdeen.⁷⁰

Saudi Arabia has also learned an important lesson from Iraq's experience during the Iran-Iraq War, and the movement of armor during the Gulf War. It now has 300 heavy equipment

transporters (HETs), and can move a brigade set rapidly using tractor trailers. The Saudi Army has practiced at least one such more in deploying a brigade out of Tabuk.

The On-Going Search for Replacements for the AMX-30

Iraq's invasion of Kuwait led Saudi Arabia to consider further purchases of M-1A2 tanks. On September 27, 1990, it signed a tentative agreement to buy a second armored vehicle package that included 235 M-1A2 tanks, 200 Bradley fight vehicles, 207 M-113 armored personnel carriers, 50 M-548 cargo carriers, 17 M-88A1 recovery vehicles, and 43 M-578 recovery vehicles. This agreement would have brought the total number of M-1A2s on order to 465 tanks, with delivery to begin in April 1993, and to take place over a three-year period.

However, Saudi Arabia delayed its order for 235 additional M-1A2s in late July 1992. It did so because Kuwait's purchase of the M-1A2 kept the M-1A2 production line open longer than had previously been estimated, and Saudi Arabia did not have to place its orders until production for Kuwait was completed. Saudi Arabia was then forced to continue delaying its order for financial reasons. These problems became so serious that it seemed in early 1994 that Saudi Arabia might have to delay taking delivery on its earlier orders of M-1A2s. The delivery of 175 M-1A2s took place in March 1994, and another 140 in August, but these deliveries only went forward after Saudi Arabia rescheduled its arms payments to the US.⁷¹

As a result, there is still a debate more than a decade after the Gulf War over (a) exactly how many new tanks Saudi Arabia will buy, (b) whether it needs and can afford a second type of modern tank, and (c) whether it will buy surplus tanks that will provide *de facto* prepositioning for US forces.⁷² Senior Saudi sources indicated in August, 1993, that the Saudi Army still planned to buy the additional 235 tanks, and was planning to create a total tank force of 1,200 tanks, with a total of 700 M-1A2s and 500 M-60A3s.⁷³ Since that time, however, the Kingdom has faced serious sustained financial pressure, and there have been no indication of major purchase plans.⁷⁴

It now seems likely, however, that new Saudi tank purchases may continue to be delayed because of their cost, and because of the problems in absorbing and manning and large additional number of modern tanks, In fact, senior Saudi Army officers see no need for additional tanks in the near future, and would much rather have additional funding for training and sustainment.

Nevertheless, there been a continuing competition for such sales -- a competition which has been heightened by Saudi Arabia's history of buying major equipment from a number of suppliers to try to win broad foreign support, the concern of some Saudi officers about becoming

over-reliant on US supply of the M-1A2, an intense political lobbying effort, and the payment of commissions.

A number of Saudi officers advocated the purchase of the French Le Clerc, and the Le Clerc completed extensive trials in Saudi Arabia in August 1995, to fill the vacancies left by the retirement of the AMX-30.⁷⁵ According to some US experts these trials were successful enough for the Saudi Army to consider replacing its AMX-30 tanks with the Le Clerc, and Saudi Arabia called for further tests.⁷⁶ A specially modified version of the Le Clerc underwent field tests in late July 1997 as part of competitive trials between the Le Clerc, the M-1A2, and the British Desert Challenger for a \$3 billion contract with the Royal Saudi Land Forces.⁷⁷

The British were also been invited to participate in the competition for Saudi tank purchases, and sent the Desert Challenger to the Kingdom for firepower and mobility trials during the summer of 1996. After an initial generator failure, the Challenger completed around 3000 km of endurance tests.⁷⁸ The Desert Challenger has a number of improvements over the original Challenger 2, including a German MTU powerpack capable of matching the Le Clerc's 1,500 hp. The Desert Challenger was also accompanied by a Challenger Armored Repair and Recovery vehicle. The British hoped to persuade the Saudi army to move forward with a proposed \$4.7 billion contract for 150-300 Desert Challengers, and possibly to buy Desert Warrior armored fighting vehicles and AS-90 self-propelled guns for British equipped units.

This competition, and the fact that an entire brigade of AMX-30s is due for early retirement, prompted General Dynamics Land Systems, the manufacturer of the M-1A2, to offer to retrofit the entire Saudi M-1A2 inventory with an auxiliary power unit and crew compartment cooling system. According to GDSL the retrofit could be done relatively easily at a facility in the region. GDSL has indicated that it hopes such actions would be followed by the purchase of additional M-1A2s.⁷⁹

The Problems in Buying Two Major Types of Main Battle Tank

Quite aside from the financial issues involved, this ongoing competition between the M-1A2, Le Clerc, and Desert Challenger has created a serious risk that the Saudi Army could eventually buy two totally different types of advanced main battle tanks -- each with different training, support, maintenance and tactical requirements. It could also create additional problems in terms of power projection and the defense of the upper Gulf. Saudi Arabia has refused US requests to preposition armored division equipment sets in Saudi Arabia, and efforts to create stronger Gulf Cooperation Council forces to defend Kuwait and the Upper Gulf have failed.

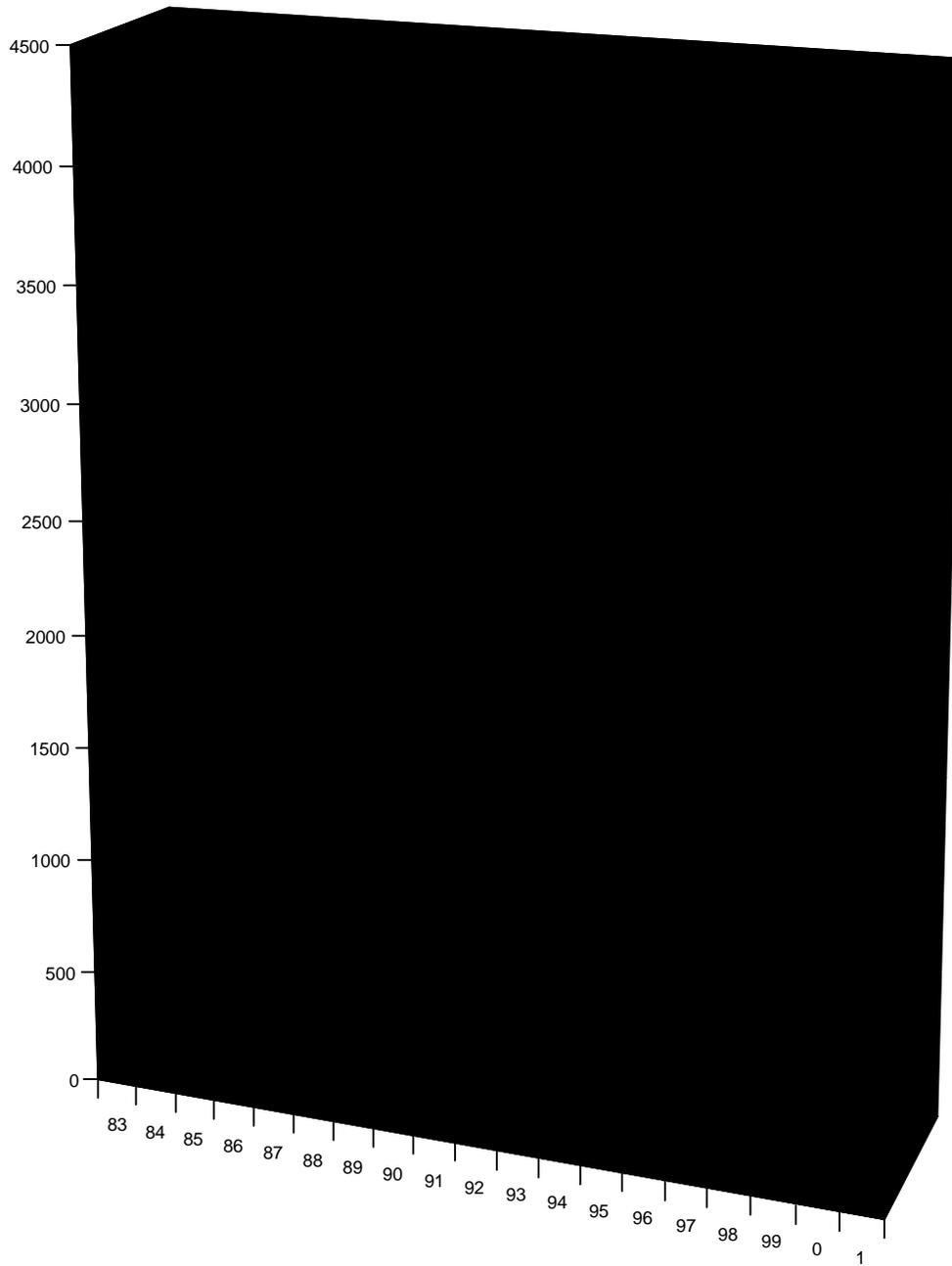
The US M-1A2 tank may or may not be slightly better than its European counterparts. The M-1A2, Le Clerc, and Desert Challenger all seem to be excellent tanks. The fact remains, however, that any differences in technical characteristics are likely to be of minor importance in determining Saudi military effectiveness. The real issue is the improved standardization and interoperability that would result from standardizing on US equipment. There also is no question that the US Army is the only Western force that can provide major reinforcements to the Saudi Army in combined arms coalition warfare. The French Army has never had the capability to project armored forces to the Gulf. Recent British force cuts mean that the British Army cannot deploy the kind of armored forces to the Gulf that it deployed in 1990. Purchases of these tanks as an alternative to US armor cannot meet Saudi military needs.

At the same time, serious questions arise as to whether the Kingdom really needs massive new tank purchases, and can afford them. It already has a total of 765 M-60A3s and M-1A2s in inventory or on order. A force of roughly 900 tanks would give it the equivalent of three heavy armored divisions or four light divisions worth of tanks that are considerable more advanced than those in Iraqi inventory. Slowly expanding the holdings of its current eight heavy brigades would ensure that it developed effective crews and support with a minimum of “turbulence” in terms of manpower, training, and providing adequate support and training.

While the resulting Saudi tank force would not come close to the 2,700-odd tanks in Iraqi forces, Iraq now must rely on 1,000 obsolescent T-54s, T-55s, T-77s, T-59s, and T-69s, plus some captured Chieftains, M-47s, and M-60s of dubious operational value. Iraq’s core tank strength consists of only 200 T-62s and 700 T-72s, none of which have truly modern fire control systems or armor, and Iraq has not been able to substantially modernize any aspect of its tank force since 1990. An effective Saudi Army that could rapidly concentrate to defeat or substantially delay an Iraqi force with 5-6 of Iraq’s best divisions might well be effective in meeting Saudi Arabia’s needs. Expanding tank holdings faster than Saudi Arabia can crew or sustain them will not.

Chart 7.2

The Growth in Saudi Armored Weapons Strength - 1979-2001



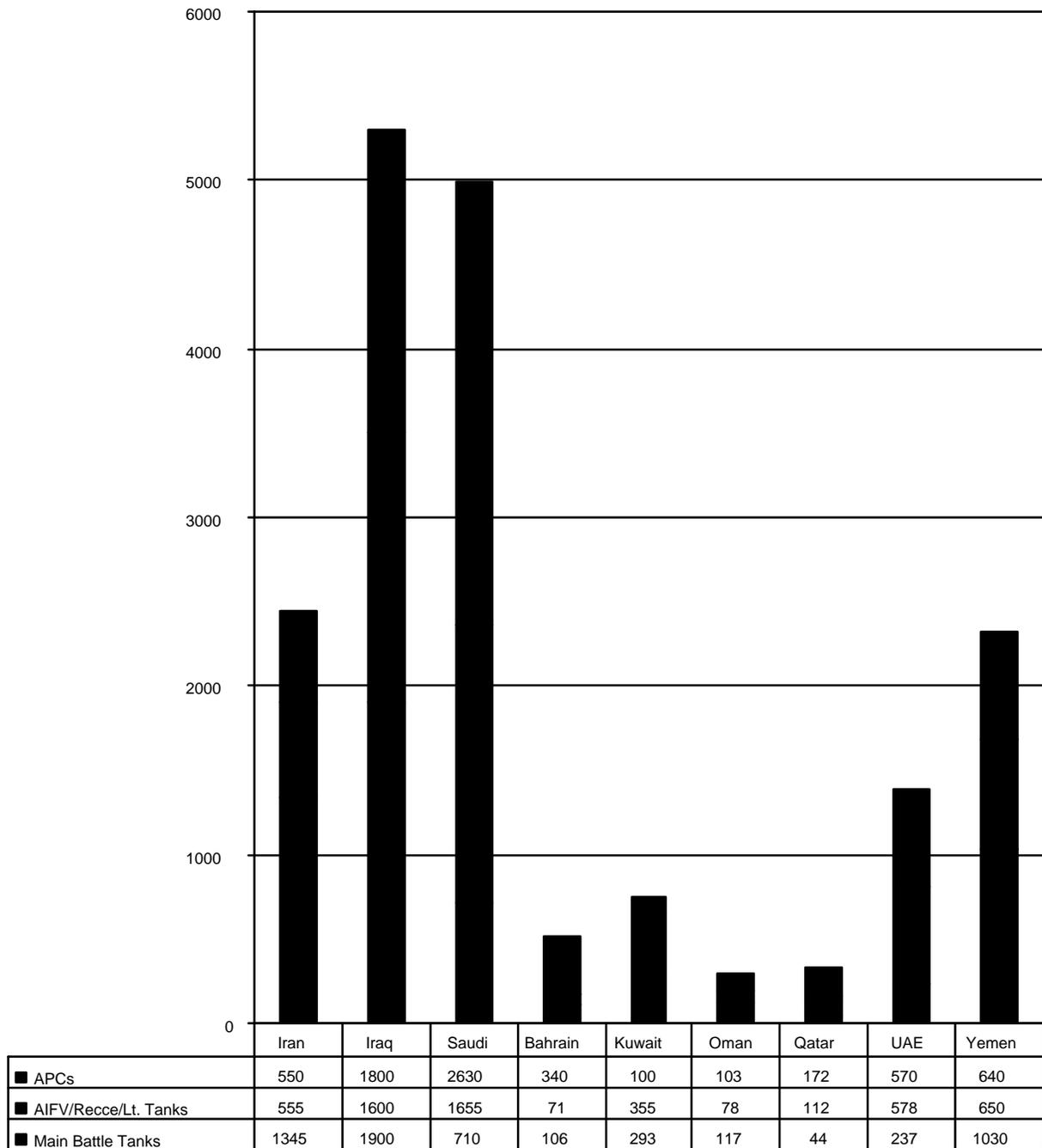
	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1
■ APC	600	800	800	880	760	960	1300	1450	1600	1880	1880	1850	1850	1850	1850	1850	1900	1900	1900
■ AIFV	550	570	570	550	550	550	750	800	860	940	1005	1005	1205	1205	1205	1205	1205	1270	1270
■ Tanks	450	450	450	450	450	550	550	550	700	700	696	770	1055	1055	1055	1055	1055	1055	1055

Source: Adapted by Anthony H. Cordesman from various editions of the IISS, Military Balance, the JCSS, Military Balance in the Middle East, and material provided by US experts.

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Chart 7.3

Total Gulf Operational Armored Fighting Vehicle Strength in 2001

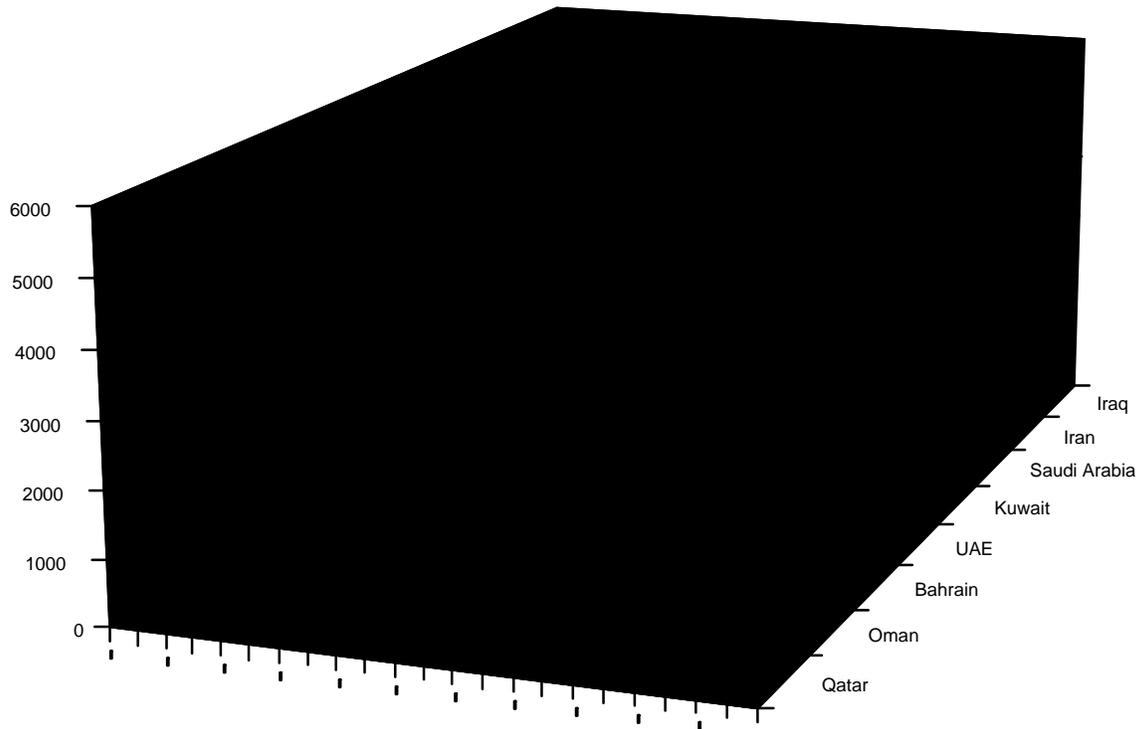


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Chart 7.4

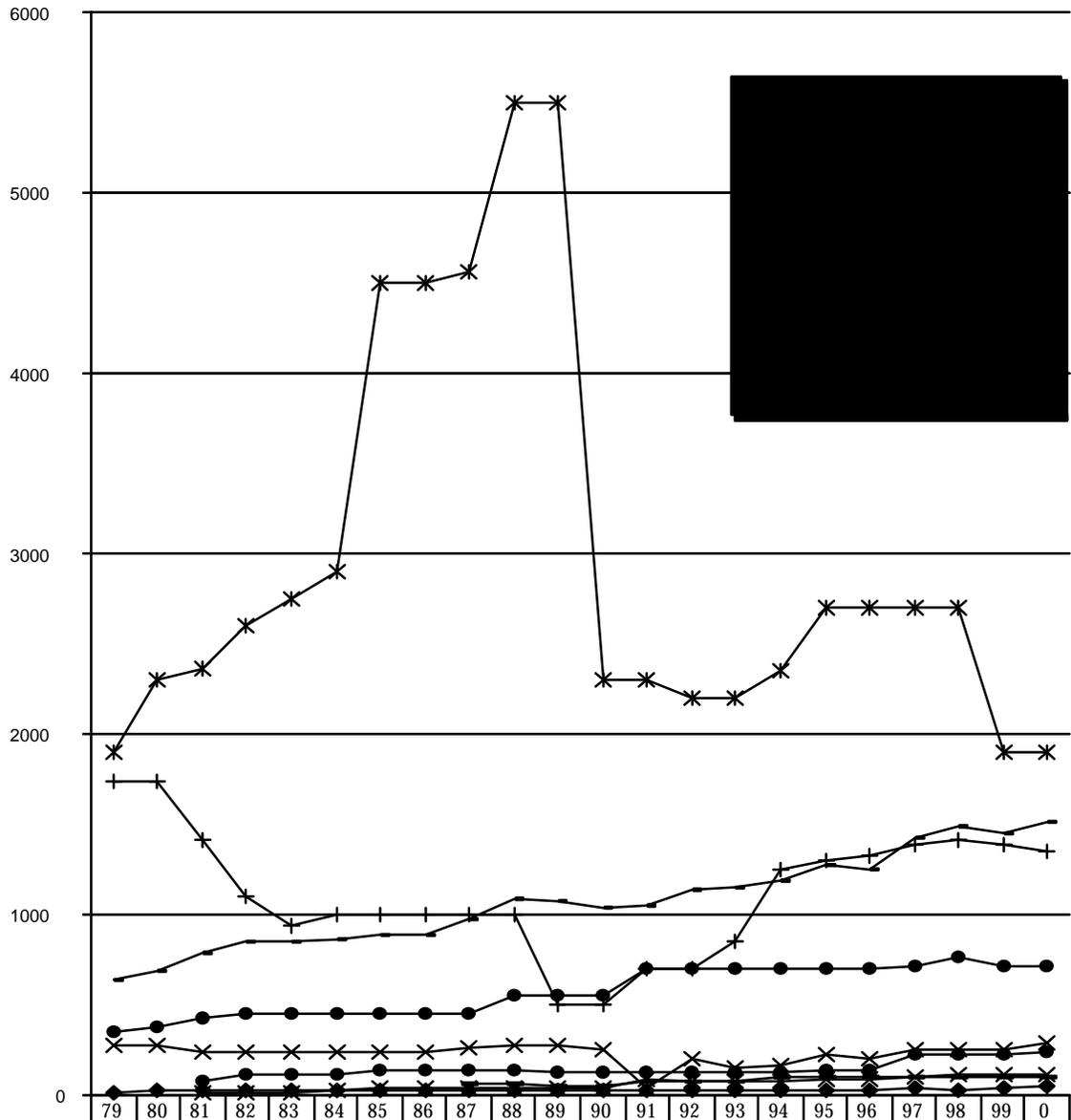
Trends in Total Gulf Main Battle Tank Inventory: 1979-2000



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0
■ Qatar	12	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	34	34	44
■ Oman			18	18	18	26	33	39	39	39	39	39	82	78	73	73	91	91	97	117	141	141
■ Bahrain									60	60	54	54	81	81	81	106	106	106	106	106	106	106
■ UAE			75	118	118	118	136	136	136	136	131	131	131	131	125	125	133	133	231	231	231	237
■ Kuwait	280	280	240	240	240	240	240	240	260	275	275	245	36	200	150	164	220	198	249	249	341	385
■ Saudi Arabia	350	380	430	450	450	450	450	450	450	550	550	550	700	700	696	700	700	700	765	810	1055	1055
■ Iran	1735	1735	1410	1100	940	1000	1000	1000	1000	1000	500	500	700	700	850	1245	1390	1390	1410	1410	1410	1410
■ Iraq	1900	2300	2360	2600	2750	2900	4500	4500	4560	5500	5500	2300	2300	2200	2200	2350	2700	2700	2700	2700	2700	2700

Chart 7.5

Total Operational Main Battle Tanks in All Gulf Forces 1979 to 2000



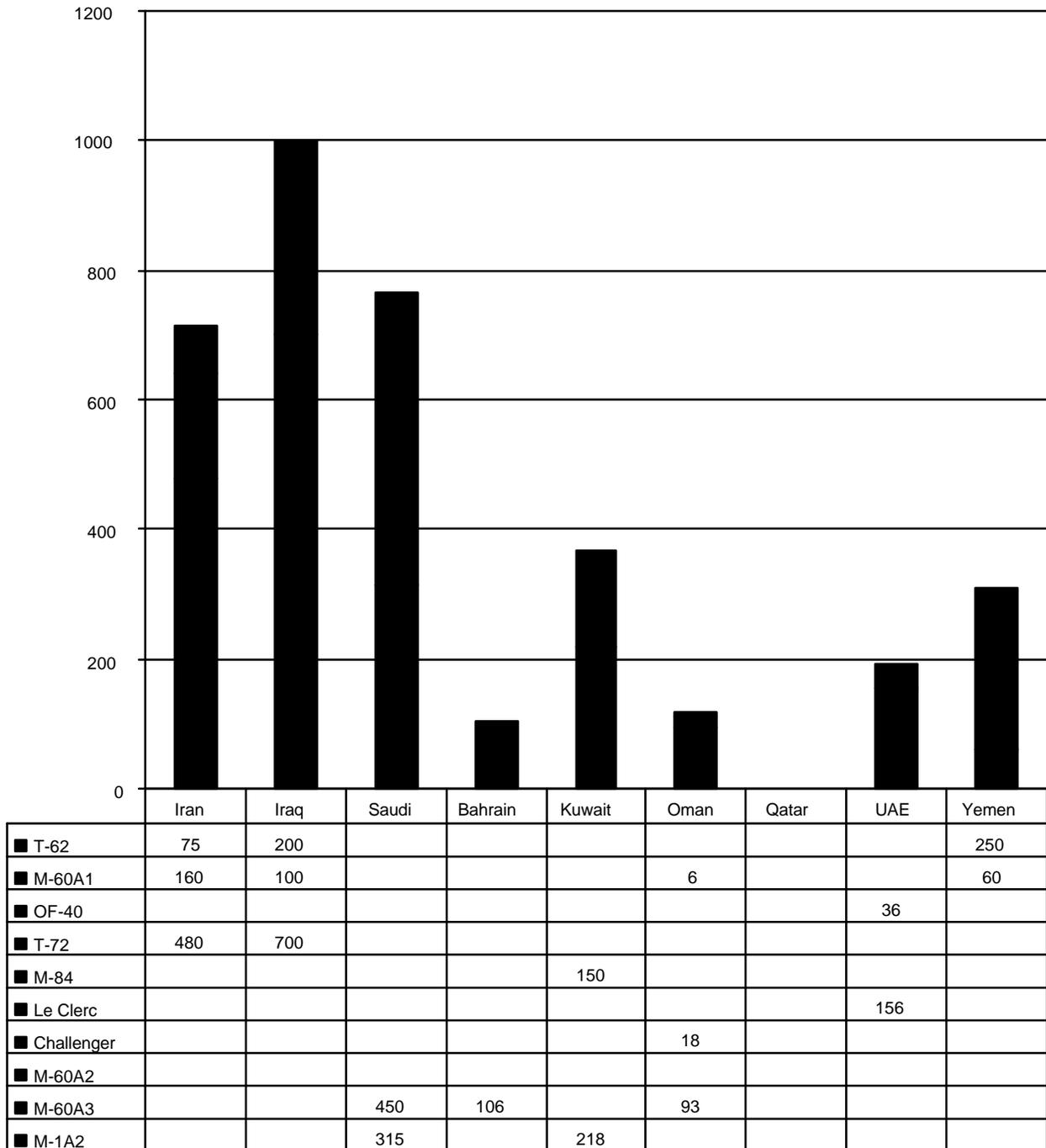
—●— UAE			75	118	118	118	136	136	136	136	131	131	131	131	125	125	133	133	231	231	231	237
—●— Saudi Arabia	350	380	430	450	450	450	450	450	450	550	550	550	700	700	696	700	700	700	710	760	710	710
—X— Oman			18	18	18	26	33	39	39	39	39	39	82	78	73	73	91	91	97	117	117	117
—◆— Qatar	12	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	34	44
—X— Kuwait	280	280	240	240	240	240	240	240	260	275	275	245	36	200	150	164	220	198	247	249	249	293
—*— Iraq	190	230	236	260	275	290	450	450	456	550	550	230	230	220	220	235	270	270	270	270	190	190
—+— Iran	173	173	141	110	940	100	100	100	100	100	500	500	700	700	850	124	130	132	139	141	139	134
—●— GCC	642	684	787	850	850	858	883	889	969	108	107	104	105	113	114	119	127	125	142	148	144	150
—●— Bahrain									60	60	54	54	81	81	81	106	106	106	106	106	106	106

Note: Iran includes active forces in the Revolutionary Guards. Saudi Arabia includes active National Guard. Source: Adapted by Anthony H. Cordesman from various sources and the IISS, Military Balance, various editions.

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Chart 7.6

Medium to High Quality Main Battle Tanks By Type in 2001

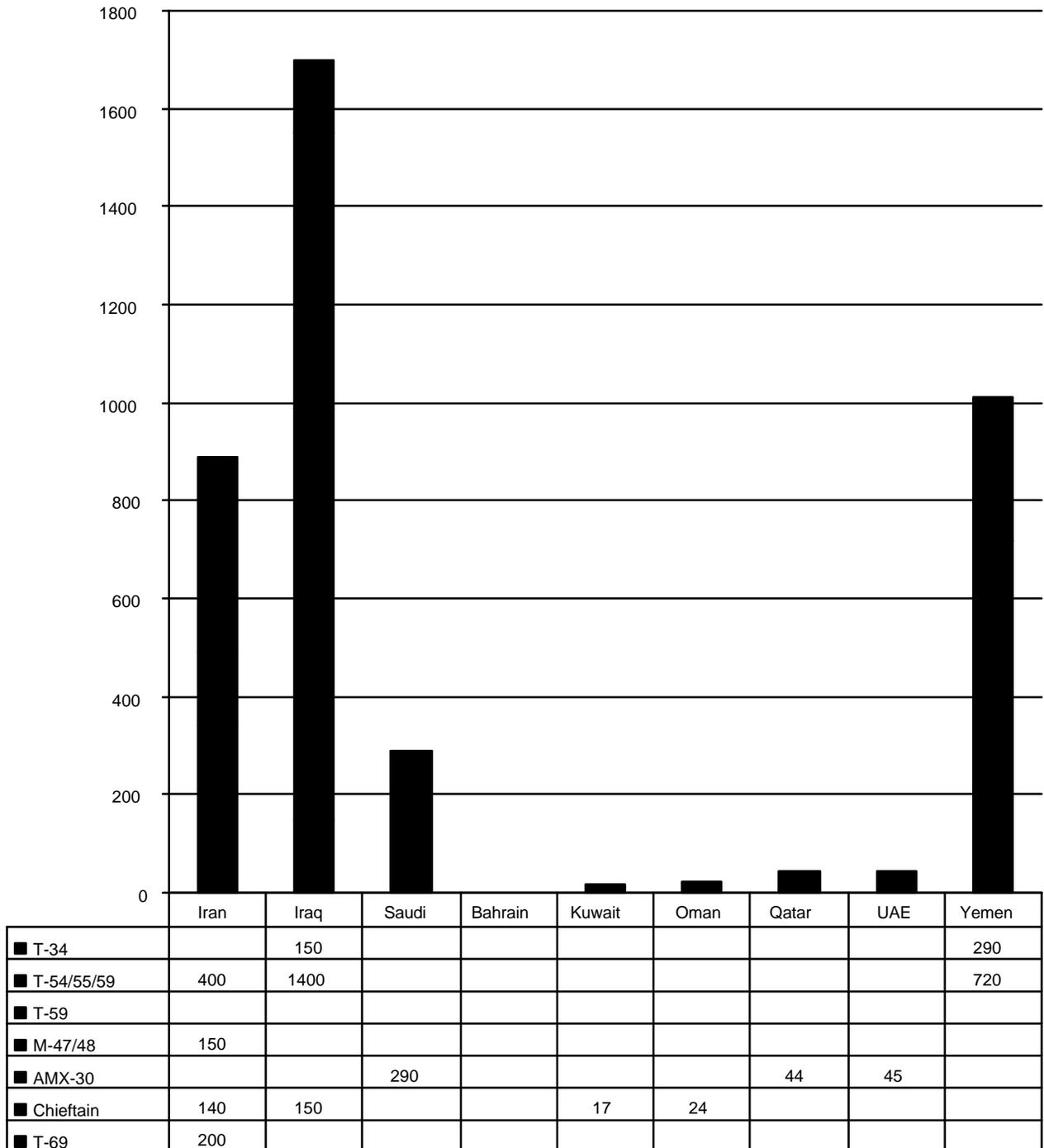


Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance.

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Chart 7.7

Holdings of Low Quality Main Battle Tanks By Type in 2001



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Saudi Other Armored Vehicles

Saudi Arabia has a large inventory of other mechanized armored equipment. It has roughly 2,600 armored vehicles in addition to its tanks (235 reconnaissance, 970 armored infantry fighting vehicles, and 1850 armored personnel carriers), and has a ratio of about 27 actives per other armored vehicle. In contrast, Iran has 960 other armored vehicles for 350,000 actives, and Iraq has about 3,500 for 350,000 men. These comparisons are shown in more detail in Charts 7.8 to 7.12. 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.⁸⁰

Problems in Standardization and Modernization

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 mid-1998, however, the Saudi Army's holdings of armored infantry fighting and command vehicles seem to have included 400 M-2A2 Bradleys, 150 M-577A1s, 570 AMX-10Ps, and 200 Camillinos. It had 390-420 AML-60, AML-90, and AML-245 reconnaissance vehicles, of which roughly 235 remained in active service in the army. It also had 250 VAB/VCI mechanized infantry combat vehicles, command vehicles and special purpose vehicles.

The Saudi Army had 1,750 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 30 EE-11 Brazilian Urutus, 110 German UR-416s, 120 Spanish BMR-600s and 270-290 Panhard M-3/VTT armored personnel carriers in inventory. Only 150 of the 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, as well as interoperability with US forces. At the same time, they present serious problems in standardization and modernization. Saudi Arabia has bought too wide a variety of types and sub-types of OAFVs. 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 this is a major training, maintenance, logistic, maneuver, and readiness problem.

The Bradley M-2A2

Saudi Arabia has attempted to deal with some of its standardization and interoperability problems by buying more modern US armored vehicles -- including the M-113 and M-2A2 Bradley. During the Gulf War, it ordered 400 M-2A2 armored fighting vehicles for a cost of \$1.5 billion. It also bought 200 M-113 armored personnel carriers, 50 M-548 cargo carriers, 17 M-88A1 recovery vehicles, and 43 M-578 recovery vehicles.⁸¹

By 1997, the Saudi Army had all 400 Bradley M-2A2s in service, in addition to 1,500-1,750 M-113 variants in its active force structure. These M-2A2s gave the Saudi Army an OAFV with the speed, protection, and firepower to keep pace with Saudi tanks and outmatch the Soviet armored fighting vehicles in most potential threat armies -- many of which have better protection and firepower than many of the armored vehicles in service with Saudi forces. The M-2A2 is heavily armed, equipped with TOW-2 missiles and a 25 mm cannon. It has air conditioning, which provides protection against gas warfare and allows extended operation even at peak desert temperatures. Saudi Arabia has contracted with FMC-Arabia for logistic support of the M-2A2.⁸²

Saudi Arabia built facility to upgrade its M-113 series vehicles that is located near Al-Kharj. In a \$413 million contract awarded in early 1997, FMC Arabia is overhauling 523 M-113A1/ M-113A2 series full-tracked APCs to the latest M-113A3 standard using U.S. parts. The improved M-113A3 includes a more powerful 6V-53T Detroit Diesel engine, Allison X-200-4 automatic transmission, external fuel tanks, and variable speed cooling fan.⁸³ This facility may eventually upgrade another 1,000 or more M-113s, as well as the M-2, M-109, and other armored vehicles.

Further Purchases and Force Expansion

Saudi sources indicated as early as August, 1993, that Saudi Arabia might go on to buy a total of 550-700 M-2A2s, and then standardize on the M-113A1 for the rest of Saudi Arabia's armored fighting vehicles. Like the M-1A2 buy, a larger purchase would have improved Saudi army capabilities, and provided a higher degree of interoperability and standardization with US Army forces. The M-113, and various combat versions of the M-113, are acceptable armored vehicles, although they lack the speed and armor to fight armored forces equipped with the most modern tanks and armored fighting vehicles.

Saudi Arabia's funding problems, however, make it increasingly unlikely that Saudi Arabia will make major new buys of M-2A2s in the near future. In fact, Saudi Arabia already has problems in properly crewing and supporting its existing M-2A2 force. It now has only 70% of

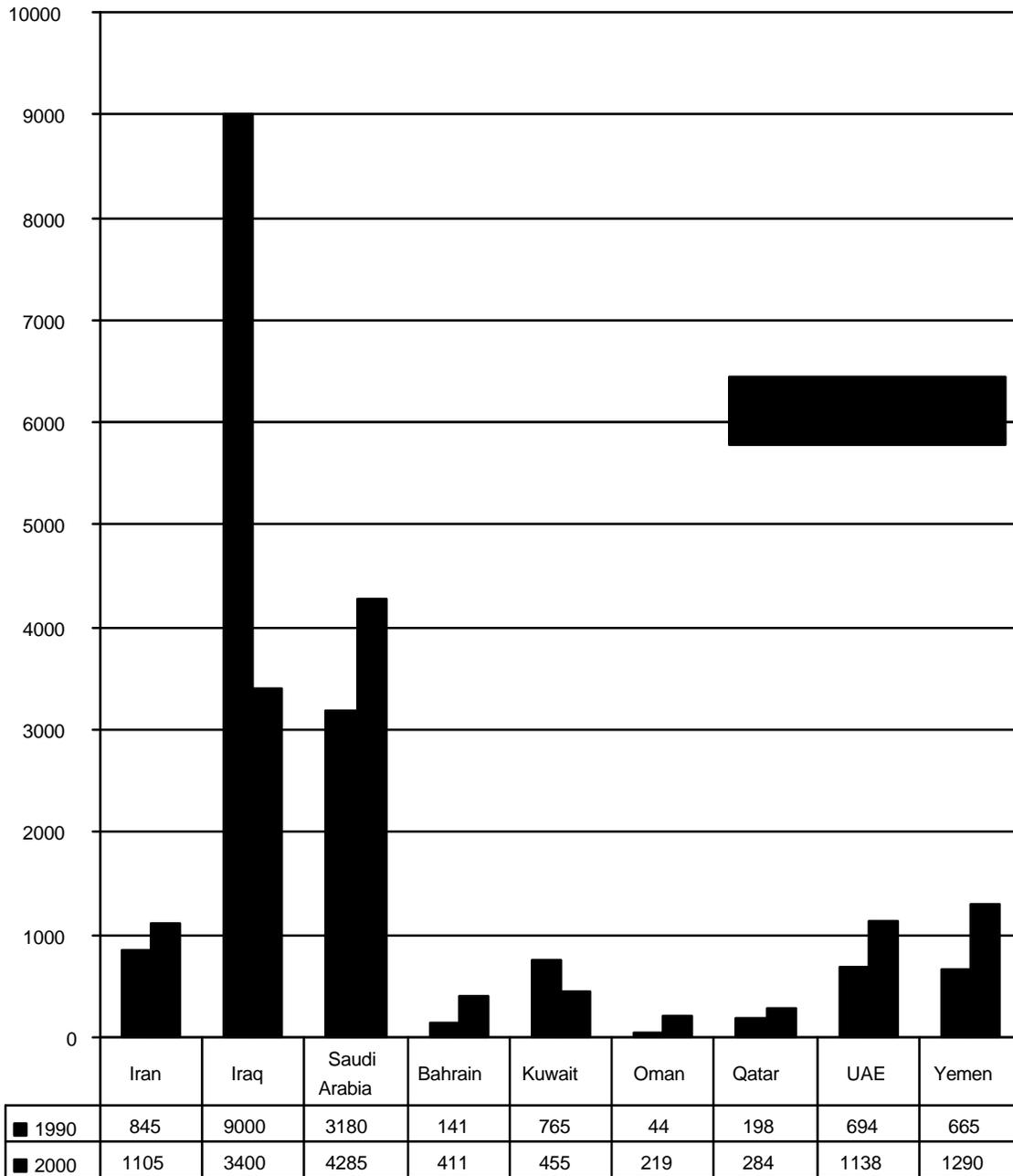
the mechanics it needs and 15-20% of these are misassigned. Further, even if Saudi Arabia did buy more M-2A2s this would scarcely eliminate its need to support many types of armored vehicles that are dependent for parts and technical support on so many different countries. The upgrading of its M-113s seems far more cost-effective.

Even so, Saudi Arabia has continued to buy other types of OAFVs. It has 36 German Fuchs chemical defense vehicles and additional French armored vehicles in delivery, and is examining possible purchases of other armored vehicles from Brazil, Britain, and Germany.⁸⁴ It announced in 1997 that was also producing a 6X6 wheeled armored fighting vehicle called the Peninsula Shield. This system began development in 1977, and entered advanced development in 1998. It is being built at the Abdallah Al-Fairs Heavy Industries factory in Dammam, and Saudi Arabia plans to build 50 in 1997, and then 150 a year later. It is amphibious, and has a 450 horsepower engine. It is said to have a land speed of up to 90 kilometers per hour and to go up to 16 kilometers per hour in water. Saudi Arabia has conducted trials of a version with a two-man turret with a 90mm gun.⁸⁵

Once again, the Saudi Army needs to give more attention to standardization, interoperability, and ease of training. The key priority is not more or better equipment, it is to “train, maintain, and sustain” the force in ways that make it combat effective, and to organize for effective combined arms warfare at the brigade level. The dispersal of the Saudi Army, the speed of the M-1A2, and the need to concentrate on the Iraqi border in an emergency also mean that speed of maneuver and sustainability are critical to success. Nathan Bedford Forrest is unlikely to have had much Saudi blood, but his advice that a force be “Fustest with the mostest!” is far more important than any of the technical differences between various types of other armored vehicles.

Chart 7.9

Total Operational Other Armored Fighting Vehicles (Lt. Tanks, Scout, AIFVs, APCs, Reconnaissance Vehicles) in Gulf Forces: 1990-2000

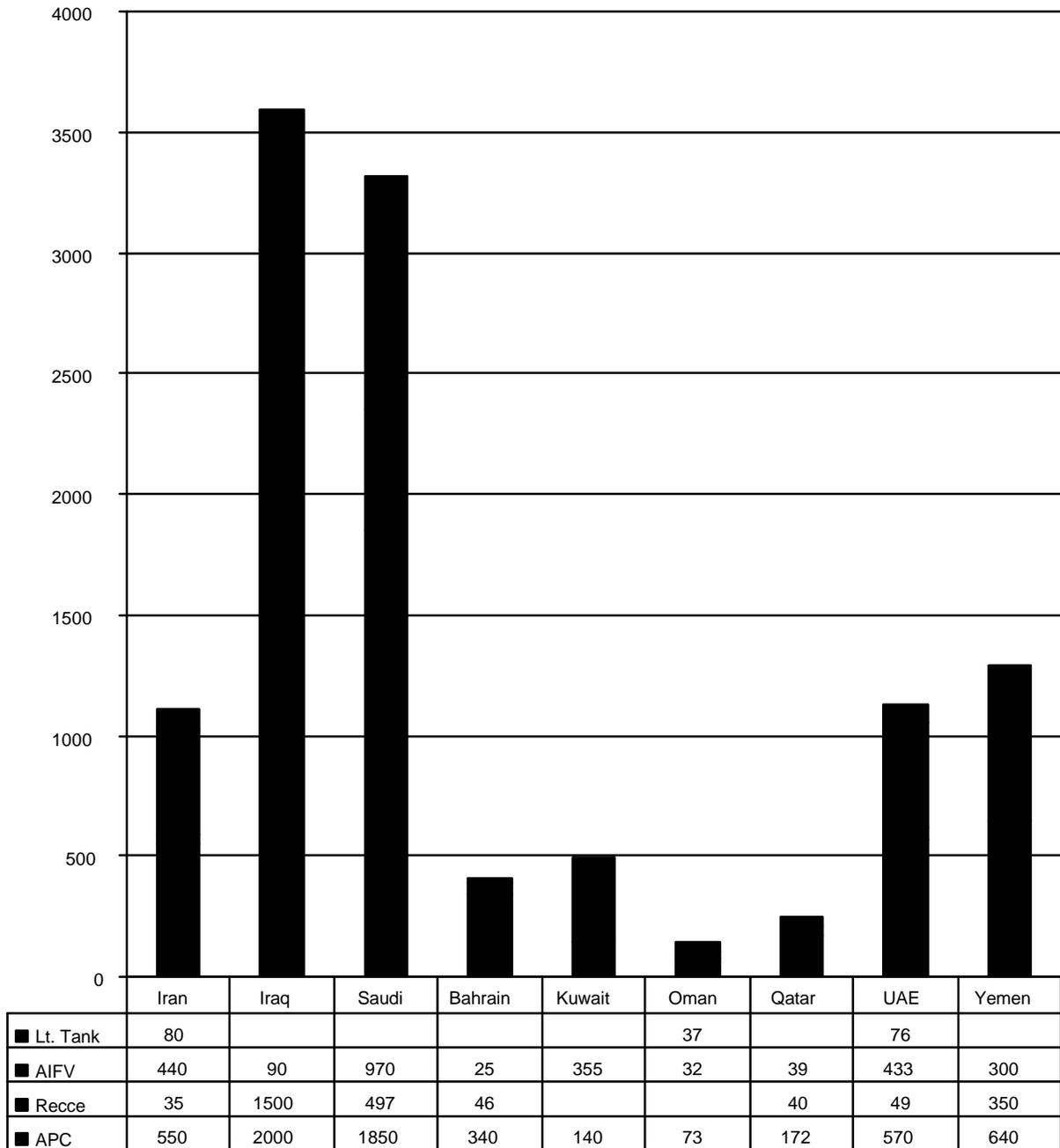


Note: Iran includes active forces in the Revolutionary Guards. Saudi Arabia includes active National Guard.

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

Chart 7.10

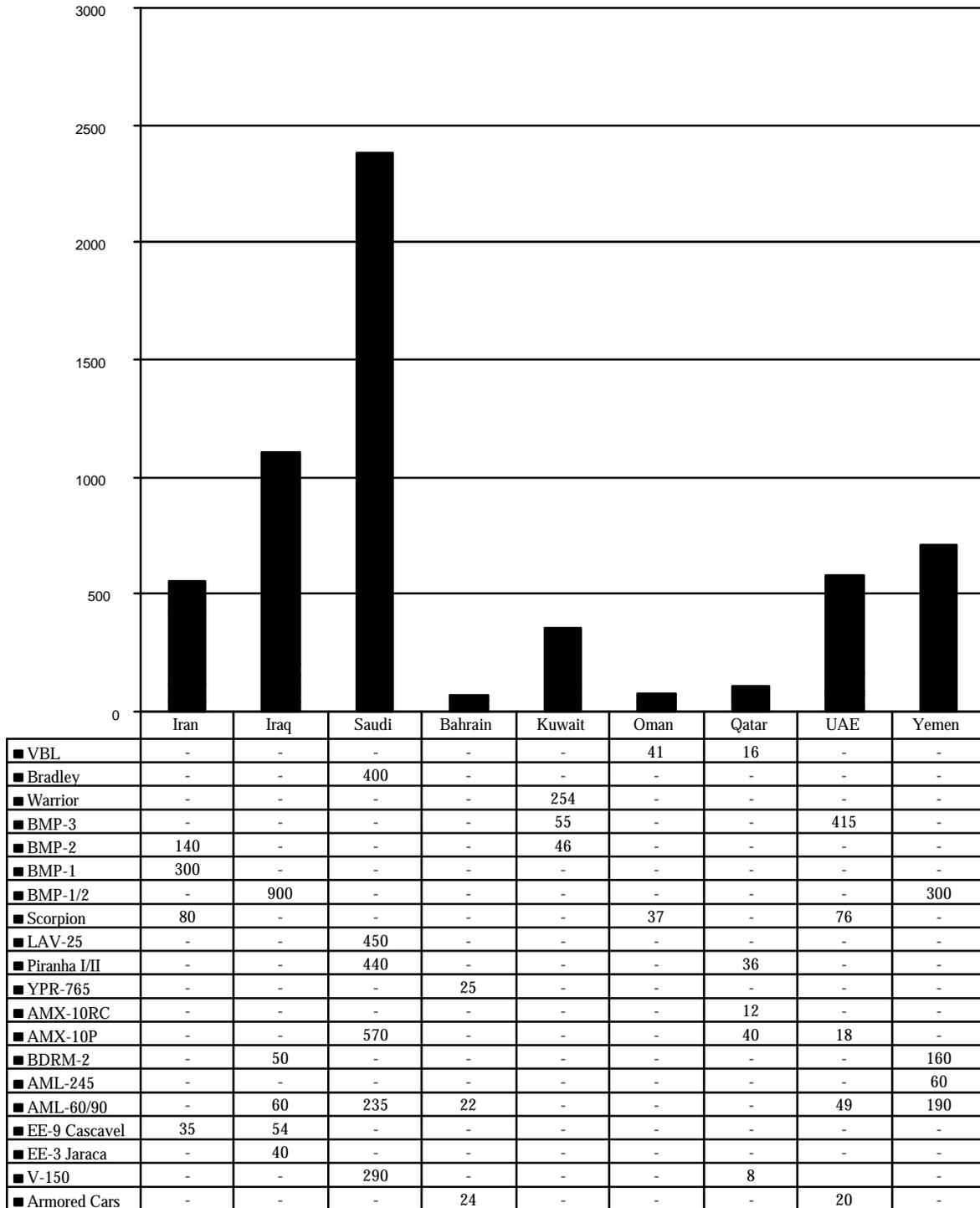
Gulf Other Armored Fighting Vehicles (OAFVs) by Category - 2001



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

Chart 7.11

Advanced Armored Infantry Fighting Vehicles, Reconnaissance Vehicles, Scout Vehicles and Light Tanks by Type in 2001

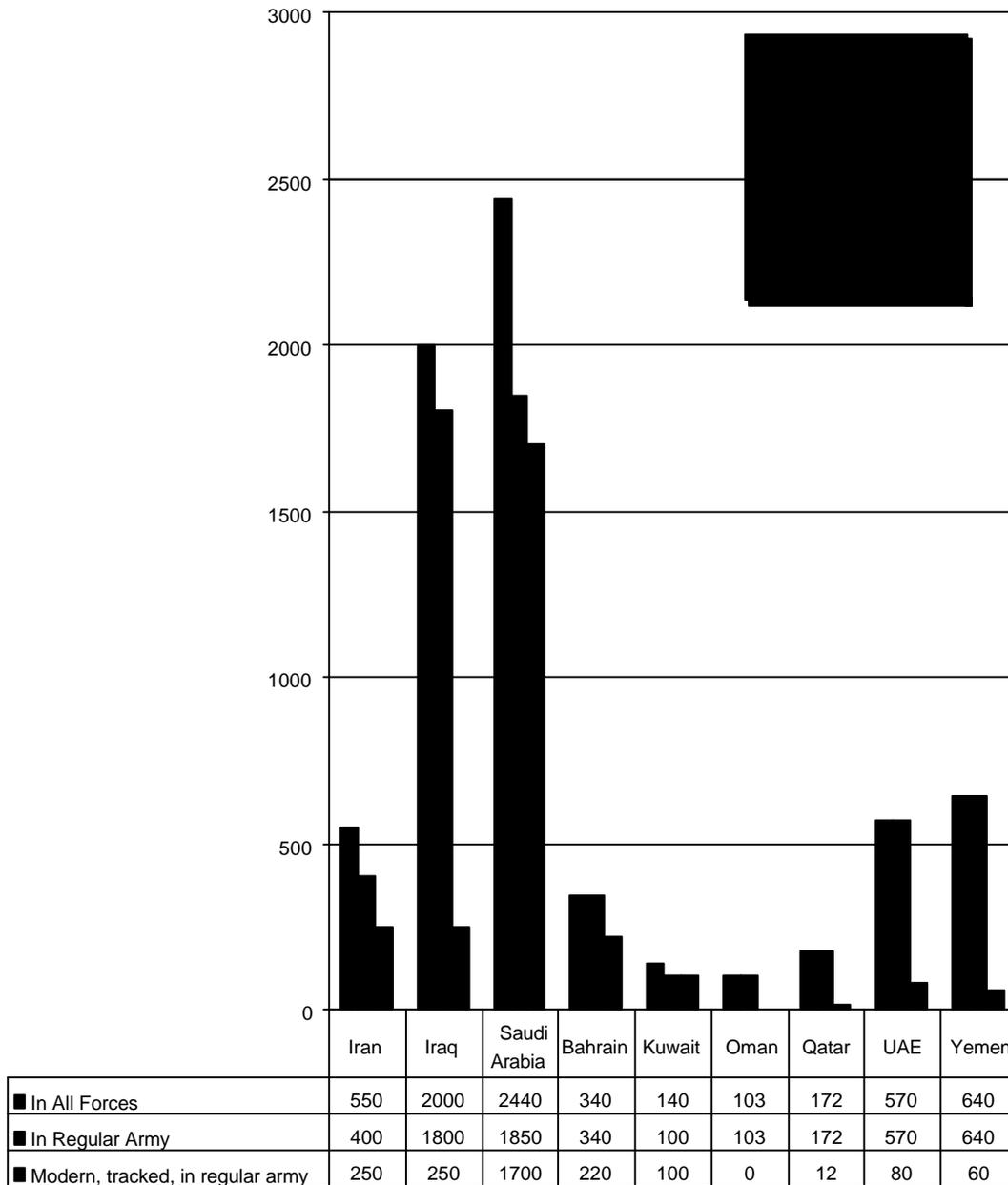


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Chart 7.12

Armored Personnel Carriers (APCs) in Gulf Armies – 2001



Note: Iran includes active land forces in the Revolutionary Guards. Saudi Arabia includes the active forces in the National Guard

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Saudi Anti-Tank Weapons

The Saudi Army has an excellent 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. In 2001, Saudi Arabia had 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 90 HOT launchers mounted on AMX-10P armored fighting vehicles.

The Army also had large numbers of TOW crew-portable and Dragon man-portable anti-tank guided weapons systems. It also had 300 Carl Gustav rocket launchers, 400 M-20 3.5" rocket launchers, thousands of M-72 LAWs, and extensive numbers of 75 mm, 84 mm, 90 mm and 106 mm rocket launchers and recoilless rifles. Saudi Arabia had a large number of missiles, including advanced types. It had ordered 4,460 TOW-2 missiles in April 1987, and 150 more TOW-2A missile launchers with night vision sights and support equipment on September 27, 1990.⁸⁶ The Saudi Army had ordered French Apilas anti-tank weapons in 1991.

Unlike the older anti-tank guided weapons in some Gulf armies, the Saudi Army missiles that can kill T-72A, T-72M1, T-80 and other modern tanks. However, there are limitations to Saudi capabilities. Individual crew and operator training anti-tank weapons has only reached moderate proficiency, although it still lacks consistency and realism. Units equipped with anti-tank weapons mounted on armored vehicles also sometimes lack maneuver and combined arms training. Crews and men using older weapons are often less proficient than those with the latest weapons, and anti-tank units often lack aggressiveness in employing anti-tank weapons in exercises.

Saudi Artillery

The Saudi Army has large numbers of modern artillery weapons. The trends in Saudi artillery strength are shown in Chart 7.13, and its total artillery strength and artillery quality is compared to that of other Gulf states in Charts 7.14 to 7.18. In 2000, Saudi Arabia had an active inventory of roughly 515 weapons. This compares with 2,940 weapons for Iran and 2,100 for Iraq.

In 2001, the Saudi inventory included 60-70 Astros II multiple rocket launchers, and 110-120 M-109A1/A2 and 51 GCT 155 mm self-propelled howitzers.⁸⁷ The Army had 24 Model 56 and 90-100 M-101/M-102 105mm towed howitzers, 40 FH-70 and 90 M-198 155mm towed howitzers, 5-10 M-115 203mm towed howitzers, and some older towed weapons in storage. It

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had some 200 M-106 and M-125A1 120mm self-propelled mortars and large numbers of towed mortars. Its total mortar strength included over 400 120 mm and 4.2" weapons, over 1,000 81mm weapons, and large numbers of light 60mm weapons.⁸⁸

Many Saudi artillery units are, however, what one senior officer terms "25 years behind what is needed." They now 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 is badly short of 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 -- to replace its 1960 vintage systems. It also needs a modern and fully integrated mix of counterbattery radars and fire control systems to rapidly mass and shift fires.⁸⁹

The moderate pace of Saudi Arabia's move from towed artillery to self-propelled artillery that is fully trained and equipped for maneuver and combined arms warfare has the Saudi Army without sufficient numbers of artillery pieces that have the mobility and firepower to properly support its armored forces. At present, units with M1A2 tanks cannot be sure that their artillery supporter will be combat ready enough, skilled enough, and mobile enough to provide effective combined arms support. The Saudi Army has only have a 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 warfighting and defense capabilities of Saudi land forces.

Saudi Arabia also needs more long-range firepower. It has considered ordering the Multiple Launch Rocket Systems (MLRS) to help deal with its fire support problems. On September 27, 1990, it announced its intention to order a package of 9 Multiple Launch Rocket Systems (MLRS), including vehicle mounted rocket launchers, 2,880 tactical rockets, 50 practice rockets, 9 MV-755A2 command post carriers, training and training equipment, and 20 AN/VRC-46 radio sets.

Such an order for the MLRS rocket might have given Saudi Arabia an important potential force multiplier. The MLRS has a highly sophisticated warhead that mixes anti-armor and anti-personnel bomblets. Each MLRS launcher is capable of inflicting more destruction on an area target or large maneuver target than a battalion of regular tube artillery or multiple rocket

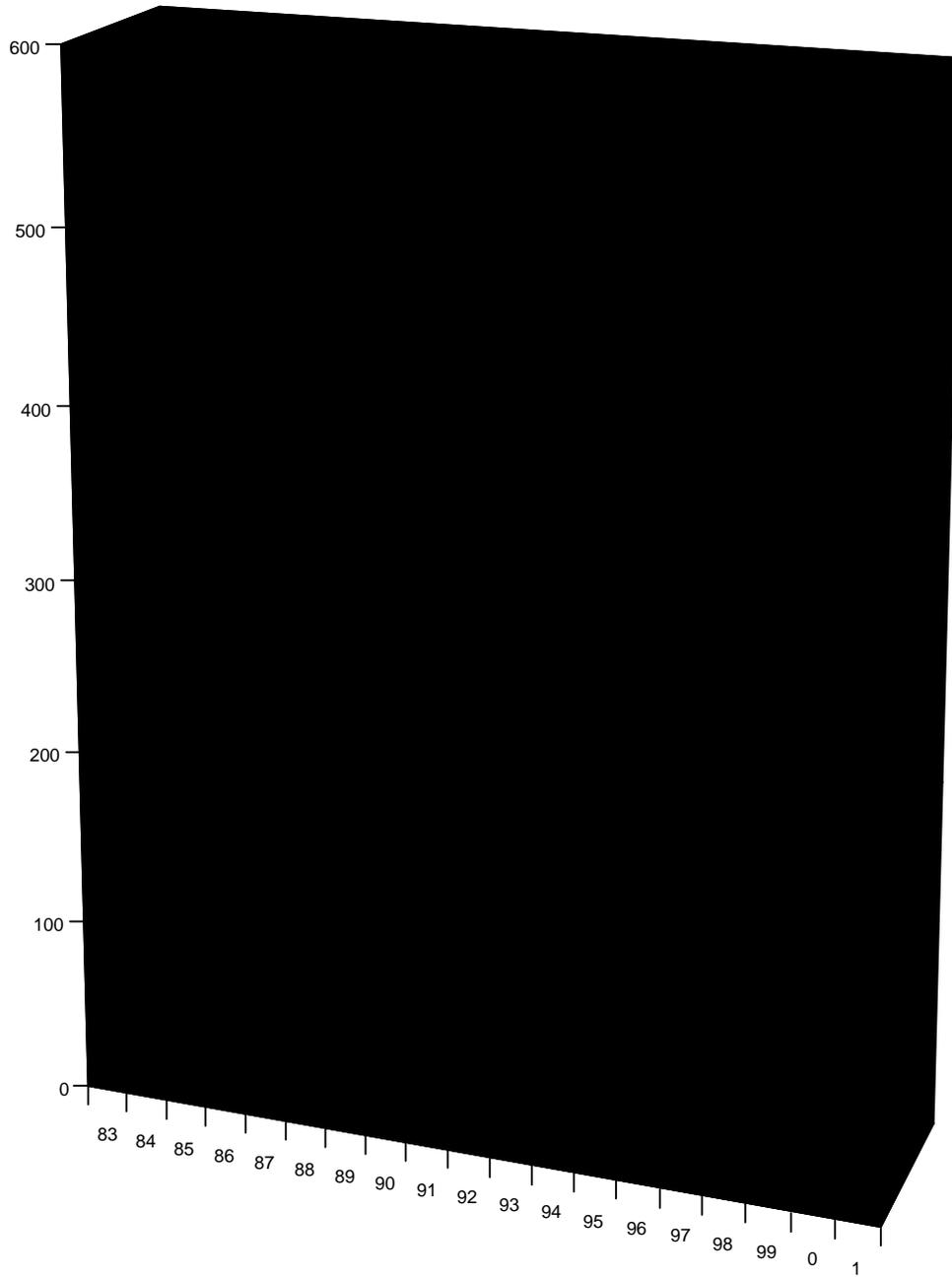
launchers and can do so at ranges in excess of 40 kilometers, which allows the MLRS to out-range most of the weapons in potential threat forces.⁹⁰

The MLRS proved to be too expensive, however, and the Saudi Army has delayed any purchase of the MLRS indefinitely. As a result, Saudi Arabia is now considering additional buys of self-propelled artillery weapons. Possible candidates include the South African G-6, the US M-109A6, the British AS-90, and the French GCT. These are all excellent artillery weapons, although non-US buys might present some standardization and interoperability problems. Saudi Arabia is also considering upgrading 111 of its M-109A2s to the M-109A6 configuration. This would ensure that its artillery can maneuver in ways that keep up with its M-1 tanks.⁹¹ Buying more tube artillery, however, will not meet Saudi Arabia's need for a system that can provide massive anti-armor and anti-personnel capabilities to defeat an attacker like Iraq. As it result, it is likely to end in creating new financial problems that slow down the purchase of higher priority systems.

Saudi Arabia has test-fired its first domestically produced surface-to-surface rocket to mark the inauguration of a new military complex at Al-Kharj, 100 kilometers southeast of Riyadh. The missile has a range of between 35 and 62 kilometers and was produced at the Kingdom's first center for ammunition maintenance at Al-Kharj. The system is a showpiece project, however, with little military significance.

Chart 7.13

The Growth in Saudi Artillery Weapons Strength - 1979-2001



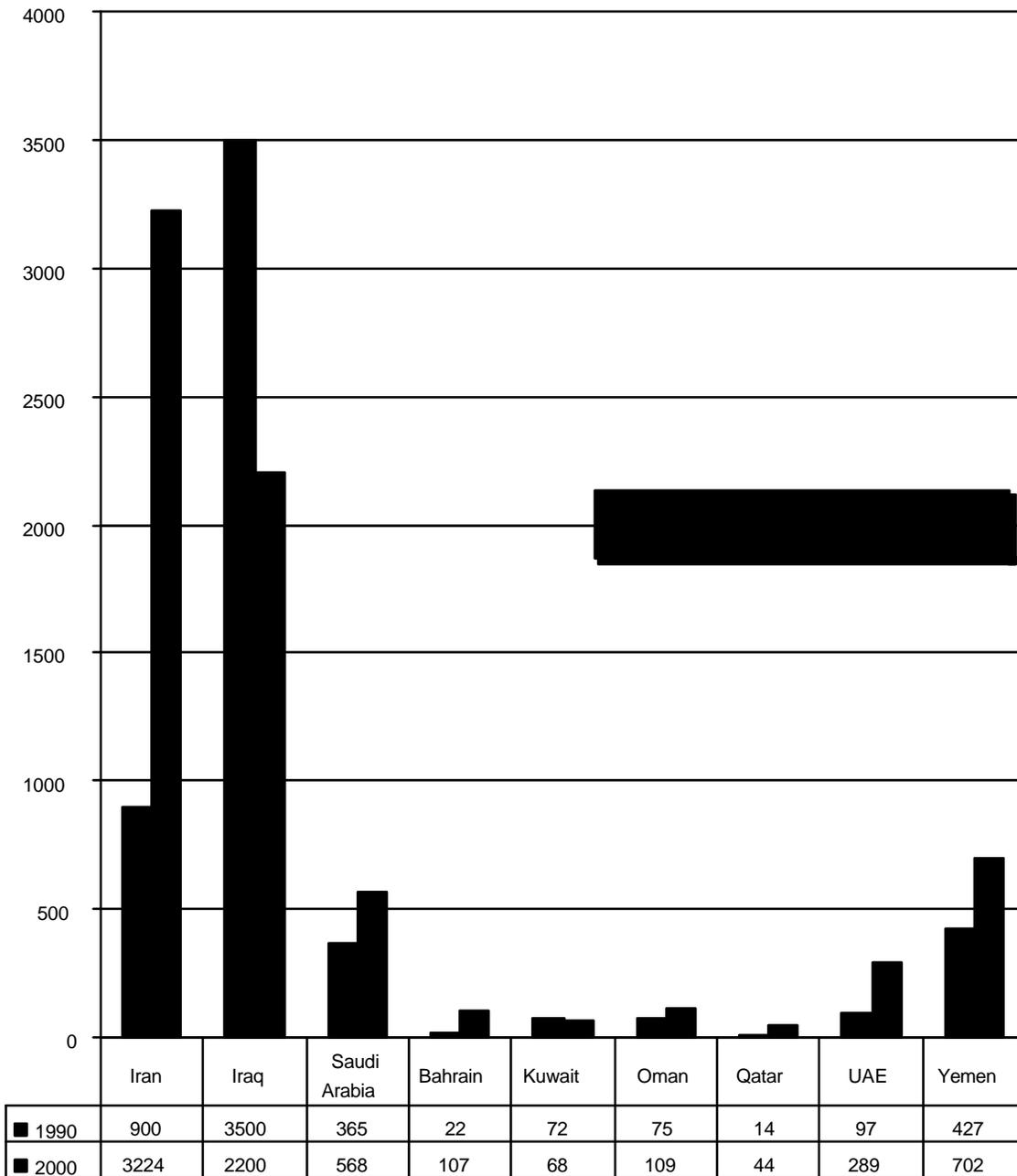
	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1
■ SP	170	185	185	275	275	275	275	275	275	275	170	170	200	200	200	200	200	200	200
■ Towed	160	171	171	171	230	230	168	180	210	224	230	230	238	248	248	248	248	248	248
■ MRL	0	0	0	0	0	6	6	12	50	60	60	60	60	60	60	60	60	60	60

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Chart 7.14

Total Operational Self-Propelled and Towed Tube Artillery and Multiple Rocket Launchers in Gulf Forces 1990-2000



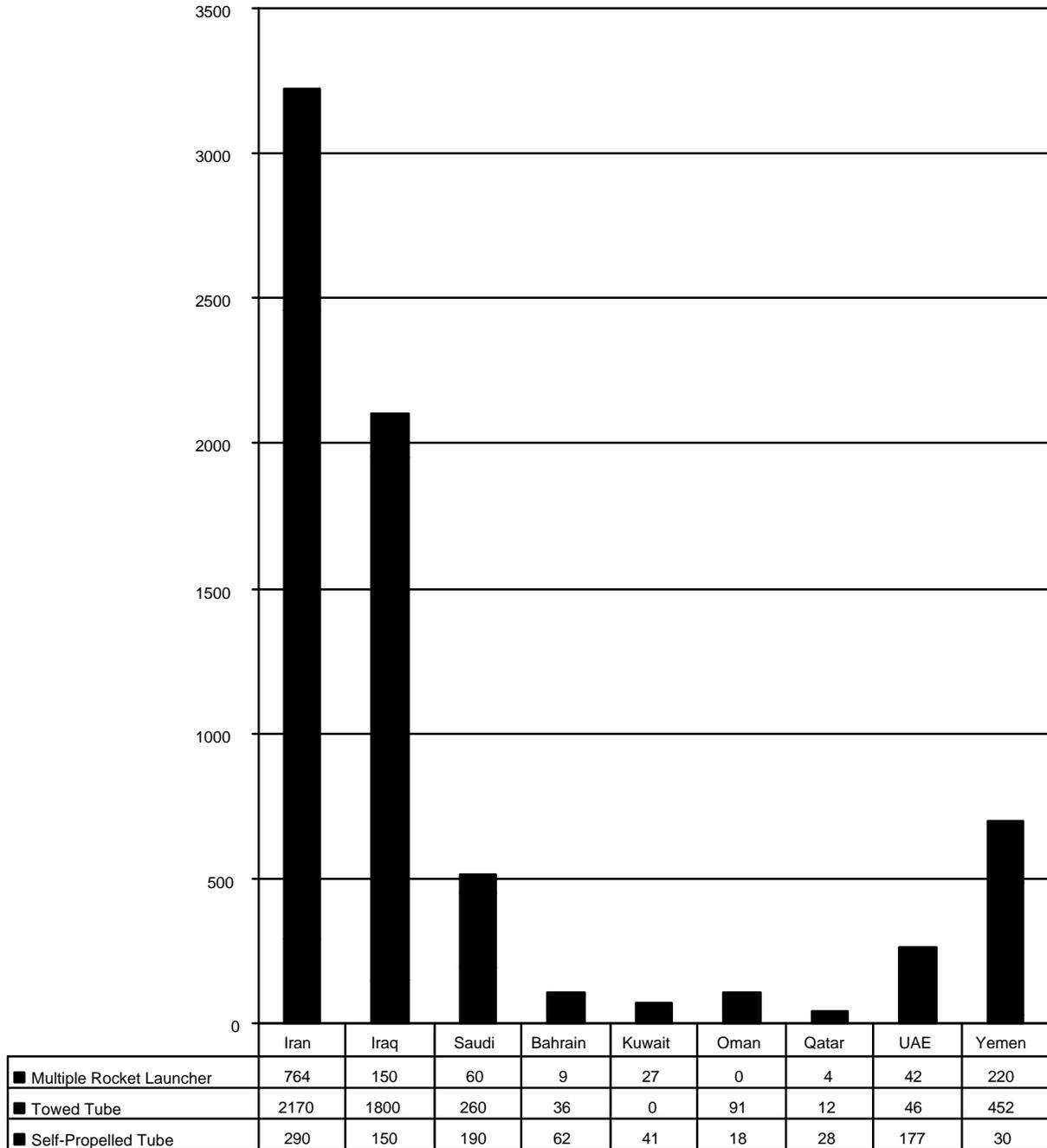
Note: Iran includes active forces in the Revolutionary Guards. Saudi Arabia includes active National Guard.

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Chart 7.15

Total Operational Gulf Artillery Weapons - 2001

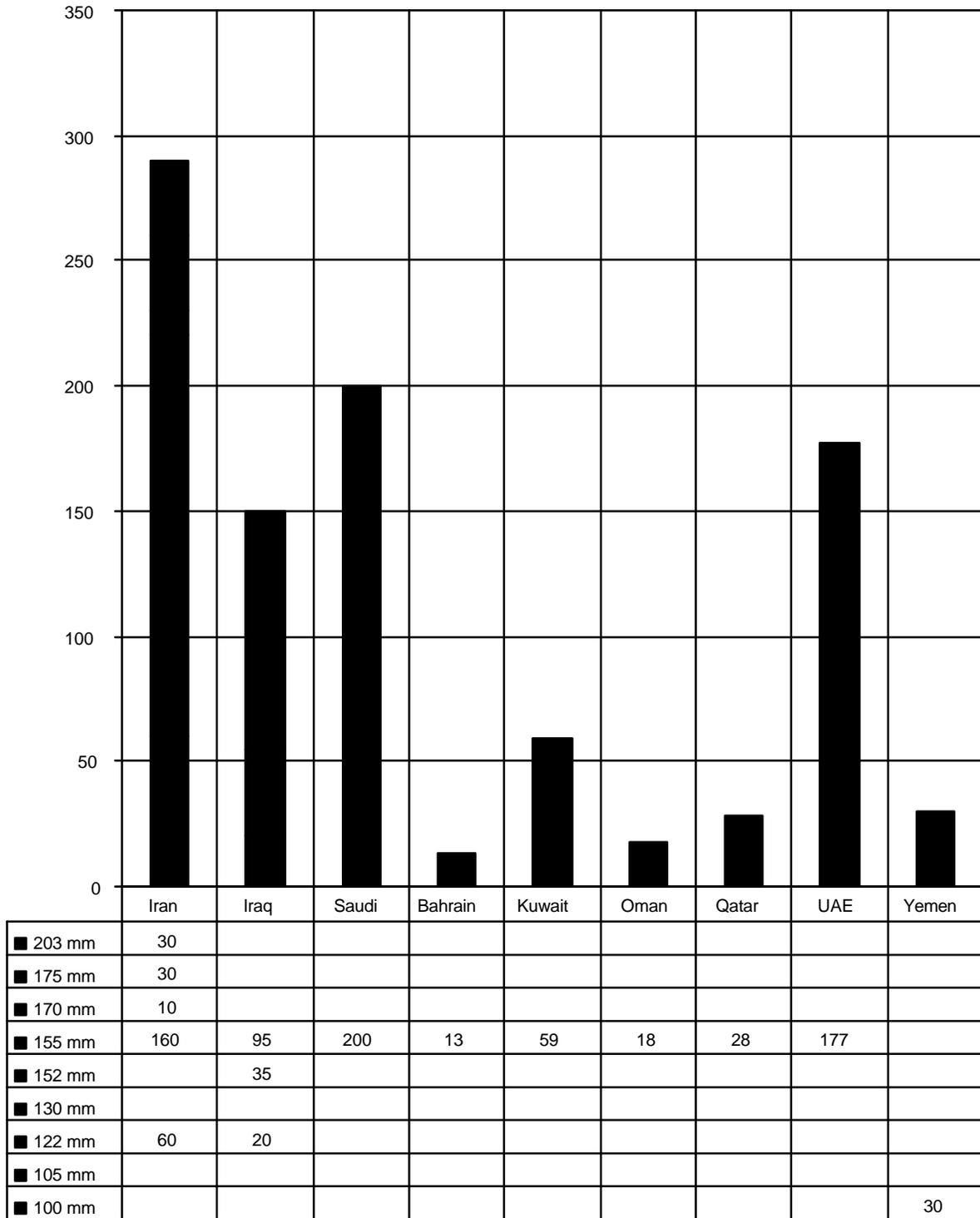


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Chart 7.16

Gulf Inventory of Self-Propelled Artillery by Caliber in 2001

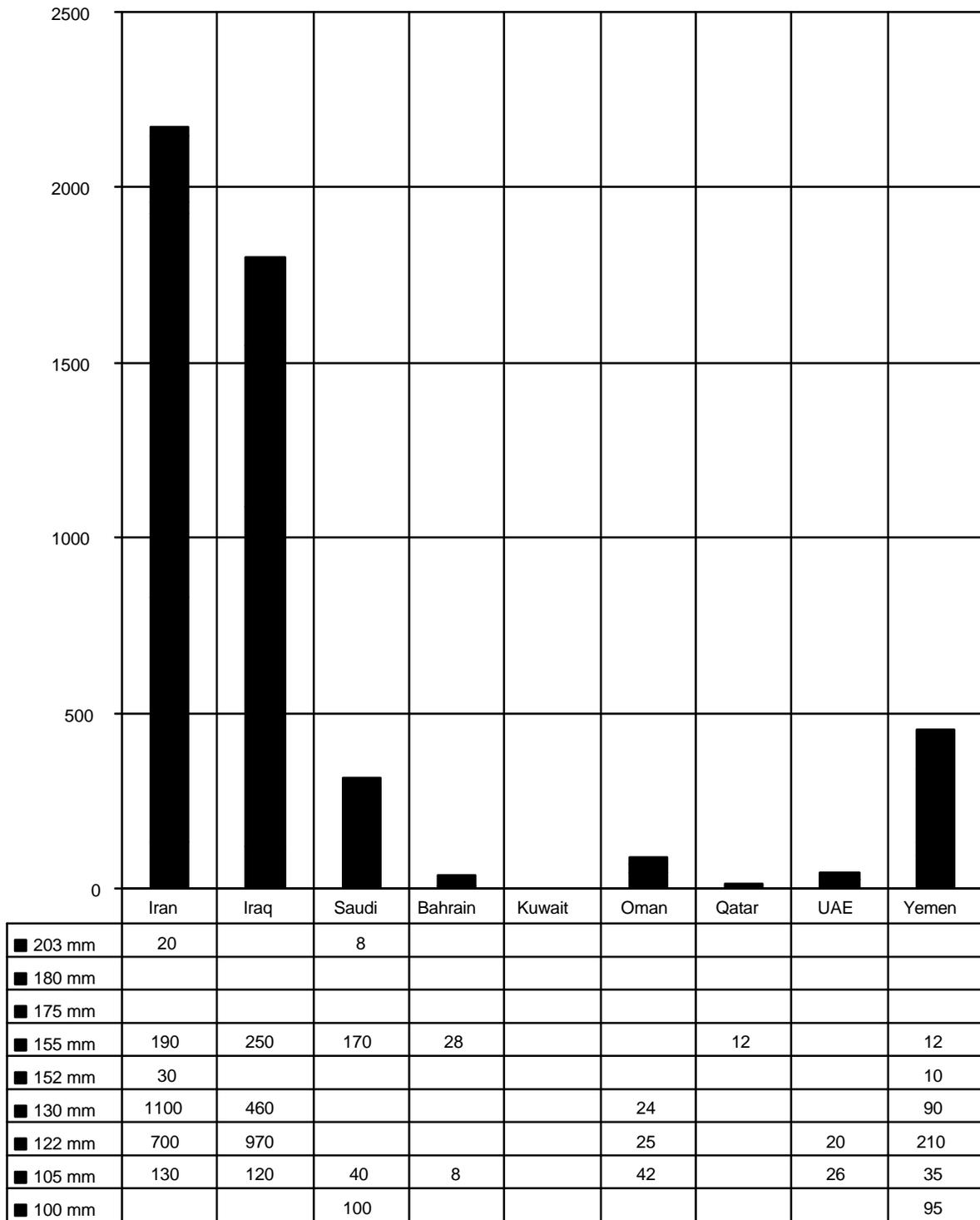


Source: Prepared by Anthony H. Cordesman, based upon discussions with US experts.

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Chart 7.17

Gulf Inventory of Towed Artillery by Caliber in 2001

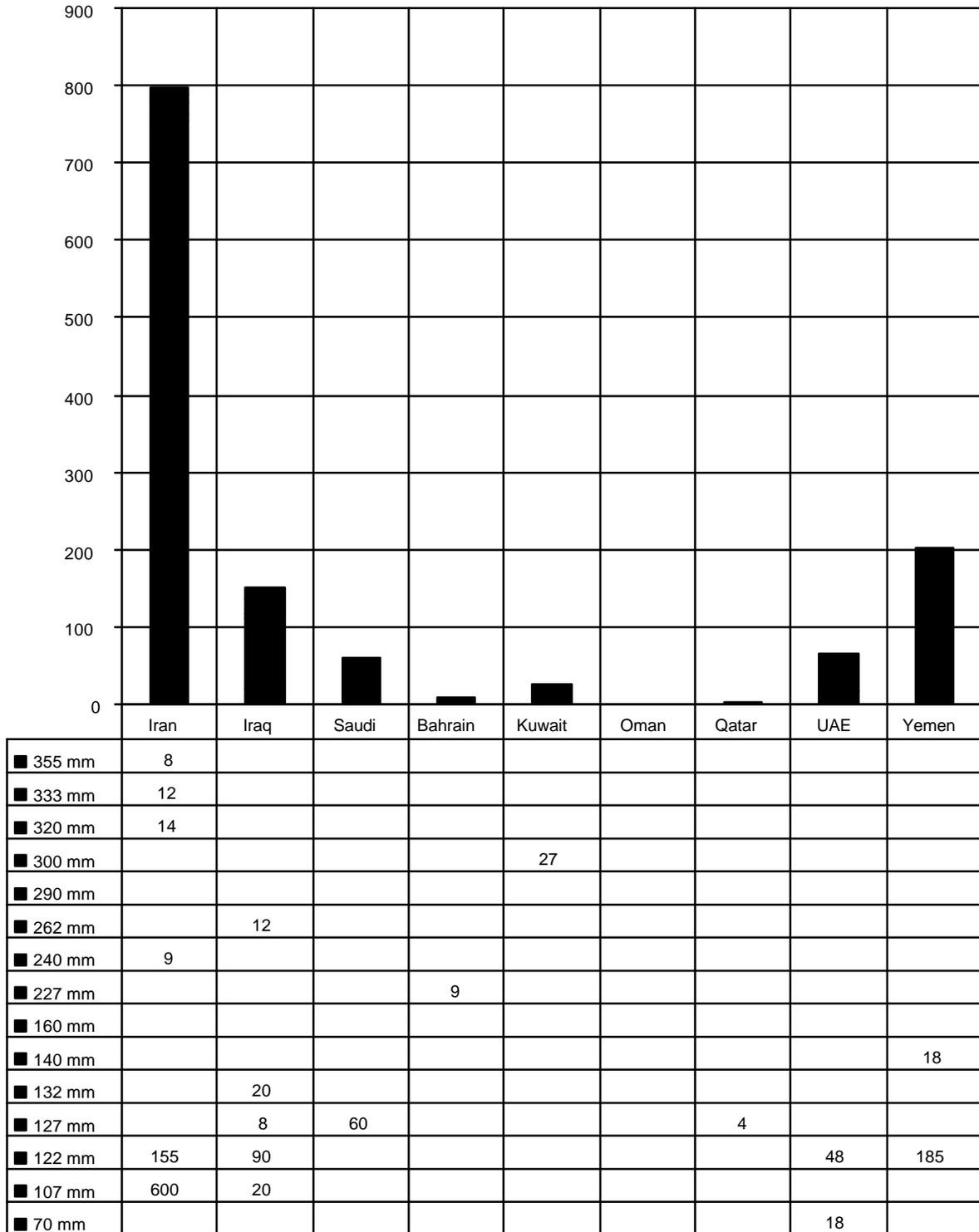


Note: Syria has 100 additional 122 mm weapons in storage. Jordan has 25 additional 203 mm weapons in storage.
 Source: Prepared by Anthony H. Cordesman, based upon discussions with US experts.

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Chart 7.18

Gulf Inventory of Multiple Rocket Launchers by Caliber in 2001



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Saudi Army Air Defense

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 in 2001. Total Saudi holdings of short-range air defenses included 45-50 Crotale radar guided missiles on tracked armored vehicles, 73 Shahine radar guided missiles on tracked armored vehicles.

Saudi Arabia also had large holdings of man-portable surface-to-air missiles. Its holdings included 700 Mistrals, over 300 Stingers, and 570 obsolescent Redeye man portable surface-to-air missiles. Saudi Arabia bought 50 Stinger launchers and 200 Stinger missiles on an emergency basis in August 1990, and had ordered additional Crotales and 700 French Mistral launchers and 1,500 missiles.⁹²

It is equally difficult to separate the army's air defense gun holdings from those of the Air Defense Force and National Guard, but Saudi Arabia's total holdings of light anti-aircraft weapons seems to include 10 M-42 40mm, 50-60 AMX-30SA 30mm self-propelled, and 92 Vulcan M-163 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 strong 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. It also consists largely of independent fire units, rather than an integrated system of netted C⁴I/BM capabilities, although such capabilities are planned for 2002-2003, and there are problems with secure data links that could transmit data from the E-3A AWACS to disperse Army air defense units. The same is true of Saudi Army air defense assets. As a result, Saudi Arabia must rely largely on a point defense approach in using land-based assets to defend its forces in the field. This makes Saudi land forces remain heavily dependent on air power for air defense.

Saudi Army Aviation

Saudi Army helicopter forces are another important area for 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

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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. In the mid-1980s, the Saudi Army studied plans for developing a sizable helicopter force by the mid-1990s. It initially considered buying 60-100 US AH-64 attack helicopters, plus additional Blackhawk utility and support, and Chinook CH-47 transport helicopters from the US.

Saudi Arabia initially experienced political problems in obtaining such helicopters from the US, however, and this led the Saudi Army to obtain an option to buy 88 Sikorsky-designed S-70 Black Hawk 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 again changed Saudi plans. It created the political conditions in which Saudi Arabia could buy the AH-64 from the US.⁹³ On September 27, 1990, 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. At the time, it indicated an interest in buying a total of 48 AH-64s, and was examining the purchase of more attack and support helicopters from the US, Italy, France, or a Franco-German consortium. The Saudi Army has not placed any additional orders of this kind, but in June 1992, it bought 362 more Hellfire missiles, 3,500 Hydra-70 rockets, and 40 HMMWV vehicles and US support services for its Apaches. It also bought eight S-70 Sikorsky medevac helicopters.⁹⁴

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 22 UL-60 Blackhawk medical evacuation and transport helicopters.⁹⁵

The AH-64s are a potential force multiplier for the Saudi Army, and will give the Saudi Army still further interoperability with the US Army. At the same time, 12 AH-64s is not a large force and the Saudi Army needs extensive US support to maintain them, since attack helicopters as sophisticated as the AH-64 require as much support and training as a light jet combat aircraft. Even if the comparatively lightly armed Bell 406CSs are included in the total, a force of 27

armed helicopters is too small to make a major impact in solving the Saudi Army's problems in concentrating its forces and maneuvering rapidly to check an Iraqi advance.⁹⁶ Studies indicate that Saudi Arabia needs at least 24 AH-64s, and probably 48, to provide the kind of rapidly, long-range anti-armor strike capabilities it needs to defend its borders with Iraq and Yemen, and to reinforce Kuwait. It also needs at least twice its present number of transport helicopters.

The Saudi Army has some 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.

Saudi Sustainment, Infrastructure, and Support

The Saudi Army has the facilities, infrastructure, and equipment to support its forces in peacetime. It has excellent support facilities, and logistic and support vehicles and equipment. As has been noted earlier, Saudi Arabia 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).

Saudi Arabia can also count on extensive foreign support. It has long had US Army support for its Ordnance Corps, logistic system, and technical services. This contract was renewed on June 1, 1992, and not only aids Saudi Arabia, but improves the ability of Saudi forces to support US reinforcements and work with them on an interoperable basis.

The key US effort supporting the Saudi Army is a person US Military Training Mission (USMTM) in Saudi Arabia. The history of this effort date back to the first 12 man US military training mission in the Kingdom, which arrived in 1944. Formal accords were signed in 1951 and 1953, and has been the key US office administering the US side of the Saudi Foreign Military Sales (FMS) program under accords revised in 1977, and has deal with over \$80 billion worth of sales.

In 2001, there were a total of 316 personnel in the USMTM, with 97 US personnel assigned to the Saudi Army. The USMTM also has 10 Marines, 21 Navy, and 81 Air Force Personnel, plus 107 civilians. They administered well over 300 sales cases at any one time, and over 100 are for the Saudi Army. The USMTM had advisors in King Khalid Military City in the Northeast, Jubail, Dhahran, Riyadh, Tabuk, Jeddah, Taif, and Khamis Mushayt.

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The Saudi Army has not, however, adopted the modern management systems in needs to management sustainment and support under demanding warfighting conditions, or properly organized 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.

Saudi Army Readiness and Warfighting Capabilities

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 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 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 also does not have a single combat brigade that is now truly combat ready. Every brigade has shortfalls in its active combined arms strength, usually in artillery and mechanized elements, or both. Every brigade is short some elements of combat and service support capability.

The Problem of Training

Training is a problem, and will continue to be a problem in the future. US advisors helped bring Saudi forces to a level of readiness during the Gulf War that they had never before experienced, and gave them their first real experience with large scale unit and combined arms training. Many Saudi officers absorbed this training quickly, and the Saudi Army did well during Operation Desert Storm -- very well if its low pre-war readiness is considered.

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The Saudi Army has continued to make progress at the tactical-small combat unit level since the Gulf War. At the same time, the Saudi Army has had continuing problems in converting complex new equipment. Its training plans have not always been properly executed, and maneuver training has been mediocre. There is little realistic emphasis on combined arms training involving large formations, and joint land-air training has been ineffective beyond the battalion level, except when organized and led by the US. As has been discussed earlier, there is also far too much favoritism in the selection of personnel for training, and Saudis conducting army training programs often are very reluctant to fail other Saudis.

There has been a lack of support for demanding training and exercises at the higher command level, and little linkage between strategy, overall organization, and force-wide training. The army's problems have also been compounded by a serious lack of interest in joint warfare training on the part of the Saudi Air Force, and by the air force's overall failure to modernize its offensive warfare training and develop effective support and interdiction capabilities.

Saudi Arabia has, however, leased the US Army Multiple Integrated Laser Engagement Systems (MILES) for advanced realistic combat training, and took delivery in 1996.⁹⁷ These deliveries give the Saudi Army the only advanced land warfare training capabilities in the Southern Gulf. It is also beginning to conduct realistic command post exercises, and is sending bridge commanders to the US Army National Training Center to gain experience in realistic joint and combined arms warfare. Prince Sultan also reinstated joint training by the Saudi and US armies in 1999, which began with small command post exercises.

The question is whether such training resources will be properly exploited. The Saudi Army now over-emphasizes numbers of combat units and weapons at the expense of training and balanced warfighting capabilities, and does so in ways that are all too common in the Arab world. Both senior Saudi officials and officers do not seem prepared to act upon the fact that military manpower and equipment are only effective to the extent they are integrated into forces with realistic war-fighting training.

It is equally unclear that Saudi officials and officers recognize the need to try to integrate such training for Saudi land forces with training for other GCC land forces. High technology training offers Southern Gulf forces still another potential force multiplier over potential threats from the Northern Gulf. It potentially provides a way of making up for a lack of combat experience, by standardizing training so as to make Gulf forces more interoperable, and improving interoperability with the US and British armies. The smaller Gulf countries cannot

afford such training facilities, but joint use of Saudi facilities would provide them with the capabilities they need and reduce costs to the Saudi Army. The fact that training is often far more important than force numbers and equipment, and that showpiece Saudi and GCC exercises service little practical purpose, is not, however, a reality that any senior Saudi as yet seems ready to act upon.

Battle Management and Command and Control

The Saudi Army needs to improve its command, control, communications, and computer (C⁴) and battle management capabilities. This is not so much a matter of equipment, as a matter of training and leadership. Saudi Army command and communications are too rigid and over-centralized and better long-range communications are needed. It is also essential that promotion at senior command levels should be based on professional merit, not politics.

It is not clear that the Saudi Army is effectively organized, trained, and equipped to provide land-based air defense for its maneuver forces. The creation of a separate air defense force may have had benefits in ensuring that the air defense units would achieve proper attention and suitable amounts of training manpower, but a separate air defense force is best suited to a static and defensive concept of warfare.

Strategic Focus

The strategic focus that the Saudi Army should have is clear. The Saudi Army should shape its war fighting concepts around rapid maneuver and sustained high-intensity operations. It should emphasize sustainability in the forward area, which means emphasizing standardization and interoperability. It should make its existing units fully effective before making new major equipment buys and expanding its forces.

The current strategic posture of the Saudi Army, however, falls far short of these goals. The army is too static and defensive in character and lacks strategic focus. It takes days to weeks to move when it needs to be ready in hours or days. It is not capable of rapidly concentrating its armor and artillery to defend Kuwait and its northern border with Iraq. Moreover, its operations remain poorly integrated with those of the Air Force, National Guard, and Air Defense Force. The critical strategic importance of joint operations receives lip service at best.

There is a similar indifference to the need for effective coalition warfare capability, and efforts to create effective Southern Gulf coalition land forces range from façade to farce. Saudi Arabia clearly needs to both emphasize the ability to rapidly redeploy its forces and meet an

attacker as far forward as possible, and emphasize joint operations with Kuwaiti and US land forces against the Iraqi threat. At present, much of the effort to create such coalition warfare capabilities is limited to Saudi participation in small command post exercises in programs like Earnest Leader; although such exercises are planned increase in frequency and size and to include brigade-sized exercises including US and other Gulf Cooperation Council (GCC) forces.

Command post exercises do not create effective coalition forces, and serious questions exists as to whether major elements of other Southern Gulf armies can fight effectively beside a Saudi force once it does have adequate training. Effective coalition warfare creates a GCC-wide need for integrated training and field exercises, and for advanced land warfare training facilities for all the land forces in the Southern Gulf. There is a clear need for the kind of automated advanced training capabilities used by the US at Fort Irwin, and used by Israel in a cheaper and less sophisticated form.

Senior Saudi officials and officers now feel, however, that there is no meaningful prospect that other GCC countries will contribute major forces capable of defeating Iraqi heavy armored and mechanized units or have forces capable of doing this at any point in the foreseeable future – an impression shared in many other Southern Gulf countries.⁹⁸ Even at the highest levels, Saudi officials and officers privately dismiss efforts to create larger “GCC forces” as useful political fictions with no warfighting substance. They see no practical prospect that US efforts to persuade the GCC to create effective coalition land and forces will succeed. They see no prospect that other GCC forces will actually go from showpiece exercises to effective training in the foreseeable future. Most notably, some of the most senior officials in the Kingdom privately dismiss Kuwaiti land forces as ineffective and too small to play more than a symbolic role in what they feel must be a de facto US-Saudi coalition.

Saudi officials are certainly right that it will be years before the GCC as a whole can become a meaningful defensive alliance, but Saudi Arabia needs to accept the fact that a Saudi-Kuwaiti-US coalition is critical to its defense and act accordingly to create an effective integrated defense system. The failure to accept the fact that the cooperative, integrated defense of Kuwait and the Saudi border with Iraq, is the primary mission of the Saudi Army remains a key problem in giving Saudi land forces their proper strategic focus.

In theory, a Peninsula Shield Force was created in 1986 to provide an integrated GCC land defense unit to cover the upper Gulf. In practice, this force contributes little to the prospects for coalition warfare capabilities. Although the Peninsula Shield Force has a nominal strength of 4,000 men and is supposedly based near the Saudi-Iraqi border and Kuwait, much of the non-

Saudi elements of the force consist of ear-marked forces that are still located in their home casernes outside Saudi Arabia. The non-Saudi elements deployed forward total substantially less than a brigade in terms of actually war fighting strength, and one expert described them as the equivalent of a reinforced US battalion.

Regardless of whether the Peninsula Shield Force should be called façade or fare, the elements from other Southern Gulf countries that are forward deployed near King Khalid Military City and Hafr al-Batin seem to have little or no warfighting capability against large formations of heavy Iraqi armor. The “Manama Declaration of the 21st GCC Summit Conference on December 30-31, 2000 called for increasing the Peninsula Shield Force to some 22,000 men and adding naval and air elements. In practice, however, this again seems to consist of the largely symbolic earmarking of existing units that will be left in their current bases. The practical burden of the land elements of any coalition warfare against Iraq will be left to Kuwait, Saudi Arabia, and the US.

VIII. 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.⁹⁹

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, and
- Provide security for Crown Prince Abdullah.

The National Guard was used to deal with the Shi'ite uprising in the Eastern Province, the siege of the Grand Mosque in Mecca in 1979, and put down the Iranian riots in Mecca in 1987. It also helped secure the Eastern Province during the Iran-Iraq War and Gulf War.¹⁰⁰ The National Guard remains under the command of Crown Prince Abdullah, and his son, Prince Badr Bin Abdul Aziz, is its deputy commander. There is speculation that one of Abdullah's sons might become commander of the National Guard once Crown Prince Abdullah becomes king, but other sources indicate that Crown Prince Abdullah has stated that he will retain command.

The Assistant Deputy Commander of the Guard is Sheik Abdul Aziz Bin Abdul Moshin Al Tuwajjiri, who has served with the Guard since its creation as a modern force. The command structure of the Guard is then divided into three main branches: The primary operational branch

is under the Prince Lt. General Mit'eb Bin Abdul Aziz, the Assistant Deputy Commander for Military Affairs.¹⁰¹ Lt. General Mit'eb is another son of the Crown Prince. He was educated at Sandhurst, and has excellent relations with the British and US armies. He is well liked in the region, and is one of the few Saudi officers with good relations with the military in both Jordan and Turkey.

The Health Affairs branch is under Dr. Fahad Abdul Jabber, and provides some of the most advanced medical care in the Kingdom. Expenditures and the budget are controlled by a civil Deputy, Sheik Abdul Rahman Abu Haimid. Sheik Haimid's control over expenditures, and the Guard's reliance on US government-supervised FMS buys, is reported to be a major reason why the National Guard has not been accused of the kind of cronyism and commission-granting that has affected the purchases of the regular services. One observer, who is a strong proponent of the Guard, estimated that the Guard got 93 cents worth of equipment for every procurement dollar (the US charges a 3 cent administration fee), while the regular services got only 70 cents worth.

The Manning of the National Guard

Estimates of the current full time strength of the National Guard differ sharply. The IISS, for example, reported that the Guard had 57,000 actives, and 20,000 tribal levies in 1999, but reported that it had 75,000 actives, and 25,000 tribal levies in 2000.¹⁰² 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's manning now includes a much larger proportion of trained, full-time personnel. In the past, the National Guard recruited largely from loyal tribes in the Najd and Hasa. Its recruiting base has steadily expanded, however, to include other regions and urban areas, and it now has some Shi'ites. The Guard now deliberately avoids creating active units based around one tribe or region, and recruits on a central basis with much larger numbers of entrants from urban areas. There are far more qualified applicants for its academy and for enlisted positions than the Guard can accept; sometimes over 20 qualified applicant for each opening.

Retention is high, with only 10-15% losses after the first tour of duty. Most personnel serve out a career of 25-35 years. This, however, has disadvantages. Even though the Guard tends to promote more on the basis of merit than the other services, key personnel stay too long

in given ranks and grades. The Guard needs about 17% attrition annually to keep its personnel in the proper age brackets, and does not come close to this goal – particularly at the more senior levels. Early retirement carries a considerable stigma in some levels of Saudi society, and any retirement means a significant loss in status.

The Organization of the National Guard

The Saudi Arabian National Guard (SANG) does not have a formal mission statement. It is, however, primarily a combat force, and internal security missions like riot control and guard duty have secondary and declining importance. It does not provide security for the royal family, except for its commander Crown Prince Abdullah, and most internal security missions are the responsibility of the Ministry of the Interior. ARAMCO has its own active guard force for the Saudi oil fields.

The SANG is headquartered at Riyadh, and has separate regional headquarters for an Eastern and Western Region at Dammam and Jeddah. The Guard's full-time professional forces have been organized into modern military formations over the two decades. The Guard held its first significant training exercises for its first 6,500-man Mechanized Brigade, the Imam Mohammed bin-Saud Brigade, during the early 1980s. It deployed a brigade-sized presence, and a limited oil-field security force in the Eastern Province, and the Mohammed bin Saud brigade held its first major exercise in the desert about 250 miles west of Riyadh in early 1983. Units moved to join this exercise from other parts of the Kingdom and from as far away as the Eastern Province, and the key mechanized elements performed relatively well. While the Guard experienced problems in translating tribal discipline into regular military discipline, and the force was below its authorized manning level, the set-piece maneuvers performed were successful.

Since that time the Guard has steadily expanded its combat capabilities. The National Guard inaugurated its second mechanized "brigade" in a ceremony on March 14, 1985. This new unit was called the King Abd al-Aziz Brigade, which was formed after another relatively successful round of set-piece exercises called "Al Areen," which were held near Bisha. Prince Abdullah then spoke of expanding the Guard to 35,000 men, and succeeded in building up a force of three mechanized "brigades" by 1989. In the mid-1990s, he discussed expanding the Guard to a total manning of 80,000-100,000 by the year 2000, a goal that the SANG largely met.¹⁰³

In 2001, the Guard was 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.

There were combined arms battalions near Arar, Rafha, and Hail, and a ceremonial cavalry squadron at Riyadh. There were training and support bases headquartered at Riyadh, Jeddah, and Dammam.¹⁰⁴ These Guard battalions were normally assigned only to protect sensitive facilities in the provinces like power generation, desalination, and communications. There also were tribal force elements (or “Fowj) at Arar, Dammam, Rafha, Hail, Buraydah, Hofuf, Medina, Jeddah, Yanbu, Mecca, Taif., Najran, Jizan, Sharawrah, and Riyadh. In mid 2001, the Guard had the order of battle shown in Chart 8.1

Table 8.1

The Saudi National Guard Order of Battle in Mid-2001

Headquarters: Riyadh

- Turki Mechanized Brigade (in formation)
- IMBS Mechanized Brigade
- PSAR Mechanized Brigade
- King Khalid Light Infantry Brigade
- Support brigade
- MP battalion
- King Khalid Light Infantry Brigade support battalion.
- Training Base: Signal School. Medical School, NGMS, KKMA, recruiting.
- Support Base: Signal Corps, Medical Corps, Weapons and ammunition, Logistics base, and engineers.

Eastern Region Headquarters: Dammam (Brigades at Dammam and Hofuf)

- KAA Mechanized Brigade (in formation)
- Guard Battalion
- MP battalion
- Recruiting.
- Support Base: Signal Corps, Medical Corps, Weapons and ammunition, Logistics base, and engineers.

Western Sector Headquarters: Jeddah (Brigades at Jeddah, Medina, and Taif)

- KFB Mechanized Brigade
- KSB Mechanized Brigade
- KOKB Mechanized Brigade
- Guard Battalion
- MP battalion
- Recruiting.
- Support Base: Signal Corps, Medical Corps, Weapons and ammunition, Logistics base, and engineers.

Independently deployed light infantry battalions

- Arar (?)
- Yanbu
- Rafha
- Hail (?)

Independent Regular National Guard Element or Presence: Arar, Tabuk, Rafha, Hail, Buraydah, Hofuf, Medina, Yanbu, Mecca, Taif, Khamis Mushayt, Najran, Jizan, Sharawrah.

Independent Tribal Forces or "Fowj" Element or Presence: Arar, Dammam, Rafha, Hail, Buraydah, Hofuf, Medina, Jeddah, Yanbu, Mecca, Taif, , Najran, Jizan, Sharawrah, Riyadh.

Source: Author's interviews in Saudi Arabia, April 2000 and February 2001

The Equipment of the National Guard

In 2001, the Guard's forces operational forces were equipped with about 450 LAV-25 light armored vehicles in its mechanized units, and 290 V-150 Commando armored vehicles (plus 810 in store) in its light infantry forces. 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. It did not have a complex or sophisticated mix of equipment, but had chosen to standardize on some of the best wheeled armor available.

The Guard's V-150s have been in service for some time. They are part of an older family of armored vehicles with a number of different configurations and weapons systems, including anti-tank guided missile carriers, cannon turrets, and main guns. While estimates differ, current holdings seem to include 100-120 V-150s configured as AIFVs, 20-30 with 90 mm guns, 130-140 armored command vehicles, 70-80 81 mm mortar carriers, 45-50 armored recovery vehicles, 30 special purpose vehicles, and 325-375 configured as APCs.¹⁰⁵ Other reports indicate that the SANG has 100 TOW fire units are mounted on its V-150s. The V-150s have been retrofitted to have air conditioning.

Some reports indicate that the SANF also had 440 Piranha light, 8X8 wheeled armored vehicles. These are designed by FAMAE/MOWAG of Switzerland, and made in Switzerland, Canada, and the UK. They have a combat weight of 16,000 kilograms, a maximum crew of 16, a range of 780 kilometers, and a maximum road speed of 100 kilometers per hour. They can be armed with a wide range of weapons, and configured as support vehicles. They have cross-country mobility roughly equivalent to that of tracked vehicles.

The SANG's most important purchase is a buy of some 1,117 LAV-25s (light armored vehicles) from General Motors of Canada through the US Army Tank Automotive Command (TACOM) at a cost of \$3.4 billion. The resulting package included 116 TOW launchers with 2001 missiles, 27 M-198 155mm howitzers, support systems, training, and facilities. The LAV-25 is another 8x8 wheeled armored vehicle that can be configured in a number of different ways. It has excellent cross-country mobility, and has been used by the US Marine Corps for some years. It is primarily a combat fighting vehicle, rather than a transport, but also has a number of command, reconnaissance, and support variants.

The National Guard has chosen the Delco 120mm Armored Mortar System for installation on the Lav-25s. The Saudi National Guard also ordered 130 90mm turret weapon systems in Cockerill LCTS Mark 8 turrets and 130 M-240 .50 machine guns to upgrade its

OAFVs in 1997. It purchased 169,00 rounds of 90mm ammunition and a full range of spares as part of this buy.¹⁰⁶

These deliveries are giving the National Guard ten variants of the LAV-25, including 111 anti-tank weapons vehicles with TOW, 73 armored mortar systems with 120 mm mortars, 182 command vehicles, 71 ambulances, 417 APCs, together with ammunition carriers, recovery vehicles, engineer vehicles. Some 384 LAVs will be armed with two man turrets with the 25mm McDonnell Douglas chain gun and thermal sights. In late April 1997, Saudi Arabia selected the Belgian LCTS Mk 8 90mm turret, fitted with computerized fire control systems, for the remaining LAVs.¹⁰⁷ The SANG took delivery of the first of 73 120 mm armored mortar systems in 1998.

The Guard plans to standardize its mechanized brigades using the LAV-25. Three mechanized brigades already have the LAV, and a fourth is phasing out its gas-powered V-150s. This conversion to the LAV should be complete in 2001, and all five brigades should be fully manned and converted within the next few years. Conversion has been easy enough so that only one battalion set of the LAV-s was in storage in the spring of 2000.

The Guard had 40 M-102 105mm towed artillery weapons, 30 M-198 155mm howitzers, and 81mm mortars in mid-2001. The National Guard had 27 M-198 howitzers in 2001. It needs more weapons and is short of the artillery support it needs, but has found the US-supplied M-198 to be too heavy and is examining weapons from other countries. The Guard also had 116 TOW launchers and 2,000 missiles, and HMMWV light transport vehicles on order. It had large numbers of TOW anti-tank guided missiles, rocket launchers, and recoilless rifles.

The Guard has a limited number of helicopters. Its air defenses consist largely of 30 M-40 Vulcan 20 mm anti-aircraft guns. The Guard has sought to buy the US Stinger, but the US insists that US officers have access to the weapons and count regular formal inventories. Crown Prince Abdullah feels this is a violation of Saudi sovereignty. The Guard has also examined the possibility of using a vehicle mounted version of the AMRAAM anti-air missile.

The National Guard is steadily improving its communications. It now has advanced SINGARS tactical radios. It has a \$52 million contract with the Harris Corporation for RF-5000 Falcon digital high-frequency radios for its vehicles and base stations, and Arabic-language data terminals, turn-key logistical support, and technical assistance.¹⁰⁸

The National Guard has the tightest fiscal management and controls of any of the Saudi military services. Prince Abdullah does not like the commissions and special charges the other

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services often pay for major procurements, and has often insisted that National Guard contracting avoid any such fees and payments. At the same time, it is another potential source of strains on the Saudi budget.

The Guard's Support Capabilities

The Guard's has greatly improved its ability to sustain its deployed forces in recent years, help in part by its standardization on one basic family of mechanized vehicles for each combat unit, and deliberate effort to avoid complicating its "train, maintain, and sustain" efforts with over-sophisticated or complicated mixes of equipment.

Its full-time active forces do remain dependent on outside contractors for some forms of rear area service support, maintenance, and logistics. This support is delivered in part through a modernization program financed by the Saudi government and run by the US the Office of the Program Manager-Saudi National Guard (OPM-SANG), which is part of the US Army Materiel Command and by contractors like the Vinnell Corporation. In 2000, the OPM had 95 military personnel, 50 US civilians, 43 third country civilians, and 95 local hires. There were 400 subcontractor civilian personnel, 280 US and 500 Saudi contractors, and 250 contractor personnel from other countries. These advisory groups were located in Dammam, Hofuf, Riyadh, Jeddah, and Taif.

This advisory, support, and medical services program is now a quarter of a century old and has cost Saudi Arabia well over \$6 billion. It was the headquarters of this program that was the target of the car bomb in Riyadh on November 13, 1995. Currently, the program is administered through the Office of the Program Manager-Saudi National Guard by the US Army Materiel Command and by the Vinnell Corporation, which signed an \$819 million, four-year contract to provide support services in January 1994.¹⁰⁹ The Guard signed an additional contract with Vinnell, valued at \$163.3 million, for additional training support in 1995.¹¹⁰

The Training of the National Guard

The training of the National Guard's full time forces has improved steadily in recent years, and training activity is considerably higher than in the army. Training has recently been improved by the use of advanced technology systems like MILES, and LAV combat simulators. The US is helping the SANG set up "mini-National Training Centers" to provide realistic combat training at the battalion level and hopes to expand this program to the brigade level. The light infantry brigades have also begun realistic brigade level exercises. The artillery is also receiving

better training, although SANG units still lack modern digital fire control systems. The maintenance ethic in the SANG has also improved, and training is improving.

The men in the Fowj forces have less training but are becoming steadily better trained. The core of the SANG's new training efforts are built around the US battle-focused method of training, rather than set piece exercises.

The SANG uses specially modified Arabic editions of US field manuals, and now has well organized training schedules. SANG training for key missions and tasks is now tailored to given regions of the Kingdom because the desert warfare conditions and missions in the northeast are very different from the terrain around its cities near the Red Sea, mountains' and border with Yemen. The Guard is now undergoing realistic combat training at the battalion level and is beginning to expand to brigade-sized battle-focused training.

While the SANG has traditional senior leaders, it now has a modern academy for its officers and trains some 300 cadets a year. This academy is popular enough so that it had some 2,100 applicants in 1999. Some 80 SANG officers a year train in the US, and SANG officers receive extensive English-language training. They only go to the US if they pass the required tests. Promotion is also increasingly according to merit, and merit-based promotion has reached the level of major, although the SANG has a surplus of lieutenants and promotion is slow. The main leadership and promotion problems exist at the top, and general officer level, which has had roughly the same leadership since 1985.

The Readiness and Effectiveness of the National Guard

The National Guard has had some operational successes. Guard forces helped secure the Eastern Province during the Iran-Iraq War, but their capabilities were never really tested. They were given special training and additional manning during the Gulf War. They were the first force to meet the initial Iraqi assault on Khafji, and deployed within days while the regular army then required weeks. The Guard units were not equipped to take on an Iraqi heavy armored brigade, however, and then required extensive reinforcement by US air and artillery support during the battle to retake the city. They performed well in rear area and screening missions, but did not play a significant role in the armored advance in the liberation of Kuwait.

The National Guard has done a good job since 1991 in dealing with low-level problems with the Shi'ites in the Eastern Province, extremists, border clashes with Yemeni forces and smugglers, and Iranian-sponsored riots during the Haj, There has been little fighting along the Yemeni border since 1997, however, except for incidents with smugglers. Nevertheless, there

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were still three clashes with armed Yemeni tribesmen in 1999, including one exchange of artillery fire. The Guard has steadily reduced its role in protecting the Haj as Saudi relations with Iran have improved. The SANG has only had to deal with minor protests since the election of President Khatami, and the Ministry of the Interior now handles most security functions. As result, The Guard now only deploy one brigade to provide security for the Haj where it used to provide two. Reports that the Guard deployed elements in Bahrain in the 1990s, during its troubles with its Shi'ite seem to be false.

The SANG has also become a more effective light mechanized force. It has not, however, developed a high capability for sophisticated internal security operations, and it is the forces of the Ministry of the Interior that are intended to deal with well-organized cells or sophisticated hostile groups that hide under political cover. As a result, the SANG and Ministry of Interior hold weekly anti-terrorism meetings to coordinate their different activities and share a common headquarters during the Haj. The Ministry of the Interior has some 100,000 personnel, including firemen, emergency medical services, and other civil capabilities. It also has anti-terrorist units and forces like SWAT teams. The SANG is just beginning to develop urban SWAT and special forces capabilities. It is also still developing its capabilities for military operations in urban terrain (MOUT), and riot and crowd control.

Tribal Forces or Fowj

The tribal forces of the National Guard, or Fowj, are grouped and deployed where they can defend key regions, more to screen the border, and cover every critical urban and populated area in the country. They are useful in securing Saudi Arabia against infiltration and terrorists, and key facilities in a way that limits the ability of the army to conduct a coup, and their leaders are carefully chosen for their loyalty to the regime. They still lack modern combat training but Prince Abdullah is seeking correct this situation over the next few years.

The Guard helps key princes to maintain close relations with the tribes, as well as a means of maintaining internal security. The Deputy Commander of the SANG handles the tribes, although it should be noted that the tribes have changed strikingly in the last decade. Most tribes are now heavily urbanized and many small settlements are all but abandoned. This has help the SANG recruit, because tribal members from rural areas are often less well-educated and competitive in the Saudi labor force, and need jobs. It also, however, has meant that the SANG must accept some illiterate recruits, particularly into the Fowj, while the overall intake of tribal youth is better educated and more interested in the full time forces than the Fowj.

The Guard balances tribal factions to reduce the risk of feuding, and provides a means through which the royal family can allocate funds to tribal and Bedouin leaders. This organization makes the tribal portion of the Guard politically vital to ensuring the integration of Saudi Arabia's increasingly urbanized and underemployed tribes into its society. The Kingdom's economic problems have greatly improved SANG recruiting in recent years, and SANG soldiers are often the sole breadwinner in an extended family. US experts estimate that the SANG now supports up a million Saudis by providing income, medical support, and education.¹¹¹

Full-Time Forces

The changes in the organization and equipment of the Guard's full-time forces are steadily improving their quality. Unlike the regular Saudi Army, the Guard can also deploy rapidly and begin to move the key elements of its brigades in hours. This is a major advantage of its reliance on wheeled vehicles, and Guard units can deploy for distance of several hundred miles with their existing fuel load and without major service support. The Guard has steadily improved the quality of its training in the field and technical training, and has conducted command post exercises involving up to four brigades. There is some discussion of going to a division-sized structure.

Nevertheless, the Guard has serious force mix and readiness problems. The Guard's mechanized brigades lack the integral firepower, heavy armor, air defense, and maneuver capability to take on the heavy mechanized infantry or armored forces of Iran and Iraq in head-on combat. The Guard's full-time mechanized and light infantry forces also lack the heavy armor, self-propelled artillery, air mobility, specialized support units, logistics, and maintenance capabilities present in Saudi regular army units.

The Guard has other limitations. There is little real-world cooperation with the regular forces and Ministry of Defense and Aviation, although there is one token liaison meeting a month. There are no meaningful joint exercises with the Saudi regular army and air force, and there has been no effort to develop a common concept of operations or to see if the Saudi Air Defense Force could support the Guard in some contingencies. The Guard and regular forces use different communications systems, and there are no joint war plans. Any cooperation requires each service to send liaison officers to the other service with radios.

The Guard plays little attention to the Gulf Cooperation Council, and its leaders have little respect for either the regular Saudi Army, or other Gulf land forces – including Saudi units. They tend to see Egyptian and Jordanian forces as examples of Arab proficiency, and ignore the

Expansion Options

Prince Abdullah evidently has asked the Guard's foreign advisors to study an expansion beyond 100,000 regulars by the early 2000s. Such manning level would allow the Guard's to create another mechanized brigade, and a new mix of battalion sized formations for its part-time forces. This modest expansion seems well within the SANG's capabilities.¹¹²

There have also been a series of examinations of possible options for giving the Guard heavier tracked armor and self-propelled artillery. There were media reports after the Gulf War that Prince Abdullah has considered plans to bring the Guard up to a strength of 11 full time brigades, with tanks, self-propelled artillery and other heavy equipment. It is unclear, however, that Prince Abdullah ever seriously considered such options. Both Prince Abdullah the other leaders of the SANG seem to have understood that expansion must proceed slowly, and that the Guard was not ready to move beyond the LAV-25.

There have been recent studies of a possible purchase of helicopters. At present, however, there are no plans to "heavy up" the National Guard. It does not have the manpower base, and its entire infrastructure is sized for light armored vehicles. Moreover, the Guard is paying close attention to the US Army's efforts to "lighten up" its heavy armor and create more rapidly deployable forces.

IX. The Saudi Navy

The Saudi Navy has grown steadily over the last ten years, and now has East and West fleets for its Gulf and Red Sea coasts. The Saudi Navy also has growing effectiveness, particularly in defensive roles like mine warfare.¹¹³ It has expanded from active strength of around 6,000 men in the mid-1980s to much higher levels. In 2001, it had a total active strength of 13,500-15,500, including 3,000 marines.¹¹⁴

The Saudi navy is headquartered at Riyadh, and includes command of the naval elements of the Coast Guard and Frontier Forces. Its ranking officers are the Chief of Naval Staff; Commander, East Fleet; Commander, Western Fleet, and the Director, Frontier Force (Coast Guard.) Its has a modern headquarters staff with five major branches -- G1 Personnel, G2 Intelligence and Security, GS Operations and Training, G4 Logistics, and G5 Civil and Military Affairs. Its operational command is divided into two major fleets, plus command of the Marine regiment. The Arabian Gulf Division is headquartered at Al Jubail and has bases at Dammam, Ras Tanura, and Al Qatif, plus a naval aviation element. The Red Sea Division is headquartered at Jeddah, and has bases at Haqi, Al Wajh, and Yanbu. There are small bases at Al Sharmah, Duba, Ras al-Mishab, and Tamwah. The main base of the Coast Guard is at Aziziah.¹¹⁵

Saudi Arabia has also begun the construction of a new military city at Jizan, on the Red Sea near the Saudi-Yemeni border. The new facility will include a naval base, an air base, and a dry dock. This adds naval and air capability in an area where Saudi Arabia already has a military city at Abha, which it uses to base its land forces, and a major air base at Khamis Mushayt.¹¹⁶

Current Saudi Naval Forces

Charts 9.1 show the manpower strength of the Saudi Navy relative to other Gulf navies. Charts 9.2 to 9.6 show similar data on ship and aircraft strength. Any purely numerical comparisons, however, are misleading. The Iranian Navy has not acquired any major surface ships since the fall of the Shah, although it does have modern missile patrol boat, shore-based long-range anti-ship missiles, and three submarines. The Iraqi Navy was never strong and was virtually destroyed during the Gulf War. The Omani Navy is the only Southern Gulf navy with relatively high proficiency, but is not equipped with ships anywhere as advanced as those of the Saudi and UAE navies. The key issue in the Gulf is not ship numbers, but ship quality, crew capability, and the ability to employ ships in meaningful missions in combat.

Saudi Navy Combat Strength

In 2001, the combat strength of the Saudi Navy included four Madina-class (F-2000) frigates, four Badr-class missile corvettes, and nine Al Siddiq-class guided missile ships. It also included 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.

There were 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. Two large royal yachts are based at Dammam.

Saudi Marine Corps Strength

The 3,000-man Saudi marine forces are organized into one regiment with two battalions. It initially was equipped with 140 BTR-60Ps.¹¹⁷ It is now equipped with 140 Spanish Santa Barbara SBB BMR-600 6x6 amphibious APCs. It is expected to receive nearly 100 Al Fahd 8x8 Armored personnel carriers during 2001.

The basic Al-Fahd can be armed with a cupola-mounted 12.7mm machine gun, but other weapons systems are being considered, including anti-tank systems armed with the 106mm recoilless rifle, the Delco 120mm Armored Mortar system, and the Delco LAV-25/tube-launched optically-tracked, wire-guided (TOW) turret system. The LAV-25/TOW turret is armed with a stabilized Boeing 25mm M242 cannon and 7.62mm coaxial machine gun. Mounted on either side is a launcher for a Raytheon TOW 3,750m-range anti-tank guided missile. A total of six TOW missiles are carried.¹¹⁸

Saudi Naval Aviation

Various sources report different holdings for Saudi naval aviation. In 2001, it seems to have included 15 operational SA-565F Dauphin ASW and anti-ship missile helicopters with AS-15TT missiles, and four SA-565s 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 had 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

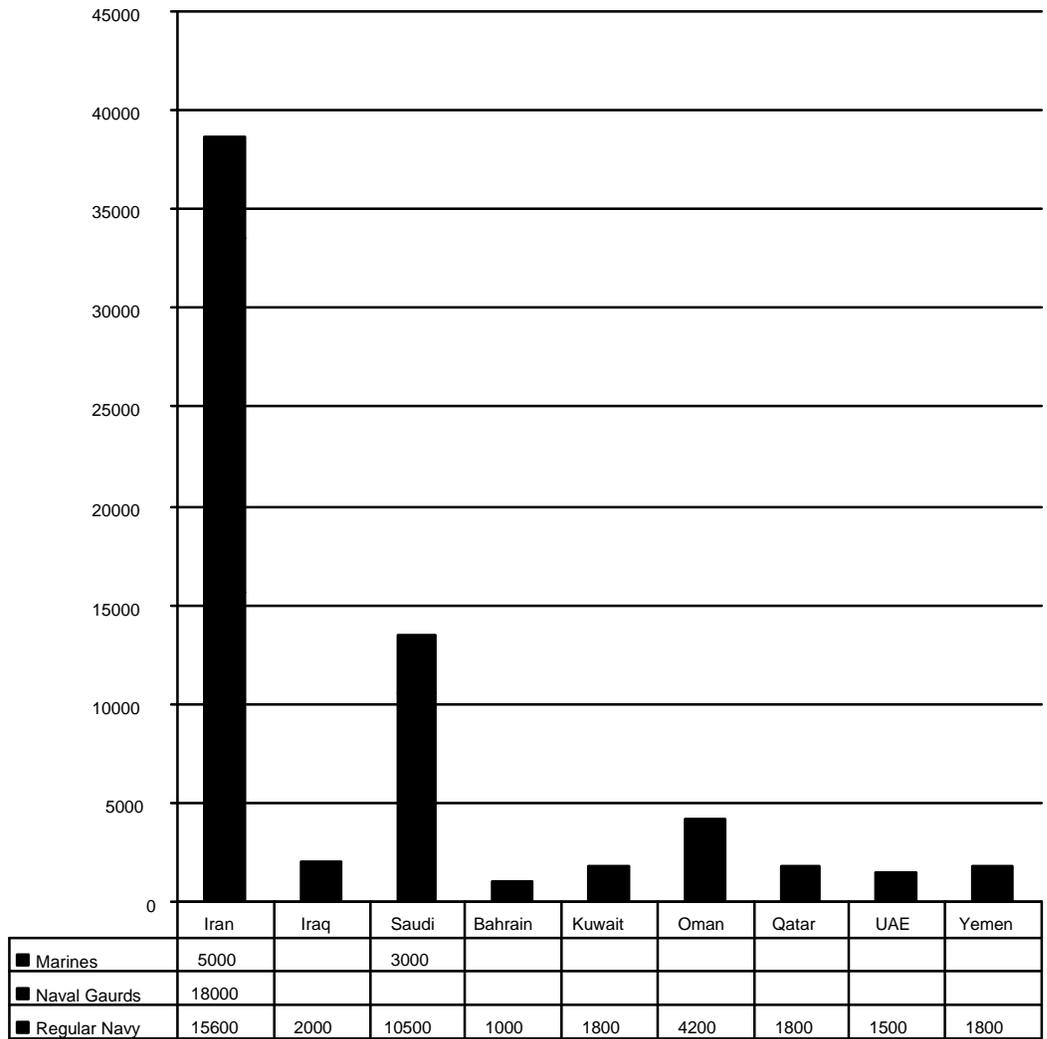
12 aircraft with Omera search radars, nine with Giat 20mm cannon, and 12 with Exocet or Sea Eagle air-to-ship missiles. Other reports indicate the AS-332s included only six transport aircraft, plus another six with Exocet air-to-ship missiles.¹¹⁹

The Saudi Coast Guard

The Saudi Coast Guard has up to 4,500 men, and reports to Prince Abdul Rahman, the Deputy Minister of Defense and Aviation. 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.¹²⁰

Chart 9.1

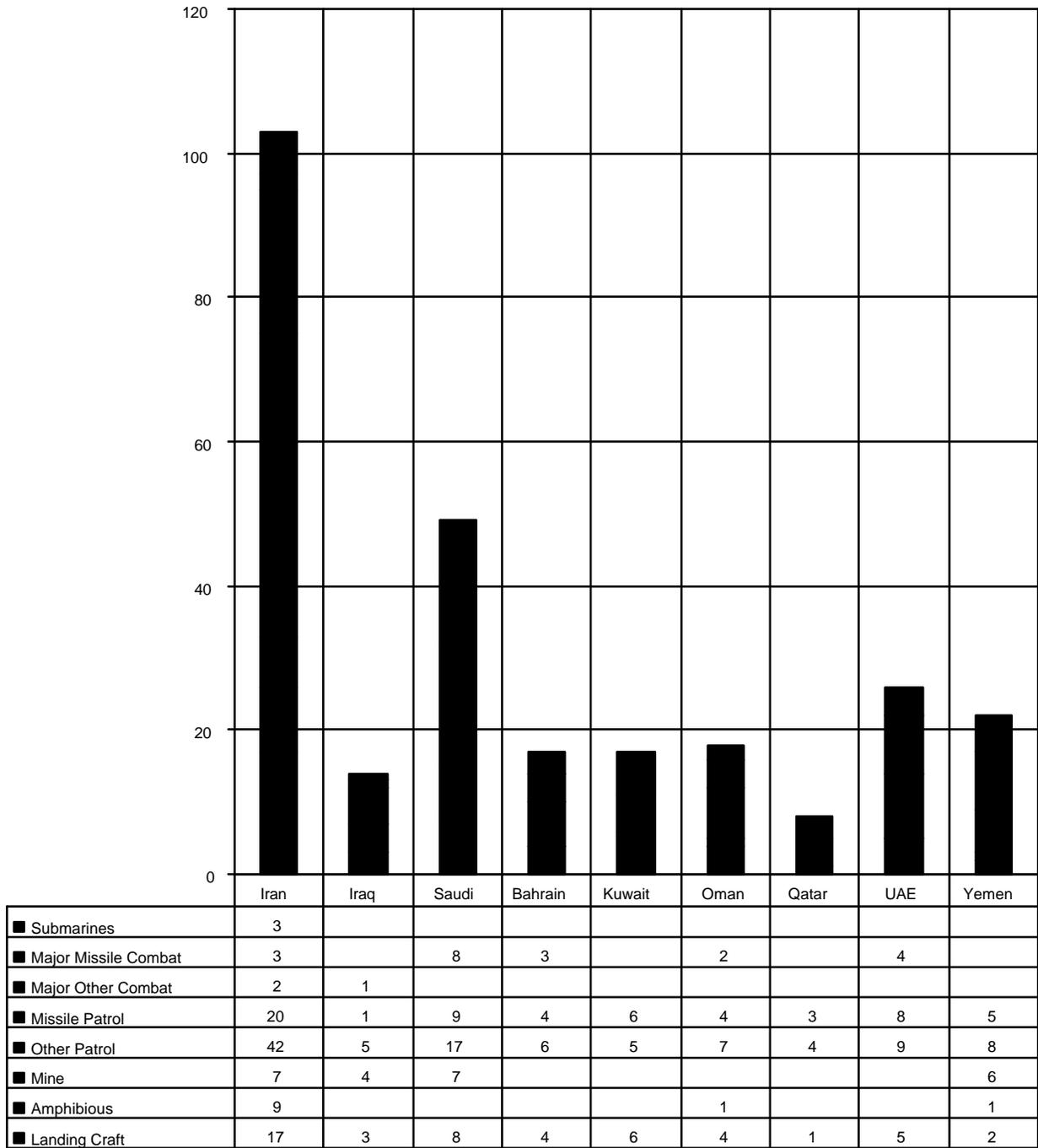
Total Gulf Naval Manpower: 2001



Source: Estimated by Anthony H. Cordesman using data from the IISS Military Balance.

Chart 9.2

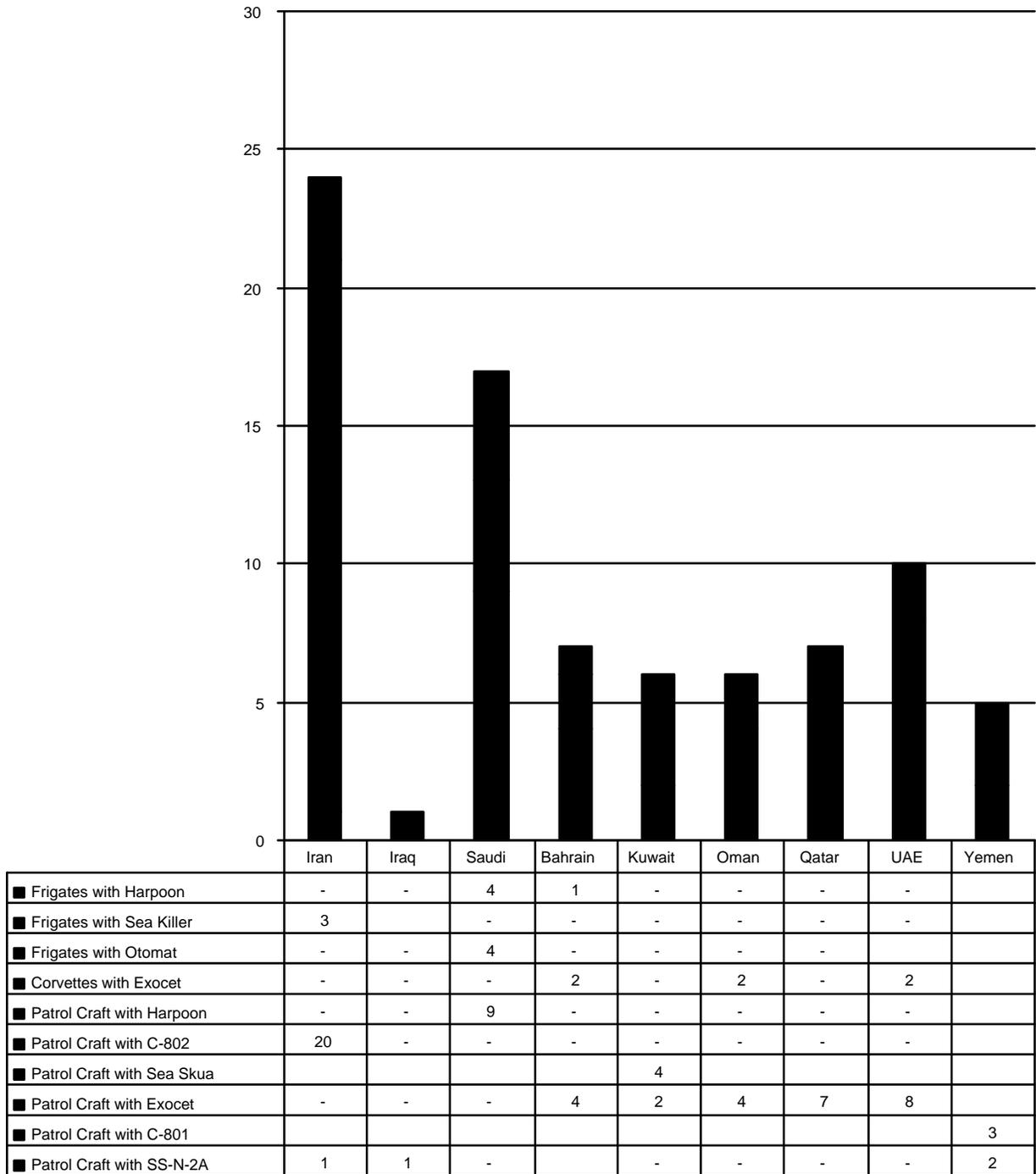
Gulf Naval Ships by Category in 2001



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

Chart 9.3

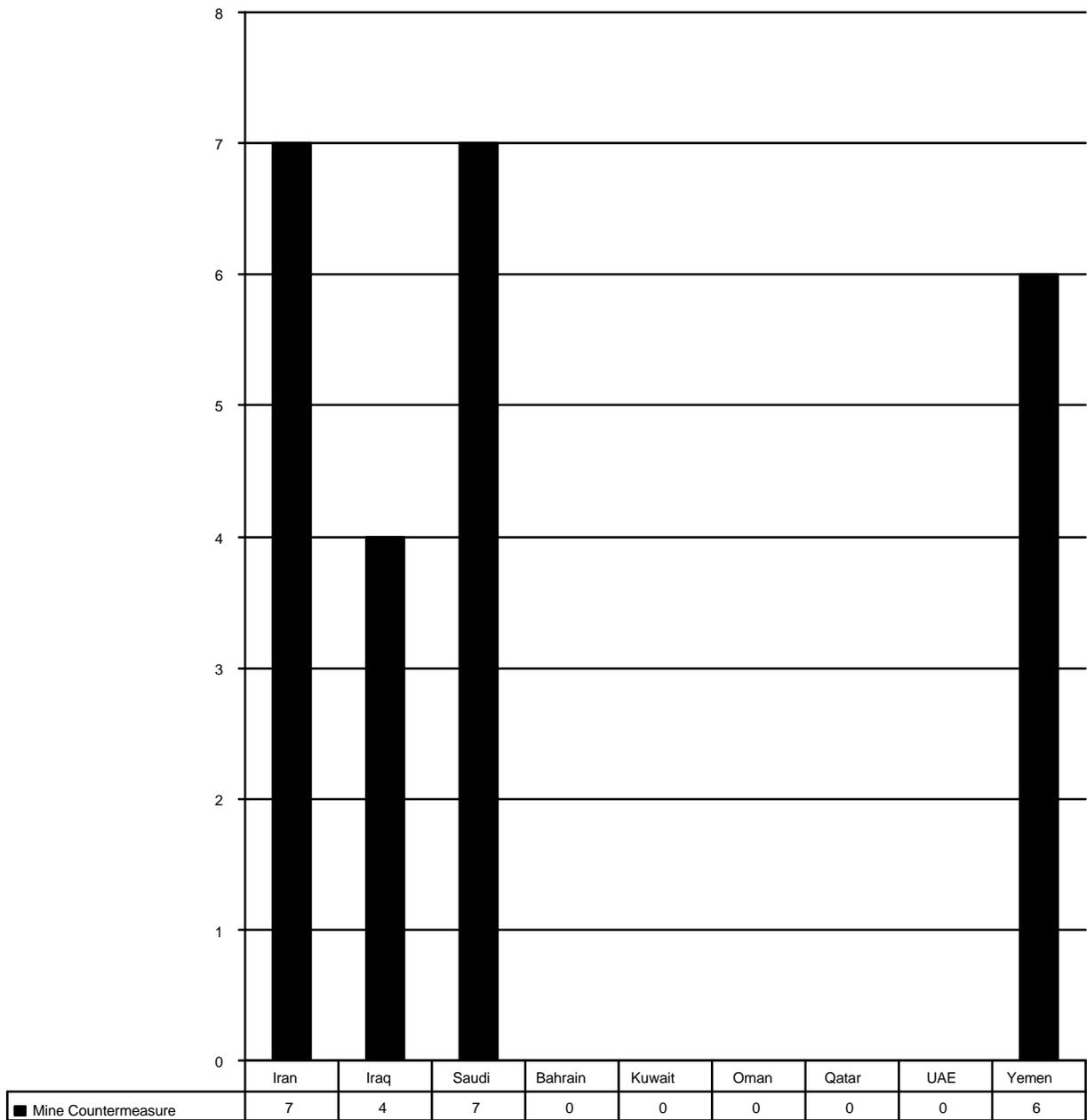
Gulf Warships with Anti-Ship Missiles in 2001



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

Chart 9.4

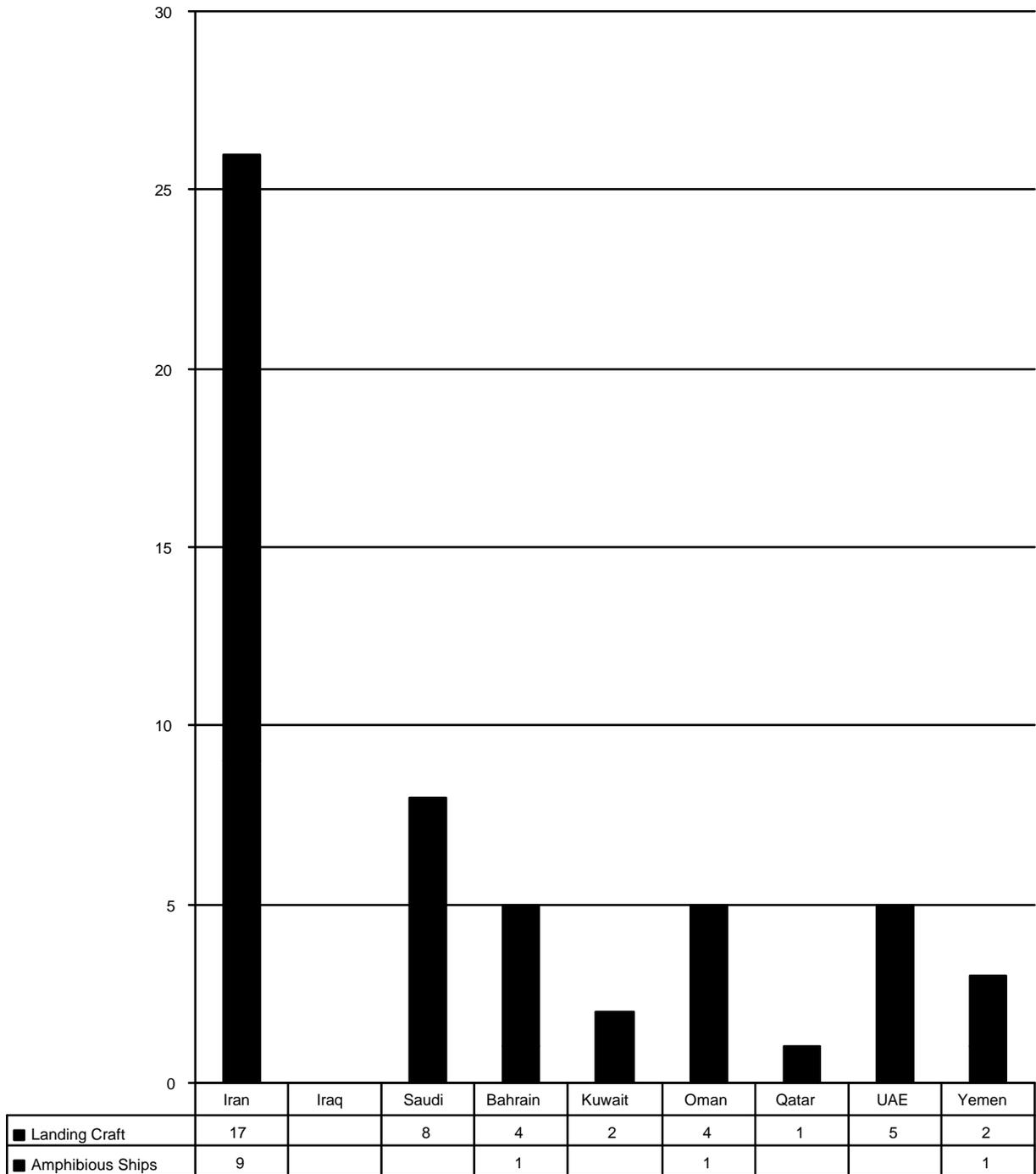
Gulf Mine Warfare Ships in 2001



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

Chart 9.5

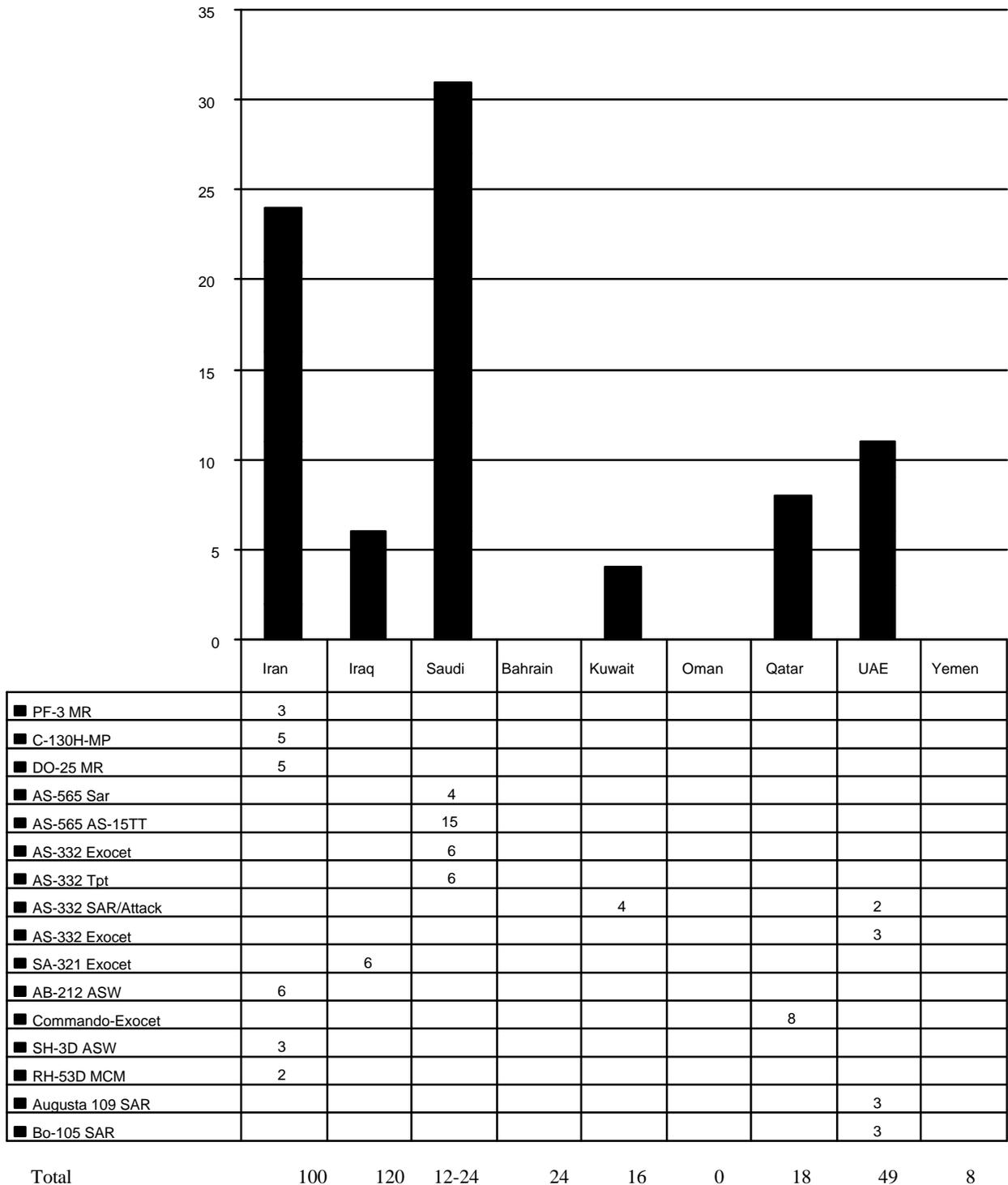
Gulf Amphibious Warfare Ships in 2001



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

Chart 9.6

Gulf Naval Aircraft and Helicopters Aircraft in 2001



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

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Saudi Naval Development

The Saudi Navy began its development by relying on US support and equipment, but it now relies on French equipment and support for its larger ships and US support for its smaller weapons systems. The Saudi Navy is making significant progress in developing combat effectiveness, and coordinates closely with the US Navy Central Command (NAVCENT), which is forward based in Bahrain.

Badr-Class Corvettes and MSC-322 Coastal Mine Sweepers

Major deliveries under the US phase of the Saudi naval expansion effort have been completed for well over a decade.¹²¹ The US delivered a total of nine 478-ton Al Siddiq-class patrol-gunboat, guided missile (PGG) craft, each armed with two twin Harpoon missile launchers, 1 76 mm gun, and light AA weapons. Although, the Saudi Navy has lagged behind Saudi air and land forces in Saudi Arabia's military modernization program, but it is now being accorded greater priority partly due to Iran's acquisition of Russian 'Kilo'-class submarines.¹²²

The US also delivered four larger patrol-chaser missile (PCG) craft, or Badr-class, ships which the Saudis class as frigates but which most foreign sources class as corvettes.¹²³ The Badr-class vessels displace 1,038 tons fully load, and have two quad Harpoon missile launchers, one 76 mm gun, Vulcan and 20 mm guns, and six 324 mm torpedo tubes. They are being modernized in Saudi Arabia with US assistance.

The Badr-class ships are all based at Jubail on Saudi Arabia's east coast, but they occasionally deploy to the Red Sea. Although the Saudi Navy claims to be a two-sea navy, its forces generally avoid the Indian Ocean and Gulf of Oman, and deploy to either the Gulf or Red Sea.¹²⁴

The US delivered four MSC-322-class coastal mine sweepers, two large harbor tugs, two utility landing craft, and 4 LCM-6, 4 LCU-1610, and 4 LCM landing craft. Other US deliveries included Harpoon missiles, Mark 46 torpedoes, and ammunition for the Saudi Navy's 76 mm guns and other weapons. The Saudi Navy also took delivery of three Dammam-class torpedo boats from Germany, each with four 533mm torpedo tubes each.

Sawari (Mast) I

Saudi Arabia turned to France as the major source of its naval ships and weapons in the early 1980s, partly because of dissatisfaction with the US Navy advisory effort. Saudi Arabia also turned to France, however, because it felt French ships were better equipped and better

suited to its mission requirements, to provide France with a share of Saudi arms purchases, and to reduce Saudi reliance on the US. The Saudi Navy retained several support contracts with US firms, however, and has had some problems with the quality of the French support effort. It has also turned to Britain for support in mine warfare and has held extensive discussions with Germany regarding the possible purchase of submarines.

The Saudi Navy signed its first major contract with France in 1980 in an effort to accelerate its modernization, and obtain more advanced ships than it could purchase from the US. The first modernization package was worth \$3.4 billion, and Saudi Arabia then signed another contract that effectively made France its primary source of support and modernization for future Saudi orders. This follow-on French program, which began in 1982, was called Sawari (Mast) I. It had a minimum value of 14 billion French francs, or \$1.9 billion, and may have escalated to \$3.2 billion.

The Madina-class Frigates

France delivered four missile-equipped Madina-class or Type F-2000S frigates by August 1986. These are 2,870-ton vessels when fully loaded. They have eight Otomat 2 missile launchers, eight Crotale surface-to-air missile launchers, 1 100 mm gun, 4 twin Breda 35 mm guns, 4 533 mm torpedo tubes, and 1 SA-365F helicopter.¹²⁵ France also delivered two modified Durance-class fuel supply/replenishment vessels (Boraida class), Otomat missiles for the frigates, 24 SA-365 Dauphin 2 helicopters (20 missile-equipped and 4 SAR-equipped), AS-15 missiles for the helicopters, and additional training services. The Otomat is the longest-range anti-ship missile in Gulf service, with a range of 160 kilometers.¹²⁶

These vessels are all based in Jeddah on Saudi Arabia's Red Sea coast and so far have had limited operational value. Saudi crews trained in France to operate the vessels and helicopters, but the ships are only at sea for a few weeks a year, and at least one ship has had a severe engine room fire that has evidently not been fully repaired. These ships will undergo a 13-month refit in France at a cost of \$1.7 billion.¹²⁷ Ship wear and maintenance problems are still a serious problem with this class of Saudi vessels.¹²⁸

The Sawari II Program

The Saudi Navy began to study plans for a Sawari II program in the early 1980s, which was initially estimated to cost \$1.6-\$2.12 billion. Prince Sultan met with France's President Francois Mitterrand and Defense Minister Charles Hernu to discuss this program in May 1983. The program he discussed would have provided Saudi Arabia with at least two more 2,000-ton

frigates and possibly 4,000-ton frigates as well. It included selling mine-sweeping helicopters and maritime patrol aircraft as the first step in the procurement of much larger forces, including lift and troop-carrying helicopters, surveillance and intelligence equipment, and special warfare equipment.

While Saudi Arabia ordered 12 Super Pumas and 12 more patrol boats from France in the 1980s, it did not place major additional orders until 1990. Saudi Arabia did not agree to the Sawari II program because of funding problems and because the Saudis experienced growing problems with their French ships that were more severe than those experienced with American vessels. These maintenance and support problems were so serious in the late 1980s that Saudi Arabia even approached the US to provide support for the French vessels.

The situation slowly improved, however, and Saudi Arabia made a decision to keep France as its major naval supplier. The Saudi Navy signed a new support agreement with France in 1989. The Saudi Navy ordered 6 additional Super Pumas in 1989, and decided to raise its order for French patrol boats to 20 ships.

Saudi Naval Infrastructure and C⁴I Capabilities

The Saudi Navy C⁴I system was still unable to support effective combat operations when the Gulf War began. As a result, the Saudi Navy purchased a \$307 million upgrade of its C⁴I system on September 27, 1990.¹²⁹ Since that time, Saudi Navy C⁴I has been upgraded significantly, and it now has commercial data links to improve its interoperability. The Saudi Navy has Link 16 secure communications capability and its C4I/BM links are fully compatible with those of the US Navy. Its overall training proficiency and readiness is now capable of supporting a complex combat operation.

Saudi naval facilities are excellent. The Saudi Navy's bases are exceptionally capable and well stocked. The main bases will eventually have up to five years of stocks on hand, and will have initial deliveries of two years worth of inventory. The Jubail base is now the second largest naval base in the Gulf and stretches nearly eight miles along the coast. It already has its own desalinization facility, and is designed to be expandable up to 100% above its present capacity. The Saudi Navy is also steadily improving its exercise performance, and has begun to conduct joint exercises with the British, Egyptian, and US navies.¹³⁰

The Saudi Navy is procuring an automated logistic system similar to the systems used by its other services, and extensive modern command and control facilities. The first major links in this C⁴I system became operational, along with hardened command centers at Riyadh, Jubail, Copyright Anthony H. Cordesman, all rights reserved. Rough draft. Not be copied or circulated further without the author's express written permission.

and Jeddah, by the end of 1985. The system was supposed to have automated data links to the E-3A by the late 1980s, and be able to transfer data to Saudi ships by secure digital link from the Saudi E-3As as they operated in the ocean surveillance mode.

The Saudi Navy has purchased other US designed facilities, including a meteorology laboratory, a Harpoon missile and Mark 46 torpedo maintenance facility, an advanced technical training school, and a Royal Naval Academy. Saudi Navy maintenance, however, is poor to very poor and these maintenance problems are compounded by the fact that Saudi Arabia cannot hire foreign maintenance personnel to go to sea, as it can hire foreigners to work at air bases and army depots. The resulting lack of maintenance at sea places a strain on contractor facilities on shore, and leads to the relatively rapid degradation of Saudi naval readiness after ships have been at sea. This situation is not improving.

Saudi Navy Force Expansion Plans

During the Gulf War, Saudi Arabia placed a tentative order for three F-3000 frigates. These orders were then delayed, however, because Saudi Arabia gave priority to new orders for its air and land forces, and because of its economic problems. The Saudi Navy only signed firm contracts for two new frigates on November 22, 1994, and did not order a third until May 20, 1997.¹³¹

Frigate Programs

The resulting program is called “Project Mouette” in France and “Sawari II” in Saudi Arabia. It seems to have a total cost of \$3.5 billion (19 billion French Francs). The first two new French F-3000S class frigates are to be delivered by 2002, and the third in 2005. The first two ships will displace 3,700 tons fully loaded, and their design is based on the French La Fayette class of “stealth” frigates, with enhanced air defense capabilities. They have special radar cross-section shaping, IR paint, and reduced heat emission from their funnels. Their magnetic structure has been reduced through degaussing, and their acoustic signature has been reduced with the use of special machines, cradles, and propellers. They are 128 meters long and 16.2 meters wide. They have a crew of 139, with the ability to house a detachment of 25 additional personnel as marines or special forces. They have a range of 12,600 kilometers at 15 knots, and a top speed of 25 knots. They are stabilized to allow helicopter operations up to sea state five or six. They have enhanced survivability and damage control capabilities.¹³²

The first two frigates will initially carry the Thomson-CSF AirSys Crotale Navale NG surface-to-air missile used in the F-2000S, but are expected to be upgraded to use the vertical

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launched Aster missile. They carry eight Exocet missiles, a 100mm gun, two 20mm guns, four 324mm torpedo launchers, and 1 SA-365F helicopter. They have decoy launchers, a COMINT suite, and a Thomson-CSF DR 3000 ESM suite. Their combat electronics are much more advanced than those in the F-2000S class. They include dual tactical computers, a highly automated combat information center, DRBV-26D long-range surveillance radar, and the DRBV-15C Sea Tiger Mark 2 E/F band two-dimensional surveillance radar. They have special Link 11 and over-the-horizon data link equipment to work with the E-3As in the RSAF, Saudi fighters and strike aircraft, and the Navy's helicopters.¹³³

The third ship will come with 32 Aster 15 anti-aircraft missiles and the Arabel radar. This same system will be retrofitted to the first two ships by 2005. The third frigate will also be equipped with the Exocet MM-40 Block 2 missile. It will have a more advanced V-26 radar, and will be 500 tons heavier and 10 meters longer than the first two frigates. It is not clear what sonar capability they will have, and they were originally ordered without sonars. This makes their capabilities against Iran's submarines somewhat problematic.¹³⁴

Project Mouette and the Overhaul and Modernization of F-2000S class ships

Project Mouette includes the overhaul and modernization of the four F-2000S class ships, and the two replenishment tankers (LRTs) it had ordered from France in the 1980s. One frigate, the Madina, has already been returned to the Saudi Navy, after a year of refitting and overhaul in Toulon. The last frigate is scheduled to be completed in March 1999.

The modernization involves the improvement of the sonars, the replacement of the MacTaggart Scott helicopter handling system with the Samahe system, improvements in maintenance and repair subsystems, and improved NBC contamination detection and protection. The NBC enhancement will include an airtight gas citadel and high performance detection sensors. Missile upgrades primarily concern the OTO Breda/Matra Otomat anti-ship weapon system, which is being given additional capabilities both inside the missiles and in the ship-based control system, including enhanced search patterns to reattack missed targets. The VT1 round for the Crotale will not be provided, but improvements to the Castor 2B X-band radar will bring it up to the 2C standard.¹³⁵ France will also provide greatly improved maintenance and overhaul facilities in Jeddah and training for 750 personnel to crew the ships.¹³⁶

Other Modernization and Expansion Options

Saudi Arabia has examined more ambitious programs. These include a SNEP II program that would spend roughly \$10 billion to expand and modernize the Saudi Navy over the next 10 years. They also include a \$23 billion program to expand its Marine and naval special forces during the next 10 years -- although it seems doubtful that such a program can be implemented.

There are reports that Saudi Arabia has considered the purchase of several AEGIS-class warships to give it advanced battle management, Harpoon anti-ship missiles, Tomahawk strike capability, ASW, anti-aircraft, and anti-ship missile defense capabilities. The AEGIS-class ships are highly effective, but they cost roughly \$900 million to \$1 billion each, and require highly trained crews. As a result, it would be at least 2003-2005 before such a ship could be delivered. Saudi Arabia would also confront problems in obtaining release of some of the weapons and technologies involved.¹³⁷

While Saudi Arabia may acquire more advanced large surface ships in the future, such an acquisition is a very low priority and is likely to be a waste of Saudi funds. It is extremely doubtful that the Saudi Navy can absorb its existing orders of French frigates effectively until 2005-2010. In the interim, the US Navy and Royal Navy have ample capability to provide such support to Saudi Arabia. Investing similar amounts of money in added air and land capabilities would give Saudi Arabia far more contingency capability.

Mine Warfare Programs

In contrast, the Saudi Navy badly needs to expand its mine warfare capabilities. It now has a total seven mine warfare ships. However, these include four obsolescent US MSC-322 mine vessels of the Addriyah class that began to phase out in 1997. Its only modern mine warfare vessels are three Al-Jawf class ships.

Saudi Arabia began to modernize its mine warfare capability in July 1988, when it agreed to lease two Hunt-class mine vessels from Britain. It did so in response to Iran's successful mining of the Gulf tanker routes during the "tanker war" of 1987-1988. It followed up by placing a tentative order for six to eight Vosper Sandown-class MCMVs, training by the Royal Navy, and new port facilities for mine warfare vessels from Ballast Nedam, as part of its \$18 billion al-Yamamah 2 program.

The Saudi Navy, however, only signed firm contracts for three Sandown-type vessels, which became what the Saudi Navy calls the Al-Jawf class. These vessels are 500 ton ships built by Vosper-Thornycroft. They have a crew of 34, a range of 3,000 miles, and a speed of 12 knots

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with diesel engines and 6 knots using electric engines for minesweeping. They have many advanced features, including vectored thrust with bow thrusters, a remote controlled mine disposal system, a computerized ship positioning system which is accurate to one meter, and a Plessey-Marconi variable depth sonar. It has Saudi enhancements including twin 30 mm Emerson Electric guns and a Contraves fire control system, larger engines, and uprated Voith-Schneider propulsors.¹³⁸

According to press reports, the Saudi Navy has options to buy three to four more Al-Jawf class vessels, although the Saudi Navy has not yet exercised this option and may be considering purchase of French-built Tripartite mine hunters.¹³⁹ Kuwait, Bahrain, Oman, Qatar, and the UAE are also reported to be examining orders of the Sandown or Tripartite mine warfare vessels.¹⁴⁰

Saudi Arabia is rapidly improving its capability to conduct mine warfare operations, and exercises regularly with the US Navy, which means it could make up a critical gap in US forward-deployed capabilities and perform an important mission. It would take a force of at least 15-20 modern mine warfare vessels in the GCC as whole, however, to provide security for the main tanker routes used by the Southern Gulf states. While Saudi Arabia is making progress, and the Southern Gulf states are improving their exercise capabilities in mine warfare, the lack of adequate force numbers and combat capability is a major potential vulnerability.

Deferring Coastal Submarines

Saudi Arabia has indefinitely deferred plans to buy coastal submarines. Saudi Arabia sought to buy six to eight submarines during the 1980s, and discussed programs costing \$4 billion to \$6 billion -- including one submarine base for each fleet. Saudi Navy representatives visited several European manufacturers in 1986 and 1987 -- including the builders of the Walrus-class boats in the Netherlands, Vickers Type-2400 in the UK, and ILK 209/2000 and Kockums 471 in West Germany.

This deferral is a wise decision and any Saudi purchase of submarines would result in a gratuitous waste of money. Saudi Arabia lacks the manpower and maintenance resources to operate submarines. The Gulf and Red Sea are poor operating areas for such vessels, Saudi Arabia could not use such submarines to fight Iranian submarines effectively, and the high salinity of the Gulf could present problems in terms of long-term operating life.

Deferring Maritime Patrol Aircraft

Saudi Arabia also seems to have indefinitely deferred an order for two AND-BA Atlantique 2 (ANG) maritime patrol aircraft, and the order of two more Atlantique 2, Fokker F-27 Maritime Enforcers, or Lockheed P-3 Orions as part of a GCC maritime surveillance force. The AND-BA Atlantique 2 (ANG) maritime patrol aircraft proved to be too expensive. The aircraft supplemented the existing maritime surveillance coverage provided by Saudi E-3As and were intended to cover the rest of the Southern Gulf. A Saudi purchase for this mission depended on GCC cooperation, and partial funding of the aircraft. Neither was forthcoming.¹⁴¹

These again appear to be sound decisions. Saudi Arabia has a valid need for both modern mine warfare and maritime patrol (MPA) aircraft, but the requirement for submarines is dubious at best and its E-3A AWACS aircraft have advanced maritime patrol capabilities. Unfortunately, the Saudi E-3As will only acquire Link 16 secure data links to the Saudi Navy in the future, and are not really trained for this kind of joint warfare. Ironically, the US E-3As have a Link 16 capability and are trained for such a mission. As a result, the USAF can support the Saudi Navy better than the Saudi Air Force.

If the Saudi Air Force developed adequate joint warfare capabilities to support the Saudi Navy, it could provide the necessary maritime patrol coverage although the defense of the Gulf as whole would require the UAE or Oman to provide such capabilities in the lower Gulf, and the Saudi E-3As would have problems in covering the entire Red Sea area.

Iran's deployment of Kilo submarines has increased the submarine threat, but coastal submarines are not ideal hunter-killers, and it is unclear how the Saudis could make cost-effective use of submarines as a strike force in either the Gulf or Red Sea.

Saudi Naval Readiness and Warfighting Capabilities

The Saudi Navy has enough equipment on hand, and on order, to evolve into a relatively powerful force by regional standards, and US experts feel it is now making major progress in becoming an effective force and that equipment fully effective. Its readiness is improving, and has been helped by crash training efforts during Operation Earnest Will (1987-1989) and the Gulf War. However, its current equipment mix requires a force of close to 18,000-20,000 men, and the Navy is undermanned.

Saudi Naval training standards are improving, as are operating rates and active training and exercise days. The Saudi Navy is working closely with the US 5th Fleet and held 11 exercises in 1999, including participating in joint mine warfare task forces. Its exercise performance now gets considerable from US officers. It is dependent on foreign maintenance and logistic support, however, and is still having problems operating its new French frigates – partly because they are so packed with weapons systems and electronics that they are difficult to fight..

The main threats to Saudi Arabia, as well as the other Arabian Gulf states, are from Iran and Iraq. From a maritime standpoint, there is little threat from Iraq, whose navy was largely destroyed in 1991. Iran, on the other hand, built up some aspects of its naval forces as part of its overall rearmament program. It has taken delivery of two Russian 877EMK ‘Kilo’ class diesel-electric submarines since 1993, and a third is expected.

Although the Gulf is too shallow for large-scale underwater warfare, these vessels can fire wake-homing or wire-guided acoustic torpedoes as well as lay mines in strategic shipping lanes, seriously impeding the flow of crude oil and liquefied natural gas exports.¹⁴² Iran has also received 10 Hudong class FACMs from China and these vessels, along with the older Kaman class vessels are being armed with Chinese C-802 anti-ship cruise missiles.

Saudi Arabia scarcely has to meet these threats alone, however, and it is making enough progress so that US and British experts feel it can play a major role in any future coalition warfare. There is, however, the question of funding. The recent decline in oil revenues and the improvement in relations between Iran and Saudi Arabia may lessen the urgency with which the Saudi Navy has to pursue its modernization program. However, funds and manpower may also be limited modernization. As of June 1999, Saudi Arabia had shelved its plans to continue its naval expansion due to the decrease in funding caused by low oil revenues. The Kingdom had already earmarked funds for the purchase of three French La Fayette-class frigates, however, and it may well go ahead with such purchases.¹⁴³

The key to success will be to emphasize warfighting readiness over expansion and modernization, and to keep the Navy's strategic focus on the missions it really needs to perform. It needs to emphasize maritime surveillance, defending offshore facilities and coastal installations, dealing with unconventional threats like the naval branch of Iran's Revolutionary Guards, and threats to maritime traffic like mine warfare. Seen from this light, putting so substantial part of its limited resources into frigates that attempt to duplicate the capabilities of large US and British surface ships has a lower priority. So do efforts to buy submarines, advanced anti-submarine warfare capabilities, and even larger surface ships that do not suit either Saudi Arabia's overall defense needs or the current capabilities of its navy.

The Saudi Navy can scarcely be expect to compensate for the problems created by the dismal standards of the other Southern Gulf navies except Oman, but these may not be mission-critical. The Saudi Navy should be able depend heavily on air support, and on reinforcement by USCENTCOM and the British, French, and/or US navies.

X. The Saudi Air Force

Modernizing and expanding the Royal Saudi Air Force (RSAF) has been given a higher priority than that of the army, navy, and air defense force. The RSAF is the only service that can cover Saudi Arabia's 2.3 million square kilometers of territory. It represents the investment most capable of cross-reinforcement with the other services. It also has had the most impact in terms of regional prestige, and the most credibility in terms of being able to support other GCC states or to operate with USCENTCOM forces in a major crisis, although its quality and real-world strength has declined significantly since the mid-1990s.¹⁴⁴

The Saudi Air Force is headquartered at Riyadh. Like the Army and Navy, it has a modern headquarters staff with five major branches -- G1 Personnel, G2 Intelligence and Security, GS Operations and Training, G4 Logistics, and G5 Civil and Military Affairs. The RSAF also has a military academy and an extensive system of training schools and support facilities. Its operational command is structured around its Air Command and Operations Center, and base operations. The main Air Command and Operations Center is near Riyadh and there are Sector Operating Centers at Tabuk, Khamis Mushayt, Riyadh, Dhahran, and Al-Kharj, These centers control air defense operations by fighter aircraft, surface-to-air missiles, and air defense artillery.¹⁴⁵

The RSAF has shifted from a command structure whose chain of command went from Air Force command to air base command to squadron, to a chain of command going from Air Force command to sector command to base command to wing or group command to squadron. This new command structure is designed to give certain sectors more freedom and flexibility at the local command level.

It has operational command facilities at its air bases at Riyadh (King Faisal Air Academy), Dhahran (King Abdul Aziz), Tabuk, Jeddah, and Khamis Mushayt. There are additional major air bases at Al Jawf, Hafr al Batin, and Taif (King Fahd). There are major Air Defense force facilities at Al-Kharj, Dhahran, and Khamis Mushayt. Most of Saudi Arabia's fighters and strike aircraft are based at Dhahran, Taif, and Khamis Mushayt. In the past, the RASAF has limited its deployments at Tabuk to minimize vulnerability to Israeli attacks.

The Current Size and Capability of the Saudi Air Force

The growth of the Saudi Air Force is summarized in Chart 10.1. While the build-up of the Saudi Air Force's combat strength sometimes seems erratic in this chart, the peaks generally

represent periods where major new deliveries of combat aircraft took place while the older aircraft were still kept in service. Other peaks represent periods when lower quality and older aircraft were converted to trainers. In general, the modernization and expansion of the Saudi Air Forces proceeded relatively smoothly from the time it began to replace its Lightning fighters up to the mid-1990s.

Chart 10.2 shows how the size of the Saudi Air Force manpower compares with that of other Gulf states. Chart 10.3 provides similar data for comparative total fixed and rotary-wing combat aircraft strength. Chart 10.4, and Table 10.1 compare relative holdings of advanced types of combat aircraft, and Chart 10.5 compares holdings of low-quality combat aircraft. Chart 10.6 compares reconnaissance aircraft, Chart 10.7 compares sensor aircraft, and Chart 10.8 compares attack helicopter strength.

In broad terms, the Saudi Air Force has benefited from the fact that Iran has not had any major modernization since the fall of the Shah, other than for limited deliveries of MiG-29s and Su-24s. Iraq had faced an arms embargo since 1990. The Iranian air force is worn and aging, and the Iraqi air force is now at least a decade old and has never had major weapons deliveries to allow it to react to the lessons of its massive defeat during the Gulf War.

These developments have helped make the Saudi Air Force 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 C4I/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 mishandling of overall training and readiness, underfunding, and poorly managed Saudisation have not only brought readiness to the point of near-crisis, but 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, and corruption in the highest ranks, have compounded these problems.

The IISS estimates that the RSAF had about 20,000 men in 2001, 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 432 combat aircraft. Its army operates Saudi Arabia's 12 AH-64 attack helicopters, and it has 21 more armed helicopters in its Navy. Its 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.¹⁴⁶

Saudi Arabia's total inventory of major combat aircraft included 72 F-15Ss, 70 F-15Cs, 24 F-15Ds, 76 Tornado IDSs (10 Tornado GR.1 recce-attack equipped), 24 Tornado ADVs, and 5 E-3A AWACS. It had 56 F-5Es, 21 F-5Fs, 10 RF-5Es, and 14 F-5Bs. Most of the F-5s, however, were grounded in storage. It had 30 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 had been phased out of service in the late 1990s. Its major non-combat air assets included, 8 KE-3A tankers, 8 KC-130H tanker-transports, 36 C-130 cargo-transports (7 Es and 29 Hs), 1 KE-3B (EW), and 2 L-1000-30HS hospital aircraft.¹⁴⁷

The combat strength RSAF aircraft strength included seven fighter-attack squadrons. Four with 90 Tornado IDS, three with 56 F-5Es, , and one with 14 F-5Fs. 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 had 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 F-5 units had poor readiness and proficiency levels and most aircraft were little combat capability or were in storage.

The RSAF also had at least six interceptor squadrons for defensive missions. There were four squadrons with a total of 70 F-15Cs, 25 F-15Ds, and 5 F-15Ss. F-15Ds were deployed to each F-15 squadron to perform both training and operational missions. There were two Tornado ADV squadrons with 24 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 F-15s were capable in the air defense role, but most aircrews lacked adequate advanced fighter combat training. The training of F-15 aircrews in the attack role was weak to the point where it presented serious safety problems in advanced mission profiles and had led to a number of fatal accidents. 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 missiles.

Saudi Arabia is the only Southern Gulf air force with meaningful reconnaissance assets for offensive operations in spite of its problems, but its mission capabilities are limited. The RSAF had two aging reconnaissance squadrons with a total of 10 RF-5Es. These aircraft are approaching obsolescence in terms of their sensors and survivability, and some were in storage. The Tornado IDS-Rs would probably perform most missions, although Saudi Arabia is acquiring reconnaissance and electronic warfare pods for its F-15s and has deployed some of this equipment.,

The RSAF had an airborne early warning squadron with five E-3As. These aircraft now have Saudi crews, but the crews have shown only limited capability to actually 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. This upgrading will be part of a Block 35 upgrade to be delivered in the early 2000s.

There were two multipurpose squadrons with 7 F-5Fs and 14 F-5Bs. These latter two squadrons had both a training and a combat mission, but had little real operational capability. Most aircraft were “parked” and without real operational capability.

There were also combat-capable training units with 30 Hawk Mark 65 and 30 Hawk Mark 65A aircraft capable of performing COIN and light attack functions with machine guns, cannons, and rockets. It is not clear how effective the Hawks would be. They present major problems even as training aircraft because they cannot be used to train for supersonic flight or for the kind of demanding mission profiles needed for F-15 training. The combat mission training of their aircrews is limited and they are very vulnerable to short-range air defenses (SHORADS), although they could be useful in securing rear areas. Many experts feel that the Hawk's inability to train aircrews for demanding air-to-air and air-to-combat missions and has contributed so much to the problems in Saudi F-15 aircrew proficiency that the aircraft should be replaced, but it is far from clear what better trainer is available. The RSAF had four Cessna 172s, one Jetstream, and 50 PC-9 training aircraft that were not armed for combat.

The RASF is the only Gulf air force with an effective mid-air refueling capability. In 2001, its support units included a tanker squadron with 8 KE-3A tanker/transports, and 7 KC-130H tankers. It had three transport squadrons with 7 C-130Es, 34 C-130Hs, 8 L-100-30HS hospital aircraft, and 35 C-212As. There were two helicopter squadrons with 25 AB-206Bs, 22 AB-205s, 27 AB-212s, and 12 AS-332s. There were also 12 AS-532A2 Cougar search and rescue helicopters which Saudi Arabia had ordered from France in September 1996, at a cost of \$590 million.¹⁴⁸

There was a Royal Flight with 1 B-747 SP, 1 B-737-200, 4 BAe 125-800s, 2 C-140s, 4 CN-235s, 2 Gulfstream IIIs, 2 Learjet 35s, 6 VC-130H, 1 Cessna 310s. There were also 3 AS-61, AB-212, and 1 S-70 helicopters.

Saudi Arabia had limited and aging inventories of air munitions and spares -- a marked decline from the cutting edge munitions and high inventories it had at the time of the Gulf War. For example, it ordered 101 shipsets of F-15 conformal fuel tanks, 909 AIM-7F and AIM-9P/L air-to-air missiles, 100 Harpoon and 1,600 Maverick air-to-surface missiles, JP-233 and BL-755 bombs and munitions, before Iraq's invasion of Kuwait. It also ordered large numbers of additional Aim-9Ls and Aim-7Fs in August 1990, and 2,000 Mark 84 2,000-pound bombs, 2,100 CBU-87 cluster munitions, 770 AIM-7Fs, and components for laser-guided bombs in July 1991. The Kingdom did not continue 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.¹⁴⁹

Up until the mid-1990s, the Saudi Air Force had excellent foreign support. During the 1970s and early 1980s, Saudi Arabia was able to draw on US Air Force and contractor support to

create some of the most modern air facilities in the world. These programs have been steadily renewed and expanded ever since, and the current contract is worth \$2.5 billion and runs from June 1997 through May 31, 2002. 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 have not enforced the proper qualification standards.

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..

Operational History and Force Development

The RSAF first proved its effectiveness in Saudi Arabia's border wars with Yemen. In the late 1980s, it created effective air defenses to meet a threat from Iran during the Iran-Iraq War. It established the “Fahd Line,” which created an Air Defense Identification Zone and forward air defense system off the Saudi coast. Saudi Arabia defended its air space and shot down an Iranian F-4 that tested Saudi defenses on June 5, 1984.

The RSAF was the most effective single element of Arab forces in the UN Coalition during the Gulf War. It flew a total of 6,852 sorties between January 17, and February 28, 1991-- ranking second after the US in total air activity, and flying about 6% of all sorties flown. These sorties included 1,133 interdiction missions, and 523 battlefield air interdiction missions, for a total of 1,656 offensive missions. The RSAF flew 2,050 defensive counter-air missions, 129 offensive counter air missions, and 102 escort missions for a total of 2,281 air defense sorties. The RSAF flew 118 reconnaissance sorties, 85 E3-A AWACS sorties, 485 refueling sorties, and 1,829 airlift sorties.¹⁵⁰

During the slightly longer period from January 16 to February 28, Saudi Air Force F-15C units flew 2,088 sorties (over one-third the total F-15C sorties flown by the USAF) and 451 Tornado ADV sorties. Saudi pilots were as capable in these air defense sorties as most pilots in NATO. The RSAF also flew 665 Tornado GR.1/IDS strike sorties, 1,129 F-5 sorties, and 118 RF-5 sorties. Saudi F-15Cs shot down three Iraqi Mirage F-1s with air-to-air missiles -- including the only double kill by a single fighter in the war on January 24, 1991. The RSAF lost only two aircraft -- one Tornado GR.1 to anti-aircraft fire and one F-5 to unknown causes.¹⁵¹

Shaping the Saudi Air Force: The “Peace Sun” Program

Much of the capability of the modern Saudi Air Force is the result of its purchase of the F-15 and Tornado. The first of these purchases was the F-15C/D. During the early 1980s, spare parts, equipment, and facilities for Saudi Arabia’s original F-15s were provided under an extensive, multi-stage program called Peace Sun (Royal Saudi Air Force Technical Support Program).¹⁵² The second stage of Peace Sun (Peace Sun II) involved an \$82.5 million contract for spare parts and support equipment for 12 F-15 craft, and this contract was increased by \$20.1 million four months later.¹⁵³ Under Peace Sun IV, \$10.1 million worth of spare components and retrofit kits were provided for modifications and upgrades to the F-15s.¹⁵⁴ Three F-15D and nine F-15C aircraft were purchased from McDonnell Douglas under Peace Sun VI.¹⁵⁵ Also purchased under this contract were two F100 engines for use on the F-15.¹⁵⁶ A follow-on to Peace Sun VI in 1996 included an upgrade of the F-15 software at a cost of \$11.5 million.¹⁵⁷

Construction work was done in 1993 at three bases in the Kingdom where the F-15s are based: Taif, Khamis Mushayt, and Dhahran (Peace Sun IX).¹⁵⁸ Thirty mission support systems were also purchased under this stage for the 72 new F-15 aircraft then on order. These systems are capable of flight planning, route planning and threat penetration, weapons delivery and target area tactics, radar predications, mapping and imagery, post-flight analysis, and debriefing and intelligence connectivity.¹⁵⁹ Peace Sun X involved a contract for LANTIRN radar from Martin Marietta.¹⁶⁰ In January 1999, Boeing was awarded a \$79.1 million contract to provide for direct manning personnel from January through March 1999 to assist the Saudi Air Force in the operation and maintenance of the F-15.¹⁶¹ The total value of the contract has now reached \$850 million.¹⁶²

The Peace Sun program has been valuable in providing Saudi Arabia with both the F-15 aircraft it needs, as well as the support and upgrade capability necessary to maintain them over the long-term. However, the remaining stages of the Peace Sun program are facing the same funding difficulties as other Saudi military contracts. As of May 1999, the United States has considered not renewing the Peace Sun or Peace Shield programs due to Saudi Arabia’s inability to make timely payments.¹⁶³

The Saudi Tornado Buy and Al-Yamamah Agreement

The RSAF has faced a broad range of problems in developing a modern offensive strike capability and it is important to understand the history of this effort. The RSAF tried for nearly five years to buy more F-15s, and to acquire an advanced attack mission capability from the US, during the early 1980s. In July 1985, however, President Reagan sent King Fahd a letter stating

that he could not obtain Congressional approval of the sales Saudi Arabia sought. As a result, the Saudi Air Force initiated talks with Britain. These talks led to an agreement in September 1985 that Britain would provide 60 Tornado ADV air defense fighters, 60 Tornado IDS/GR.1 attack strike-fighters, light attack aircraft, trainers, helicopters, munitions, and British support services.

That same month, Saudi Arabia signed a series of memorandums of understanding (MOUs) with Britain that gave Saudi Arabia the option of turning each MOU into an individual contract. These MOUs were called the al-Yamamah agreement. Saudi Arabia's first major contract under the MOUs cost \$8 billion, but the total value grew to a total of \$29 billion by 1992. This figure included training, support, construction, naval vessels, etc. It was worth roughly \$4 billion a year to Britain by the early 1990s.

Saudi Arabia agreed to pay for al-Yamamah by bartering 600,000 barrels of oil per day. This gave Saudi Arabia a guaranteed market and allowed it to bypass some of the constraints imposed by OPEC quotas.¹⁶⁴ Revenue from the sale of oil has been channeled into a Saudi account at the Bank of England, from which the British Ministry of Defense withdraws payments to contractors.¹⁶⁵ This arrangement created serious payment problems when oil prices were low, however, particularly during the “oil crash” that began in late 1997.

The first phase of the al-Yamamah program called for the purchase of 24 Tornado ADV air defense fighters; 48 Tornado IDS/GR.1 ground attack fighters; 30 BAe Hawk 65 trainers; 30 Pilatus PC-9 trainers; and two Gulfstream aircraft, air weaponry, and ground support and training services.

The Tornado ADV

The Tornado IDS/GR.1 proved to be a relatively successful strike aircraft, although it lacked a laser tracking system for the self-targeting of laser-guided bombs, the advanced avionics for long-range attack missiles, and advanced electronic “stealth” features. In contrast, the Tornado ADV did not prove to be a successful air defense fighter for either the British Royal Air Force or Saudi Arabia. It turned out to be under-powered. While its limited dogfight performance might not have been important in areas where long-range missile combat is critical, the short distances and reaction times affecting many potential threats to Saudi Arabia require dogfight superiority. Its radar warning receiver was not fully effective, and the Tornado's radar and air defense avionics experienced development and performance problems, as did efforts to fully integrate and qualify advanced air-to-air missiles with the aircraft.

Such problems are scarcely unusual in new aircraft, but they were severe enough in the case of the Tornado ADV to prompt the RAF to talk about converting its air defense Tornados to reconnaissance, strike, or electronic warfare missions, or dropping them from service the moment it could obtain some form of Eurofighter. The RSAF's experience with the first eight Tornado ADVs was also negative. It converted some to the reconnaissance role, and converted the rest of its orders for ADVs to IDS strike-attack aircraft.

Orders for the Tornado Strike-Attack Fighter, Hawk, and Helicopters

At the same time, such problems did not prevent additional Saudi orders for British aircraft. In July, 1988, Saudi Arabia signed a letter of intent for a second phase of al-Yamamah. According to Saudi sources, the second phase included 48 more Tornado strike-attack fighters, 40 Hawk 100 and 20 Hawk 200 trainer-fighters, 3-6 Vesper Thorneycroft mine counter measure vessels, C⁴I systems, and additional weapons, spares, ground support, and training. The Hawk 200 has combat radars -- unlike the trainer version. It was also ordered with Sea Eagle anti-ship missiles. Munitions included the Skyflash, ALARM, Sea Eagle, and AIM-9L missiles, and JP-233 and BL-755 bombs.¹⁶⁶

The new series of MOUs included the order for 80 Sikorsky Black Hawk helicopters for the army discussed earlier. The RSAF had already ordered 12 Black Hawks through the US, but these were transport versions of the aircraft and it was concerned that the US Congress would not sell it armed or attack versions. Accordingly, it ordered the 88 Black Hawks from Westland in Britain. According to some reports, it ordered them with TOW air-to-surface missiles.¹⁶⁷

The total value of the memorandums of understanding that made up the second phase of al-Yamamah was approximately \$18 billion. The deal included light transport aircraft (12 BAe 125s and 4 BAe 146s), and two major military cities and air bases for the new Tornado forces, complete with British support.¹⁶⁸ The new British-built military cities and air bases were to be located at Taiba (about 290 kilometers southwest of Tabuk) and at al-Sulayyil (on the edge of the Empty Quarter). The air bases were to be equipped with at least 25 hardened multiple aircraft shelters. Saudi Arabia felt that its existing bases were adequate in the Eastern Province and near the PDRY, but were not suited for a force of nearly 400 combat aircraft. This brought the potential total value of the two phases of al-Yamamah to \$60 billion, projected over a 15-year program.¹⁶⁹

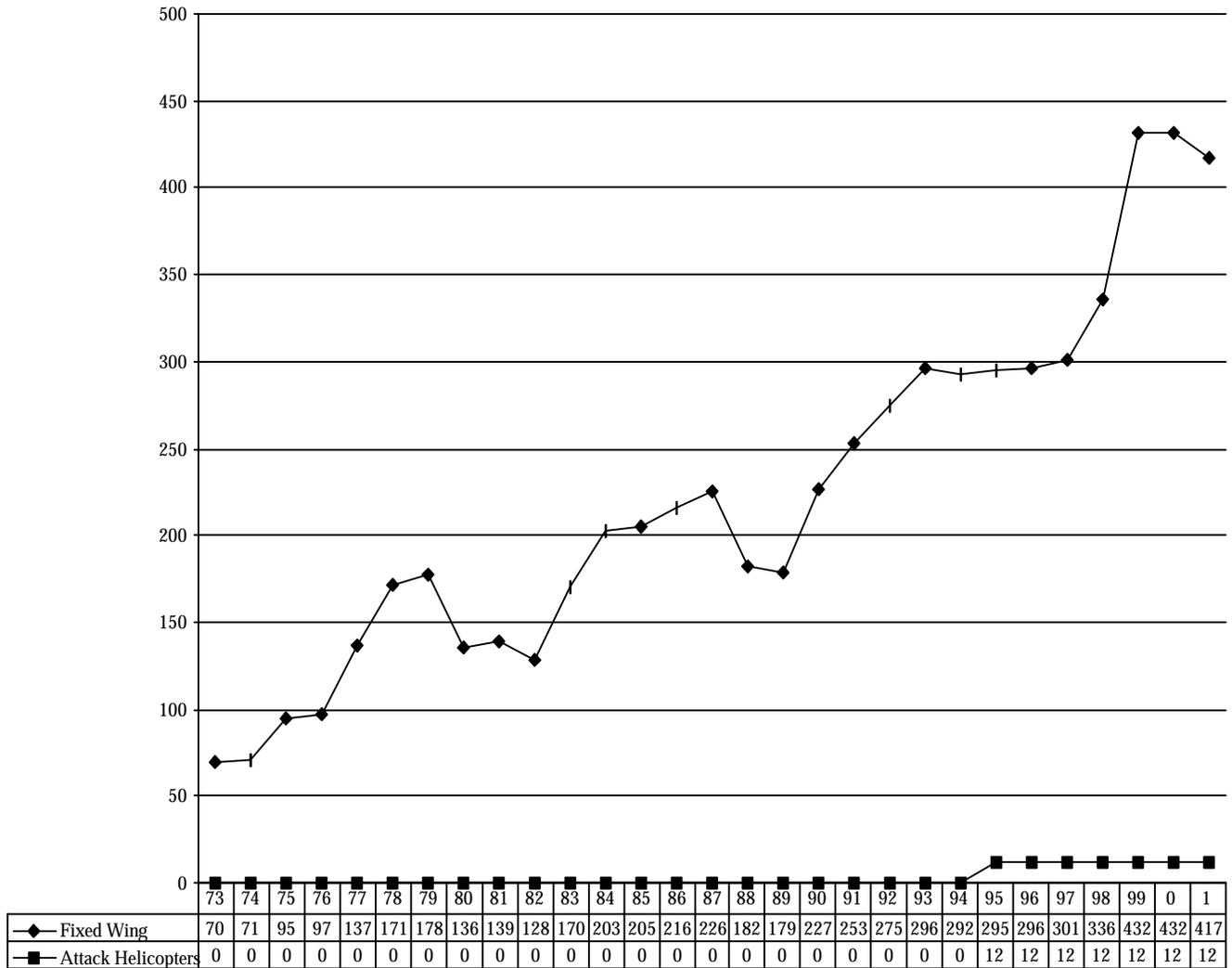
There were good reasons for the Saudi purchase of the first phase of the al-Yamamah package. Saudi Arabia's 12 BAC-167 trainers were only armed with 7.62mm machine guns. They no longer could be used in anything other than light support functions. Saudi Arabia had

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bought its Lightning fighters from the UK under pressure from former Secretary of Defense Robert S. McNamara. The US effectively forced Saudi Arabia to buy the Lightning as part of a then-covert three-cornered deal, in which the Lightning sale to Saudi Arabia was designed to allow the UK to buy the F-111 from the US.¹⁷⁰ Even when first delivered, however, the Lightning never had the range, dual capability, and avionics Saudi Arabia needed.

Chart 10.1

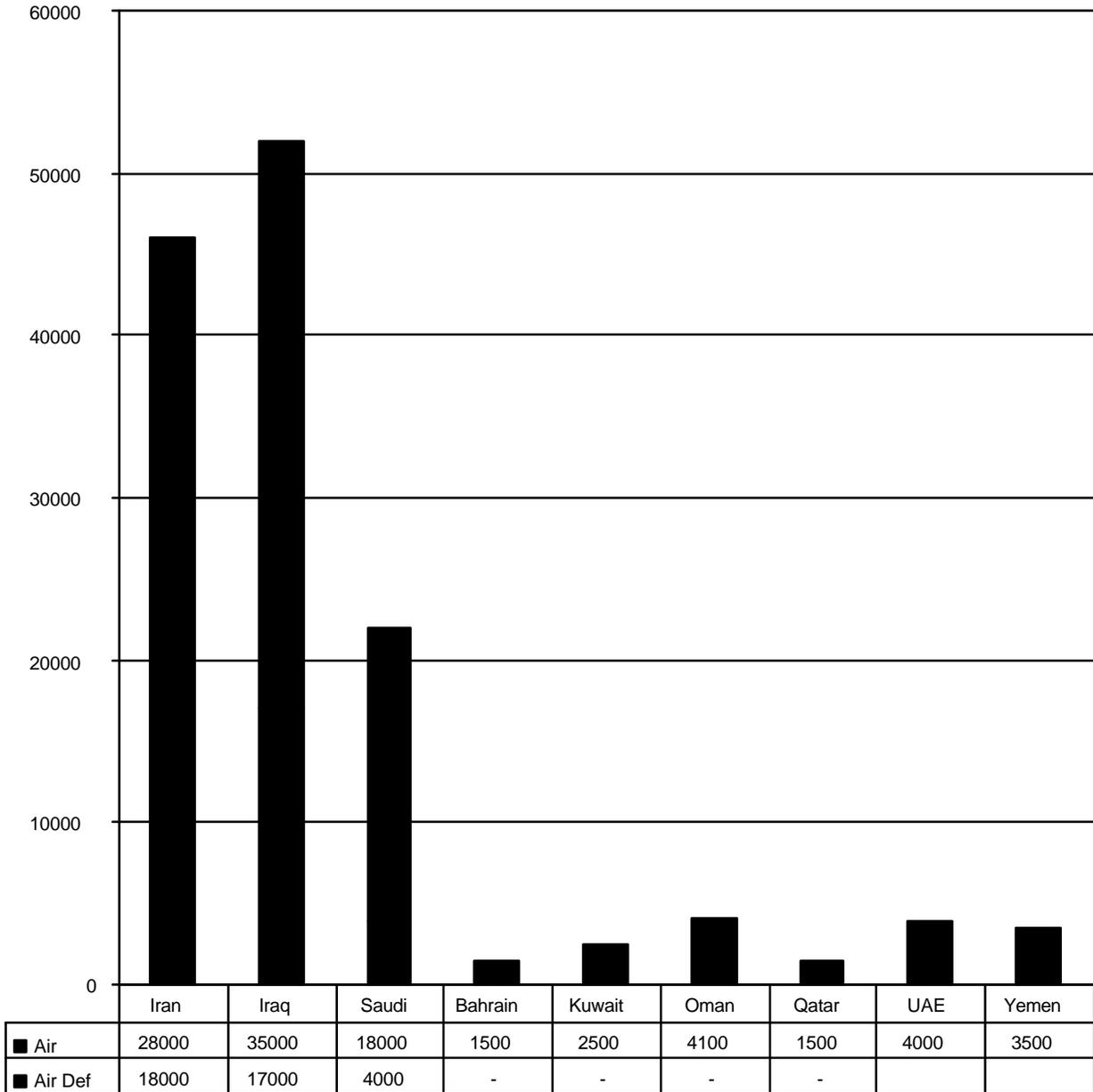
Saudi Arabia: Fixed Wing and Rotary Wing Combat Air Strength - 1979-1998



Source: Adapted by Anthony H. Cordesman from various editions of the IISS, Military Balance, the JCSS, Military Balance in the Middle East, and material provided by US experts. Does not include armed naval helicopters.

Chart 10.2

Total Gulf Air Force and Air Defense Manpower: 2001

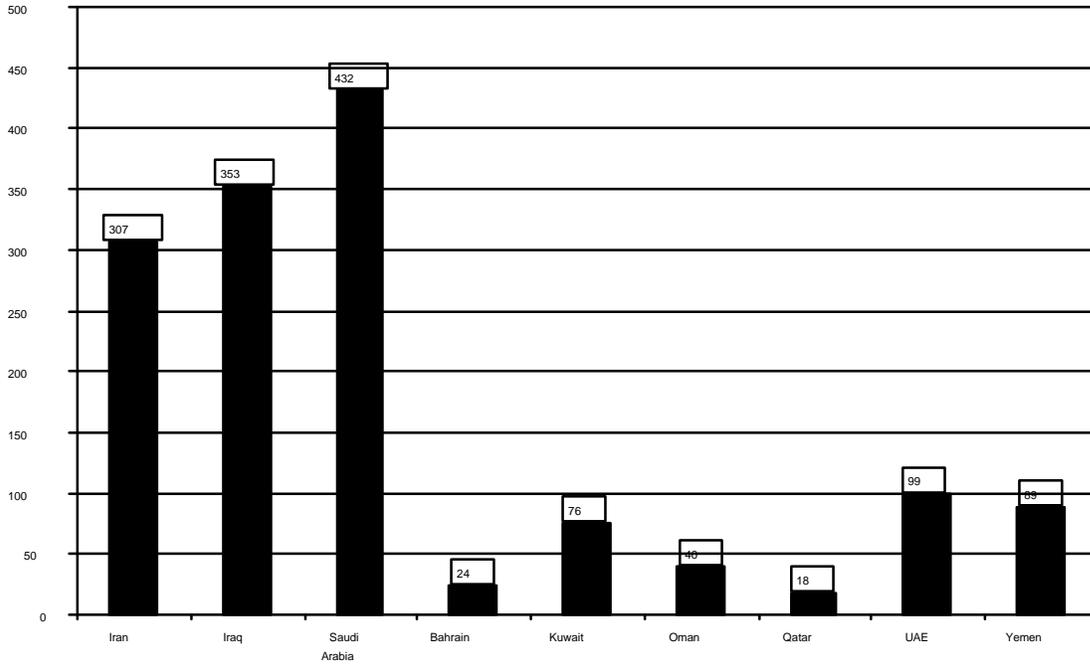


Source: Estimated by Anthony H. Cordesman using data from the IISS Military Balance.

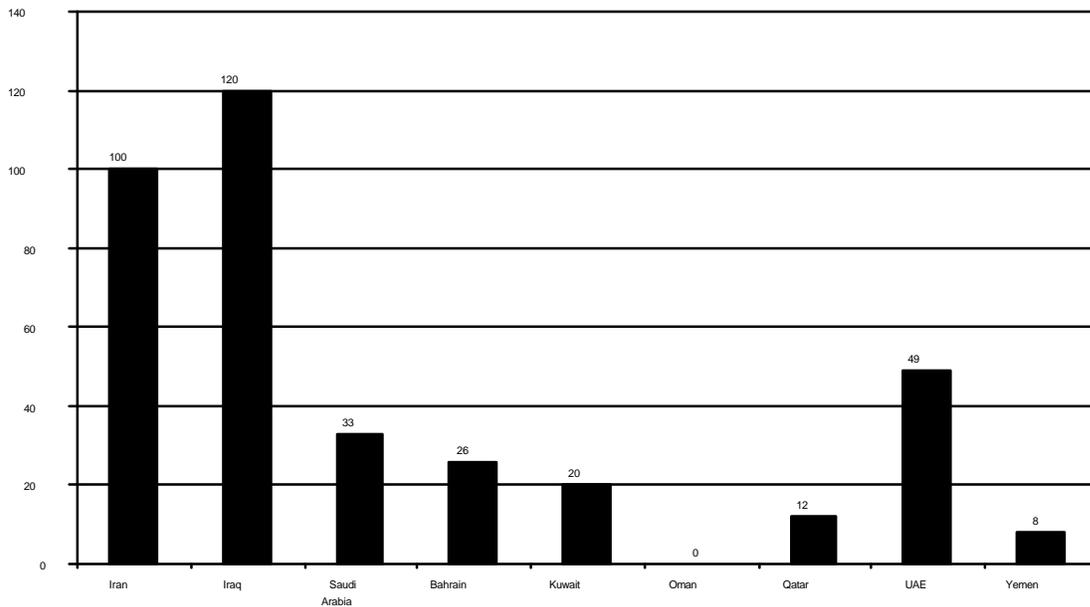
Chart 10.3

Total Gulf Holdings of Combat Aircraft – 2001

Fixed Wing Combat Aircraft



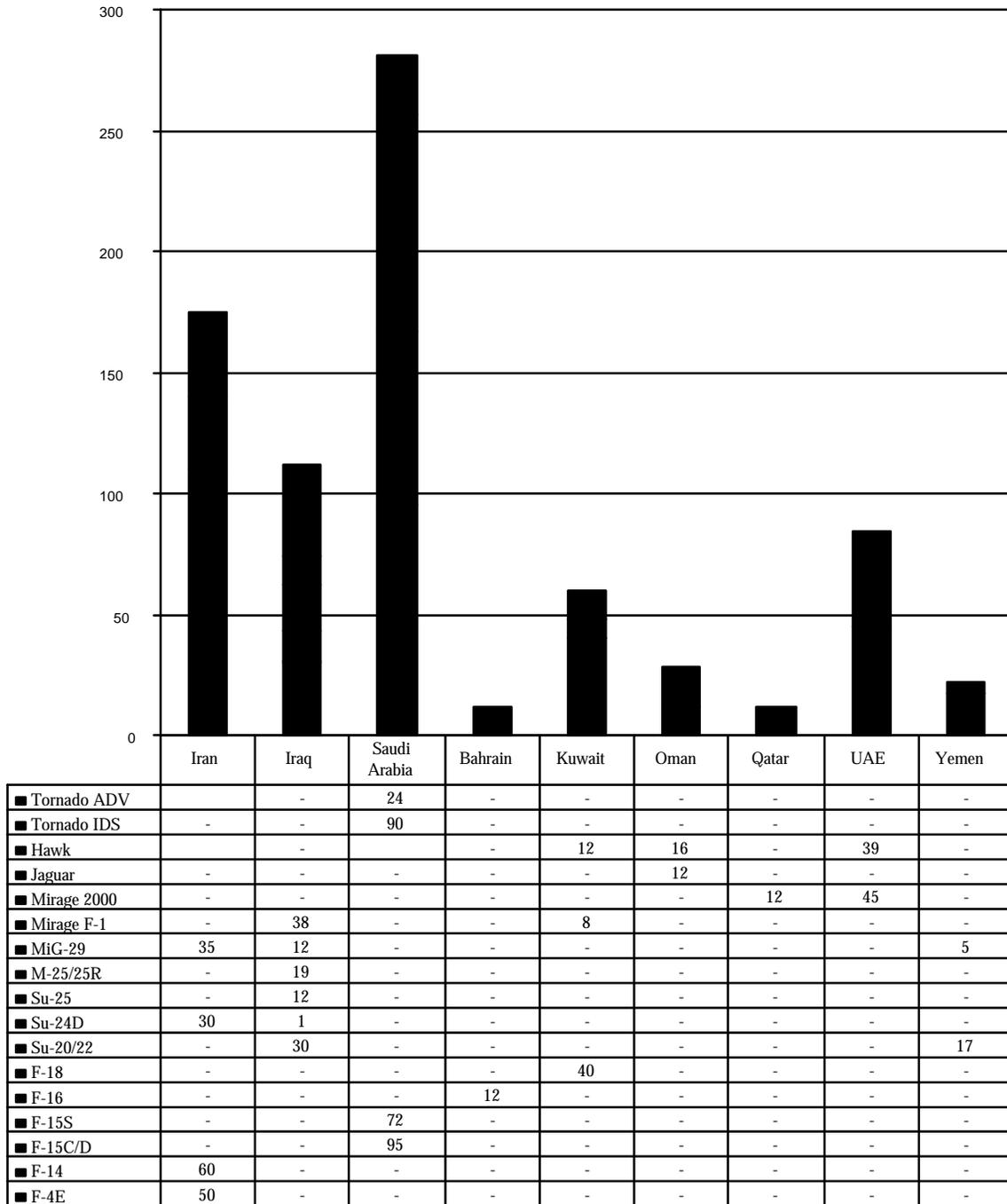
Armed and Attack Helicopters



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

Chart 10.4

Gulf High and Medium Quality Fixed Wing Fighter, Fighter Attack, Attack, Strike, and Multi-Role Combat Aircraft By Type - 2001



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

Table 10.1

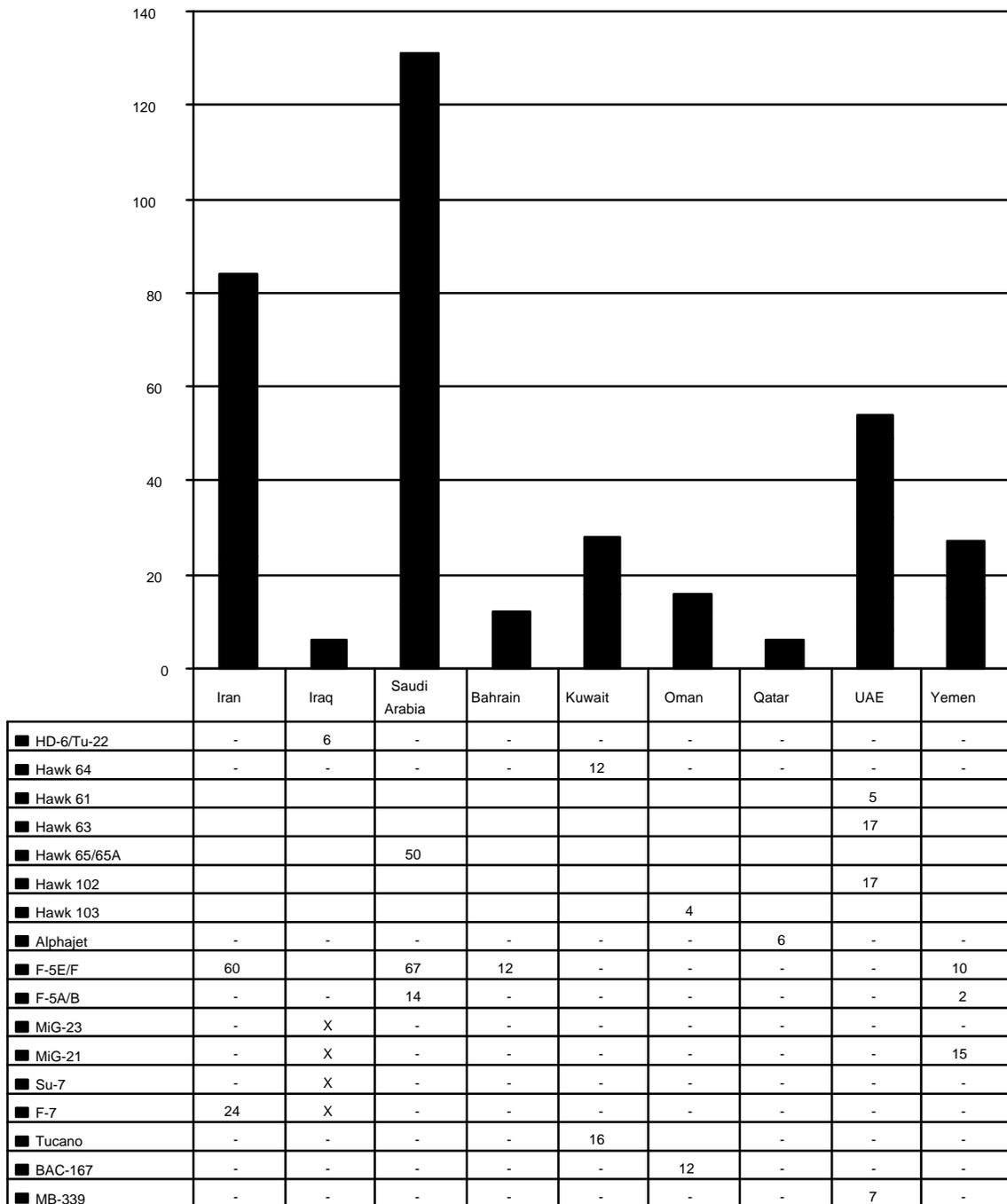
Advanced Combat Aircraft by Type in Gulf Forces in 2001

	Number	Type
Bahrain:	24	Total Fixed Wing Combat
	12	F-16C/D
Iran:	304	Total Fixed Wing Combat
	90	Modern Combat Aircraft
	30	Su-24D
	30	MiG-29
	60	F-14
Iraq:	353	Total Fixed Wing Combat
	81	Modern combat Aircraft
	30	Su-20
	1	Su-24D
	12	Su-25
	38	Mirage F-1EQ5/200
	12	MiG-29
	15	MiG-25
	4	MiG-25R
Kuwait:	76	Total Fixed Wing Combat
	48	Modern Combat Aircraft
	40	F/A-18C/D
	8	Mirage F1
Oman:	40	Total Fixed Wing Combat
	0	Modern Combat Aircraft
	(12)	Jaguar (SO) Mark 1, T-2
Qatar:	18	Total Fixed Wing Combat
	12	Mirage 2000-5 EDA/DDA
Saudi Arabia:	432	Total Fixed Wing Combat
	286	Modern Combat Aircraft
	90	Tornado IDS
	24	Tornado ADV
	95	F-15C/D
	72	F-15S
	5	E-3A
UAE:	99	Total Fixed Wing Combat
	45	Modern Combat Aircraft
	9	Mirage 2000E
	22	Mirage 2000EAD
	6	Mirage 2000DAD
	8	Mirage 2000RAD
	(72)	F-16C/D Block 60 on order
Yemen	49	Total Fixed Wing Combat (40 more in storage)
	23	Modern Combat Aircraft
	5	MiG-29
	17	Su20/22

Note: Older aircraft with inferior avionics are not included. Supersonic flight performance is not regarded as more than a marginal measure of combat performance. Adapted by Anthony H. Cordesman from the IISS, Military Balance

Chart 10.5

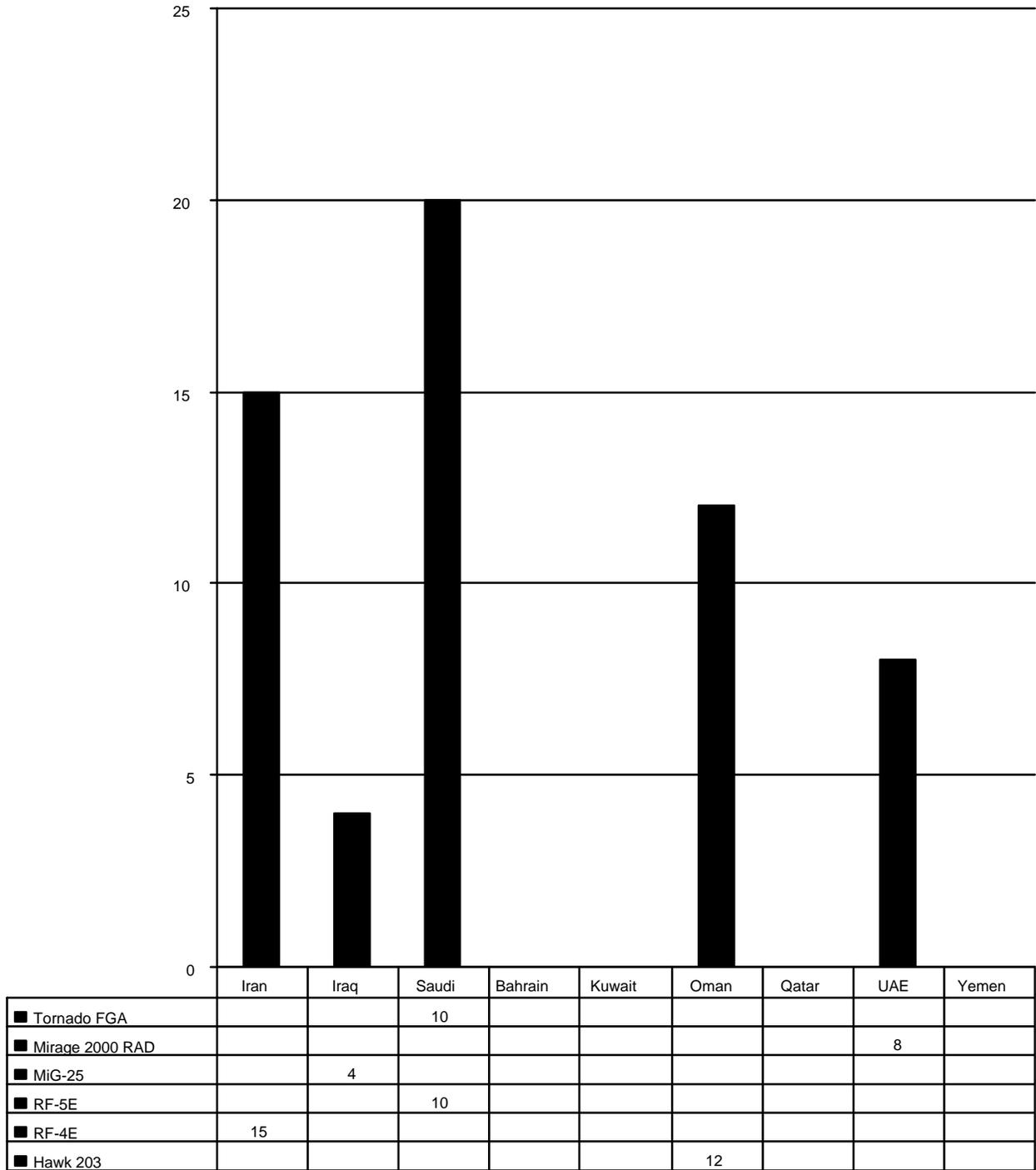
Gulf Low Quality Fixed Wing Fighter, Fighter Attack, Attack, Strike, and Multi-Role Combat Aircraft By Type - 2001



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

Chart 10.6

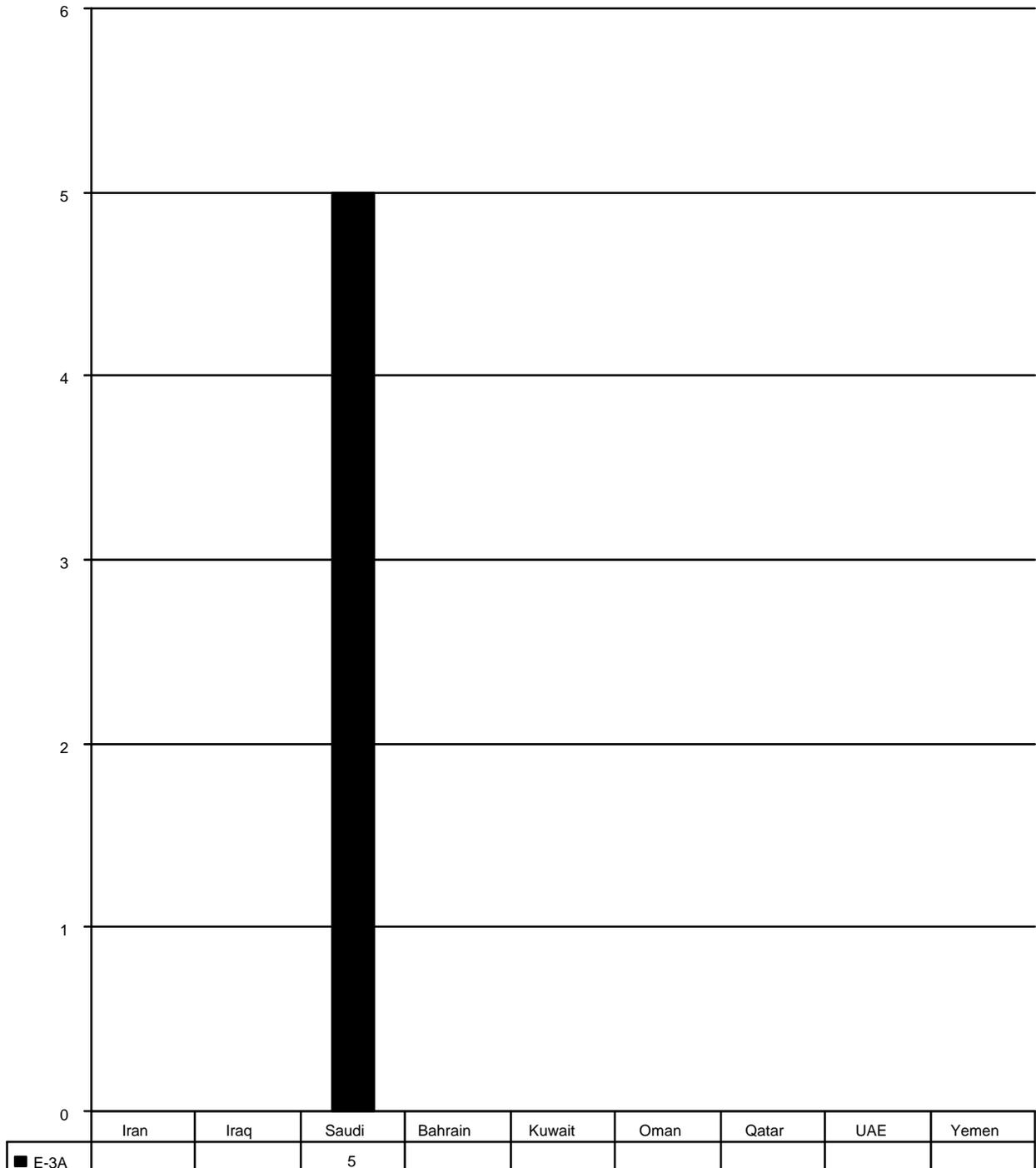
Gulf Reconnaissance Aircraft in 2001



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

Chart 10.7

Sensor, AWACS, C⁴I, EW and Elint Aircraft in 2001

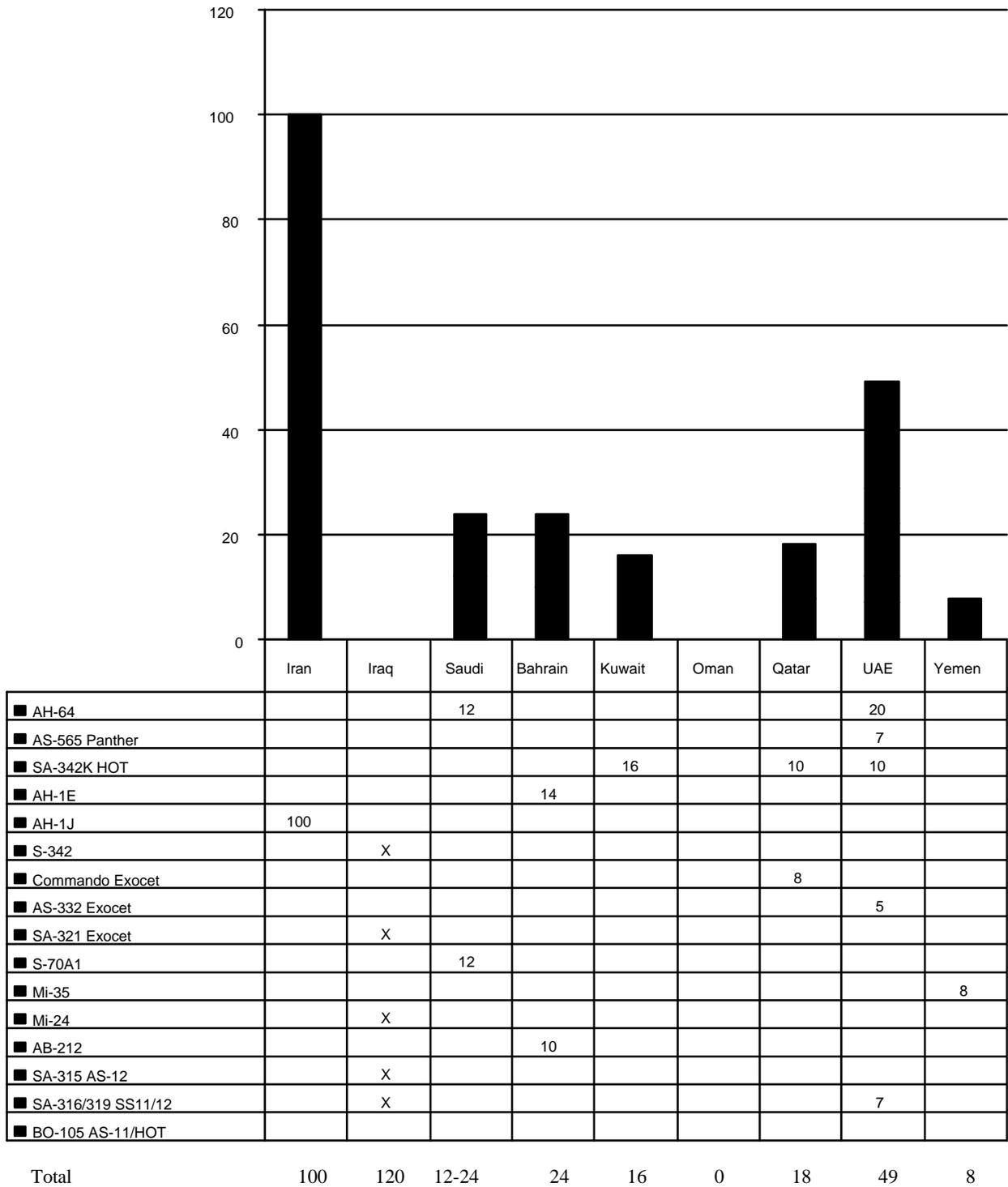


Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance.

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Chart 10.8

Gulf Attack Helicopters in 2001



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

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Saudi Modernization After the Gulf War

Saudi Arabia made significant new aircraft purchases as a result of the Gulf War. It purchased 24 additional F-15C/Ds from USAF stocks, 8 C-130Hs, and 2 C-130H-30 aircraft and large numbers of Aim-9Ls, and AIM-7Fs from the US in late August 1990. It also bought the Falcon Eye electronic warfare aircraft, although it knew that this plane lacked the sophistication and capability of US and Israeli ELINT aircraft.¹⁷¹

Saudi Arabia made these purchases because it needed additional modern strike aircraft. Its F-5E-IIs and F-5Fs were relatively advanced models of the F-5E/F, equipped with INS, refueling probes, and the ability to fire Mavericks (the F-5F could also fire laser-guided bombs). The oldest of these F-5 aircraft, however, were nearing the end of their useful life, and the F-5 production line had long been closed. The F-5Es were not cost-effective to upgrade and required more than twice as much Saudi and foreign technical support manpower per plane as an F-15. The F-5E/Fs were also too short-ranged and limited in avionics and payload to cope adequately with the kind of advanced-threat aircraft being introduced into the region, or to deploy from one Saudi air base in support of another. As a result, the F-5Es were phased down into a training and light support role. Some 20-30% of Saudi Arabia's F-5 strength was already devoted to full-time training missions by 1990, and most aircraft gradually were deadlined during the 1990s

The F-15C/D showed during the Gulf War that it could do an excellent job in air-to-air combat against the most advanced aircraft then in service in potential threat nations, and Iran and Iraq have not acquired more modern fighter types since that time. The Saudi F-15C/Ds, however, were configured as a one-mission aircraft and could only be used for air combat. The US Air Force had recommended that the Saudi Air Force be given an advanced dual-capable fighter as early as 1977 -- when it conducted the original studies that led to the US sale of the F-15 -- but the US could not then obtain Congressional permission to sell Saudi Arabia the bomb racks and attack systems necessary to make the F-15C/D effective in the air-to-ground role. As a result, a key part of Saudi Arabia's total first-line fighter strength was unable to perform effective attack missions, or provide attack support to Saudi land and naval forces.

The Search for Offensive Airpower and the F-15S Buy

The Gulf War showed the Saudi Air Force the importance of offensive air power, and demonstrated that the Saudi Air Force could use the Tornado in long-range strike missions. The RAF proved during Desert Storm that the Tornado could be an effective strike fighter, once it was equipped with new FLIR and laser designator pods. The Tornado delivered over 1,000 laser guided bombs and ALARM missiles, and it was clear that the Tornado could help meet Saudi

Arabia's need for a long-range deterrent to Iraq and Iran. However, the Tornado then lacked the flexibility, maneuverability, and avionics to fly demanding missions using precision guided munitions against advanced air defenses in the forward battle area, and did not meet all of Saudi Arabia's needs for a first line strike aircraft.

Saudi Arabia reacted by buying 72 more F-15s in 1992. This purchase was possible because of the improvement in Saudi-Israeli relations and the strengthening of US and Saudi ties during the Gulf War. The potential risk of the F-15S being used by an unfriendly regime in the event of some unforeseen coup, is limited by the fact that Saudi Arabia accepted a reliance on US technicians and technical support to keep the aircraft operating, knowing that this reliance will continue well beyond the year 2005. As Iran showed during the first weeks of the Iran-Iraq War, even a relatively sophisticated air force can lose much of its operational strength in a few days if it lacks sophisticated technical support. Iranian F-14s had even lost their ability to use the Phoenix missiles by the time the Iran-Iraq War started.¹⁷²

These factors, and a US commitment to provide Israel with enough technology superior to that of any potential Arab threat, allowed the Bush Administration to move the sale forward. President Bush and Defense Secretary Cheney made such a commitment to provide advanced technology at the time they announced the sale of the F-15S, and Israel's new Labor government indicated that it did not pose the same objections to the sale as did the Likud. As a result, Congressional leaders assured President Bush that they had the votes to ensure that Congress would not block the sale, and the President sent the proposed sale forward to Congress for approval on September 14, 1992.

Congress approved the sale on October 1, 1992, and this removed the last obstacle to a sale that provided major strategic benefits for both the Royal Saudi Air Force and the US. The Saudi order included 24 more F-15 aircraft designed for air combat, and 48 F-15 aircraft dual-capable in both the air defense and strike/attack missions. All 72 F-15s were designated the F-15S, although they involved two configurations of aircraft. The sale involved a total of \$5 billion worth of aircraft, and up to \$4 billion worth of other arms and supplies -- including \$800 million worth of construction. It also included 24 spare engines, 48 targeting and navigation pods, 900 AGM-65D/G Maverick air-to-surface missiles, 600 CBU-87 bombs, 700 GBU-10/12 bombs, and special mission planning systems.¹⁷³

The 24 air defense versions of the F-15S initially were air defense aircraft based on the F-15E air frame. They could not use navigation and targeting pods, or laser illuminators, and could only drop general purpose bombs. Their radars were better than those on the F-15C/D, however,

and have a resolution of 60 feet at 20 nautical miles versus resolution of 530 feet in the F-15C/D. They could use the same AIM-7F and AIM-7M radar guided air-to-air missiles used by existing Saudi F-15C/Ds, and the AIM-9S, which is the export version of the radar guided AIM-9M air-to-air missiles.

These F-15s also had the capability to be upgraded to use the Advanced Medium-Range Air-to-Air Missile (AMRAAM). In March 1999, the United States also agreed to sell AMRAAM missiles to Saudi Arabia during a meeting with Saudi Defense Minister Prince Sultan. The missiles cost more than \$380,000 each, but they and be used to shoot enemy aircraft at ranges of over 50 miles (80km). The number of missiles to be sold and the timetables for delivery have yet to be finalized.¹⁷⁴ These F-15Ss have now been modernized to allow them to be used in advanced attack missions, and have suitable software to make offensive use of their radars, and hardpoints and connections for munitions.

The 48 F-15S strike/attack variants of the F-15E Strike Eagle delivered to the Saudi Air Force were highly advanced dual-capable fighters, although they differed from the US Air Force version of the F-15E in several ways. They used the AAQ-20 Path Finder navigation pods, the AAQ-20 Sharpshooter targeting pods, and a laser illuminator. The Path Finder pods have a terrain-following radar, but have reduced ECCM capabilities that allow them to be tracked by US types of fighters. The Sharpshooter pods for the F-15S only had limited cluster bomb delivery capability. They delivered the A/B version of the electro-optical Maverick and the D/G version of the IR Maverick, but did not have a missile boresight correlator. They only had a single-fire capability for Maverick, rather than multiple fire capability, and were not equipped to deliver the HARM anti-radiation missile.

The F-15S had several other changes from the F-15E. It had a de-tuned version of the APG-70 radar on the 15E. The radar on the F-15S had only 60% of the bandwidth of the regular APG-70, and only has 16 channels, rather than the regular 32. It did not have a computerized mapping capability, and had a resolution of 60 feet at 15 nautical miles versus 8.5 feet at 20 nautical miles in the F-15E. The F-15S had altered software for the AWG-27 armament control system. It lacked a data transfer module, and its ASW-51 auto flight control did not include the terrain following mode. It used a commercial- grade secure voice and global positioning system navigation system.

The F-15S's electronic warfare suite was missionized for use against non-US aircraft and threats in the Gulf and Red Sea area. This meant substantial modifications to the ALQ-135 internal countermeasures set, the ALR-56C radar warning receiver, the ALE-45 countermeasures

dispenser, and MX-9287 interference blanker set. The ALQ-135 initially supplied to Saudi Arabia did not have the capability to jam friendly aircraft by type, and the radar warning receiver did not identify friendly aircraft by type.

The performance of the F-15S is heavily affected by the software that its computer and other avionics use to recognize threats, launch air combat and attack munitions, counter enemy sensors and weapons, and navigate to target. The Saudis could not alter the software on the F-15S, and it had no software optimized to attack US or Israeli air and air defense systems. The terms of the sale also meant the software could not be modernized to operate a new type of weapon, or be optimized to deal with a new type of threat aircraft without US approval. The software has since been steadily upgraded, however, as part of the US Air Force multi-stage improvement programs (MSIPs) for the F-15. The US has also granted access to the software codes for the F-16C to the UAE, and may eventually give the F-15 codes to the RSAF.

Other aspects of Saudi F-15 capability are changing. The RSAF F-15S are now supplied with conformal fuel tanks of the kind supplied on the F-15E, adding two extra tangential stores stations for carrying extra munitions and some of its ability to carry precision guided weapons. The major present limitations of the Saudi F-15s have been the lack of Modern Mark IV IFF systems and Have Quick secure communications but these will be delivered in the early 2000s. Once these steps are complete, the only major limitation of the Saudi F-15 force will be a lack of air and maintenance crews, inadequate offensive and joint warfare training, and the need for larger stocks of offensive munitions and more advanced types of munitions. Saudi Arabia is also developing a capability to conduct depot level maintenance for either the overall aircraft or the APG-70 radar.

The F-15S are now a far more advanced strike-fighter than any aircraft in service in Iran and Iraq, and will probably give Saudi Arabia a decisive edge over Iraq and Iran well beyond the year 2010. It now fully meets Saudi Arabia's desire for an F-15E-like aircraft that can attack deep into Iraqi or Iranian territory, defend itself in air-to-air combat, and launch air-to-ground ordnance from outside the range of short-range air defense missiles. The F-15S can also be rapidly upgraded in an emergency if Iran or Iraq should acquire new types of fighters with advanced avionics.

More Tornadoes

The Saudi Air Force also purchased additional Tornado and trainer aircraft. In April 1992, Britain announced that Saudi Arabia had agreed to a financing package for a \$2.7 billion follow-on sale, and indicated that the deal would again be financed "off-budget," by shifting oil revenue directly to a London account. The purchase of the additional aircraft was made financially possible by Saudi Arabia's decision deciding not to turn past MOUs into firm contracts. On August 24, 1992, Saudi Arabia cut the number of new air bases it would buy from two to one. This decision was a result of Saudi Arabia's discovery during the Gulf War that its existing facilities could sustain the build-up of some 500,000 foreign troops, and that they had substantial over-capacity. This decision saved Saudi Arabia \$15.6 to \$19.5 billion, and released funds it could use to complete the buy of 48 Tornado IDS/GR.1s

Saudi Arabia signed a contract with Britain in early February 1993, which completed a buy 48 Tornado IDS/GR/1s, and which included shelters, maintenance, weapons, and training for the aircraft. The aircraft were to be delivered in configurations similar to those used by the RAF, and had Turbo-Union RB-199 engines, Sky Shadow ECM pods, and GEC-Marconi flight control systems, radars, and radar homing and warning receivers.¹⁷⁵

The order did not include more Hawks and mine-countermeasure vessels, but negotiations continued on these purchases. When oil prices increased in 1994, Saudi Arabia ordered 20 more Hawk 65 jets and 20 more Swiss Pilatus PC-9 turboprop trainers, at a cost of \$750 million. This purchase was essential to provide training for the new pilots Saudi Arabia needed to crew its F-15S's and Tornadoes, although it meant Saudi Arabia would not buy enough of the advanced Hawks to replace its F-5s and would rely more on the lower-performance, tandem-seat, Hawk 100 variant of the aircraft.¹⁷⁶

The future status of such buys, however, is in doubt. Crown Prince Abdullah was not included in the 1986 negotiations that led to the signing of the first part of al-Yamamah, and is said to be concerned with some aspects of the agreement. In particular, he may not favor the arrangement by which al-Yamamah is able to escape budgetary pressures while these constraints increased on other military forces, such as his National Guard.¹⁷⁷ He may oppose arrangements that grant Britain 400,000 to 600,000 BPD of Saudi oil to pay for al-Yamamah almost indefinitely into the future. If Abdullah becomes king, he might seek to make the al-Yamamah deal a regular part of the Saudi budget.¹⁷⁸

Some Saudi officers and officials have expressed concern that the al-Yamamah program has gotten too broad and unwieldy. Many in the Saudi government now privately express their

concern over allowing the Saudi Ministry of Defense to operate the three billion dollar program independent of normal budgetary constraints, particularly in view of Saudi Arabia's structural budget deficits. Political support for the al-Yamamah deal has also eroded as funds have grown progressively tighter, and many officials and some members of the Royal family in civil ministries feel that the program has become wasteful and over ambitious.

There are senior Saudis who feel that fully integrating all defense expenditures into a public national budget is a key step in bringing military spending under control, ensuring the proper trade-offs between military and civil expenditures, reducing corruption and favoritism, and building a popular consensus behind Saudi military efforts. At the same time, Saudi Arabia has a long tradition of secrecy and Prince Sultan is not likely to give up his prerogatives without a fight.¹⁷⁹

Other factors are at work. A number of non-British firms have attempted to obtain part of the al-Yamamah funding. For example, Canadian Bell and Eurocopter have both sought to get money shifted to helicopter purchases¹⁸⁰ and were recently successful. Saudi Arabia chose to buy 12 Cougar Mark 2 search-and-rescue helicopters from Eurocopter in August 1996. The contract, valued at \$590 billion, includes training, logistics, and technical support and marks the first significant order of French equipment by the Saudi Air Force.¹⁸¹ In addition, 44 Canadian Bell-Boeing 412 search-and-rescue helicopters were expected to be bought under the al-Yamamah deal as of November 1997.¹⁸²

The new deal encountered political and financing problems. Saudi government made it quite clear during the 1990s that its purchases of British equipment were dependent on a less hospitable climate for Saudi dissidents in Britain, and Britain acted accordingly. Following a November 1995, car bombing in Riyadh, the British government responded to a November 1995 car bombing in Riyadh by ordering the expulsion of Mohammed al-Mas'ari, the head of the CDLR, after he made statements seemingly condoning the bombing. This move was blocked in a British court, and the Saudi government threatened to halt further defense purchases as well as other major contracts. Al-Mas'ari soon went bankrupt, however, and Saudi Arabia does not seem to take the remaining dissident groups as seriously.¹⁸³

Saudi Arabia tightened the reins of the Al-Yamamah account at the end of 1996 by shifting control of the daily sale of 650,000 barrels of oil to Aramco from Royal Dutch Shell and British Petroleum. The switch is indicative of the Kingdom's view that the funds derived from petroleum sales are to be used at the discretion of the Ministry of Defense, rather than exclusively for the purchase of British equipment. In addition, the Saudi government budget was

strained by the decline in oil prices that began in late 1997. The resulting drop in oil revenues aggravated concerns within the government over allowing the Ministry of Defense to operate Al-Yamamah independent of normal budgetary constraints. The Ministry of Finance made it clear that it would like to end all off-budget programs, including Al-Yamamah.¹⁸⁴

Looking Towards the Next Generation: The F-5EII Replacement Problem

The next major procurement challenge the Saudi Air Force faces is how to deal with its aging F-5Es. The RSAF now has some 87 F-5s of various types in storage, and Saudi Arabia has talked about replacing the F-5EII for years. At various times, it has considered buying entire new aircraft -- like F-16s, and F-18s -- as replacements for its F-5s. At other times, it discussed the purchase of 72 F-15S aircraft, and 48 more Tornado IDS/GR.1s, plus some additional Hawks.

The sheer cost of any additional aircraft purchase has proved to be a key factor affecting the decision to make any major new purchase as a follow-on to the F-5, but Saudi Arabia also faces major aircrew quality and sustainment problems. Furthermore, it has found that major diseconomies of scale arise in trying to make a limited buy of a new advanced fighter like the F-16 or F-18. It takes about 50% to 100% more Saudi and foreign manpower to support a new type than it does to add an additional F-15 or Tornado. A new type also creates major problems in terms of additional facilities and maintenance stockpiles.¹⁸⁵

Even so, Saudi Arabia there were reports that Saudi Arabia would purchase of 70-102 F-16C/D fighters to replace its F-5Es in 1997. Press reports appeared in January 1997 that Prince Sultan might announce such a purchase during a coming visit to Washington. The reports indicated that this announcement would in part be an effort to defuse the tension between the US and Saudi Arabia over the investigation of the June 25, 1996 terrorist bombing of the Al-Khobar barracks. The sale was reported to have a potential value of up to \$6 billion, and include a potential buy of the AIM-120 AMRAAM long-range air-to-air missile.¹⁸⁶

The reports of such a sale raised a number of issues. Prime Minister Netanyahu expressed concerned over the sale on February 11, 1997 -- creating the possibility of a new round of Congressional battles over arms sales to Saudi Arabia. Serious questions arose over Saudi Arabia's ability to fund the deal, given the fact it was already some \$13 billion in debt to the US for past arms buys and had previously agreed to limit its future debts to \$10 billion. A number of US military advisors privately indicated that Saudi Arabia was not yet ready to absorb such a purchase and had a higher priority for investments in training, readiness, and sustainability.¹⁸⁷ It

is unclear whether Saudi Arabia ever planned to make such an announcement before press leaks triggered this debate, but no such announcement was made during Prince Sultan's visit.

There is no question that an export version of the F-16 C/D, Block 60, could have been an excellent replacement for the F-5 -- *if* it could have been properly financed, and supported with the proper crews and readiness. It would then have been able to serve both Saudi and Western strategic interests by providing an advanced multi-role fighter that would be directly interoperable with USAF power projection forces and allow full integration into an advanced air battle management system using the AWACS, JSTARS, and US electronic warfare and intelligence systems. The F-16 also could have providing a powerful new offensive capability against Iraq and Iran that would compensate in part for the continuing weakness of the Saudi army and navy.

The same, however, would have been equally true of the purchase of a number of other types of combat aircraft including more F-15s. More importantly, the key issues that Saudi Arabia face -- and still faces -- were not related to aircraft performance. They were money; and the difficulties in converting an already inadequate maintenance, training, and sustainment base to an advanced new aircraft type. This has led to three very different views of how the Saudi Air Force should deal with the F-5EII replacement issue:

- Those who argue for a major new purchase feel a properly phased long-term buy of new fighters would ease Saudi Arabia's sustainability problems because such aircraft would be less of a maintenance burden than the F-5E, in spite of their greatly superior performance capabilities. They admit that trade-offs would have to be made with investment in improvements in other aspects of Saudi military capability, but feel that strengthening Saudi multi-role air capability would be the most effective investment that Saudi Arabia can currently make. They feel the main constraint in ensuring that such a purchase met Saudi Arabia's overall needs would be to schedule in ways where the result payments did not place too large a burden on the Saudi budget.
- Those who argue against a major new purchase -- and they now include most US military advisors to Saudi Arabia -- feel that Saudi Arabia already had enough problems in making its F-15s and Tornados fully combat effective. They feel that Saudi Arabia did not have the money for such major aircraft buys, and that it either has higher military investment priorities or should concentrate its investment funds on the civil sector. They did not see a major air threat from either Iran or Iraq, and feel

that Saudi Arabia cannot eliminate its de facto dependence on the US in the event of a major regional war in any case.

- Those who argue for standardizing around the F-15 force, and buy a limited number of F-15s to replace the F-5s. There have been reports that this is the course the RSAF would follow. In the spring of 2000, there were reports that Prince Sultan would announce that the Kingdom would buy 12 more F-15s, with a goal of buying 24. At the same time, there were reports that Boeing offered a major offset program that would potential hire 3000 Saudis and would give the Kingdom a depot-level maintenance and repair capability for its F-15s.¹⁸⁸ In the event, however, no such announcement took place.

There is no easy way to resolve the merits of this debate, and there is continuing outside pressure on the Kingdom to make a massive new arms buy. In fact, a Boeing Corporation executive “leaked” a plan in 2000 that would have called for a small buy of 12-24 F-15s to replace the F-5s, with the sweetener that Boeing would provide a depot-level maintenance facility for the aircraft. Other contractor efforts have been made to push the F-16 Block 60 and Eurofighter, What is clear, is that Saudi Arabia has gradually seen its F-5 force become almost inactive. As one Saudi Air Force officer put it in the spring of 2001, “they have gone from ‘parked’ to ‘parked with rust.’”

The Readiness and Warfighting Capabilities of the Saudi Air Force

The Saudi Air Force has considerable experience with defensive operations. During the Iran-Iraq War, the Saudi Air Force worked closely with the US Air Force, and developed a patrol line called the Fahd Line near the center of the Gulf, a scramble line where aircraft on alert took off the moment an intruder came close, with inner defense lines covered by its Improved Hawk missiles. This air defense system was modified during the Gulf War to initially cover both the north and south, because of the possible risk of hostile air attacks from Yemen and the Sudan. During the rest of the war, Saudi Arabia steadily refined its system, working with the US Air Force and other UN Coalition forces to develop a layered system of land and airborne sensors and defense lines that could cover threats from Iraq as well as Iran.

The Lessons of the Gulf War

Saudi F-15C pilots performed well in air defense missions during Desert Storm. The Saudi Air Force flew some 6,800 sorties during the Gulf War (January 17, 1991 to February 28, Copyright Anthony H. Cordesman, all rights reserved. Rough draft. Not be copied or circulated further without the author’s express written permission.

1991), and some 2,000 sorties over the Kuwaiti Theater of Operations and Iraq. These sorties were largely counter-air. Saudi F-15C pilots proved to be competent and aggressive in air-to-air combat during the brief period when Iraq actively challenged Coalition fighters, and one Saudi pilot scored a double kill. Saudi Arabia was also the only Southern Gulf country that had a modern concept of air defense operations.

At the same time, the Gulf War showed the Saudi Air Force still had serious weaknesses:

- The ratio of qualified Saudi pilots to first combat aircraft was too low to maintain high sortie rates. Saudi Arabia could not reach the internationally accepted average ratio of 1.5, and its operational experience indicated that it needed 1.8 pilots per aircraft to maximize its sortie rates and combat efficiency.¹⁸⁹ Ironically, the Saudi Air Force now has only 0.9 aircrew per F-15 and only 0.5 effective maintenance crews per aircraft.
- The RSAF did well in flying air combat interdiction, airlift, and AWACS sorties, but it had weak mission planning and could not plan or control large-scale offensive operations. It had no force-on-force doctrine, jointness, or ability to operate beyond the squadron level. There were language, communications, inter-service cooperation, and mission planning problems. Coordination problems often emerged between the RSAF and the Ministry of Defense (MODA).
- The RSAF lacked the pilot numbers to operate all its British-supplied aircraft properly and some Saudi Tornados were flown by British pilots. Additional foreign technicians had to be brought in to maintain reasonable sortie rates with the F-15s and Tornados. The war showed that the RSAF will be dependent on such technicians for at least the next decade.
- The Saudi Air Force initially had difficulty in finding the manpower to operate its AWACS, and could not easily integrate AWACS data into its Command Operations Center in Riyadh, and Sector Operating Centers (SOCs) throughout the Kingdom. The Air Force operates these centers, although the Air Defense Force has responsibility for some functions and the radars and equipment at surface-to-air missile sites and some other formations.
- The Saudi air force did not do well in electronic warfare, and reconnaissance missions. The Saudi RF-5 force proved largely useless in seeking out targets and

rapidly processing information, and Saudi Arabia was almost completely dependent on the US for reconnaissance and intelligence.

- Saudi Arabia learned it needed the passive ELINT systems that are being fitted to US AWACS. These electronic intelligence systems are called the AN/AYR-1, and provide the ability to detect, locate, and identify the radar emissions of ships, aircraft, and ground systems -- often indicating their precise type and location. Saudi Arabia may also need the upgraded CC-2E central computer, GPS navigation system, and Class 2H version of the secure Joint Tactical Information Distribution System (JTIDS). These upgrades to the E-3A, however, were only be available for US aircraft during 1995-1999, and will not be available to Saudi Arabia until 2000-2001.

Saudi Air Force F-15, F-5, Tornado, and E-3A Readiness

The first Saudi F-15C/Ds were operational in Dhahran by early 1983. A second squadron was formed at Taif by the end of 1983, and a third became operational at Khamis Mushayt in July 1984. Saudi aircraft attrition levels were significantly higher than those of the US, but overall training levels were good. The Saudis began with an aircrew to aircraft ratio of 1.5:1 and the Saudi 34th Squadron became the most experienced F-15 squadron in the world, with pilots who have 700-900 hours each. Saudi pilots flew 22-33 hours per month versus 18 hours in Israel and 2 1/2 hours in Egypt. Saudi live firing exercises met NATO standards, and Saudi Arabia routinely fired off older missiles and munitions for training.

By late 1984 and early 1985, the Saudi Air Force was conducting exercises in both the Gulf and Red Sea areas, and conducting Red-Blue or aggressor exercises similar to those employed by the US Air Force. Saudi Arabia maintained these proficiency levels, and began joint exercises with other members of the GCC. Its F-15 units scored 1st and 2nd place in three exercises with NATO forces.

Although Saudi Arabia's economic problems threatened its ability to take delivery on its new F-15S in the mid-1990s, Saudi Arabia gave a high priority to funding the F-15S, and its funding problems were eased by the rescheduling of US arms purchases discussed earlier. As a result, the roll-out of the first F-15S took place in the US in late September, 1995, and the RSAF began to receive the F-15Ss at the rate of one squadron a year. The first full squadron of F-15Ss became fully operational in Saudi Arabia in 1996, and the second in 1997, and the third in 1998.¹⁹⁰

In 2001, Saudi Arabia operated 72 F-15Ss, in addition to 70 F-15Cs and 25 F-15Ds, giving it a total inventory of around 160 F-15s. If the Tornados are added to the total, the RSAF has 72 advanced dual role fighters (72- F15S), 90 advanced strike fighters (90 Tornado 1DS), and 119 advanced air defense aircraft (24 Tornado ADVs, 70 F-15Cs, and 25 F-15Ds).

This Saudi operation of the F-15S improved the interoperability of the US and Saudi Air Forces, although there has been insufficient exercise activity to assure this since the mid-1990s. Saudi Arabia has, however, bought additional service and training facilities, munitions, spare parts, and specialized electronics facilities that can support both Saudi and USAF F-15 strike-attack aircraft -- as well as Saudi and US F-15 air defense fighters. Such facilities and munitions stocks improve US rapid deployment capabilities in the Gulf, and help give the US the ability to deploy and support well over 72 F-15E attack aircraft in a matter of days. More broadly, Saudi plans to buy more F-15s involved creating a depot maintenance capability in Saudi Arabia that will greatly improve the ability repair both RSAF and USAF combat stress and damage.

Nevertheless, the overall warfighting capability of Saudi Air Force has deteriorated sharply since the mid-1990s, and it now faces a crisis in readiness. Saudi Arabia has not been able to keep up with its force expansion, and even the lead elements in its F-15 force have lost readiness, reduced training standards, and experienced growing accident rates. Saudi Arabia now has only 0.9 aircrews and 0.5 ground crews per plane, something like one-third to two-thirds of its requirement for intense, "24-hour a day," sustained combat against a major Iraqi invasion.

Accident rates have been high, and some seven fatal accidents – five in 1999-2000 – can be attributed to training and readiness problems. Proficiency levels have dropped from moderate to low, with particular problems in joint warfare and offensive missions. This decline has taken place even though large numbers of Saudi Arabia's F-5s have effectively been withdrawn from service. Although most estimates still show 77 F-5E/Fs in Saudi Arabia's attack squadrons, 10 RF-5Es in reconnaissance units, and 14 F-5Bs in other combat units, expert indicate that up to e 87 F-5s are semi operational or grounded.

This decline in the F-15 and F-5 force is partly the result of the Kingdom's cash flow problems in the 1990s, partly the result of the pace of its expansion into highly sophisticated aircraft when the RSAF did not have time to recruit and train enough personnel, and partly the result of the Saudi failure to impose high training and proficiency standards on other Saudis. It is compound by the Saudisation and language skill problems discussed earlier.

The problems in Saudi Air Force proficiency in using the Tornado have been less striking. The air force seems to have experienced many of the same problems as with the F-15, but its mission-training profiles have not been as demanding. The Tornado also has not been upgraded in ways that impose as many new training and command and control requirements. RAF only announced a comprehensive upgrade program for the Tornado in October 1997, and then cut back on many aspects of this program. It is unclear what aspects of the RAF program, if any, will be adopted by the RSAF.¹⁹¹

Saudi Arabia now fully crews its five E-3A AWACS aircraft and they have been steadily upgraded to replace their main computer memories, and substitute semiconductors and bubble memories for their magnetic drums, tripling their memory capacity. Major radar system improvements have been made to improve data handling, sensitivity, and provide real time data to each console and the same range coverage against smaller cross section targets. Electronic support measures have been installed in the aircraft for passive detection, location, and identification of electronic emitters. The software for the E-3As has been updated, and infrared countermeasures were added to the engines, and the aircraft have been given global positioning systems and five additional operator consoles.¹⁹²

Saudi Arabia has, however, failed to train its E-3A crews to properly support maritime surveillance missions and joint warfare. It has also been slow to upgrade the overall C⁴I/BM used by the Air Force and Navy to make full use of the capabilities of the E-3A. This has compounded the impact of the much broader failure of the Saudi forces to develop effective combined operations, the lack of communication between the air force and National Guard, the lack of effective close support exercises between the air force and army, and the problems in creating a smooth interface between fighter air defense coverage and the land-based air defense coverage provided by the Air Defense Force. It also forces the USAF to segregate the operations of US and Saudi E-3As into “boxes” with their own zones of responsibility.

The air force has also been slow to give its aircraft all of the advanced avionics and electronics, Mark IV identification of friend or foe (IFF) munitions, and secure communications capability they have needed, although US delays in making key systems available has also caused problems. Fortunately these systems – Mode IV IFF and secure communications systems like Have Quick – are now on order or in delivery. So are the Link 16 secure data transmission and communications systems needed by its E-3As, and the kind of Block 35 upgrade for the E-3A necessary to allow them to talk directly to USAF E-3As, US aircraft operating against Iraq in missions like Southern Watch and Peace Shield, and the Saudi Navy.

These readiness problems show that the Saudi Air Force is still very much an air force in transition. It has purchased several billion dollars worth of contractor and maintenance services from the US to support its air defense and communications system, and has signed a \$2.5 billion contract to cover the period from June 1, 1997-May 31, 2002.¹⁹³ Saudi Arabia has, however, experienced serious problems in funding this contract since the oil crash of 1998.

The Saudi Air Force Enters the 21st Century

Today, Saudi Arabia has the most modern air force in the Gulf. At the same time, it has scarcely solved all of its modernization problems and it faces funding problems that will last well beyond the year 2000. The Saudi Air Force faces major problems that will force it to make hard decisions over the next few years:

- Money remains a major problem. The F-15S sale alone cost nearly \$9 billion, and the Tornado sale cost \$7.5 billion. Saudi Arabia face significant problems in funding the further modernization and expansion of its force structure and improved readiness, despite a slow payment schedule and some concessionary terms.¹⁹⁴ By the time the RSAF fully absorbs all its F-15S aircraft into its force structure, all of Saudi Arabia's F-5s will be over twenty years old by 1999, and its initial F-15C/Ds will be 12 to 18 years old.¹⁹⁵
- Overall readiness and warfighting capability need improvement, and this involves far more than aircrew proficiency. It is one thing to train pilots and another thing to try to reshape an entire air force to carry out an offensive and multi-mission warfare, achieve joint warfare capability, and adequately supports the Saudi Navy.. The purchase of the F-15Ss and additional Tornados requires the Saudi Air Force to focus on creating advanced offensive war-fighting capabilities. It has not yet made this conversion fully combat effective. The RASAF still needs to rethink many aspects of its command and control, reconnaissance and targeting, combined operations, offensive and joint warfare doctrine and training, and support and sustainability capabilities.
- Finally, Saudi Arabia's C⁴I/BM assets are still better structured for air defense than air offense. Saudi Arabia needs to rethink its C⁴I/BM needs for theater interdiction and large-scale attack missions comprehensively and acquire the necessary systems.

Saudi Air Force Capability for Effective Offensive and Joint Warfare

The RSAF has sought to upgrade some of its reconnaissance and targeting problems by improving the reconnaissance equipment on its aircraft, and by buying a relatively high-resolution satellite imaging capability from the US. This satellite imaging service will be provided by Orbital Sciences of the US, and will be the first time the US has sold such precision imaging abroad.¹⁹⁶ The Saudi Air Force has also sought to improve its land-based C⁴I/BM system, and to acquire automated mission planning support. Mission planning, however, remains a key weakness in Saudi operations, and the RSAF is still highly dependent on the US.

The RSAF would also need US support in missions like airborne warning and control. Saudi Arabia has found that flying a full air defense and air control and warning screen against a Northern Gulf state like Iraq or Iran can require up to four simultaneous orbits by AWACS aircraft, or a total of 9-12 aircraft. Saudi Arabia can only fly two orbits with its current five E-3As. Saudi Arabia has studied the purchase of four more AWACS aircraft, based on either a B-767 air frame or a modified Saudi B-707. Such a purchase would allow Saudi Arabia to support continuous air defense and maritime surveillance coverage over both coasts. The RSAF has found such a purchase to be too expensive, however, and must rely on the US both for full coverage of Saudi Arabia and for coverage of its neighbors.¹⁹⁷

The Gulf War showed that the Saudi Air Force needed far more extensive exercise training, equipment, and organization for offensive operations. The RSAF has since failed to make such improvements and its slow improvements in its training at the tactical and squadron levels are inadequate. It has failed to improve its training and organization at the mid- and high-command levels, and for joint operations at anything like the rate required – a serious, if not inexcusable, failure in military leadership.

The RSAF did carry out some improvements in its exercise activity in January 1996, when it held the Flag of Glory exercise. This exercise was one of the first force-wide exercises by any Gulf military service and involved 150 Saudi aircraft flying from bases at Dhahran, Khamis Mushayt, Tabuk, and Taif. It involved Saudi E-3As, F-5Es, F-15C/Ds, and Tornados, and involved combined offensive and defensive maneuver to deal with a threat like an Iraqi invasion. The Saudi Air Force also improved its performance in joint exercises with US and Kuwaiti forces after 1995, and recent exercises have demonstrated that Saudi, Kuwaiti, and USAF aircraft could operate jointly using US and Saudi E-3As, the US JSTARS, other US C⁴I/BM systems, and digital data links. These efforts have declined, however, since the RSAF and USAF commands ceased to be collocated following the attack on the USAF barracks at Al Khobar.

Saudi Air Force Capability for Coalition Warfare

There are, however, other important areas where the Saudi Air Force is not making significant progress. It needs to give still more emphasis to high-intensity, 24-hour a day operations against a threat like Iran and Iraq. It needs to raise its sortie rates sharply, and to improve its targeting and force-wide C⁴I and battle management capabilities for offensive operations. This again may require more dynamic leadership at the top.

Nearly a decade after Desert Storm, the Saudi Air Force is not well organized to support the Saudi Army in the defense of Kuwait and Saudi Arabia's northern border. It found during the Gulf War that it lacked many of the capabilities it needed for joint operations with the army and navy. While the Saudi Air Force could fly against fixed, lightly defended, interdiction targets, it could only do so with foreign planning and support. The Saudi Air Force proved to have limited operational flexibility in adapting from range training to actual close air support missions, and communications between the Saudi Air Force and Army presented major problems.

The Saudi Air Force still needs more extensive joint training and joint operations activity with the Saudi Army, although the lack of initiative and leadership in this area seems to be more the fault of the Army than the Air Force. The Air Force needs to develop a coordinated operational concept with the Saudi Navy, practice making more effective use of the maritime surveillance capabilities of the E-3A, and conduct joint training with the Navy. Here, however, the Air Force will have to wait until the Saudi Navy begins to transform its equipment strength into military effectiveness. At present, the Navy is more a showpiece than a force.

These weaknesses in Saudi Air Force war fighting capability must be kept in perspective. They indicate that Saudi Arabia will have major problems in defending against Iraq or Iran unless it has extensive foreign support. The RSAF will need at least a decade more of US and British assistance to become an effective air force capable of force-on-force operations and combined operations. At the same time, they are common to even the best air forces in the developing world and many air forces in NATO. They do not prevent the Saudi Air Force from being the most effective air force in the Southern Gulf, and one of the most effective air forces in the Arab world. The Saudi Air Force not only has the most capable aircraft of any Southern Gulf or Gulf Cooperation Council (GCC) air force, it is the only one with a fully modern command and control system and with the E-3A AWACS. Regrettably, this is unlikely to change until the GCC creates a fully modern and integrated air battle management, C⁴I, and strategic reconnaissance system and -- as of 2001 -- its C⁴I integration consisted of little more than a glorified "hotline."

XI. The Saudi Air Defense Force

The Saudi Air Force has significant air defense capabilities, and the Saudi Army has growing mobile air defenses to cover its forces. Saudi Arabia also has a separate Saudi Air Defense Corps to provide fixed and mobile land-based air defense of key targets throughout Saudi Arabia. This force was created to establish a separate professional service, dedicated to the relatively high technology air defense mission, and to reduce the manpower quality and leadership problems that emerged when these air defense forces were subordinated to the army.

The Air Defense Corps has since been given command over Saudi Arabia's Patriot theater anti-ballistic missile defenses and its PRC-supplied CSS-2 surface-to-surface missiles. It is subordinate to the Air Force for C⁴I and battle management in time of war.¹⁹⁸

The Current Strength of Saudi Land-Based Air Defense Forces

A broad comparison of Saudi and other Gulf land-based air defense strength is shown in Table 11.1. Detailed estimates of the current strength and equipment of the Air Defense Force differ according to which specific surface-based air defense units are included in the total, and which forces are counted as being in the ADF versus the Air Force, Navy, and Army. It is clear that the Air Defense Force controls all of Saudi Arabia's Improved Hawk missiles, and most of its medium surface-to-air missiles, but its exact lines of control are unclear. Some sources indicate that it controls all mobile and crew-powered weapons, and that the Army controls all man-portable Mistral, Stinger, and Redeye teams. Other sources indicate the Army also controls Saudi Arabia's Crotale missiles. Control of given deployments of anti-aircraft guns is also unclear.

The Saudi Air Defense Force was reported to have a nominal strength of 16,000 men and some 33 surface-to-air missile batteries in 2001, although some sources indicate Saudi Arabia's total air defense manning was substantially smaller. Sources differ over the equipment of these forces:¹⁹⁹

- Some reports indicated its total major surface-to-air missile strength included 16 Improved Hawk batteries with 128 fire units, 9 Crotale batteries with 48 Crotale fire units (currently being modernized), 16 air defense batteries with 72 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.
- USCENTCOM reported a total of 33 SAM batteries and 73 Crotale and Shahine fire units.

Most of Saudi Arabia's Shahine units are deployed in fixed locations for the defense of air bases and key targets. All of the Shahine systems were being 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 holdings of man-portable surface-to-air missiles include 500-700 Mistrals, 350-400 Stingers, and 500-600 Redeyes. Saudi Arabia also 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 150 L/70 40 mm guns (most in storage).²⁰⁰

Saudi Arabia purchased its first Patriot units on September 27, 1990, as part of its Gulf War arms package. Saudi Arabia signed a \$1.03 billion contract for the first part of this force in December 1992. This contract included 13 launchers, 671 missiles, and associated equipment. It then bought 14 more Patriot fire units (with 64 Patriot long-range air defense missiles, 1 AN/MPQ-53 radar sets, 1 engagement control station, and 8 launcher stations each) to defend its sites, military bases, and major oil facilities.²⁰¹ Delivery of the first eight batteries, including two training batteries, began in 1993. Saudi Arabia signed a \$580 million support contract for its new Patriots and its existing IHawks with Raytheon in March 1993.²⁰²

Operational readiness remains poor. 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. Reports differ of whether Saudi Arabia had two or three major operational Patriot fire units in early 2001, 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 repositioned for a second.

Unclassified reports on the future build-up of the Saudi Patriot force are unclear. According to a report in the mid-1990s, Saudi Arabia's goal was to acquire 384 Patriot long-range air defense missiles, six AN/MPQ-53 radar sets, six engagement control stations, and 48

launcher stations. Another interview indicated that Saudi and US Army studies showed that Saudi Arabia might eventually require a total of 26 launcher stations – depending on the level of ant-tactical ballistic missile capability and anti-aircraft coverage desired. These same studies indicated Saudi Arabia was already committed to spend some \$2.2 billion out of a total cost of \$4.0 billion for the 20-26 batteries it would need.²⁰³ US experts indicated in early 2001 that they felt the Kingdom need three to four major concentrations of Patriots to cover its major oil ports, Riyadh, and cities in the east and west. They noted, however, that no detailed assessment had been made of future requirements for Saudi anti-theater ballistic missile requirements and no detailed current plan existed for sizing an overall surface-to-air missile and ATBM force.

Regardless of what the Kingdom eventually does, the Patriots have already improved Saudi Arabia's low to high-level air defense capability along Gulf coast, and provided some defense against medium-range and theater ballistic missiles. The units Saudi Arabia has bought have improved software, radar processing capabilities, longer-range missiles, better guidance systems, and more lethal warheads. Unlike the Patriots used during the Gulf War, they are designed to kill short- to medium-range ballistic missiles at comparatively long ranges and to discriminate between warheads and decoys and parts of the missile body.

Improving Saudi Air Defense Battle Management

The Saudi Air Defense Force does, however, have problems. As might be expected, some are matters of readiness, manpower quality, and training. Others are problems in command and control and battle management. The Saudi Air Defense Force still lacks the systems integration, battle management systems, and C⁴I software and integration it needs for effective operation. Moreover, contractor efforts to improve the integration of the Saudi Air Defense Corps' Improved Hawks, Shahines (Improved Crotale), anti-aircraft guns, and land-based radars and C⁴I systems have not been fully effective, and the Saudi air defense system is not easy to restructure.

The Saudi Arabian air defense network was first developed in the 1960s and used US and British radars. Saudi Arabia then added a number of bits and pieces over the years. It bought a Thomson CSF air command and control system, and four Westinghouse AN/TPS-43 three-dimensional radars in 1980. It ordered AN/TPS-43G radars to modernize its system as part of the Peace Pulse program in 1981, and updated its system to provide command and data links to its E-3A AWACS.²⁰⁴

Although these systems did improve Saudi capabilities in some ways, Saudi Arabia still was left with major communications and C⁴I integration problems, which it attempted to solve

by giving new contracts to Litton and Boeing.²⁰⁵ The Litton contract involved a \$1.7 billion effort to provide C⁴I, sensors, communications systems, and handle the interface between missiles and other air defense systems, as well as build sites and train personnel. Key elements involved 17 major communications links installed in S-280C militarized transportable shelters, and included both line-of-sight and tropospheric scatter links of 72-channel capacity. The field phase involved 34 low-level and 34 high-level shelters. While there is some dispute as to responsibility, the system was not fully operational when the contract was due to be completed. Even today some parts of the Litton supplied system seem to be experiencing problems, some of which may be the result of a lack of trained Saudi personnel.²⁰⁶

Saudi Arabia purchased another integrated C⁴I/BM subsystem in March 1989, called Falcon Eye. This is a tactical radar system that involves the supply of Westinghouse AN/TPS-70 radars with related computers, software, communications systems, and systems integration. Falcon Eye integrates data from ground radars and the E-3A force, and down-link data to the 14 Skyguard/Gun King batteries in the Saudi Air Defense Force that are used for close-in defense of air bases and vital military installations. It is supposed to be compatible with Peace Pulse and Peace Shield. The system began to become fully operational in 1992.

The "Peace Shield" Project

The Boeing contract, which was called the "Peace Shield" project, had a total cost of \$5.6 billion. It involved a far more ambitious effort to give Saudi Arabia a system of 17 AN/FPS-117(V)3 long-range, three-dimensional radar systems fully netted with its AN-TPS-43 and AN-TPS-72 short and medium-range radars. It was to have (a) a central command operations center (COC) at Riyadh, (b) five sector command centers (SCCs) at Dhahran, Taif, Tabuk, Khamis Mushayt, and Al-Kharj to cover the country, and (c) additional sector operations centers (SOCs) at each major air base. It was to use a tropospheric scattering and microwave communications system to integrate Saudi Arabia's surface-to-air missile defenses, some anti-aircraft gun units, its radars, its E-3A airborne warning and control systems (AWACS) aircraft and fighters, and six major regional underground operating centers and numerous smaller sites, all of which were to be managed by a command center in Riyadh.

This system was supposed to give Saudi Arabia the ability to provide battle management for high-intensity air combat and beyond-visual-range combat, and in providing the base for a system to integrate the six Southern Gulf countries in the GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE. However, the software and systems integration efforts required to make Peace Shield effective were years behind schedule at the time of the Gulf War. The US Air

Force found the performance of the contractor to be so bad that the US Air Force Electronic Systems Division issued a “show cause notice” and then terminated Boeing's work on the program in January 1991.

The situation was so bad that several senior US advisors in Saudi Arabia regarded the combined failure of Boeing and the US Air Force to deliver a useful Peace Shield program as the worst managed arms sale in the history of the Gulf. One senior US officer described it as, “ a disaster on the part of the contractor and the Air Force from start to finish...A model of what should never happen.” Boeing staff, in turn, blamed the US Air Force for problems in the contract specifications, program changes, and inadequate management.

In any case, Saudi Arabia had to begin again with a new contractor. It shifted the contract from Boeing to Hughes in July 1991, at a cost of \$837 million, and this time the program made solid progress.²⁰⁷ The new Peace Shield system began to become operational in January 1995, and performed well in the Flag of Glory exercises that Saudi Arabia held in January 1996. The Peace Shield system uses Hughes AND-44 workstations, Hughes HDP-6200 large screen displays, a modern data processing architecture, and far more advanced software. It will have some 300 individual sites and integrate a mix of Saudi radars that now includes 28 AN/TPS-43s, 17 AN/FPS-117s, and 35 AN/TPS-63s. The system made extensive use of modern optical fiber technology, although no provision was made for advanced data links to neighboring states like Bahrain and Kuwait.

Peace Shield finally became fully operational in 1996, some three years after the original target date of 1993. Like all of Saudi Arabia's more sophisticated air systems, it remains heavily dependent on US technical assistance and the Saudi Air Defense Force will need assistance in operating the system until well after the year 2010.²⁰⁸ Saudi Arabia did purchase the support necessary to make its system effective as part of the \$2.5 billion contract for contractor and maintenance services discussed earlier. It also purchased \$484 million worth of support and training services for its Patriots and IHawk units from Raytheon in May 1997. This contract runs through December 1999.²⁰⁹ Funding, however, has been uncertain since the “oil crash” of 1998.

The future of Saudi funding for the Peace Shield and Peace Sun projects was called into question in May 1999. Saudi Arabia had missed an FMS payment in March and the United States considered not renewing the project. Saudi Arabia and the United States had to look for options to justify the renewal of the contract, including the assumption of loans by private contractors involved in the project to cover a deferral of Saudi payments. The Saudi government would then repay the loan with interest at a later date. Although a payment was missed in March,

the Kingdom has paid for April and is expected to meet May's requirements. The delay in payments is clearly a sign of Saudi Arabia's growing financial problems and may jeopardize its arms sales with the United States.²¹⁰

Plans for integrated air defense systems are moving forward slowly. At present, Saudi Arabia still does not have a truly integrated C⁴I and battle management system for its land-based air defense units, which have to operate independently or rely on limited data links and voice communications. At current rates, a truly integrated system will only be available in 2002-2003.

Table 11.1

Gulf Land-Based Air Defense Systems in 2001

Country	Major SAM	Light SAM	AA Guns
Bahrain	8 IHawk	40+ RBS-70 15 Stinger 7 Crotale	12 Oerlikon 35 mm 12 L/70 40 mm
Iran	16/100 I Hawk 3/10 SA-5 45 HQ-2J (SA-2) ? SA-2	SA-7 HN-5 5/30 Rapier FM-80 (Ch Crotale) 15 Tigercat SA-7 Stinger (?)	1,700 Guns ZU-23, ZSU-23-4, ZSU-57-2, KS-19 ZPU-2/4, M-1939, Type 55
Iraq	SA-2 SA-3 SA-6	Roland SA-7 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 4/16 Patriot	6/12 Aspede 48 Starburst	6/2X35mm Oerlikon
Oman	None	Blowpipe 34 SA-7 28 Javelin 28 Rapier	10 GDF 35 mm 4 ZU-23-2 23 mm 12 L-60 40 mm
Qatar	None	Blowpipe 12 Stinger 9 Roland Stinger, SA-7, Mistral	?
Saudi Arabia	16/128 I Hawk ? Patriot	Crotale Stinger 500 Redeye 17/68 Shahine mobile 40 Crotale 73 Shahine static	50 AMX-30SA 30 mm 92 M-163 Vulcan 150 L-70 40 mm (in store)
UAE	5/30 I Hawk Bty.	20+ Blowpipe Mistral 12 Rapier 9 Crotale 13 RBS-70 100 Mistral	42 M-3VDA 20 mm SP 20 GCF-BM2 30 mm
Yemen	SA-2, SA3, SA-6	SA-7, SA-9, SA13, SA-14	52 M-167 20mm 20 M-163 Vulcan 20mm 100 ZSU-23-4 23 mm 150 M-1939 23 mm 120 S-60 37 mm KS-12 85 mm

Source: Adapted from the IISS, Military Balance, various years. Some data adjusted or estimated by the author.

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The Effectiveness of the Saudi Air Defense Force and Options for GCC and Southern Gulf Cooperation

The success of the Peace Shield and Falcon Eye systems has led to an improvement in the capability of the Saudi Air Defense Force, and should be a major step in helping it to absorb and operate the Patriot missile. Saudi Arabia still, however, has a weak C4I system and only limited ability to deploy and operate a layered air and land-to-air defenses.

Saudi sources indicate that in a crisis or wartime, the Kingdom it will establish a fighter patrol line like the Fahd Line near the center of the Gulf, and use other fighters to cover the forward area on its borders, a scramble line where aircraft on alert take off the moment an intruder comes close, and then use inner defense lines which will be covered by its Improved Hawk missiles and by the Patriot. This system is being exercised by Saudi commanders in local operations and exercises, and Saudi junior officers exercise command, although some workstations are still foreign-manned. Saudi Arabia has also obtained 27 mission-planning systems from the Sanders Corporation to provide the mission planning support that the RSAF lacked during the Gulf War.

The Need for Integrated Air Defense

The most immediate problem Saudi Arabia now faces is the need to integrate its air defense and airborne maritime patrol system and create joint air defense capabilities, and to create effective integrated defenses with the other Gulf states. This is crucial to both Saudi Arabia's future security and the ability of the West to reinforce Bahrain and Kuwait effectively, because of their small size and air space. Kuwait is particularly vulnerable because of its common border with Iraq, and its proximity to Iran. It desperately requires a survivable air defense and land and maritime surveillance system. No Kuwaiti-based system can provide such characteristics unless it is integrated into a Saudi system, preferably with close links to Bahrain, Qatar, and the UAE.

There has only been limited progress in creating such an integrated system.²¹¹ Kuwait seems to be committed to purchasing a modern air defense system that could be integrated with the GCC and Saudi systems. In late 1997, Kuwait launched a \$1.2 billion project to build a C³I network to eventually be integrated into similar networks in the other five GCC states.

The GCC also has a project called Hizam at-Ta'awun. This project is part of a two-tier program to establish a telecommunications network linking the military headquarters of the GCC states and then link the states' radar systems. Ericsson of Sweden was awarded a \$70 million contract for the communications link, and the U.S.-based Hughes Space and Communications won an \$88 million contract for the radar link. The program is due to be completed by 2000.²¹² The Gulf Cooperation Council has also given Hughes a broader contract to design a GCC-wide air defense system.

The Kuwaiti project has been hampered by the slow pace of the GCC-wide effort. As of May 2000, the GCC had still not moved forward beyond the creation of optical fiber data links designed to support communication between the leaders and high commands of the Southern Gulf states. Because the two systems are to be integrated, it is important that contractors have information about the GCC-wide system in order to make the Kuwaiti system compatible. The contract will involve the creation of a joint operations center, mobile command centers for each of the services, and battalion command centers.²¹³

The air defense systems of Qatar, Oman, and the UAE need to be fully integrated with the Saudi air defense and airborne maritime patrol system to deal with potential threats from Iran and Yemen, and to enhance their beyond-visual-range air defense combat capability. The smaller Gulf states have no hope of providing effective air defense on a piecemeal basis, or developing the kind of air combat training and exercise experience necessary to interoperate effectively with US and Saudi fighters and E-3As. They need to standardize and exercise operational procedures and IFF capabilities, and develop the kind of aggressor training needed to cope effectively with mass raids. In the long run, such cooperation will also be critical to linking the Patriot and follow-on ATBM systems that will be needed to deal with the risk of proliferation. The slow pace of the Kuwaiti and GCC efforts towards integrated air defense indicate that these plans may take years to be fully implemented.

Theater Missile Defense?

Saudi Arabia cannot ignore its potential need for theater missile defense. Iran's missile strike capabilities are slowly improving, and Iraq will not be under UN sanctions forever. Most of Saudi Arabia's economy, and much of its population, is located near its Gulf coast. A single

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missile strike against its capital with a weapon of mass destruction might seriously weaken the regime, or kill enough of its leaders and elite to change the character of the Saudi state.

The US signed a shared early warning agreement with Saudi Arabia in 1998. This agreement called for the US to provide data on missile launches to the Kingdom that can be used to alert the Patriots and to provide some degree of warning for alert and civil defense purposes. It took the Kingdom nearly two years to sign a related shared secure communications agreement, however, and the US early warning system still uses different data links from the Saudi Patriot and other land-based Saudi C⁴I systems. As a result, the US will have to pass all early warning data to the air defense force through the more modern communications in the Saudi Navy.

More broadly, even Saudi Arabia's improved Patriots are not advanced anti-tactical ballistic missile systems, and even if the Kingdom buys the new Patriot 3, this will only provide adequate coverage against Scud-type missiles, not the more advanced types of missiles Iran has in development. At the same time, no more advanced system is currently available although the US Navy and Army have such systems under development, and the US Air Force is working on boost-phase defenses.

It is too soon for Saudi Arabia to make any investment in missile defenses beyond the limited point defenses provided by Patriot. At the same time, it must begin to consider the cost-benefits of a theater-wide system long before it makes an actual buy, particularly since such a system could take 5-10 years to deploy and cost tens of billions of dollars.

One option is to seek the deployment of US systems, and US sea-based systems might offer suitable emergency protection without requiring full time deployment. This, however, means establishing a new cooperative approach to theater missile defense, and one that so far is only in the discussion stage. The other option is for the Kingdom to buy such systems, but US so far has failed to brief the Saudis on its advanced ATBM systems, and will not have any such systems to sell or deploy before 2008 at the earliest. The Saudis have no funds for a near-term buy in any case. Even the full PAC-3 upgrade of the Patriot may slip until well after 2003, and the most the US can provide in the near-term is missile launch warning data that will allow Saudi Arabia to better use its existing Patriots and possibly to provide some degree of civil defense.

XII. Saudi Paramilitary and Internal Security Forces

Saudi Arabia has a complex mix of paramilitary and internal security forces, and an equally complex legal system for dealing with civil and security cases. There is no doubt that its security and criminal justice system do not conform with Western standards, and involve some human rights abuses. At the same time, the Kingdom is far less repressive than many developing states, and relies more on detention than the physical punishment or exile of its opponents.²¹⁴ (Please note that this section relies very heavily on reporting by the US State Department and the author's explanation in the endnotes.)²¹⁵

Paramilitary and Internal Security Forces

Saudi Arabia has several paramilitary forces in addition to its National Guard. This reflects a system of layered forces designed to protect the regime, as well as specialization around different military and internal security missions. The regular army provides external security, but is kept away from urban areas. The National Guard provides internal security using loyal tribes and groups under a different chain of command. It protects the territory of the Kingdom and the approaches to its cities and critical facilities, acts as reinforcements for the regular forces, can serve as an urban security force in an emergency.

The internal security forces and intelligence services, however, provide security for the royal family and handle most security problems in urban and populated areas. The Coast Guard and Frontier Force are under one command under the Ministry of the Interior, Prince Naif Bin Abd al-Aziz.. The Public Security, Special Security, and General Directorate of Investigation (GDI) branches are under a separate command. They provide internal security at the political and intelligence levels, security inside cities and to deal with limited problems that require crowd control and SWAT like operations, and counter-terrorist capabilities.

The Frontier Force has done much of the fighting with Yemen in the past, , and has taken some significant casualties in doing so. It still must deal with the problem of smuggling and infiltration across the Saudi border. The 10,500 man Frontier Force covers Saudi Arabia's land and sea borders. It performs a host of patrol and surveillance missions, and can act as a light defensive screen. It is equipped with four-wheel drive vehicles and automatic weapons. The 4,500 men in the Coast Guard are primarily concerned with smuggling, but do have a limited

internal security mission. These forces come under the command of the Deputy Minister of Defense and Aviation.²¹⁶

There are about 20,000 paramilitary policemen in the Public Security Police equipped with small arms and some automatic weapons. They are assigned to Provincial Governors, and are under the Minister of the Interior. The main Public Security college is in Riyadh. The Public Security Police have a police college at Mecca.

The Ministry of Interior maintains a security service called the General Directorate of Investigation (GDI) or "Mubahith", and a Special Security Force with 500 men and UR-416 APCs. The Special Security Force was formed as a consequence of the 1969 arrests and to support the Public Security Force in its duties. It is designed to deal with terrorism and hijacking and has SWAT capabilities and detachments in every major Saudi city and province. Saudi special forces include its regular Army airborne brigade, its Royal Guard Brigade, and its Marine Regiment.

The GDI has a large special investigation force, something like the British CID, but with political as well as criminal justice functions. The US State Department reports that political detainees arrested by the GDI are often held incommunicado in special prisons during the initial phase of an investigation, which may last weeks or months. The GDI allows the detainees only limited contact with their families or lawyers

There is also a General Intelligence Directorate, with security, anti-terrorism, and foreign liaison functions, which is led by Prince Turki al-Faisal. The Ministry of the Interior is also the primary counter-terrorist force and deals with problems like the bombings of the SANG headquarters and USAF barracks at Al Khobar.

Saudi Arabia has considered building a border surveillance system that would use patrol aircraft, remotely piloted vehicles, and early warning systems to detect intruders and border crossings. There would be a 12 kilometer-deep security zone around all 6,500 kilometers of the land and sea borders, with a mix of acoustic, seismic, radar, magnetic, and infrared sensors to detect movements of men and vehicles in the border area. It would be supported by small manned patrol aircraft, and unmanned remotely piloted vehicles, wherever some threat from an intruder might exist. Thomson CSF completed a \$5 million feasibility study for this system in early 1990, and two consortiums -- one led by E Systems and the other by Thomson CSF -- submitted bids to Saudi Arabia in May, 1991. The system was not funded, in part because of its cost and in part because of the ease that sections that could be penetrated before a effective

response was possible. Its estimated cost was around \$3 billion and it would have taken several years to complete.²¹⁷

Saudi Arabia has a large Gendarmerie or national police force with more than 15,000 men. It also has religious police called the “Mutawwa’in” under the semi-autonomous Organization to Prevent Vice and Promote Virtue, which perform some security functions against religious extremists.²¹⁸ The Mutawwa’in enforce the public observances of religious practices, such as the closure of public establishments during prayer times. They have been known to exceed their authority with both Saudi and expatriate alike by undue harassment of both men and women in public places and trespass into private homes. The level of Mutawwa’in activity varies over time, and is difficult to predict. The Mutawwa’in has also been expanded in recent years, and some felt it has become a form of disguised unemployment for religious Saudis, and are sharply overstaffed in some areas. One senior Saudi official went so far as to refer to the Mutawwa’in a “religious labor union more interested in their benefits than anything else.” Other Saudis are more divided in their reaction. Some feel the Mutawwa’in perform a useful function in limiting the secularization of the Kingdom. Others see it as an outdated and over-conservative annoyance.²¹⁹

Security and Human Rights Issues

It is impossible for an outsider to appraise the effectiveness of these forces, or even identify their precise functions. Saudi Arabia is a tightly closed society, but it tolerates a great deal of peaceful discussion and dissent. Reports of mass arrests, large numbers of political prisoners, torture, and other human rights abuses have not been confirmed by the US State Department.²²⁰ At the same time, Saudi Arabia shows little tolerance for hard-line or potentially violent opposition to the government, major deviations from Wahhabi orthodoxy, or any form of actual violence. The United States Department of State report on human rights published in 2000 states that,²²¹

The Government commits and tolerates serious human rights abuses. Citizens have neither the right nor the legal means to change their government. Security forces continued to abuse detainees and prisoners, arbitrarily arrest and detain persons, and facilitate incommunicado detention; in addition there were allegations that security forces committed torture. Prolonged detention without charge is a problem. Security forces committed such abuses, in contradiction to the law, but with the acquiescence of the Government. Mutawaa'in continued to intimidate, abuse, and detain citizens and foreigners. The Government infringes on citizens' privacy rights. The Government prohibits or restricts freedom of speech, the press, assembly, association, religion, and movement. Other continuing problems included discrimination and violence against women, discrimination against ethnic and religious minorities, and strict limitations on worker rights. The Government disagrees with internationally accepted definitions of human rights and views its interpretation of Islamic law as its sole source of guidance on human rights.

The State Department reports that Saudi security forces detain prisoners for more than 24 hours without charge, conduct their own investigations, and fail to notify the public prosecutor. Security suspects can be held incommunicado for weeks or even months. Authorities usually detain suspects for no longer than three days before charging them, in accordance with a regulation issued by the Ministry of Interior in 1983, although serious exceptions have been reported. The regulation also has provisions for bail for less serious crimes. Also, detainees are sometimes released on the recognizance of a patron or sponsoring employer without the payment of bail. If not released, the accused are detained an average of one to two months before going to trial.

The US State Department report on human rights issued in 2000 places particular blame on the Ministry of the Interior,²²²

There were credible reports that the authorities abused detainees, both citizens and foreigners. Ministry of Interior officials are responsible for most incidents of abuse, including beatings and sleep deprivation. In addition, there were allegations of torture. Although the Government has ratified the Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment, it has refused to recognize the authority of the Committee Against Torture to investigate alleged abuses. In April 1998, the Government pledged to cooperate with UN human rights mechanisms. However, although the Government asks for details of reports of torture and other human rights abuses made by international human rights groups, it does not permit international observers to investigate them. The Government's general refusal to grant members of diplomatic missions access to the Ministry of Interior detention facilities, or allow members of international human rights groups into the country, hinders efforts to confirm or discount reports of abuses. The Government's past failure to criticize human rights abuses has contributed to the public perception that security forces can commit abuses with impunity

There is no established procedure for providing detainees the right to inform their family of their arrest. The authorities may take as long as several months to provide official notification of the arrest of foreigners, if at all. If asked, the authorities usually confirm the arrest of foreigners to their country's diplomats. In general, foreign diplomats only learn about such arrests through informal channels. Foreigners have been tried and executed in the past in both civil and security cases without notification of their arrest ever having been given to their government's representatives.

Dealing with Internal Opposition and Terrorism

As has been discussed earlier, the security forces have cracked down on internal opposition movements, like the CDLR, and leading clerical critics like Salman Al-Auda and Safar Al-Hawali, and 157 protesters who demonstrated against these arrests, although 130 were released soon after. The security forces show no tolerance for any hostile political activity by foreign labor. The military justice system also does not tolerate political or Islamic extremist activity by Saudi military personnel, who are tried by court-martials.²²³

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The authorities often detain people who publicly criticize the Government without charge, or charge them with attempting to destabilize the Government. The State Department report notes that,²²⁴

Political detainees who are arrested by the General Directorate of Investigation (GDI), the Ministry of Interior's security service, commonly are held incommunicado in special prisons during the initial phase of an investigation, which may last weeks or months. The GDI allows the detainees only limited contact with their families or lawyers.

The total number of political detainees is impossible to determine because the Government does not provide information on such persons or respond to inquiries about them. NGO estimate that there are about 200, however, and the Government regularly releases prisoners, under its annual Ramadan amnesty, and some seem to have a political background. In January 1999, it released over 7,000 prisoners and detainees, including over 3,000 foreigners convicted or held for minor offenses.

The Government conducts closed trials for persons who may be political prisoners and in other cases has detained persons incommunicado for long periods while under investigation, although it rarely execute prisoners and charges of torture or poor prison conditions are much rarer than in many developing countries. For example, Salman Al-Awdah and Safar Al-Hawali are Muslim clerics who were arrested in September 1994 for publicly criticizing the Government. Their detention that year sparked protest demonstrations that resulted in the arrest of 157 persons for antigovernment activities. All the prisoners have been released, but Salman Al-Awdah and Safar Al-Hawali were not released until June 1999. At the end of 1996, at least nine persons were serving prison terms for their connections to the rigidly fundamentalist Committee for the Defense of Legitimate Rights (CDLR). It is not clear what their status now is, but they seem to have been released. At the same time, Saudi Arabia often issues large-scale amnesties. At the end of January 1999, for example, the government issued its annual Ramadan amnesty, and released over 7,000 prisoners and detainees, including over 3,000 foreigners convicted or held for minor offenses

Open acts of terrorism receive far more serious punishments. The most critical recent act of terrorism, however, is still under investigation. Since beginning the investigation of the 1996 bombing of a U.S. military facility in Saudi Arabia, -- the bombing of the USAF barracks at Al-Khobar, which killed 19 U.S. servicemen, -- the authorities have detained, interrogated, and confiscated the passports of a number of Shi'a Muslims suspected of fundamentalist tendencies or Iranian sympathies. The Government reportedly still holds in jail an unknown number of Shi'a arrested in the aftermath of the bombing. Government security forces reportedly arrest Shi'a on the smallest suspicion, hold them in custody for lengthy periods, and then release them without

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explanation. Government has not yet issued a report of its findings, but cooperation between the government and FBI has improved over time. According a report that seems to be a leaked FBI report, Iranian officers are at least indirectly implicated, but it is not clear that the Iranian government played any direct role in the bombings.

The Saudi government rarely uses forced exile, or revokes citizenship for political purposes, and there have been no recent reports of politically motivated disappearances. However, it previously has revoked the citizenship of opponents of the government residing outside the country, such as Mohammed Al-Masari and Osama Bin Ladin, a suspect in organizing terrorist activities, including the a suspect in organizing terrorist activities like the August 1998 bombings of the U.S. embassies in Kenya and Tanzania.

The Role of the Judicial System

The judicial system is traditional, and the State Department reports that The independence of the judiciary is prescribed by law and usually is respected in practice; however, judges occasionally accede to the influence of the executive branch, particularly members of the royal family and their associates, who are not required to appear before the courts. In general, members of the royal family, and other powerful families, are not subject to the same rule of law as ordinary citizens For example, judges do not have the power to issue a warrant summoning any member of the royal family. Moreover, the Ministry of Justice exercises judicial, financial, and administrative control of the courts.²²⁵

The civil and criminal legal system is based on Shari'a. Shari'a courts exercise jurisdiction over common criminal cases and civil suits regarding marriage, divorce, child custody, and inheritance. These courts base judgments largely on the Koran and on the Sunna, another Islamic text. Cases involving relatively small penalties are tried in Shari'a summary courts; more serious crimes are adjudicated in Shari'a courts of common pleas. Appeals from Shari'a courts are made to the courts of appeal. The Saudi government permits Shi'a Muslims to use their own legal tradition to adjudicate noncriminal cases within their community.

Other civil proceedings, including those involving claims against the Government and enforcement of foreign judgments, are held before specialized administrative tribunals, such as the Commission for the Settlement of Labor Disputes and the Board of Grievances.

The military justice system has jurisdiction over uniformed personnel and civil servants that are charged with violations of military regulations. The Minister of Defense and Aviation and the King review the decisions of courts-martial. There is insufficient information to

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determine the number of political prisoners. The Government conducts closed trials for persons who may be political prisoners and in other cases has detained persons incommunicado for long periods while under investigation.

There are several bodies that perform higher legal review functions:

- The Supreme Judicial Council is not a court and may not reverse decisions made by a court of appeals. However, the Council may review lower court decisions and refer them back to the lower court for reconsideration. Only the Supreme Judicial Council may discipline or remove a judge. The King appoints the members of the Council.
- The Council of Senior Religious Scholars is an autonomous body of 20 senior religious jurists, including the Minister of Justice. It establishes the legal principles to guide lower-court judges in deciding cases.
- Provincial governors have the authority to exercise leniency and reduce a judge's sentence.
- The King and his advisors review cases involving capital punishment. The King has the authority to commute death sentences and grant pardons, except for capital crimes committed against individuals. In such cases, he may request the victim's next of kin to pardon the murderer—usually in return for compensation from the family or the King.

Civil and criminal trial procedures are very different than in the West. Defendants usually appear without an attorney before a judge, who determines guilt or innocence in accordance with Shari'a standards. Defense lawyers may offer their clients advice before trial or may attend the trial as interpreters for those unfamiliar with Arabic. The courts do not provide foreign defendants with translators. Public defenders are not provided. Individuals may choose any person to represent them by a power of attorney filed with the court and the Ministry of Justice. Most trials are closed. However, in a highly publicized 1997 case involving two foreign women charged with murder, the Saudi court conducted preliminary matters and the trial with relatively open and transparent procedures, including more effective use of counsel, increased consular presence, and increased family access.

A woman's testimony does not carry the same weight as that of a man. In a Shari'a court, the testimony of one man equals that of two women. In the absence of two witnesses, or four witnesses in the case of adultery, confessions before a judge almost always are required for

criminal conviction—a situation that repeatedly has led prosecuting authorities to coerce confessions from suspects by threats and abuse.

Criminal penalties and sentencing are not uniform. Foreign residents sometimes receive harsher penalties than citizens. Under Shari'a, as interpreted and applied in Saudi Arabia, crimes against Muslims receive harsher penalties than those against non-Muslims. In the case of wrongful death, the amount of indemnity or “blood money” awarded to relatives varies with the nationality, religion, and sex of the victim.

A sentence may be changed at any stage of review, except for punishments stipulated by the Koran. In a case that was known widely but was not reported in the press, a member of the royal family, who shot and killed two Mutawaa'in who had entered his property without permission in October 1998, was allowed to pay “blood money” to the family members of the Mutawaa'in instead of being charged with murder.

Changes in Security Procedures

Some efforts were made to improve Saudi security procedures during the 1990s. The sanctity of family life and the inviolability of the home are among the most fundamental of Islamic precepts. Royal decrees announced in 1992 include provisions calling for the Government to defend the home from unlawful intrusions. Nonetheless, there are few protections from government interference with one's privacy, family, home, or correspondence. The police generally must demonstrate reasonable cause and obtain permission from the provincial governor before searching a private home; however, warrants are not required.

King Fahd established Boards of Investigation and Public Prosecution, organized on a regional basis, in 1993. The members of these boards have the right to inspect prisons, review prisoners' files, and hear their complaints. It is unclear that they can deal with security cases, however, and the government does not permit visits to jails or prisons by human rights monitors. Some diplomats have been granted regular access to incarcerated foreign citizens, but impartial observers are not allowed access to specialized Ministry of Interior prisons where the government detains persons accused of political subversion, such as Al-Hair Prison south of Riyadh.

Prison and jail conditions vary throughout the Kingdom. The State Department reports that prisons generally meet internationally accepted standards and provide air-conditioned cells, good nutrition, regular exercise, and careful patrolling by prison guards. However, some police

station jails are overcrowded and unsanitary. The authorities generally allow family members access to detainees.

There are, however, few barriers to religious censorship and the security force's access to private communications. The Customs officials routinely open mail and shipments to search for contraband, including material deemed pornographic and non-Muslim religious material. Customs officials confiscated or censored materials considered offensive, including Christian Bibles and religious video tapes. The authorities also open mail and use informants and wiretaps in internal security and criminal matters. Security forces used wiretaps against foreigners suspected of alcohol-related offenses. Informants (known as "umdas") report "seditious ideas" or antigovernment activity in their neighborhoods to the Ministry of the Interior. The State Department reports that some Saudi professors believe that informers monitor comments made in university classrooms.

Enforcement of Islamic Norms, Censorship, and Control of the Media

The Saudi government enforces most social and Islamic religious norms, which are matters of law. Women may not marry non-Saudis without government permission; men must obtain approval from the Ministry of Interior to marry women from countries outside the six states of the Gulf Cooperation Council. In accordance with Shari'a, women are prohibited from marrying non-Muslims; men may marry Christians and Jews, as well as Muslims.

The authorities do not tolerate criticism of Islam, the ruling family, or the Government. However, the authorities allow the press some freedom to criticize governmental bodies and social policies through editorial comments and cartoons. Persons whose criticisms align them with an organized political opposition are subject to arrest and detention until they confess to a crime or sign a statement promising not to resume such criticisms, which is tantamount to a confession.

The Government bans all books, magazines, and other materials that it considers sexual or pornographic in nature. The Ministry of Information compiles and updates a list of publications that are prohibited from being sold in the country. Access to the Internet is available through Saudi servers or through servers in other Gulf countries. The Government attempts to block all web sites that it deems sexual, pornographic, or otherwise offensive or un-Islamic. However, such web sites are accessible readily from within the country. The Government

censors all forms of public artistic expression and prohibits cinemas and public musical or theatrical performances, except those that are considered folkloric.

Academic freedom is restricted. The authorities prohibit the study of evolution, Freud, Marx, Western music, and Western philosophy. Some professors believe that informers monitor their classroom comments and report to government and religious authorities.

The Government strictly limits freedom of assembly. It prohibits public demonstrations as a means of political expression. Public meetings are segregated by sex. Unless meetings are sponsored by diplomatic missions or approved by the appropriate governor, foreign residents who seek to hold unsegregated meetings risk arrest and deportation. The authorities monitor any large gathering of persons, especially of women. The Mutawaa'in dispersed groups of women found in public places, such as restaurants. Government policy permits women to attend cultural and social events at diplomatic chanceries and residences only if they are accompanied by a father, brother, or husband. However, in practice police often implement the policy in an arbitrary manner. On many occasions during the year, authorities actively prohibited women from entering diplomatic chanceries or residences to attend cultural events and lectures. However, in May for the second year in a row, authorities allowed unescorted Saudi women to attend a women-only cultural event hosted at a diplomatic mission.

The print media are privately owned but publicly subsidized. A 1982 media policy statement and a 1965 national security law prohibit the dissemination of criticism of the Government. The media policy statement urges journalists to uphold Islam, oppose atheism, promote Arab interests, and preserve the cultural heritage of Saudi Arabia. The Ministry of Information appoints, and may remove, the editors in chief. It also provides guidelines to newspapers on controversial issues. The Government owns the Saudi Press Agency (SPA), which expresses official government views.

The State Department reports that newspapers typically publish news on sensitive subjects, such as crime or terrorism, only after it has been released by the SPA or when it has been authorized by a senior government official. Two Saudi-owned, London-based dailies, Ash-Sharq Al-Awsat and Al-Hayat, are widely distributed and read in Saudi Arabia. Both newspapers tend to practice self-censorship in order to comply with government restrictions on sensitive issues.

The Saudi government tightly restricts the entry of foreign journalists into the Kingdom. The authorities continue to censor stories about Saudi Arabia in the foreign press. Censors may

remove or blacken the offending articles, glue pages together, or prevent certain issues of foreign publications from entering the market. The Government owns and operates the television and radio companies. Government censors remove any reference to politics, religions other than Islam, pork or pigs, alcohol, and sex from foreign programs and songs.

However, the Ministry of Information continued to relax its blackout policy regarding politically sensitive news concerning Saudi Arabia reported in the international media, although press restrictions on reporting of domestic news remain very stringent. The Government's policy in this regard appears to be motivated in part by pragmatic considerations: Saudi access to outside sources of information, especially the Cable News Network (CNN) and other satellite television channels, is increasingly widespread.

There are well over 1 million satellite receiving dishes in the country, which provide citizens with foreign broadcasts. The legal status of these devices is ambiguous. The Government ordered a halt to their importation in 1992 at the request of religious leaders who objected to foreign programming being made available on satellite channels. In 1994 the Government banned the sale, installation, and maintenance of dishes and supporting devices, but the number of dishes continues to increase and residents legally may subscribe to satellite decoding services that require a dish.

Moreover, public access to the Internet is expanding at a geometric rate, and Saudi attempts to limit access to various sections of the net as largely ineffective. Saudi students find it easy to work around government controls, as do any groups seeking to use the Internet for political purposes or communication.

The Problem of Islamic Extremists

It should be stressed that the overwhelming majority of Saudi Islamic traditionalists have no history of violence or terrorism, and that such acts are rare exceptions and the acts of a tiny minority. The government also has powerful tools to use in limiting the actions of the clergy. The Ministry of Islamic Affairs directly supervises, and is a major source of funds for, the construction and maintenance of almost all mosques in the country. The Ministry pays the salaries of imams (prayer leaders) and others that work in the mosques. A governmental committee is responsible for defining the qualifications of imams.

Nevertheless, the Saudi security services continue to face problems in dealing with Islamic extremists. The problems in Saudi and US cooperation in dealing with the National Guard Training Center bombing in 1995, and the Al Khobar Towers housing facility near

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Dhahran in June 1996, have been discussed earlier.²²⁶ So has the fact that Saudi Arabia was slow to control the flow of money from Saudi private citizens to various Islamic extremist groups, although it began to take action against conspicuous cases, like that of Osama Bin Laden, in 1994.

Saudi Arabia still tends to ignore Islamic extremist activity when it is not directed towards the Kingdom. Saudi Arabia has, for example, maintained a dialogue with Libya, and has permitted Libyan aircraft to fly pilgrims to the Haj, despite UN sanctions. Saudi Arabia conspicuously failed to cooperate with the US in arresting Imad Mughniyah on April 7, 1995. Mughniyah was a suspect in the killing of 241 US Marines in a barracks in Lebanon in 1983, and the hijacking of an airliner in 1985 that resulted in the death of a US Navy diver. The Kingdom did so in part because the US attempted to have FBI agents arrest Mughniyah on Saudi soil, and did so with minimal notice and in spite of the fact that the US and Saudi Arabia have no extradition treaty. This incident illustrates that Saudi Arabia is still trying to accommodate some hard-line Islamic movements.²²⁷

This does not, however, mean that Saudi Arabia tolerates terrorist operations on its own soil, or supports overt international terrorism. Saudi Crown Prince Abdallah has repeatedly publicly that terrorist actions are un-Islamic and called for a "concerted international effort" to eradicate terrorism in 1999. The Saudi Minister of Defense has publicly supported the Crown Prince's position, as has the Foreign Minister and the Director of Saudi General Intelligence.

While there has been some past tension between Saudi and US law enforcement officers and counter-terrorism experts, this has been more a matter of Saudi resentment of a US tendency to try to impose US methods in Saudi Arabia in cases like the bombing of the National Guard Training Center and USAF barracks at Al Khobar than any differences over the need to fight terrorism.

The case of Usama Bin Laden is a good example of Saudi opposition to overt terrorism. Usama Bin Laden is the seventeenth son of construction magnate Muhammad Bin Ladin, who is a Saudi citizen of Yemeni origin. Usama Bin Laden joined the Afghan resistance almost immediately after the Soviet invasion in December 1979, and played a significant role in financing, recruiting, transporting, and training Arab nationals who volunteered to fight in Afghanistan. During the war, Bin Ladin founded al-Qaida (the Base) to serve as an operational organization under his control, recruited Islamic extremists and use his wealth to fund other hard-line Islamic extremist and terrorist groups.

After the end of the Afghan conflict, Bin Laden directed his energy towards Islamic extremist causes in other countries, and increasingly turned towards terrorism. He also issues “fatwas” calling for terrorism using a front organization called the World Islamic Front for Jihad Against the Jews and Crusaders. The Saudi government reacted by revoking his citizenship in 1994, and his family officially disowned him that same year. Usama Bin Laden had already relocated his operations to Yemen. He moved to Sudan in 1991, and international pressure on the Sudanese government forced him to move to Afghanistan in 1996.²²⁸

Bin Ladin’s ties to the bombings of the U.S. Embassies in Nairobi, Kenya, and in Dar es Salaam, Tanzania, on August 17, 1998, do not seem to have involved any links to operations centered in Saudi Arabia. Like some other Islamic extremist movements, Bin Laden and al-Qaida do receive some private financing from within Saudi Arabia, and there are extremist groups inside the Kingdom that support him. Some of these groups continue to pose a threat to US officials, military, and businessmen in Saudi Arabia. US analysts estimate, however, that Bin Laden and al-Qaida have received as much support from Egyptian and South Asian groups as from Saudi ones. Al-Qaida also has contacts and subgroups in Afghanistan as well Tajikistan, Bosnia, Chechnya, Somalia, Sudan, and Yemen. It has also trained fighters from numerous other countries, including the Philippines, Egypt, Libya, Pakistan, and Eritrea.²²⁹

The government of Saudi Arabia has arrested and convicted other Saudi and foreign terrorists. These include terrorists associated with the bombing of the Saudi National Guard Training Center and of the Al Khobar Towers housing facility near Dhahran in June 1996. While Saudi authorities have arrested and detained several persons in connection with the attacks, they have reached no conclusions as to whether these bombings were solely the work of independent Islamic extremists or had some form of Iranian support. The US and Saudi governments have cooperated in these investigations to the extent that the US expelled Hani al-Sayegh – a Saudi national to Saudi Arabia on October 11, 1999. Al-Sayegh originally was detained in Canada in March 1997, and documents submitted to the Canadian court alleged al-Sayegh, as a member of the Saudi Hizballah, had participated in the Al Khobar Towers bombing.

The Problem of the Mutawaa’in

The Mutawaa’in, or religious police, are a powerful political force or “lobby” within Saudi society and the Saudi political system. Their power grew strikingly after the Gulf War, as Saudi traditionalists reacted to the presence of US and other Western forces, but seems to have peaked in the mid-1990s. The number of reports of harassment by the Mutawaa’in during the late

1990s remained relatively low in comparison with previous years, but the Mutawaa'in continue to intimidate, abuse, and detain citizens and foreigners of both sexes

The Mutawaa'in have the authority to detain persons for no more than 24 hours for violations of the strict standards of proper dress and behavior. However, they sometimes exceed this limit before delivering detainees to the police. Current procedures require a police officer to accompany the Mutawaa'in at the time of an arrest. The Mutawaa'in generally comply with this requirement. In the more conservative Riyadh district, however, there are continuing reports received of Mutawaa'in accosting, abusing, arresting, and detaining persons alleged to have violated dress and behavior standards.

The State Department reports that,

Mutawaa'in practices and incidents of abuse varied widely in different regions of the country, but were most numerous in the central Nejd region. In certain areas, both the Mutawaa'in and religious vigilantes acting on their own harassed, assaulted, battered, arrested, and detained citizens and foreigners. The Government requires the Mutawaa'in to follow established procedures and to offer instruction in a polite manner; however, Mutawaa'in did not always comply with the requirements. The Government has not criticized publicly abuses by Mutawaa'in and religious vigilantes, but has sought to curtail these abuses.

Mutawaa'in enforcement of strict standards of social behavior included the closing of commercial establishments during the five daily prayer observances, insisting upon compliance with strict norms of public dress, and dispersing gatherings of women in public places. Mutawaa'in frequently reproached Saudi and foreign women for failure to observe strict dress codes, and arrested men and women found together who were not married or closely related. In November 1998, several Mutawaa'in attacked and killed an elderly Shi'a prayer leader in Hofuf for repeating the call to prayer twice (a traditional Shi'a practice). Mutawaa'in attempts to cover up the killing were unsuccessful. The State Department reports that the government reportedly is investigating the incident; however, it does not make public the results of investigations involving Mutawaa'in personnel.

Shi'ites and Non-Muslims

The Shi'a Muslim minority (roughly 500,000 of nearly 14 million citizens) presents special security and legal problems. It lives mostly in the Eastern Province, and the government permits Shi'a Muslims to use their own legal tradition to adjudicate noncriminal cases within their community. The State Department reports, however, that Shi'ites are the objects of officially sanctioned political and economic discrimination.

The Saudi government seldom permits private construction of Shi'a mosques. The Shi'a have also declined government offers to build state-supported mosques because the government would prohibit the incorporation and display of Shi'a motifs in any such mosques. The Government reportedly still holds in jail an unknown number of Shi'a who were arrested in the aftermath of the Al-Khobar bombing. Government security forces reportedly arrest Shi'a on the smallest suspicion, hold them in custody for lengthy periods, and then release them without explanation. In November 1998, several Mutawaa'in attacked and killed an elderly Shi'a prayer leader in Hofuf for repeating the call to prayer twice (a traditional Shi'a practice). The government still punishes Shi'a who travel to Iran without permission from the Ministry of the Interior, or those suspected of such travel, by confiscating passports for up to two years.

This discrimination seems to be easing in some respects, in part because of actions by King Khali, the governor of the Eastern Province, and Crown Prince Abdullah and. More Shi'ites are being allowed into government jobs and some areas in the military. There is one Shi'a on the Consultative Council, or Majlis Ash-Shura, and the government has appointed its first Shi'a ambassador. Prior to 1990, the Government prohibited Shi'a public processions during the Islamic month of Muharram and restricted other processions and congregations to designated areas in the major Shi'a cities. Since 1990 the authorities have permitted marches on the Shi'a holiday of Ashura, provided that the marchers do not display banners or engage in self-flagellation. Ashura commemorations took place during the year, again without incident, as in the previous year.

The Saudi government does not permit public non-Muslim religious activities, although it has little choice. Saudi society simply would not permit such tolerance, and it would probably provoke extensive violence by the religious police and Saudi traditionalist, many of which would not be violent under other conditions.

Nevertheless, non-Muslim worshippers risk arrest, lashing, and deportation for engaging in overt religious activity that attracts official attention. The State Department also reports that the government's tolerance of private worship is uncertain. Such private non-Muslim worship occurs on a wide scale through the country, including on the premises of several embassies. High level Saudi authorities have stated that the government's policy allows for private non-Muslim worship and that the government does not sanction investigation or harassment of such private worship services.

However, a senior Saudi leader stated publicly in 1997 that the Government does not "prevent" private non-Muslim religious worship in the home, and there have been arrests and

deportations for private worship. The government ascribes some of this harassment of private worship services to individuals and organizations acting on their own authority and in contradiction of government policy. Representatives of many Christian denominations present in the country report that the Government is not interfering with their private worship services.

Treatment of Foreign Workers

The State Department reports that foreigners typically are allowed to reside or work in Saudi Arabia only under the sponsorship of a Saudi national or business. The Government requires foreign residents to carry identification cards. It does not permit foreigners to travel outside the city of their employment or change their workplace without their sponsor's permission. Foreign residents who travel within the country may be asked by the authorities to show that they possess letters of permission from their employer or sponsor.

The Government prohibits forced or compulsory labor pursuant to a 1962 royal decree that abolished slavery. Ratification of the International Labor Organization (ILO) Conventions 29 and 105, which prohibit forced labor, gives them the force of law. However, employers have significant control over the movements of foreign employees, which gives rise to situations that sometimes involve forced labor, especially in remote areas where workers are unable to leave their place of work. Some sponsors prevented foreign workers from obtaining exit visas to pressure them to sign a new work contract or to drop claims against their employers for unpaid salary. In another pressure tactic, some sponsors refused to provide foreign workers with a "letter of no objection" that would allow them to be employed by another sponsor.

Some foreign nationals who have been recruited abroad have complained that after their arrival in Saudi Arabia they were presented with work contracts that specified lower wages and fewer benefits than originally promised. Other foreign workers reportedly have signed contracts in their home countries and later were pressured to sign less favorable contracts upon arrival. Some employees report that at the end of their contract service, their employers refuse to grant permission to allow them to return home. Foreign employees involved in disputes with their employers may find their freedom of movement restricted (see Section 2.d.). Some female domestic servants often were subjected to abuse,

Labor regulations require employers to protect most workers from job-related hazards and disease. Foreign nationals report frequent failures to enforce health and safety standards. Farmers, herdsmen, domestic servants, and workers in family operated businesses are not

covered by these regulations. Workers risk losing employment if they remove themselves from hazardous work conditions

The labor laws do not protect domestic servants. There were credible reports that female domestic servants sometimes were forced to work 12 to 16 hours per day, 7 days per week. There were numerous confirmed reports of runaway maids. The authorities often returned runaway maids to their employers against the maids' wishes. There have been many reports of workers whose employers refused to pay several months, or even years, of accumulated salary or other promised benefits. Non-domestic workers with such grievances have the right to complain before the labor courts, but few do so because of fear of deportation. The labor system is conducive to the exploitation of foreign workers because enforcement of work contracts is difficult and generally favors employers. Labor courts, while generally fair, may take many months to reach a final appellate ruling, during which time the employer may prevent the foreign laborer from leaving the country. An employer also may delay a case until a worker's funds are exhausted and the worker is forced to return to his home country.

The law does not specifically prohibit forced or bonded labor by children. Nonetheless, with the rare exception of criminal begging rings, and the possible exceptions of family businesses, forced or bonded child labor does not occur (see Section 6.d.). In 1997 the Government actively sought to eradicate forced child begging. Criminal rings consisting almost exclusively of foreigners bought and imported South Asian children for the purpose of forced begging

Sponsors generally retain possession of foreign workers' passports. Foreign workers must obtain permission from their sponsors to travel abroad. If sponsors are involved in a commercial or labor dispute with foreign employees, they may ask the authorities to prohibit the employees from departing the country until the dispute is resolved. Some sponsors use this as a pressure tactic to resolve disputes in their favor or to have foreign employees deported. There were numerous reports of the Government prohibiting foreign employees involved in labor disputes from departing the country until the dispute was resolved.

The Government seizes the passports of all potential suspects and witnesses in criminal cases and suspends the issuance of exit visas to them until the case is tried or otherwise concluded. As a result, some foreign nationals are forced to remain in the country for lengthy periods against their will. Although racial discrimination is illegal, there is substantial societal prejudice based on ethnic or national origin. Foreign workers from Africa and Asia are subject to various forms of formal and informal discrimination and have the most difficulty in obtaining justice for their

grievances. For example, pay scales for identical or similar labor or professional services are set by nationality such that two similarly qualified and experienced foreign nationals performing the same employment duties receive varied compensation based on their nationalities.

Treatment of Iraqi Exiles and Prisoners of War

The Saudi 1992 Basic Law provides that “the state will grant political asylum if the public interest mitigates” in favor of it. The language does not specify clear rules for adjudicating asylum cases. In general, the authorities regard refugees and displaced persons like other foreign workers: they must have sponsors for employment or risk expulsion.

The State Department reports that none of the 33,000 Iraqi civilians and former prisoners of war allowed refuge in Saudi Arabia at the end of the Gulf War, has been granted permanent asylum in the country; however, the Government has underwritten the entire cost of providing safe haven to the Iraqi refugees, and continues to provide excellent logistical and administrative support to the UNHCR and other resettlement agencies. In early 2000, approximately 27,000 of the original 33,000 Iraqi refugees had been resettled in other countries or voluntarily repatriated to Iraq. Most of the approximately 6,000 remaining refugees are restricted to the Rafha refugee camp. The UNHCR has monitored over 3,000 persons voluntarily returning to Iraq from Rafha since December 1991 and found no evidence of forcible repatriation.

Representatives of the United Nations High Commissioner for Refugees (UNHCR) are present at the Rafha refugee camp, which houses former Iraqi prisoners of war and civilians who fled Iraq following the Gulf War. According to UNHCR officials, there was no systematic abuse of refugees by camp guards. When isolated instances of abuse have surfaced in the past, the authorities have been responsive and willing to investigate allegations and reprimand offending guards. The State Department reports that the camp receives a high level of material assistance and is comparatively comfortable and well run.

Saudi Enforcement of Islamic Justice

Saudi Arabian justice is unique in one respect. The internal security services are general far more humane by Western standards than the procedures and punishments used in traditional criminal justice. Islamic practice generally is limited to that of the Wahhabi order, which adheres to the Hanbali school of the Sunni branch of Islam as interpreted by Muhammad Ibn Al-Wahab, an 18th century religious reformer. Practices contrary to this interpretation, such as visits to the tombs of renowned Muslims, are discouraged.

The result is often the severe physical punishment of criminals. Western human rights groups often strongly object to such traditional punishments, and the State Department reports that,²³⁰

The Government punishes criminals according to its interpretation of Islamic law, or Shari'a. Punishments include flogging, amputation, and execution by beheading, stoning, or firing squad. The authorities acknowledged 100 executions during the year, a substantial increase from 25 in 1998, but less than the 134 reported in 1997. Executions included 36 men for murder (29 Saudis and 7 foreigners), 40 men for narcotics-related offenses (2 Saudis and 38 foreigners), 3 men for gang-related activities (2 Saudis and 1 foreigner), 8 men for rape (7 Saudis and 1 foreigner), 10 men for armed robbery (7 Saudis and 3 foreigners), and 3 women for narcotics-related offenses (all foreigners). The men were executed by beheading and the women were executed by firing squad. There were no executions by stoning. In accordance with Shari'a, the authorities may punish repeated thievery by amputation of the right hand. There were two reports of multiple amputations (right hand, left leg) for the crime of highway robbery during the year. The amputations were carried out against two Saudi men. Persons convicted of less serious offenses, such as alcohol related offenses or being alone in the company of an unrelated person of the opposite sex, sometimes were punished by flogging with a cane.

Western critics of this aspect of Saudi justice should, however, keep three factors in mind. First, the percentage of the Saudi population tried or convicted of crimes is probably less than 10% of that subject to trial or conviction in the US. Second, Saudi prison sentences are generally much shorter and Saudi prison conditions are usually substantially better. Whether Saudi draconian punishments are cumulatively more harsh than the treatment of US prisoners over time is questionable. Third, at least some Saudi government officials point out that giving "traditionalists" power over criminal punishment is both popular with the vast majority of Saudis and an area where the government can make concessions with the least damage to the modernization of the Kingdom.

XIII. Proliferation and Saudi Missile Capabilities

Saudi Arabia faces major challenges from proliferation in Iran and Iraq. Iran and Iraq are both seeking to improve their long-range missile capabilities, and biological, chemical, and nuclear weapons. So far, Saudi Arabia's response has been limited. The Kingdom has supported arms control treaties that limit biological, chemical, and nuclear weapons, and there have been few indications that it has actively sought weapons of mass destruction or funded significant efforts to acquire them.

During the Iran-Iraq War, Saudi Arabia reacted to missile exchanges in the "war of the cities" between Iran and Iraq by Chinese CSS-2 (DF-3) long-range surface-to-surface missiles, which it deployed as part of the Air Defense Force. The Saudis bought a package of 50 to 60 missiles, 10-15 mobile launchers, and support from the PRC at a cost of about \$3 billion to 3.5 billion.²³¹ Saudi Arabia has now begun to seek a replacement for the CSS-2, and Saudi planners are beginning to seriously discuss whether Saudi Arabia needs its own deterrent and retaliatory capability, or can rely on a mix of US strength, Saudi air and missile defenses, and US and international arms control and counterproliferation programs.

The CSS-2

Saudi Arabia's present CSS-2 missiles are largely an exercise in political symbolism and have only token warfighting capability. The CSS-2 missiles are extremely large 70-ton systems, and have a special, large conventional warhead. They are mobile, and one-third are supposed to be kept armed and near-launch-ready on transporters, one-third are kept half fueled, and one-third are normally empty and being serviced. Saudi sources indicate that actual readiness rates are normally far lower.

The missiles are currently deployed in two battalions. One is located at the As-Sulayyil Oasis, roughly 475 kilometers south to southwest of Riyadh. As-Sulayyil will also be the site of one of Saudi Arabia's new air bases for its Tornado fighter-bombers. A second battalion is located at Al-Juaifer near the Al-Kharj air base south of Riyadh. A further training facility that may have a launch capability, seems to exist in southwestern Saudi Arabia at al-Liddam.²³²

Commercial satellite photos of the site at As-Sulayyil show a headquarters and transportation complex with 60 buildings or tents; a transportation center; a command and control complex with roughly 40 buildings and tents; a secure area; a construction area; a bunker

which may be a fixed launcher site; other launch areas with bunkers for missile storage; an additional launch area, and three 150 meter-long white buildings that may be missile assembly facilities.²³³ Saudi Arabia has only a very limited technological base to support such programs, although it has begun to experiment with short-range artillery systems

None of the Saudi missiles are now armed with weapons of mass destruction. Saudi Arabia is a signatory of the Non-Proliferation Treaty, and Saudi Arabia and the PRC have provided US officials with assurances that the missiles will remain conventional. The Saudi government has issued a written statement that, "nuclear and chemical warheads would not be obtained or used with the missiles." US experts believe that Saudi Arabia has largely kept its word, although the Saudis have refused a US request to inspect the missile sites in Saudi Arabia.²³⁴

Saudi Arabia has no capability to produce its own long-range ballistic missiles or weapons of mass destruction. The most it has done is develop an unguided rocket. In July 1997, Saudi Arabia test-fired its first domestically produced surface-to-surface artillery rocket or missile at the Al-Kharj complex. Defense Minister Prince Sultan stated that the missile has a range of between 35km and 62km.²³⁵

The Saudis cannot maintain or fire its CSS-2 missiles without Chinese technical support, and Chinese technicians are operating the missiles under Saudi supervision. Ballast Nedam, a subsidiary of British Aerospace, has recently extended the runway at the As-Sulayyil air base to 3,000 meters. There are some signs that Saudi Arabia may be deploying surface-to-air missiles to defend the facility.²³⁶

Saudi Arabia claimed that it bought the CSS-2 to "propagate peace," but it really bought them for a number of other reasons.²³⁷ Its efforts to buy arms from the US had reached a low point when the purchase was made, and Saudi Arabia felt the purchase would be a major demonstration of its independence. Equally, Saudi Arabia felt threatened by the fact that Iran, Iraq, and Yemen had long-range surface-to-surface missiles and it did not. Saudi Arabia was particularly interested in acquiring systems that could hit Tehran, while being deployed outside the range of Iranian surface-to-surface missiles.

There are good reasons to question the military value of such missiles, however, as long as they are only equipped with conventional warheads.²³⁸ The CSS-2s deployed in the PRC are all nuclear-armed missiles. Each can carry one to three megaton warheads. They have a maximum range of about 2,200 miles (3,500 kilometers), an inertial guidance system, and a

single-stage, refrigerated liquid fuel rocket motor. The version of the CSS-2 that the PRC has sold to Saudi Arabia is very different. It is heavily modified and has a special large conventional warhead, which weighs up to 3,500 to 4,000 pounds. This added warhead weight cuts the maximum range of the missile to anywhere from 1,550 nautical miles (2,400 kilometers) to 1,950 nautical miles (3,100 kilometers).

A conventional warhead of this size is more effective than the warhead on a Scud, but is scarcely a weapon of mass destruction, or even an effective conventional weapon. Assuming an optimal ratio of HE to total weight, the warhead of the CSS-2 could destroy buildings out to a radius of 200-250 feet, seriously damage buildings out to a radius of 300-350 feet, and kill or injure people with projectiles to distances of up to 1,000 feet.²³⁹ This is the damage equivalent of three to four 2,000 pound bombs, or about the same destructive power as a single sortie by a modern strike fighter.

The CSS-2 has other limitations that led Saudi Arabia to examine possible replacements beginning in the mid-1990s. It is an obsolete missile that was first designed in 1971. While an improved version has been deployed, most experts still estimate that the missile has a CEP of nearly two to four kilometers, and lacks the accuracy to hit anything other than large area targets like cities or industrial facilities. Even with the improved warhead, each missile would still only have the effective lethality of a single 2,000-pound bomb. It requires large amounts of technical support and ground equipment, and takes hours to make ready for firing.²⁴⁰

It is also far from clear that the CSS-2 missile can be properly calibrated for targeting purposes, and be kept truly operational, without more frequent test firings and without test firings conducted at long ranges along the axis it would have to be fired in an actual strike. Saudi Arabia has never conducted a meaningful operational test of the CSS-8, and is incapable of conducting the tests necessary to refine the missile's targeting using the derived aim point method.²⁴¹

The Saudi purchase of the CSS-2 thus raises serious issues on several grounds:

- A very costly weapons system is being procured in very small numbers with relatively low lethality.
- As now configured, the missile system may do more to provoke attack or escalation than to deter attack or provide retaliatory capability. This point became clear to the Saudis during the Gulf War. King Fahd rejected advice to retaliate against Iraqi strikes because he felt that strikes that simply killed civilians would have a provocative, rather than a deterrent effect;

- On the other hand, Saudi acquisition of chemical or nuclear warheads would radically improve the value of the system as a deterrent or retaliatory weapon.

At best, the CSS-2 acts as a low-level deterrent and a symbol of Saudi Arabia's willingness to retaliate against Iraqi and Iranian strikes. At worst, the missiles are a potential excuse for Iranian or Iraqi missile strikes, and their use could trigger a process of retaliation against which Saudi Arabia would have little real defense capability. Israel, which initially showed concern about the system, no longer seems to see it as any kind of direct threat. Israel has the capability to launch air strikes against the Saudi missile sites, but is unlikely to consider preemptive strikes unless radical changes take place in Saudi Arabia's political posture or regime.

The CSS-2 does, however, symbolize the risk that Saudi Arabia will buy much more capable missile and seek weapons of mass destruction. Long-term Saudi motives will remain uncertain to its neighbors despite Saudi pledges, foreign intelligence reports, and any inspection agreements. Such concerns have already led to fears that Saudi investments in imaging satellites might be used for intelligence and targeting purposes.²⁴² While nations like India, Iran, Iraq, Israel, Libya, and Syria are the major proliferators in the region, Saudi possession of the CSS-2 also gives other countries an added incentive and excuse to join the missile arms race, acquire weapons of mass destruction, or preempt in a conflict.

The most Saudi Arabia seems to have done to date to acquire weapons of mass destruction is to quietly examine its options for acquiring chemical and biological weapons, and hold preliminary discussions with China and Pakistan. The Saudi Chief of Staff, Lt. General Saleh Mohaya, and Prince Khalid Bin Sultan, also seem to have begun discussing replacement of the CSS-2 with China in 1995, but there has been no visible progress to date.²⁴³

Prince Sultan and other Saudi military officials do seem to have toured Pakistan's nuclear weapons facilities, and did so in 1999 after Pakistan's nuclear tests, but there is no evidence of they intend to buy an "Islamic bomb." While there have been reports of a more extensive Saudi nuclear program, the "evidence" advanced to date has been tenuous at best and the charges seem to be more political in character than inspired by any actual knowledge. The only deeply disturbing aspect of talks with Pakistan is that some estimates indicate that Pakistan's production of fissile material will begin to exceed its domestic military requirements at some point around 2005. Little data area available of what discussions Saudi Arabia has had with China about the possible purchase of weapons of mass destruction – if any.

What Comes Next? Missiles, Missile Defenses, Civil Defense, Counter Proliferation, Counterterrorism, and Deterrence

Saudi Arabia faces hard choices. Iran is succeeding in developing long-range missiles like the Shahab-3, and will probably acquire nuclear weapons in the next 5 to 10 years. Iraq continues to possess significant technical resources in spite of UNSCOM and will become a major proliferator the moment it can break out of UN sanctions. Saudi Arabia's CSS-2 missiles have already aged to the point where they need replacement, and the need to find a new system is becoming steadily more pressing. At the same time, Saudi Arabia does not have good option for acquiring its own capabilities. China cannot make new sales of long-range missiles without openly violating its agreements relating to the Missile Technology Control Regime (MTCR), and Russia and the other FSU states are bound by both the MTCR and the limits of the IRBM Treaty. Pakistan's missile programs are still in development, as are those of North Korea.

Saudi Arabia also faces much broader questions as to whether it should invest in a symbolic and ineffective deterrent, or buy new missiles armed with weapons of mass destruction, or invest in areas like theater missile defense, civil defense, and counter-terrorism. A number of Saudi planners do advocate buying modern missiles and arming them with chemical, biological, or nuclear weapons. They feel that buying long-range missiles without such weapons has little purpose. It is unclear, however, that Saudi Arabia has better options to acquire weapons of mass destruction than it does to buy missiles. It does not have the industrial base to produce biological and nuclear weapons, or to compete in producing chemical weapons. It is very difficult to purchase "turn key" production capabilities and/or finished weapons abroad, and such purchases might well cut off Saudi Arabia from US and other Western supplies of conventional arms.

Saudi Arabia faces other problems. Such a purchase would certainly seriously jeopardize US-Saudi security arrangements and could make it a target for Israel. Even if Saudi Arabia could find ways to join Iran, Iraq, and Israel in proliferating, it is also not clear whether it would reduce its vulnerability or simply raise the threshold of any attack on the Kingdom. Mere possession of weapons of mass destruction may be adequate for the purposes of prestige in peacetime, but they need to be carefully structured to avoid encouraging preemption and escalation in wartime and accelerating the efforts of neighboring states to acquire even more chemical, biological and nuclear arms.

Although Saudi Arabia is concerned with regional proliferation, it does not express the overt concern about Iran's efforts to arm itself that US policymakers do. In an interview with Al Sharq al-Awsat, Crown Prince Abdullah defended Iran's right to arm itself, as well as the right of others to do so: "Iran has every right to develop its defense capabilities for its security without

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harming or damaging the rights of others. We also do the same. All countries follow the same policy.” He also expressed concern about Israeli armament and weapons programs. Although Saudi views differ from those held by Washington, Saudi Arabia is not likely to enter any arrangements or relations with Iran that would compromise their defense links with the US and the West.²⁴⁴

At the same time, measures like buying improved theater missile defense, civil defense, and counter-terrorism may well not be enough to deal with the creeping proliferation in Iran and Iraq. The US has agreed to share missile early warning data with Saudi Arabia and other friendly Arab states, but it is unclear what this warning is worth. The Patriot 2 missiles in Saudi inventory have only limited intercept capability against advanced Scud missiles. While the Patriot 3 should provide more effective defense against such missiles – when and if the Patriot 3 becomes available – it has only limited effectiveness against more advanced missiles with higher closure speeds. Iran is already testing such missiles, and Iraq is almost certain to develop them if it can break out of sanctions. Developmental anti-theater ballistic missile (ATBM) US systems like the Navy Theater Wide, Navy Area Defense, and US Army THAAD systems are designed to provide such defense capabilities – as are additional boost-phase intercept weapons – but the US currently has no ability to tell Saudi Arabia when it will be able to sell such weapons, and what their cost, effectiveness, and delivery dates will be.

As a result, Saudi Arabia may come to feel that needs some much stronger form of deterrence, as do the other Southern Gulf states. If so, the main options for Saudi Arabia would seem to be to create a major long-range strike capability that combined the assets of the Saudi Air Force with modern strike systems like cruise missiles – systems Saudi Arabia might arm with either conventional warheads or some imported weapon of mass destruction -- and Saudi de facto or formal reliance on US extended deterrence and counterproliferation capabilities. The first option, raises serious questions as to whether the Kingdom can either create conventional strike capabilities that are a credible deterrent to weapons of mass destruction or obtain weapons of mass destruction on its own. The second option requires a major rethinking of US strategy as well as that of Saudi Arabia. Extended deterrence is not a casual affair, and it cannot be separated from efforts to develop some form of regional arms control and develop integrated missile defense, civil defense, and counter-terrorism defenses for the Southern Gulf.

These issues are not urgent as long as Iran’s proliferation remains at low levels and Iraq is under UN sanctions. There scarcely, however is any guarantee that these conditions will hold true long after the year 2001, and dealing with these issues may be one of Saudi Arabia’s most difficult challenges in the years to come. Furthermore, US efforts like the agreement to provide

early warning of enemy missile launchers, and discussing the potential sale of theater missile defense systems, offer little near to mid-term security. Warning at best can have limited benefits in improving civil defense if it is not backed by active missile and air defense or retaliation in kind. The US will not possess wide-area theater missile defenses until well after 2010, and their future cost, effectiveness, and delivery schedule is unclear. At least, at present, the proliferator is likely to acquire major offensive capabilities that outstrip any near-term options for defense.

Saudi Arabian Security at the Start of the 21st Century

Saudi Arabia faces major security problems as it enters the 21st Century. These problems include political stability, Islamic extremism, the economy, security threats and military modernization. All of these problems are important but none currently seem likely to threaten Saudi stability or vital Saudi security interests. Saudi Arabia may need reform and modernization in some areas and a better strategic focus in others, but it is scarcely a fragile state or one without strengths.

The Saudi Arabia of the 21st Century, however, must evolve into a very different state from the Saudi Arabia of today. It must move from oil wealth to a more diversified economy or it may eventually sink into oil poverty. It may not need Western style democracy, but it does need political reform, modernization of its government, and more advanced forms of consultation. Saudi Arabia must deal with major population problems, sharply reduce its dependence on foreign workers, and shift its youth from dependence on the state to a competitive role in the global economy. Saudi Arabia can only deal with Islamic extremism if it reshapes its Islamic practices to make them more tolerant and more flexible, and evolves a clearer picture of what Saudi society should become.

Saudi Arabia also must redefine its security structure. This is not simply a matter of military modernization, but a need to find ways to cooperate with the other Gulf states in collective defense. Saudi Arabia needs to continue to explore the possibility Iran may emerge as a moderate and pragmatic state, and it must look beyond the containment of Iraq. At the same time, it cannot ignore the problems posed by proliferation and by continued dependence on the US to counterbalance potential threats from Iran and Iraq.

Political Change

While Saudi Arabia must remain sensitive to its Islamic character, it must ensure that Islamic extremism cannot challenge the legitimacy of the government or block social and economic change. Saudi religious practices now make for too many concessions to hard-liners and extremists and live in the past, rather than seek to adapt to the future. They oppose, rather than propose.

Saudi Arabia's political system must evolve if it is to preserve its internal stability. The Kingdom must continue to expand the role of the Majlis, and find ways of allowing peaceful debate of social and economic issues. It must preserve the almost universal Islamic character of the Saudi state and society while resolving the differences between modernism and traditionalism. It must allow popular debate and increasing popular control of its national resources. It must come to grips with the issue of defining a rule of law that applies to all its citizens, to the royal family as well as ordinary citizens. It must provide for a uniform commercial code and fully competitive privatization, while resolving the inevitable tensions and conflicts between religious and civil law.

The leadership of the royal family needs to set clear limits to the future benefits members of the royal family receive from the state and to phase out special privileges and commissions. It needs to transfer all revenues from oil and gas to the state budget, and to ensure that princes obey the rule of law and are not seen as "corrupt" or abusing the powers of the state. The royal family already has the wealth to do this, and it does not take much vision to see that the Saudi monarchy cannot give 15,000 princes the same rights and privileges it once gave several hundred. The vast majority of the royal family will have to be cast loose from state support and forced to earn its own living.

The Majlis as Shura needs to be steadily expanded in power, and in regional and sectarian representation, to provide an evolution towards a more representative form of government. The Majlis has made a good beginning, but it needs younger members, members that are moderate critics of the royal family, and some Shi'ites that are permitted to speak for this ethnic group. It needs to play a more direct role in reviewing the Saudi budget, and its debates need to be more open and reported in the media. It may be some years before Saudi Arabia is ready for an elected Majlis or National Assembly, but the Saudi government needs to be more open and some body other than the royal family needs to be seen as playing a major role in decision-making. The present closed, over-centralized process of government breeds extremist opposition.

It may be even more important to give Saudi Arabia a "rule of law" which gives guarantees to its peaceful opposition to openly criticize the government, and which protects human rights. A lack of repression is certainly more important in the near-term than a formal movement towards stronger representative government. While Saudi Arabia has never been particularly repressive, it must do better and it must also place firm limits on its legal abuses by its Islamists and religious police.

A modern commercial rule of law is equally important. The Saudi private sector and foreign investment need to be able to operate in a secure environment that makes Saudi commercial practices competitive on a global basis. The occasional legal abuses of princes, ministers, and the privileged and the tolerance of excessive corruption, are dated remnants of the past.

Population, Youth, and a Vision of the Future

Saudi Arabia needs to face the fact that its most serious threat is its own population growth. The failure of the Arab and Islamic world to face demographic realities has been an act of continuing intellectual cowardice and one of the great disgraces of the 20th century. This cowardice cannot be allowed to continue long into the 21st century.

The Saudi royal family, Saudi government, and the people of Saudi Arabia must come to grips with the fact that Saudi oil wealth is limited and that Saudi Arabia faces a potential demographic crisis. Strong leadership is needed to persuade the Wahhabi ulema that voluntary population control is needed and Saudi families that they should limit their number of children. There needs to be a firm understanding that even the best economic development plan cannot maintain the present standard of real per capita wealth in Saudi Arabia without a sharper decline in the birth rate and that population growth is a major factor affecting political stability.

At the same time, these same demographic pressures illustrate why the government cannot succeed in dealing with Islamic extremism by a combination of accommodating the most fundamental and regressive Wahhabi practices while forcibly repressing Islamic extremists that actively criticize the government. These policies are dragging Saudi Arabia back into a past that cannot be viable in the future and which makes the problems young Saudis face in finding rewarding careers and a valid place in society even more difficult. The Saudi royal family and government need to face the problem of social alienation and religion much more directly, and push for slow but steady reform. They need to face the fact that the present cost of such efforts at change is likely to be much lower than waiting and relying on the present policy.

Saudi Arabia scarcely needs to radicalize Islam. Islam is more than flexible enough to deal with any pace of social and technological change. The Saudi royal family and government, as well as all educated Saudis, do, however, need to start asking existential questions about the future of Wahhabi practices, Saudi society and the role of young Saudis in that society. Even today, most educated Saudi women face a dead end at the end of their education and most Saudi young men graduate into purposeless jobs that offer little real future or productive value to the

economy. The impact of Saudi religious practices and demographics on Saudi society and the Saudi job market has been partially disguised by the fact that half of the population is still under 18 and living with an extended family. With the next half decade, however, something like 20% of the present native population will leave home and will have no where to go. Only radical efforts to stimulate the private sector and remove foreign labor can begin to deal with this problem.

This does not mean Saudi Arabia should be an imitation of the West. Saudi Arabia must find its own path within these constraints. It is unrealistic and impractical for Saudi Arabia to attempt to adopt Western standards of human rights. The West needs to be careful not to be trapped into supporting the efforts of Islamic extremists who claim to advocate human rights and democracy as a way of attacking the Saudi regime. At the same time, Saudi Arabia does need to give Saudi Shi'ites a special religious status and proper economic rights, emphasize the protections of the individual already granted under Saudi law, and sharply rein in the growing abuses of the religious police. The government must reestablish public faith in the Saudi legal process and the rule of law.

Broader Goals for Economic and Social Reform

Saudi Arabia's present and structural economic problems must be kept in careful perspective. None of its near to mid-term financial problems are critical. The Saudi government may be acting slowly, but it has recognized virtually all of the nation's economic problems except the need to reduce the rate of population growth. Many of the solutions the government has identified are workable, and Saudi Arabia has ample time in which to take decisive action.

Oil Wealth or Oil Poverty?

As the previous analysis has shown, Saudi Arabia's budget deficit has already been reduced by a combination of higher oil prices and austerity measures. Saudi Arabia has been able to repay its foreign debt and has already financed much of the infrastructure needed to modernize the country. It is unlikely that Saudi Arabia will have to pay for another Gulf War, and many Saudi arms purchases have been "front loaded" so that arms imports in the late 1990s and early 2000s will cost substantially less than in the aftermath of the Gulf War.

Saudi Arabia is making a massive investment in increasing oil production to reach a sustainable level of 10 million barrels a day. In spite of some cutbacks in foreign investment, Saudi Arabia seems to retain up to \$50 billion in SAMA and government entity foreign investments, and \$20 billion in foreign assets, controlled by public bodies.²⁴⁵ Even though real

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Saudi GDP growth has been low in constant dollars, the US government estimates that the value of the Saudi GDP in constant 1995 dollars grew from a recent low of \$107.2 billion in 1988 to \$110.7 billion in 1989, \$129.5 billion in 1990, \$137.9 billion in 1991, and \$138.4 billion in 1992. In spite of the decline in oil prices during the mid-1990s, it was still \$128.6 billion in 1993 and \$124.4 billion in 1994.²⁴⁶ By 1995 this had increased to \$127.6 billion and by 1996 was \$198 billion.

Some of the increase in the governments domestic civil debt has gone into investment, rather than paying for services, the deficit, and foreign loans. These expenditures will eventually be repaid in the form of added future revenues. Foreign debt has been reduced to low levels, but outstanding central government domestic debt stood at SR 434.4 billion or 85.3% GDP. The domestic bond holdings of Saudi banks are less than \$10 billion, and only about 16% of their total deposits. Major private capital inflows and asset repatriation have taken place since the end of Desert Storm. Bank profits, liquidity ratios, and capital to risk weighted assets are all at acceptable-to-good levels.²⁴⁷

Nevertheless, Saudi Arabia faces serious economic problems that greatly compound the impact of constant social change, high birth rates, internal political divisions, and a “youth explosion.” No one outside Saudi Arabia -- and probably no one within it -- can be certain of just how serious the impact of the resulting tensions within Saudi society really are. None currently seem to threaten the government, and there are few signs that a cohesive opposition is beginning to emerge. Nevertheless, the Saudi government can scarcely ignore the importance of such tensions, and it faces the added problem of dealing with a highly conservative Islamic revival at a time when it must move towards internal reform, in modernizing Saudi society, and dealing with the West.

The Need for a New Social Contract

One thing is clear. Saudi Arabia cannot live in the past or stay in the present. Saudi society, the economy, and government must evolve relatively rapidly if Saudi Arabia is to preserve its internal stability. The government must continue to expand the role of the Majlis, and find ways of modernizing the Saudi economy and society that can at least win the tolerance of most of its traditionalists.. It must allow popular debate and increasing popular control of its national resources. It must come to grips with the issue of defining a rule of law that applies to all its citizens, including the royal family. It must replace “statism” with a dominant private sector. This means it must provide for a uniform commercial code and fully competitive

privatization, while resolving the inevitable tensions and conflicts between religious and civil law.

Saudi Arabia cannot ignore the political realities created by its welfare and entitlements programs. It must continue to ensure that oil wealth is shared throughout its society. At the same time, it must move beyond a petroleum and service-based economy, and a subsidized welfare state. This is not simply a matter of dealing with declining oil revenues per capita. It is a matter of creating a work ethic and economy that employs young Saudis, giving them a real career and share in the future of the nation, and steadily reducing Saudi Arabia's dependence on foreign labor.

Saudi Arabia must redefine its "social contract." It must look beyond oil exports to ensure its budgets are brought into better balance and that its society and economy develop. It must increase revenues by directly taxing wealthier citizens. It must reduce state spending and create a more balance economy by eliminating most subsidies and converting to market prices. It must make a full commitment to privatization and adopt much more stringent restrictions on foreign labor that put far more native citizens to work. In an effort to tighten restrictions on foreign labor, the Kingdom is considering a proposal to double the cost of work permits for foreign laborers, increasing the fee from 1,000 Riyals to 2,000 Riyals (\$533). The London-based Saudi paper Al-Hayat reported that the Kingdom expects to make 80 million Riyals (\$21.3 million) from the work permit fees.²⁴⁸

The State Budget, Subsidies, and Welfare

The government needs to reform the structure of the national budget, and find new sources of revenue by reforming the tax system, and by taxing earnings and sales with progressive taxes that reduce or eliminate budget deficits. At the same time, it needs to make the budget open and transparent and allow an effective debate over both the preparation of the budget and future five-year plans within Saudi Arabia's consultative bodies.

It should ensure that all income from enterprises with state financing is reflected in the national budget and is integrated into the national economic development and planning program, and ensure that all of the nation's revenues and foreign reserves are integrated into the national budget and into the planning process. It should reduce the amount of money going directly to royal accounts, and clearly separate royal and national income and investment holdings. It should place limits on the transfer of state funds to princes and members of the royal family outside the actual ruling family, and transfers of unearned income to members of other leading families.

It should place national security spending on the same basis as other state spending and integrate it fully into the national budget, including investment and equipment purchases. It should also replace the present emphasis on judging purchases on the basis of initial procurement costs and technical features with a full assessment of life cycle costs, including training, maintenance, and facilities and implement specific procedures for evaluating the value of standardization and interoperability with existing national equipment and facilities, those of other Gulf states, and those of the US and other power projection forces.

Privatization and Encouraging the Private Sector

The private sector is the only force that can create real jobs and career opportunities for native Saudi Arabians, and open opportunities to a wider range of investors. Saudi Arabia needs to carry out much more rapid and extensive privatization to increase the efficiency of Saudi Arabian investments in both downstream and upstream operations. At the same time, privatization must be managed in ways that ensure all Saudi Arabians have an opportunity to share in the privatization process and that it is not conducted in a manner that benefits a small, elite group of investors and discourages popular confidence and willingness to invest in Saudi Arabia.

Where Saudi Arabia does continue to rely on a major public sector, but it should establish market criteria for all major state and state-supported investments. There may still be a case for a major state role in some aspects of oil and gas production, and utilities, but the government should require detailed and independent risk assessment and projections of comparative return on these investments, with a substantial penalty for state versus privately funded projects and ventures. It should downsize the scale of programs to reduce investment and cash flow costs and the risk of cost-escalation. It should remove distortions in economy and underpricing of water, oil, and gas. It needs to enforce a firm rule of law for all property, contract, permitting, and business activity and reduce state bureaucratic and permitting barriers to private investment.

Saudi Arabia needs to face the fact that colonialism is dead, and that no nation can isolate itself from the global economy and the growing role of multi-national corporations. The government needs to encourage foreign investment and allow such investment on more competitive terms. Saudi Arabia currently allows only limited foreign investment in certain sectors of the economy, in minority partnerships, and on terms compatible with continued Saudi Arabian control of all basic economic activities.

Some sectors of the economy--including oil and gas, banking, insurance and real estate--have been virtually closed to foreign investment. Foreigners (with the exception of nationals

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from some GCC states) are not permitted to trade in Saudi Arabia, except through the medium of Saudi firms. Protection should not extend to the point where it prevents investment in upstream or downstream operations, eliminates efficiency and competitiveness, and restricts economic expansion. Saudi Arabia needs to act decisively on proposals such as allowing foreign equity participation in the banking sector and in the upstream oil sector.

The government should consider creating new incentives to invest in local industries and business and disincentives for the expatriation of capital. At the same time, it must put an end to the present kind of “offset requirements” that often simply create disguised unemployment or non-competitive ventures that act as a further state-sponsored distortion of the economy. Some Saudi Arabian firms and businesses are now subsidized in ways which prevent economic growth and development, and which deprive the government of revenue.

Saudis need to learn to be competitive. Policies that strongly favor Saudi Arabian citizens and Saudi Arabian-owned companies in ways that block constructive foreign investment should be amended. Income taxes are only levied on foreign corporations and foreign interests in Saudi Arabian corporations, at rates that may range as high as 55 percent of net income. Individuals are not subject to income taxes, eliminating a key source of revenue, as well as a means of ensuring the more equitable distribution of income. Saudi Arabia needs to tax its citizens and companies and ensure that wealthier Saudi Arabian’s make a proper contribution to social services and defense.

Population and Foreign Workers

The government must make good on its attempts to force radical reductions in the number of foreign workers, with priority for reductions in servants and in trades that allow the most rapid conversion to native labor. It must eliminate economic disincentives for employers hiring native labor, and create disincentives for hiring foreign labor. Saudi Arabia’s young and well-educated population needs to replace its foreign workers as quickly as possible, and it will only develop a work ethic and suitable skills once it is thrust into the labor market.

State efforts to encourage Saudi to work and develop a work ethic are useful, but the keys are creating a climate where Saudis must work for a living on market terms and restructuring the educational system to focus on job training and competitiveness. The government needs to create strong new incentives for faculty and students to focus on job-related education. Sharply downsize other forms of educational funding and activity, and eliminate high overhead educational activities without economic benefits.

Saudi Military Development

Saudi Arabia succeeded in using its wealth to create military forces that fought effectively against first-line Iraqi forces in the Gulf War. Its forces are now strong enough to deal with many low-intensity contingencies, and limit the amount of US reinforcements needed in mid-intensity contingencies. Saudi Arabia is by far the strongest and most modern military force in the Southern Gulf, and the only force large enough to provide the support, training, C⁴I/BM, and other specialized capabilities necessary to sustain modern land-air combat and provide the infrastructure for effective regional cooperation.

At the same time, Saudi Arabia remains vulnerable to threats from Iran and Iraq. It can only achieve security through cooperative defense with its Southern Gulf neighbors. Even then, it will only be able to secure itself against an all-out Iraqi attack with active American support. The Gulf War has left Iraq a revanchist state, with much of its army intact and the capability to overrun Kuwait's military forces in a matter of days regardless of Kuwait's present force improvement plans.

Iran may be moving towards moderation, but Saudi Arabia cannot ignore its military or efforts to proliferate. Saudi Arabia is within five to seven minutes flying time from Iran, from the earliest point of detection by an AWACS to over-flying key Saudi targets on the Gulf coast. Missile attacks would offer even less warning and present more problems for defense. While Iran cannot bring the bulk of its land power to bear without major increases in amphibious lift, it can bring naval and air pressure to bear on tanker and air traffic through the Gulf, and threaten Saudi Arabia in other ways.

Cooperation with Other Southern Gulf States

The lack of any clear plan for military cooperation between the Kingdom, other moderate Gulf states, and its Arab neighbors outside the Gulf presents major problems for Saudi Arabia that are not easy to solve. Saudi Arabia cannot turn to the Arab world. The failure of the Damascus Declaration to involve more than politics and money. Neither Egypt nor Syria is organized to project effective combat forces. They lack most of the technological advantages of US forces, and they are not equipped and trained to provide the Saudi Air Force and Saudi Army with the mix of interoperable capabilities they need. Although they are Arab and Muslim, they also bring all the political liabilities to bear of being states with separate interests and with strategic objectives that often differ from those of Saudi Arabia.

Similarly, there are few prospects for a regional security structure, although much can be done in some areas. The Gulf Cooperation Council has made progress in political areas, but little progress in military areas. Its efforts to create a GCC-wide C⁴I system for air defenses are still in the study stage and it has only made limited progress in a few areas of military exercise training like air combat and mine warfare. The GCC's failure to agree on effective plans for cooperation, interoperability, and integration has left the military role of the GCC a largely symbolic one. Rhetoric is not a substitute for reality. The GCC will only play a major role in regional security once it can develop integrated air defenses, develop integrated mine warfare and maritime surveillance capabilities, an ability to deal with Iranian surface and ASW forces, rapid reaction forces that can actually fight, and the ability to defend Kuwait and Eastern Saudi Arabia against land attack.

Priorities for Action

In spite of massive spending since the Gulf War, the Southern Gulf has made far too little progress in far too many areas that are critical priorities for cooperative defense. Saudi Arabia needs to look beyond its own military modernization program and take tangible steps to expand Gulf cooperation. Even if this is not possible on a GCC-wide basis, Saudi Arabia must find ways to strengthen the defense of its northern border area and Kuwait. This means, at a minimum, that Saudi Arabia must work to:

- Create an effective planning system for collective defense, and the creation of interoperable forces with common C⁴I/BM capabilities, and interoperable infrastructure and sustainability.
- Provide the infrastructure, transportation, sustainability, training and C⁴I systems to rapidly deploy Saudi forces to support the joint land defense of the Kuwaiti/Northwestern Saudi borders and to reinforce other Gulf states like Oman in the event of any Iranian amphibious or airborne action.
- Create joint air defense and air attack capabilities with an emphasis on Saud-Kuwaiti-Bahraini cooperation.
- Integrate the Saudi C⁴I and sensor nets for air and naval combat, including BVR and night warfare, link them to Kuwait, Bahrain, and the other Southern Gulf states.
- Create joint air and naval strike forces to deal with threats from Iran and Iraq.

- Develop a joint warfighting capability to provide minesweeping, naval-based air and anti-ship missile defenses to protect Gulf shipping, offshore facilities, ports, and coastal facilities.
- Establish effective cross- reinforcement and tactical mobility capabilities throughout the Kingdom with special emphasis on the defense of Kuwait and the Saudi-Iraqi border. Emphasize forward defense and active maneuver warfare.
- Prepare for rapid over-the-horizon reinforcement by the US and other Western powers. Seek a solution to the lack of US Army prepositioning in Saudi Arabia.
- Set up joint training, support, and infrastructure facilities with the other Southern Gulf states.
- Create common advanced training systems that develop a brigade and wing-level capability for combined arms and joint warfare, and which can support realistic field training exercises for Saudi and allied Southern Gulf forces of the kind practiced by US and Israeli forces.
- Develop a common capability to provide urban and urban area security and to fight unconventional warfare and low-intensity combat.
- Begin development of a broadly-based counter-proliferation program.

Saudi Arabia is the only GCC state that can serve as the central focus of such activity. At least for the next decade, there is no other Southern Gulf state that will be able to use heavy armored forces, modern air control and warning systems, maritime forces and surveillance systems, mine sweeping forces, integrated air defense and anti-tactical ballistic missile defenses, heliborne assault and other rapid reaction forces, and C⁴I/BM systems in ways that can provide an effective deterrent and defense against large scale Iranian and Iraqi attacks.

Mission-Oriented Procurement Priorities

Saudi Arabia does not need massive new arms purchases in the near to mid-term. It needs to focus on training, readiness, and sustainability. It also needs to consolidate its modernization programs to reduce its number of different suppliers and major weapons types and focus on procuring interoperable and/or standardized equipment to provide the capability to perform the following missions:

- Heavy armor, artillery, attack helicopters, and mobile air defense equipment for defense of the upper Gulf.
- 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.

Eliminating the Glitter Factor

Saudi Arabia needs to recognize that it can no longer afford military procurement efforts that emphasize politics and high technology “glitter” over military effectiveness and sustainability. It needs long-term force plans and planning, programming, and budget systems that create stable and affordable force development and defense spending efforts. It needs to bring its manpower quality and sustainment capabilities into balance with its equipment. It needs to recognize that its effectiveness is heavily dependent on interoperability with US and Kuwaiti forces.

Saudi Arabia needs to set firm and realistic limits on its procurement spending. The goal for Saudi Arabian military procurement should not be simply to buy the best possible equipment on paper, but rather to improve the overall holdings of combat forces in a balanced and evolutionary manner. It should be to reach the maximum possible interoperability with the power projection capabilities of US land and air forces, and to procure the training, munitions, and support facilities to deal with the threat from Iraq and Iraq.

Saudi Arabia must take every possible step to eliminate the waste of funds on:

- Unique equipment types and one-of-a-kind modifications.
- “Glitter factor” weapons; “developmental” equipment and technology.
- Arms buys made from Europe for political purposes where there is no credible prospect that the seller country can project major land and air forces.
- Non-interoperable weapons and systems.
- Submarines and ASW systems.
- Major surface warfare ships.
- Major equipment for divided or “dual” forces.
- New types of equipment which increase the maintenance, sustainability, and training problem, or layer new types over old.
- New types of equipment which strain the financial and manpower resources of Saudi Arabia, and overload military units that are already experiencing absorption and conversion problems in using the equipment they possess or have on order.

The Changing Role of Western Power Projection

Saudi Arabia has long played a critical role in supporting Western power projection. The US and Saudi Arabia cooperated closely in setting up combined air and naval defenses against Iran, beginning in 1983, when Iraq came under serious military pressure from Iran. The two countries conducted joint exercises, and cooperated in establishing the “Fahd Line,” which created an Air Defense Identification Zone and forward air defense system off the Saudi coast. Saudi Arabia and the US have jointly operated E-3A AWACS units in Saudi Arabia ever since. The Saudi Arabia and the US also cooperated closely during the tanker war of 1987-1988.

Saudi Arabia took the lead in organizing the Arab world's effort to force Iraq to leave Kuwait in 1990, and worked closely with the US in first developing effective defenses against further Iraqi aggression and then liberating Kuwait. Saudi Arabia supported the US in deploying massive land and air forces to Saudi Arabia during the Gulf War, and jointly commanded UN Coalition forces with the US during Desert Storm. Saudi Arabia also provided the US with \$12.809 billion in direct aid during the Gulf War, and \$4.045 billion in goods and services, for a total of \$16.854 billion.²⁴⁹

Since the Gulf War, Saudi Arabia has recognized that the US is the only power that can provide Saudi Arabia with the kind of land and air reinforcements that can fight "24-hour-a-day" intensive combat, launch highly maneuverable armored counter-offensives, strike deep and repeatedly with long-range precision air attacks, check and deter missile and air attacks with weapons of mass destruction, and provide "force multipliers" like satellite intelligence and targeting, advanced electronic warfare capabilities, and sophisticated battle management and C⁴I systems.

Saudi Arabia has expanded its security arrangements with the US. The US and Saudi Arabia have expanded the USMTM agreement to increase US access to Saudi air and seaports, including Jubail, and have improved the capabilities of the joint AWACS force. The US deploys a wing of aircraft in southern Saudi Arabia, including F-117 and U-2 aircraft, and the Saudi Air Force has supported the enforcement of the "no fly" zone in Southern Iraq.²⁵⁰

Saudi Arabia has allowed the USAF to regularly rotate combat units in and out of Saudi air bases, and the US Military Mission now has roughly 70 military, five civilian, and ten local personnel. Saudi Arabia has increased stocks of selected spares and electronics to support US forces in deploying -- including enough parts and supplies to support 15 USAF tactical fighter equivalents -- and has increased the number of joint exercises with US forces.²⁵¹ It is standardizing key aspects of its C⁴I system to make them interoperable with US C⁴I systems, including theater missile defense arrangements for Saudi Arabia's Patriot missiles. Saudi Arabia has ordered \$1.6 billion worth of US military construction services since the Gulf War -- \$610.8 million of which has been delivered.²⁵²

Saudi cooperation with the West, however, is not easy or without its risks. Saudi Arabia is forced to rely largely on the US- Israel's closest ally. Britain and France are now the only European states with significant power projection capabilities into the Gulf. They both have effective air combat forces and ships, but they cannot deploy the C⁴I and battle management assets for a major regional conflict, and both states are steadily cutting their total pool of power projection forces. Britain and France now lack strategic lift, and the ability to project large sustainable forces in the Gulf. It would take Britain at least two months to project a single, two brigade heavy division that could be sustained in intense combat. It is unclear that France could deploy more than a brigade within the same time frame.

There are significant uncertainties in US and Saudi cooperation. Saudi Arabia reached a tentative agreement for common training with US forces in September, 1991, but Saudi Arabia rejected US proposals to preposition two division sets of ground combat equipment in Saudi Arabia -- although the US could have left such equipment there when its forces completed their withdrawal from the Gulf at the end of 1991.²⁵³ This rejection was partly a result of Saudi concern with the opposition from Islamic fundamentalists and partly a result of an unrealistic Saudi sensitivity to the nuances of sovereignty. At the same time, the US was slow to understand the Saudi emphasis on informal cooperation and low-profile activities. Saudi internal and external stability has long depended on keeping strategic cooperation as quiet as possible, while the US has been insistent on formal and public arrangements.

The US insistence on formal arrangements has hurt both the US and Saudi Arabia after the Gulf War. According to some reports, Saudi Arabia offered to allow US Army prepositioning of major armor, artillery, and other equipment in Saudi warehouses at Saudi cost and under joint US-Saudi Guard. The US insisted on a formal status of forces agreement, flying the US flag, total US control of the facility, and large numbers of US personnel. It also presented the US plan complete with long computer lists of additional equipment. Saudi officials have privately indicated that Saudi Arabia then rejected the US plan because of the way in which it was presented, and because the US insistence on an overt basing facility openly violated the royal family's pledge to the Islamic clergy not to grant bases or formally base non-Muslim forces in the Kingdom. The US plan would almost certainly have resulted in a crisis with hard-line Islamic fundamentalists.

These problems have not blocked other forms of cooperation. Saudi Arabia agreed to expand the 15-year old Military Training Mission agreement it signed with the US in 1977. It reached an agreement for joint US and Saudi land force training in 1991, and exercises have been held regularly since that time. In August, 1992 -- when the US, UK, and France established

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a "no fly" zone over Iraq -- Saudi Arabia not only allowed US aircraft to operate, but also provided refueling tankers, combat air defense patrols, and support from Saudi AWACS. This support was critical to the US, Britain, and France since it allowed them to establish the "no fly zone" over Iraq with less than 150 aircraft. They would have had to provide roughly 100 more aircraft without Saudi support. Since that time, Saudi Arabia has permitted the US to station combat aircraft in the country continuously, including U-2 intelligence aircraft and F-117 strike fighters. Such cooperation is vital to maintaining the interoperability of the Saudi and US air forces, as is continued cooperation in training, exercises, acquiring stockpiles of munitions and supplies, designing repair and maintenance facilities, improving C⁴I/BM systems, and a host of other factors.²⁵⁴

The US has reacted to the problems in Saudi-US cooperation by reshaping its strategy and force plans to rely more on informal cooperation, limit its forward presence and concentrate it in areas with less political visibility, and rely on prepositioning outside the Kingdom. These plans are reflected in the results of the Bottom Up Review of US defense plans for FY1995-FY1999 that Secretary of Defense Les Aspin announced on September 1, 1993. US planners would still have liked to preposition the equipment for two heavy divisions in Saudi Arabia and Kuwait, and in locations that allowed the US to airlift in troops and deploy forward rapidly to defend the Kuwaiti-Iraqi and Saudi-Iraqi borders. The US concluded, however, that Saudi sensitivities to a large-scale US land presence, even in the form of centers with prepositioned equipment, would force the US to rely on more limited prepositioning in other countries, and on the periodic deployment of US forces in exercises and other training activity.²⁵⁵

As a result, the US emphasized cooperation with Saudi Arabia in maintaining a limited presence of US air units, in improving Saudi-US C⁴I/battle management capabilities, in making Saudi air and land forces interoperable with US forces, and in improving Saudi basing and infrastructure to support both Saudi and US forces in defending Kuwait and meeting other defensive needs in the Gulf.

After the Islamic extremist attacks on the Saudi National Guard headquarters and US Air Force barracks in Al Khobar, the US relocated much of its presence in Saudi Arabia to an isolated base in the desert south of Riyadh. It reduced its problems in prepositioning by maintaining a seven ship maritime prepositioning ship squadron at Diego Garcia. It also sought to raise the level of prepositioned US Army equipment in the Gulf to a level of three heavy armored brigades by prepositioning equipment on land for one brigade in Kuwait, one in Qatar, and one in the UAE. The US prepositioned one "swing" brigade set at sea that would normally be deployed afloat near the Gulf, but which could go to Asia or elsewhere in the world. This

prepositioning could allow at least one heavy division in place to halt an Iraqi invasion within 14 to 21 days.

It is clear, however, that the US will have to continue to readjust its forward presence with time. It is also clear that the US and Saudi Arabia need to work together to consider how to contain a post-UN sanctions Iraq, and to consult much more closely on military options. No fly zones and US threats of cruise missile and air attacks will not contain Iraq indefinitely. At some point, Iraq will be able to resume massive oil exports and revenues, and gradually reassert its political and military power. Similarly, sound strategic cooperation cannot be based on a divided policy towards Iran, and the US needs to react to Saudi political successes in dealing with Iran while both states need to work together to determine its military capabilities.

Proliferation presents an even greater challenge. Long-range missile and chemical, biological, and nuclear weapons present a major new challenge for US and Saudi military cooperation. Saudi Arabia must redefine its security arrangements with the US to deal with the problem of creeping proliferation in Iran and Iraq. Saudi Arabia should consider missile defenses and civil defense, but it needs some form of extended deterrence from the US, as do the other Southern Gulf states. The main option would seem to be de facto or formal reliance on US deterrent and counterproliferation capabilities. This, however, requires a rethinking of US strategy as well as that of Saudi Arabia. Extended deterrence is not a casual affair, and it cannot be separated from efforts to develop some form of regional arms control and develop integrated missile defense, civil defense, and counter-terrorism defenses for the Southern Gulf.

Islamic Extremism and Terrorism

Saudi Arabia and the US need to continue to work together to reduce Islamist resentment of the US military role and presence in Saudi Arabia, or further attacks by Sunni and Shi'ite extremists. The US can minimize the vulnerability of its personnel by isolating them, restricting their numbers, and taking additional security measures as it has already done.²⁵⁶ Neither Saudi Arabia nor the US can afford, however to let their military agendas be dictated by terrorists or the nations that support them. There also is no strategic alternative that offers anything approaching the same advantages as a significant, forward-deployed US strategic presence in Saudi Arabia.

This requires effective security cooperation between Saudi Arabia and the US -- cooperation that does not now exist. Saudi Arabia needs to modernize and improve its security services, and make even stronger efforts to bring Islamic extremism under control. On the other hand, the US needs highly professional teams of area specialists from the US that can work

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quietly and discretely with the Saudi security services, which understand Saudi culture and politics and which are fluent in Arabic. This raises severe questions about the role of the FBI in foreign counter-terrorist operations. The FBI's noisy, unprofessional efforts relating to Al-Khobar were as bad in their way as the Saudi attempts to deny access to US experts. It may be that this is a function that belongs in the CIA and with the relevant intelligence and security services of the Department of Defense.

The Saudi and US governments also need to communicate more openly and frankly with the Saudi people about the reasons why US forces are in Saudi Arabia. The Saudi government can no longer deal with the Saudi people by ignoring them, and the US cannot rely on silence. If the Saudi and US governments do so, they simply leave the ground free for exaggerated charges criticism. The US also needs to do far more to make it clear that it is not a mercenary, that its military presence is comparatively limited, that it works in close cooperation with the Saudi military, and that it limits the role of US forces to missions vital to the defense of Saudi Arabia. The US military in Saudi Arabia have helped make these points to the Saudis they work with, but this is scarcely a public information campaign. At this point in time, it is far too easy for Islamic and other extremists to criticize the US presence in the most exaggerated terms with little fear of rebuttal. Even generally friendly Saudis know so little about the facts that they often accept some of these charges.

Arms Sales and Security Assistance

The Saudi government and its arms suppliers need to recognize that the majority of educated Saudis have serious questions about the value of Saudi Arabia's present arms imports and the honesty of the procurement and delivery process. This is true even of senior Saudi officials and some junior members of the royal family and is one of the few areas where Saudi Arabia's most progressive businessmen and technocrats and Islamic extremists agree. The time is past when the Saudi government could rely on silence. It needs to make its programs more public, bring them openly on budget, and demonstrate that it has accounting procedures that limit favoritism and commissions to levels that are broadly acceptable in Saudi society.

The West must be careful in pressing for military sales, or aid, in ways which do not meet vital Saudi security needs and which do not take into account Saudi Arabia's domestic economic situation and social needs. Saudi Arabia has long been one of the largest single customers for US military exports -- and Saudi purchases have increased interoperability and sustainability with US forces, and reduced the unit cost of equipment purchased by US forces. It is clear, however, that Saudi Arabia faces serious long-term constraints on what it can buy in the future, and that it

will often have to make hard choices between the military desirability of standardization with US power projection forces and the political need to buy arms from a range of friendly states.

This will require some hard choices and well planned trade-offs, and Saudi Arabia is long past the point where it simply can throw money at the problem. It needs a stable long-term procurement plan that spends no more than 60-70% of what the kingdom has averaged since the Gulf War, that limits total outstanding orders to \$7-8 billion, and focuses on its highest priorities for standardization and inter-operability with the US, and which ensures that Saudi Arabia does not buy a series of partly incompatible systems when it buys from other countries.

The US needs to make it clear to the Saudi people that it emphasizes military readiness and effectiveness and not sales, that it is not forcing Saudi Arabia to buy unnecessary arms, is seeking to limit Saudi purchases to the level Saudi Arabia can afford, and that its FMS program does more to make arms transfers effective and limit corruption than any other sales program in the war. Once again, the problem is not really with the US program per se, but with the failure to communicate the facts to the Saudi people. Reliance on official silence and passive popular acceptance may have worked in the past, but it now cedes the debate to extremists and critics of the Saudi government and US.

The West and the Pace of Saudi Modernization

Real progress must come from within Saudi Arabia. It is easy to call for change from outside Saudi Arabia. Such analysis can also help Saudi Arabia to the extent it provides an added perspective and new ideas. At the same time, the West needs to understand that the Saudi royal family and most Gulf royal families can only make such changes as fast as their societies can accept them. In Saudi Arabia, for example, there is already a major fundamentalist reaction to the existing rate of change. Over-accelerating the pace of change would lead to conservative reaction, rather than actual progress.

The West also needs to pay more attention to Saudi Arabia's real needs for economic and social reform, and make fewer vacuous calls for instant democracy. Saudi Arabia often prefers to use private and informal methods in modernizing, in supporting the Arab-Israeli peace process, and in limiting the influence of Arab and Islamic radicals; the West and Israel prefer formal and visible arrangements. Israel has often made the mistake of treating Saudi Arabia and other moderate and conservative Arab states as enemies, and insisting on formal arrangements as signs of progress.

Saudi Arabia cannot survive letting Islamic conservatives and hard-liners dictate the future structure of Saudi society. At the same time, it is important for both the West and Israel to understand that Saudi Arabia must preserve its Islamic character, avoid provoking Arab radicals, and minimize the risk of confrontation with Iran, Iraq, and Syria. Informal success is always preferable to formal failure, but this is a lesson that the US and Israel have found very difficult to learn.

Partnership is also based on respect and a clear understanding that any partner must give priority to its own national interests. Crown Prince Abdullah made this point quite clearly in an interview in the Lebanese newspaper, *As-Safir*, in June 1997,²⁵⁷

“We are friends with the Americans, this is known. But we are the ones who know our interests. We can’t give precedence to their interests over our interests. We are Arabs and our interests are those of Arabs and Muslims everywhere. On many occasions we have to tell the Americans...you have your policy and we have our policy...you have your interest and we have our interests? Do you want weak friends who are of no benefit and burden you, or do you want strong friends?”

The West needs the strongest friend it can help create. Its grand strategic and economic interests all depend on the continuing development of Saudi Arabia as the lynchpin of any effort to create stability in the Gulf. Much will also depend, however, on Saudi and Kuwaiti willingness to ensure that US forces can deploy to the northern Gulf in time to defend either country against an invasion by Iraq. No nation likes to admit its dependence on another, but the success of Saudi military forces ultimately depends on the effectiveness of US power projection capabilities. Saudi Arabia will remain as dependent on the West for security as the West is dependent on Saudi Arabia for oil.

¹ Reuters, May 14, 1996; Jane's Defense Weekly, May 22, 1996, pg.4.

² Interviews, and Saudi Arabia Monetary Agency, Thirty-Sixth Annual Report, Riyadh, SAMA Research and Statistics Department, p. 250.

³ CIA, World Factbook, 1996, "Saudi Arabia", and CIA, World Factbook, 1997, "Saudi Arabia".

⁴ CIA, World Factbook 1998, "Saudi Arabia."

⁵ CIA, World Factbook, 1998, "Saudi Arabia".

⁶ CIA, World Factbook 1999, "Saudi Arabia."

⁷ CIA, World Factbook, 1999, "Saudi Arabia".

⁸ CIA, World Factbook, 2000, "Saudi Arabia".

⁹ IISS, Military Balance, 1998-1999.

¹⁰ IISS, Military Balance, 1999-2000.

¹¹ IISS, Military Balance, 1999-2000.

¹² CIA, World Factbook, 2000, "Iran," Iraq," "Saudi Arabia," and "Yemen."

¹³ Some estimates of National Guard regulars go as low as 75,000. Guard officials sometimes use a figure of 150,000, but this seems to include tribal irregulars.

¹⁴ IISS, Military Balance, 2000-2001.

¹⁵ Unless otherwise specified, the military data quoted here are taken from the relevant country sections of various annual editions of the IISS, Military Balance; CIA, The World Factbook; and The Middle East Military Balance, Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv.)

¹⁶ These Pakistani forces left the Kingdom in 1988 and 1989.

¹⁷ Based on interviews, IISS estimates, and the Jane's Sentinel series for 1999.

¹⁸ Department of State, Annual Report on Military Expenditures, 1999, Submitted to the Committee on Appropriations of the U.S. Senate and the Committee on Appropriations of the U.S. House of Representatives, July 27, 2000, in accordance with section 511(b) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1993.

¹⁹ IISS, Military Balance, 1990-1991.

²⁰ Jane's Defense Weekly, May 22, 1996, p. 4.

²¹ Jane's Pointer, September 1996, p. 5; Defense News, April 14, 1997, p. 3.

²² Saudi government officials again raised the possibility of instituting a draft in late 1994. See Reuters, 11-23-94 00:39 AET.

²³ The data available to the author were so much in conflict that it proved impossible to provide even a useful range.

²⁴ Exchange rate of 3.75 Saudi Riyal to \$1 USD.

²⁵ Department of State, Annual Report on Military Expenditures, 1999, Submitted to the Committee on Appropriations of the U.S. Senate and the Committee on Appropriations of the U.S. House of Representatives, July 27, 2000, in accordance with section 511(b) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1993.

²⁶ Department of State, Annual Report on Military Expenditures, 1999, Submitted to the Committee on Appropriations of the U.S. Senate and the Committee on Appropriations of the U.S. House of Representatives, July 27, 2000, in accordance with section 511(b) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1993.

²⁷ Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1996, Washington, GPO, September 1997, Table I.

²⁸ The FY1988 budget was planned to have a \$10 billion deficit, with \$8 billion in foreign borrowing. It involved the first foreign borrowing in 25 years and the first increase in taxes in eight years -- all on foreign businesses. The actual budget reached a \$15-17 billion deficit by the year's end, with some \$10 billion in financing. Economist, January 16, 1988, p. 59; Defense News, January 18, 1988, p. 4.

²⁹ Calculations made by the author using various tables provided by the Saudi Embassy in Washington in October, 1993, and April 1995.

30 Based on various editions of the CIA World Factbook. Some of the differences between these estimates may, however, reflect differences in the CIA definition of GDP and military expenditures.

³¹ Interview with official of the Office of the Secretary of Defense, February 2001.

³² Defense News, November 20-26, 1995, p. 27.

³³ Richard F. Grimmett, *Conventional Arms Transfers to the Third World, 1985-1992*, Washington, Congressional Research Service, CRS-93-656F, July 19, 1993, p. 59 and 69; *Conventional Arms Transfers to the Third World, 1989-1996*, Washington, Congressional Research Service, CRS-97-778F, August 13, 1997, p. 53 and 65; and *Conventional Arms Transfers to the Third World, 1992-1996*, Washington, Congressional Research Service, CRS-RL30640, August 18, 2000, pp. 47-49 and 58-60.

³⁴ Richard F. Grimmett, *Conventional Arms Transfers to the Third World, 1989-1996*, Washington, Congressional Research Service, CRS-97-778F, August 13, 1997, p. 53 and 65-66.

³⁵ Arms Control and Disarmament Agency (ACDA), *World Military Expenditures and Arms Transfers, 1989*, Washington, GPO, 1990, Table II; ACDA printout dated May 14, 1996, and *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1996*, Washington, GPO, 1997, Table II, and US State Department, *World Military Expenditures and Arms Transfers, 1998*, Bureau of Arms Control, Washington, 1999.

³⁶ Based on data provided by Richard F. Grimmett.

³⁷ See "High Costs of the Persian Gulf War," *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1987*, Washington, GPO, 1988, pp. 21-23; ACDA printout dated May 14, 1996; and Richard F. Grimmett, *Trends in Conventional Arms Transfers to the Third World by Major Supplier, 1982-1989*, Congressional Research Service, Library of Congress, Washington, 90-298F, June 19, 1990.

³⁸ Arms Control and Disarmament Agency (ACDA), *World Military Expenditures and Arms Transfers, 1989*, Washington, GPO, 1990, Table II; ACDA printout dated May 14, 1996, and *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1996*, Washington, GPO, 1997, Table II, and US State Department, *World Military Expenditures and Arms Transfers, 1998*, Bureau of Arms Control, Washington, 1999.

³⁹ These data are all take from the 1988-1996 editions of Richard F. Grimmett *Conventional Arms Transfers to Developing Nations*, Congressional Research Service.

⁴⁰ Defense Weekly, May 31, 1999, pgs.1, 20.

⁴¹ Richard F. Grimmett, *Trends in Conventional Arms Transfers to the Third World by Major Supplier, 1992-1999*, Congressional Research Service, Library of Congress, Washington, RL-30640, August 18, 2000.

⁴² Arms Control and Disarmament Agency (ACDA), *World Military Expenditures and Arms Transfers, 1985*, Washington, GPO, 1985, pp. 133-134; ACDA printout dated May 14, 1996.

⁴³ Arms Control and Disarmament Agency (ACDA), *World Military Expenditures and Arms Transfers, 1989*, Washington, GPO, 1990, pp. 117-118 ACDA printout dated May 14, 1996.

⁴⁴ ACDA changed its way of reporting arms sales by source in 1992. *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1990*, Table III, Washington, GPO, 1992; ACDA printout dated May 14, 1996.

⁴⁵ ACDA changed its way of reporting arms sales by source in 1992. *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1990*, Table III, Washington, GPO, 1992; *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1991-1992*, Table III, Washington, GPO, 1994; and *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1993-1994*, Table III, Washington, GPO, 1995; ACDA printout dated May 14, 1996.

⁴⁶ ACDA changed its way of reporting arms sales by source in 1992. *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1990*, Table III, Washington, GPO, 1992; *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1991-1992*, Table III, Washington, GPO, 1994; and *Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, 1993-1994*, Table III, Washington, GPO, 1995; ACDA printout dated May 14, 1996.

⁴⁷ Richard F. Grimmett in *Conventional Arms Transfers to Developing Nations, 1987-1994*, Congressional Research Service 95-862F, August 4, 1994, pp. 56-57 and 68; *Conventional Arms Transfers to the Third World, 1989-1996*, Washington, Congressional Research Service, CRS-97-778F, August 13, 1997, p. 53 and 65.

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⁴⁸ These figures are based on data provided by the Defense Security Cooperation Agency as of March 19, 2001.

⁴⁹ These figures are based on data provided by the Defense Security Cooperation Agency as of March 19, 2001.

⁵⁰ These figures are based on data provided by the Defense Security Cooperation Agency as of March 19, 2001.

⁵¹ These figures are based on data provided by the Defense Security Cooperation Agency as of March 19, 2001.

⁵² US Defense Security Assistance Agency (DSAA), "Foreign Military Sales, Foreign Military Construction Sales and Military Assistance Facts as of September 30, 1994", Department of Defense, Washington, 1995.

⁵³ Interview with OSD official, February 2001.

⁵⁴ New York Times, August 22, 1993.

⁵⁵ Richard F. Grimmett, "Saudi Arabia: Restructuring Arms Payments to the US," Washington, Congressional Research Service, 94-356F, April 25, 1994; New York Times, January 3, 1994, p. A-3, January 18, 1994, p. A-8; Department of Defense, "Saudi Stretch Out," February 1, 1994, Wall Street Journal, January 31, 1994, p. A2; Reuters, April 5, 1994; Defense News, January 10, 1994, p. 1, May 30, 1994, p. 1; Aviation Week, February 7, 1994, p. 22; Inside the Navy, January 3, 1994, p. 3; Christian Science Monitor, December 20, 1993, p. C-1.

⁵⁶ New York Times, August 22, 1993.

⁵⁷ Jane's Defense Weekly, July 10, 1996, p. 30, February 26, 1997, p. 32. Interviews at USCENTCOM.

⁵⁸ Defense Weekly, May 31, 1999, pgs.1, 20.

⁵⁹ Defense News, March 17, 1997, pp. 1, 40.

⁶⁰ Unless otherwise specified, the military data quoted here are taken from the relevant country sections of various annual editions of the IISS, Military Balance; CIA, The World Factbook; The Middle East Military Balance, Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv.), the author's publications and other sources mentioned at the start of the section on Saudi Arabia, and Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," Jane's Intelligence Review, November, 1994, pp. 500-504; Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkinson, The Powder Keg, Falls Church, NOVA Publications, 1996; Geoffrey Kemp and Robert E. Harkavy, Strategic Geography and the Changing Middle East, Washington, Carnegie Endowment/Brookings, 1997; USCENTCOM, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997; Jane's Sentinel: The Gulf States, 1997; London, Jane's Publishing 1997; Jane's Helicopter Markets and Systems (CD-ROM); Jane's All the World's Armies (CD-ROM); Jane's Armor and Artillery (CD-ROM); Jane's Land-Based Air Defense (CD-ROM); Jane's Military Vehicles and Logistics (CD-ROM).

⁶¹ An airborne ranger battalion is deployed at Tabuk.

⁶² Major General Dennis Malcor was sent to Saudi Arabia to survey its military requirements after the Gulf War. Washington Post, March 15, 1992, p. A-35; New York Times, October 15, 1991, p. A-1; Jane's Defense Weekly, December 14, 1991, p. 1175.

⁶³ Defense News, April 14, 1997, pp. 2, 23.

⁶⁴ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.

⁶⁵ Inside the Army, April 6, 1992, p. 1; Inside the Pentagon, April 9, 1992, p. 2.

⁶⁶ Department of Defense, "Sale of Abrams Tanks to Saudi Arabia", Background Information, 1 November, 1989.

⁶⁷ Department of Defense fax, July 18, 1990; Defense Week, March 12, 1990. p. 3.

⁶⁸ Executive News Service, September 23, 1995, 0557.

⁶⁹ Defense News, November 13, 1989, p. 3, March 12, 1990. p. 3; Washington Post, October 12, 1989, p. A-9; October 16, 1989, p. A-17; Department of Defense Background Paper, November 1, 1989; Insight, September 25, 1989, p. 34; Philadelphia Inquirer, September 30, 1989, p. 5-A; New York Times, September 28, 1989, p. A-1;

⁷⁰ Louisville Courier Journal, November 6, 1992, p. B-3; Defense News, June 21, 1993, p. 14; Jane's Defense Weekly, February 20, 1993, p. 8.

⁷¹ Jane's Defense Weekly, February 26, 1994, p. 4.

⁷² Jane's Defense Weekly, February 6, 1988, p. 191, March 7, 1992, July 25, 1992, p. 18, August 15, 1992, p. 5; Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4; Defense Daily, February 14, 1992, p. 251; Defense News, March 30, 1992, p. 6.

- ⁷³ Jane's Defense Weekly, February 6, 1988, p. 191, March 7, 1992; Defense Daily, February 14, 1992, p. 251; Defense News, March 30, 1992, p. 6.
- ⁷⁴ Defense News, March 30, 1992, p. 6, April 14, 1997, p. 3; Defense Daily, February 14, 1992, p. 251; Jane's Defense Weekly, February 6, 1988, p. 191, March 7, 1992; Inside the Army, April 6, 1992, p. 1; Inside the Pentagon, April 9, 1992, p. 2.
- ⁷⁵ Jane's Defense Weekly, February 6, 1988, p. 191, March 7, 1992; Defense Daily, February 14, 1992, p. 251; Defense News, March 30, 1992, p. 6; Executive News Service, August 11, 1995, 0625.
- ⁷⁶ Jane's Defense Weekly, April 17, 1996, p. 10.
- ⁷⁷ Jane's Defense Weekly, August 6, 1997.
- ⁷⁸ Jane's Defense Weekly, August 28, 1996, pg.19.
- ⁷⁹ Jane's Defense Weekly, November 4, 1995, p. 8; Defense News, April 14, 1997, p. 3.
- ⁸⁰ IISS, Military Balance, DMS computer database, interviews in Saudi Arabia and discussions with US experts. These figures are based largely on Saudi data, and differ significantly from IISS and most Western databases.
- ⁸¹ The first 200 M-2s were produced at a rate of 2 in FY1989, 98 in FY1990, and 100 in FY1991. Jane's Defense Weekly, September 9, 1989, p. 452; Wall Street Journal, June 2, 1988, p. 56.; Aviation Week, June 17, 1991, p. 129.
- ⁸² Defense News, June 6, 1994; Washington Times, July 23, 1997, p. A-6.
- ⁸³ Jane's Defense Weekly, August 19, 1998, pg.19.
- ⁸⁴ DMS computer data base, interviews in Saudi Arabia in February, 1991, discussions with Saudi experts in December, 1990, and Defense News, February 22, 1988, p. 3.
- ⁸⁵ Jane's Defense Weekly, April 9, 1996, p. 14.
- ⁸⁶ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.
- ⁸⁷ The IISS reports 90 GCT-1s, but Giat only reports the sale of 51.
- ⁸⁸ Aviation Week, June 17, 1991, p. 129; Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4; IISS and JCSS military balances; DMS computer data base, interviews in Saudi Arabia in February, 1991, discussions with Saudi experts in December, 1990, and Defense News, February 22, 1988, p. 3.
- ⁸⁹ Jane's Defense Weekly, March 11, 1989, p. 393.
- ⁹⁰ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.
- ⁹¹ Defense News, April 14, 1997, p. 3.
- ⁹² Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4; Jane's Defense Weekly, December 17, 1988, p. 1546, June 25, 1989, p. 1296, Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," Jane's Intelligence Review, November, 1994, pp. 500-504; Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkinson, The Powder Keg, Falls Church, NOVA Publications, 1996; USCENTCOM, Atlas, 1996, MacDill Air Force Base; Jane's Sentinel: The Gulf States, 1997; London, Jane's Publishing 1997; Jane's Aircraft Upgrades (1997-1998); Jane's Avionics (1997-1998); Jane's All the World's Aircraft (1997-1998); Jane's World Air Forces (binder, April, 1997); Jane's Land-Based Air Defense, 1997-1998 (CD-ROM); Jane's Radar and Electronic Warfare Systems (CD-ROM); Jane's Military Communications, 1997-98; Jane's Unmanned Aerial Vehicles and Targets, (binder)..
- ⁹³ Aviation Week, April 2, 1990, p. 44; Jane's Defense Weekly, November 16, 1991, p. 927; Wall Street Journal, October 7, 1991, p. 16.
- ⁹⁴ Jane's Defense Weekly, December 14, 1991, p. 1175, June 13, 1992, p. 1013. Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.
- ⁹⁵ Jane's Defense Weekly, July 22, 1989, p. 105; IISS, Military Balance, 1992-1993, pp. 120-121; Military Technology, World Defense Almanac, 1992-1993, Vol. XVII, Issue 1-1993, ISSN-0722-3226. pp. 157-159.
- ⁹⁶ Journal of Electronic Defense, February, 1994, p. 17.

⁹⁷ Department of Defense Notice Pursuant to Section 62(A) of the Arms Export Control Act, Transmittal No. 9-93, July 19, 1993.

⁹⁸ These are points normally raised only in private interviews. However, see the comments in Defense News, February 5, 2001, p. 5. The broader issues affecting the GCC are laid out in John Duke Anthony's draft of "The GCC's 21st Summit, Part Two: Defense Issues," Gulf Wire, Washington, January 2001.

⁹⁹ Long, David, *The Kingdom of Saudi Arabia*, Gainesville, University Press of Florida, 1997.

¹⁰⁰ Unless otherwise specified, the military data quoted here are taken from interviews in Saudi Arabia and the relevant country sections of various annual editions of the IISS, *Military Balance*; CIA, *The World Factbook*; *The Middle East Military Balance*, Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv.), the author's publications and other sources mentioned at the start of the section on Saudi Arabia, and Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," *Jane's Intelligence Review*, November, 1994, pp. 500-504; Andrew Rathmell, *The Changing Balance in the Gulf*, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkinson, *The Powder Keg*, Falls Church, NOVA Publications, 1996; Geoffrey Kemp and Robert E. Harkavy, *Strategic Geography and the Changing Middle East*, Washington, Carnegie Endowment/Brookings, 1997; USCENTCOM, *Atlas*, 1996, MacDill Air Force Base, USCENTCOM, 1997; *Jane's Sentinel: The Gulf States*, 1997 and 1999; London, Jane's Publishing; *Jane's Helicopter Markets and Systems* (CD-ROM); *Jane's All the World's Armies* (CD-ROM); *Jane's Armor and Artillery* (CD-ROM); *Jane's Land-Based Air Defense* (CD-ROM); *Jane's Military Vehicles and Logistics* (CD-ROM).

¹⁰¹ General Mohammed Bin Abdullah Al Amr retired in 2000.

¹⁰² IISS, *The Military Balance*, 1999-2000, London, Oxford, 1999, "Saudi Arabia," and *The Military Balance*, 2000-2001, London, Oxford, 2000, "Saudi Arabia."

¹⁰³ *Jane's Defense Weekly*, July 10, 1996, p. 33, April 23, 1997, p. 19.

¹⁰⁴ Based on interviews in Saudi Arabia in April 2000. Other sources indicate that the Guard also has an engineer battalion, and a special security battalion. One source suggests that its strength is two mechanized brigades and two Special Forces units. IISS, *Military Balance*, 1996-1997 and 1999-2000 and 1999-2000; *Jane's Sentinel: The Gulf States*, 1997; London, Jane's Publishing 1997.

¹⁰⁵ *Jane's Defense Weekly*, July 10, 1996, p. 33, April 23, 1997, p. 19; *Jane's Pointer*, September 1996, p. 5..

¹⁰⁶ *Defense News*, June 6, 1994; *Washington Times*, July 23, 1997, p. A-6; *Jane's Defense Weekly*, March 7, 1992, p. 388; January 24, 1996, p. 18, April 23, 1997, p. 19; *Military Technology*, *World Defense Almanac*, 1992-1993, Vol. XVII, Issue 1-1993, ISSN-0722-3226. pp. 157-159.

¹⁰⁷ *Jane's Defense Weekly*, April 23, 1997, pg.19.

¹⁰⁸ Author's estimate based on interviews in Saudi Arabia; "Saudi National Guard Fact Sheet," DSAA; FMC data; DMS computer print outs; and the IISS and JCSS military balances.

¹⁰⁹ *Chicago Tribune*, November 14, 1995, p. I-1; *Washington Post*, November 14, 1995, p. A-15.

¹¹⁰ *Baltimore Sun*, November 14, 1995, p. 1A; *Chicago Tribune*, November 14, 1995, p. I-1; *Washington Times*, May, 4, 1995, p. B-9.

¹¹¹ For an interesting Israeli view of the earlier role of the National Guard in the mid-1980s, see Mordechai Abir, "Saudi Security and Military Endeavor", *The Jerusalem Quarterly*, No. 33, Fall 1984, pp. 79-94. This assessment is based on interviews in Saudi Arabia in April 2000.

¹¹² *Armed Forces Journal*, May 1994, p. 39.

¹¹³ This analysis draws heavily upon the author's interviews in Saudi Arabia in 2000, relevant country sections of various annual editions of *Jane's Fighting Ships*, the IISS, *Military Balance*; CIA, *The World Factbook*; *The Middle East Military Balance*, Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv.), the author's publications and other sources mentioned at the start of the section on Saudi Arabia, and Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," *Jane's Intelligence Review*, November, 1994, pp. 500-504; *Jane's Sentinel: The Gulf States*, 1997; US Naval Institute, *The Naval Institute Guide to the Combat Fleets of the World: Their Ships, Aircraft, and Armament*, Annapolis, Naval Institute; Andrew Rathmell, *The Changing Military Balance in the Gulf*, London, RUSI, Whitehall Series, 1996, pp. 9-23.

¹¹⁴ Based on *Jane's Fighting Ships*, 1996-1997 and 1999-2000; IISS, *Military Balance*, 1996-1997 and 1999-2000 and 1999-2000. Some estimates put its total active strength at 13,500-17,000 men

115 Historical sources for the analysis of the Saudi Navy include James Bruce and Paul Bear, "Latest Arab Force Levels Operating in the Gulf, Jane's Defense Weekly, December 12, 1987, pp. 1360-1361; and various editions of the "Middle Eastern, North African, and South Asian Navies," sections of the March issue of Proceedings.

116 Jane's Defense Weekly, May 15, 1996, p. 3.

117 Based on Jane's Fighting Ships, 1996-1997 and 1999-2000; IISS, Military Balance, 1996-1997 and 1999-2000 and 1999-2000. Some estimates put its total active strength at 13,500-17,000 men

118 Jane's Defense Weekly, April 7, 1999, pg.21.

119 Based on Jane's Fighting Ships, 1996-1997 and 1999-2000; IISS, Military Balance, 1996-1997 and 1999-2000.

120 Based on Jane's Fighting Ships, 1996-1997 and 1999-2000; IISS, Military Balance, 1996-1997 and 1999-2000.

121 These include 20 AS-365N Dauphin helicopters with AS-15TT air-to-surface missiles, and 4 search and rescue versions of the same helicopter.

122 Jane's Defense Weekly, July 10, 1998, pg.33.

123 They are Tacoma-class ASUWs, with 2X4 Harpoon launchers, and 2X3 ASTT (Mark 46 light weight torpedo launchers).

124 Jane's Fighting Ships, 1996-1997 and 1999-2000; IISS, Military Balance, 1996-1997 and 1999-2000.

125 These are French F-2000 class vessels with 4 X 533 mm and 2 X 406 mm ASTT torpedo launchers, one Dauphin helicopter, one 100 mm gun, and 8 Otomat 2 missile launchers.

126 Jane's Fighting Ships, 1994-1995, 1996-1997 and 1999-2000; IISS, Military Balance, 1996-1997 and 1999-2000..

127 Jane's Defense Weekly, July 10, 1996, pg.33.

128 Jane's Fighting Ships, 1994-1995, 1996-1997 and 1999-2000; IISS, Military Balance, 1996-1997 and 1999-2000..

129 Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.

130 Executive News Service, July 25, 1995, 1749.

131 The new contract had a total value of \$3.6 billion; 35% to be offset. Jane's Defense Weekly, October 8, 1994, p. 1; November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515, May 28, 1997, p. 4; Defense News, February 7, 1994, p. 36; Financial Times, January 10, 1994, p. 4; Middle East Economic Digest, September 15, 1995, pp. 13-14, Reuters, May 20, 1997, 1611.

132 Jane's Defense Weekly, December 17, 1988, p. 1546, June 25, 1989, p. 1296, October 8, 1994, p. 1, November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515; Defense News, February 7, 1994, p. 36 London Financial Times, June 13, 1989, p. B-5; Wall Street Journal, June 7, 1988, p. 31; International Defense Review, 7/1989, p. 884.

133 Jane's Defense Weekly, December 17, 1988, p. 1546, June 25, 1989, p. 1296, October 8, 1994, p. 1, November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515; Defense News, February 7, 1994, p. 36 London Financial Times, June 13, 1989, p. B-5; Wall Street Journal, June 7, 1988, p. 31; International Defense Review, 7/1989, p. 884.

134 Reuters, May 20, 1997, 1611, Jane's Defense Weekly, June 26, 1996, p. 26, March 12, 1997, pp. 78-80, May 28, 1997, p. 4, International Defense Review, 7/1997, p. 9.

135 Jane's Defense Weekly, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515

136 Jane's Defense Weekly, October 8, 1994, p. 1; November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515; Defense News, February 7, 1994, p. 36; Financial Times, January 10, 1994, p. 4; Middle East Economic Digest, September 15, 1995, pp. 13-14.

137 Washington Times, May 27, 1995, p. A-11.

138 The Sandown class ships have glass reinforced plastic hulls, Type 2903 Variable Depth Sonar, remote control mine disposal systems, and Plessey NAUTIS-M command, control, and navigation systems. Defense News, March

20, 1989, p. 24, April 24, 1989, p. 28; Jane's Defense Weekly, October 26, 1991, p. 770, and February 20, 1993, p. 15; Jane's Intelligence Review, November, 1996, p. 515.

139 Jane's Defense Weekly, July 10, 1996, p. 33, Military Technology, World Defense Almanac, 1992-1993, Vol. XVII, Issue 1-1993, ISSN-0722-3226. pp. 157-159; Jane's Intelligence Review, November, 1996, p. 515.

140 Jane's Defense Weekly, July 16, 1987, p. 58.

141 Jane's Defense Weekly, December 12, 1987, pp. 1360-1361.

142 Jane's Intelligence Review, November 1996, pg.514; Defense News, June 7, 1999, pg.10.

143 Defense News, June 7, 1999, pg.8.

144 This analysis draws heavily on the relevant country sections of various annual editions of the IISS, Military Balance; CIA, The World Factbook,; The Middle East Military Balance, Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv.); the author's publications and other sources mentioned at the start of the section on Saudi Arabia, Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," Jane's Intelligence Review, November, 1994, pp. 500-504; Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkinson, The Powder Keg, Falls Church, NOVA Publications, 1996; USCENTCOM, Atlas, 1996, MacDill Air Force Base; Jane's Sentinel: The Gulf States, 1997; London, Jane's Publishing 1997; Jane's Air-Launched Weapons (CD-ROM); Jane's Aircraft Upgrades (1997-1998); Jane's Avionics (1997-1998); Jane's All the World's Aircraft (1997-1998); Jane's World Air Forces (binder, April, 1997); Jane's Land-Based Air Defense, 1997-1998 (CD-ROM); Jane's Air-Launched Weapons (binder); Jane's Radar and Electronic Warfare Systems (CD-ROM); Jane's Military Communications, 1997-98); Jane's Unmanned Aerial Vehicles and Targets, (binder).

145 Historical sources for the analysis of the Saudi Navy include James Bruce and Paul Bear, "Latest Arab Force Levels Operating in the Gulf, Jane's Defense Weekly, December 12, 1987, pp. 1360-1361; and various editions of the "Middle Eastern, North African, and South Asian Navies," sections of the March issue of Proceedings.

146 USCENTCOM, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997; IISS, Military Balance, 1996-1997 and 1999-2000.

147 USCENTCOM, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997; IISS, Military Balance, 1996-1997 and 1999-2000.

148 Defense News, September 9, 1996, p. 26.

149 Washington Post, July 30, 1991, p. A-12; Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.

150 Cohen, Dr. Eliot A, Director, Gulf War Air Power Survey, Volume V, Washington, US Air Force/Government Printing Office, 1993, pp. 232 and 279-287. Note that these data are not consistent from table to table.

151 Cohen, Dr. Eliot A, Director, Gulf War Air Power Survey, Volume V, Washington, US Air Force/Government Printing Office, 1993, pp. 316-317, 335, 340, 343, 641, 653-654.

152 Defense Daily, July 31, 1991, pg.24.

153 Defense Daily, May 14, 1991, pg.258.

154 Defense Daily, February 2, 1993, pg.162.

155 Defense Daily, August 14, 1991, pg.258.

156 Defense Daily, July 31, 1991, pg.24.

157 Business Wire, September 23, 1996.

158 Middle East Economic Digest, February 26, 1993, pg.29.

159 Defense Daily, March, 1995; October 3, 1995.

160 Defense Daily, September 17, 1993, pg.434.

161 Defense Daily, January 5, 1999.

162 Defense News, May 31, 1999, pg. 1.

163 Defense News, May 31, 1999, pg. 1.

164 Middle East Economic Digest, January 19, 1996, pp. 7.

165 Jane's Defense Weekly, August 14, 1996, pg.23.

166 Jane's Defense Weekly, February 13, 1993, p. 41; Middle East Economic Digest, January 19, 1996, p. 7.

167 Jane's Defense Weekly, February 13, 1993, p. 41.

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- ¹⁶⁸ Jane's Defense Weekly, July 9, 1988, p. 23, July 16, 1988, p. 59, July 23, 1988, p. 111 and 122-123, March 28, 1992, pp. 533-535; Newsweek, July 25, 198, p. 47; New York Times, July 11, 1988, p. 1 and July 12, p. 3.
- ¹⁶⁹ Jane's Defense Weekly, July 9, 1988, p. 23, July 16, 1988, p. 59, and July 23, 1988, p. 111 and 122-123, June 15, 1991, p. 998, October 26, 1991, p. 770, March 28, 1992, pp. 533-535; Newsweek, July 25, 198, p. 47; New York Times, July 11, 1988, p. 1 and July 12, p. 3.
- ¹⁷⁰ See the author's, *The Gulf and the Search for Strategic Stability*, pp. 122-126.
- ¹⁷¹ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 3; Defense News, September 7, 1992, p. 7.
- ¹⁷² There are unconfirmed reports that air force officers loyal to the Shah ensured that the F-14s were not fully operational.
- ¹⁷³ Aviation Week, September 21, 1992, p. 26; New York Times, September 12, 1992, p. A-1, September 15, 1992, p. A-1; Defense News, January 30, 1994, p. 32, June 62, 1994, p. 30. February 13, 1995, p. 21;
- ¹⁷⁴ Reuters, March 7, 1999.
- ¹⁷⁵ Jane's Defense Weekly, February 6, 1993, p. 6, February 13, 1993, pp. 38-42; New York Times, January 30, 1993, p. 3; Defense News, October 12, 1992, p. 3; Manchester Guardian, October 25, 1992, p. 9; Financial Times, November 18, 1992, p. 10; Financial Times, January 29, 1993, p. 1..
- ¹⁷⁶ Financial Times, January 29, 1993, p. 1; Armed Forces Journal, November, 1994, p. 41.
- ¹⁷⁷ Defense News, January 8-14, 1996, pp. 1, 20, March 24, 1997, pp. 1, 66.
- ¹⁷⁸ Jane's Defense Weekly, August 14, 1996, p. 23.
- ¹⁷⁹ Defense News, March 24, 1997, pp. 1, 66; Washington Post, April 19, 1996, p. A-31.
- ¹⁸⁰ Defense News, March 24, 1997, pp. 1, 66,
- ¹⁸¹ Jane's Defense Weekly, August 7, 1996, pg.3.
- ¹⁸² Defense News, November 10, 1997.
- ¹⁸³ Middle East Economic Digest, January 19, 1996, p. 7; Wall Street Journal, January 5, 1996, p. A6; Jane's Pointer, March 1997, p. 5; Jane's Intelligence Review, August, 1996, Jane's Pointer, March, 1997, p. 5; Washington Post, April 19, 1996, p. A-31.
- ¹⁸⁴ Defense News, November 10, 1997, pg.60.
- ¹⁸⁵ Signal, August, 1991, p. 116; Aviation Week, December 5, 1988, p. 23; Aerospace Daily, October 28, 1991, p. 152.
- ¹⁸⁶ Jane's Defense Weekly, February 5, 1997, p. 3; Wall Street Journal, February 24, 1997, p. B-4; Defense News, February 3, 1997, p. 4.
- ¹⁸⁷ Defense News, February 3, 1997, p. 4, March 2, 1997; Reuters, February 12, 1997, 1448; Washington Times, January 30, 1997, p. A-1, January 31, 1997, p. A-3, February 23, 1997, p. A-5; Washington Post, January 31, 1997, p. A-1.
- ¹⁸⁸ Reuters, April 10, 2000, 0520, April 15, 2000, 0503.
- ¹⁸⁹ Defense News, April 14, 1997, p. 3.
- ¹⁹⁰ Defense News, January 24, 1994, p. 32; January 23, 1995, p. 1, February 13, 1995, p. 22; Jane's Defense Weekly, September 30, 1995, p. 19.
- ¹⁹¹ Jane's Defense Weekly, October 22, 1997, pg.1.
- ¹⁹² Fax from Department of Defense, OSD/LA, January 11, 1987; Baltimore Sun, September 26, 1989, p. E-9; Jane's Defense Weekly, October 7, 1989, p. 744.
- ¹⁹³ The contract involves the services of 25 US government and 300 contract personnel. Associated Press, September 26, 1997, 1917.
- ¹⁹⁴ The deal would be in addition to the \$3.5 billion Al Yamamah I sale and bring total related sales to around \$10 billion. Jane's Defense Weekly, April 11, 1992, p. 597; Flight International, April 21, 1992, p. 21; Defense News, August 31, 1992, p. 40.
- ¹⁹⁵ Defense News, January 24, 1994, p. 32; January 23, 1995, p. 1, February 13, 1995, p. 22; Jane's Defense Weekly, September 30, 1995, p. 19.
- ¹⁹⁶ Baltimore Sun, June 6, 199C, p. 20C.

¹⁹⁷ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 3; Defense News, September 7, 1992, p. 7; .

¹⁹⁸ The following analysis draws heavily on the relevant country sections of various annual editions of the IISS, Military Balance.; CIA, The World Factbook; The Middle East Military Balance, Jaffee Center for Strategic Studies, Tel Aviv University, Tel Aviv.), the author's publications and other sources mentioned at the start of the section on Saudi Arabia; Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," Jane's Intelligence Review, November, 1994, pp. 500-504; Andrew Rathmell, The Changing Balance in the Gulf, London, Royal United Services Institute, Whitehall Papers 38, 1996; Edward B. Atkinson, The Powder Keg, Falls Church, NOVA Publications, 1996; USCENTCOM, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997; Jane's Sentinel: The Gulf States, 1997; London, Jane's Publishing 1997; Jane's Land-Based Air Defense (CD-ROM); Jane's Military Vehicles and Logistics (CD-ROM) Jane's Radar and Electronic Warfare Systems (1997-1998; Jane's C4I Systems (1997-1998).

¹⁹⁹ For typical reporting see IISS, Military Balance, 1996-1997 and 1999-2000; ; USCENTCOM, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997; Military Technology, World Defense Almanac, 1992-1993, Vol. XVII, Issue 1-1993, ISSN-0722-3226. pp. 157-159. The Hawks are MIM-23Bs.

²⁰⁰ IISS, Military Balance, 1996-1997 and 1999-2000; USCENTCOM, Atlas, 1996, MacDill Air Force Base, USCENTCOM, 1997.

²⁰¹ DSAA, June, 1996; Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 3; Defense News, September 23, 1991, pp. 1 and 36, March 1, 1993, p. 17, April 14, 1997, p. 3; Washington Post, November 12, 1991, p. C-1, New York Times, November 9, 1991, p. 3; Jane's Defense Weekly, October 19, 1991, p. 699, July 10, 1996, p. 33; Washington Times, October 24, 1991, p. A-4; Defense Daily, November 8, 1991, p. 223, November 11, 1991, p. A-14; Wall Street Journal, December 24, 1992, p. 2.

²⁰² Raytheon background brief, February 1992; Defense News, September 23, 1991, pp. 1 and 36, March 1, 1993, p. 17; Aviation Week, January 4, 1993, p. 25; New York Times, February 17, 1993, p. D-4; Washington Post, December 24, 1992, p. A-8.

²⁰³ Defense News, March 1, 1993, p. 17, April 14, 1997, p. 3; Jane's Defense Weekly, October 19, 1991, p. 699, July 10, 1996, p. 33.

²⁰⁴ Jane's Radar: National and International Air Defense, 1994-1995, pp. 24-25; Jane's Air Defense Systems, 1994-1995, pp. 805-806; Jane's Command Information Systems, 1994-1995, pp. 47 and 127.

²⁰⁵ Flight International, July 23, 1991, p. 18; Jane's Defense Weekly, July 15, 1989, p. 57.

²⁰⁶ Flight International, July 23, 1991, p. 18; Jane's Defense Weekly, July 15, 1989, p. 57.

²⁰⁷ Jane's Defense Weekly, July 15, 1989, p. 57, January 19, 1991, July 20, 1991, p. 97; London Financial Times, July 5, 1991, p. 5; Flight International, July 23, 1991, p. 18.

²⁰⁸ Jane's Defense Weekly, January 19, 1991, July 20, 1991, p. 97; London Financial Times, July 5, 1991, p. 5; Flight International, July 23, 1991, p. 18.

²⁰⁹ The \$2.5 billion contract involves the services of 25 US government and 300 contract personnel. Associated Press, September 26, 1997, Boston Globe, May 21, 1997, D-7; Jane's Defense Weekly, May 28, 1997, p. 19; Jane's Military Exercise and Training Monitor, July-September 1996, p. 9.

²¹⁰ Defense Week, May 31, 1999, pg.1, 20.

²¹¹ Reuters, April 10, 2000, 0520, April 15, 2000, 0503.

²¹² Jane's Defense Weekly, December 3, 1997, pg. 5.

²¹³ Defense News, May 4, 1998, pg.3; interviews in Saudi Arabia in April 2000 and February 2001; Reuters, Kuwait, February 2001.

²¹⁴ This section is paraphrased or drawn directly from the US State Department report on Human Right, particularly the 1999 edition: 1999 Country Reports on Human Rights Practices, U.S. Department of State, February 25, 2000 http://www.state.gov/www/global/human_rights/1999_hrp_report/saudiara.html, Released by the Bureau of Democracy, Human Rights, and Labor. The author looked extensively at various NGO reports on human rights in the Kingdom, but does not believe that they have the objectivity or reliability of the State Department report. He did, however, ask a wide range of Saudis, inside and outside Saudi Arabia, and Western legal and internal security experts. to review his extensive restructuring of the State Department report, and the text has sometimes been modified accordingly. The reader should be fully aware that virtually all of the credit for this analysis belongs to Copyright Anthony H. Cordesman, all rights reserved. Rough draft. Not be copied or circulated further without the author's express written permission.

State Department personnel, and that no outside analyst can report reliably on these aspects of developments in the Kingdom.

²¹⁵ This section is paraphrased or drawn directly from the US State Department report on Human Right, particularly the 1999 edition: 1999 Country Reports on Human Rights Practices, U.S. Department of State, February 25, 2000 http://www.state.gov/www/global/human_rights/1999_hrp_report/saudiara.html, Released by the Bureau of Democracy, Human Rights, and Labor. The author looked extensively at various NGO reports on human rights in the Kingdom, but does not believe that they have the objectivity or reliability of the State Department report. He did, however, ask a wide range of Saudis, inside and outside Saudi Arabia, and Western legal and internal security experts. to review his extensive restructuring of the State Department report, and the text has sometimes been modified accordingly. The reader should be fully aware that virtually all of the credit for this analysis belongs to State Department personnel, and that no outside analyst can report reliably on these aspects of developments in the Kingdom.

²¹⁶ This analysis draws heavily on interviews, various annual editions of the IISS, Military Balance; and Jane's Sentinel: The Gulf States, 1997; London, Jane's Publishing 1997..

²¹⁷ Defense News, November 11, 1991, p. 36; Washington Technology, September 24, 1992, p. 1.

²¹⁸ US State Department, Country Report on Human Rights Practices, various editions, especially US State Department, 1999 Country Reports on Human Rights Practices, "Saudi Arabia", Released by the Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, February 25, 2000.

²¹⁹ The Ministry of Islamic Affairs funds the Mutawaa'in, and the general president of the Mutawaa'in holds the rank of cabinet minister. The Ministry also pays the salaries of imams (prayer leaders) and others who work in the mosques. During 1999, foreign imams were barred from leading worship during the most heavily attended prayer times and prohibited from delivering sermons during Friday congregational prayers. The Government claims that its actions were part of its Saudisation plan to replace foreign workers with citizens.

²²⁰ US State Department, Country Report on Human Rights Practices, various editions, , especially US State Department, 1999 Country Reports on Human Rights Practices, "Saudi Arabia", Released by the Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, February 25, 2000.

²²¹ US State Department, Country Report on Human Rights Practices, http://www.state.gov/www/global/human_rights/1999_hrp_report/saudiara.html, and US State Department, 1999 Country Reports on Human Rights Practices, "Saudi Arabia", Released by the Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, February 25, 2000.

²²² US State Department, Country Report on Human Rights Practices, http://www.state.gov/www/global/human_rights/1999_hrp_report/saudiara.html, and US State Department, 1999 Country Reports on Human Rights Practices, "Saudi Arabia", Released by the Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, February 25, 2000.

²²³ US State Department, Country Report on Human Rights Practices, various editions.

²²⁴ US State Department, Country Report on Human Rights Practices, various editions.

²²⁵ US State Department, Country Report on Human Rights Practices, http://www.state.gov/www/global/human_rights/1999_hrp_report/saudiara.html, and US State Department, 1999 Country Reports on Human Rights Practices, "Saudi Arabia", Released by the Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, February 25, 2000.

²²⁶ For additional sources, see Washington Times, July 14, 1996, p A-4, June 16 ,1997, p. A-11; Washington Post, January 26, 1997, p. A-22, January 23, 1997, p. A-8, March 23, 1997, p. A-28, May 9, 1997, p. A-31; Reuters, November 1, 1996, 1635, February 20, 1997, 0143; Baltimore Sun, February 28, 1997, p. 1A, June 16, 1997, p. 7A; Chicago Tribune, March 31, 1997, p. 4; USA Today, June 16, 1997, p. 12A.

²²⁷ New York Times, April 22, 1995, p. A-5; Los Angeles Times, April 21, 1995, pp. A-9, A-26; USA Today, April 26, 1995, p. 11A; Washington Post, April 22, 1995, p. A-24; Washington Times, April 22, 1995, p. A-8, April 24, 1995, p. A-11, May 3, 1995, p. A-12.

²²⁸ US State Department, Patterns of Global Terrorism: 1999, "Middle East Overview," <http://www.state.gov/www/global/terrorism/1999report/mideast.html#Arabia>.

²²⁹ US State Department, Patterns of Global Terrorism: 1999, "Middle East Overview," <http://www.state.gov/www/global/terrorism/1999report/mideast.html#Arabia>.

²³⁰ US State Department, Country Report on Human Rights Practices, http://www.state.gov/www/global/human_rights/1999_hrp_report/saudiara.html, and US State Department, 1999 Country Reports on Human Rights Practices, "Saudi Arabia", Released by the Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, February 25, 2000.

²³¹ Associated Press, May 12, 1997, 0251; Defense News, April 8, 1991, p. 1; Defense and Foreign Affairs Weekly, November 28, 1988, p. 1; Washington Post, September 20, 1988, p. A-8; Jane's Defense Weekly, October 1, 1988, pp. 744-755.

²³² Associated Press, May 12, 1997, 0251; Jane's Defense Weekly, July 30, 1997, p. 17.

²³³ Jane's Defense Weekly, October 1, 1988, pp. 744-755, July 30, 1997, p. 17; Associated Press, May 12, 1997, 0251.

²³⁴ Washington Times, October 4, 1988, p. A-2; Christian Science Monitor, October 8, 1988, p. 2.

²³⁵ Jane's Defense Weekly, July 30, 1997, pg.17.

²³⁶ Jane's Defense Weekly, October 1, 1990, pp. 744-746.

²³⁷ Associated Press, May 12, 1997, 0251.

²³⁸ Shuey, Lenhart, Snyder, Donnelley, Mielke, and Moteff, Missile Proliferation: Survey of Emerging Missile Forces, Washington, DC, Congressional Research Service, Report 88-642F, February 9, 1989, pp. 64-65.

²³⁹ The warhead could also be enhanced with submunitions, a proximity fuse to detonate before impact to give an optimum burst pattern and widen the area covered by shrapnel, and a time delay fuse to allow the warhead to fully penetrate a building before exploding. Shuey, Lenhart, Snyder, Donnelley, Mielke, and Moteff, Missile Proliferation: Survey of Emerging Missile Forces, Washington, DC, Congressional Research Service, Report 88-642F, February 9, 1989, pp. 23-24.

²⁴⁰ US experts have never monitored a test of the conventional version of the missile. CEP stands for circular error probable, and is an indication of a missile's accuracy. The figure represents the radius of a circle in which half the warheads are expected to fall. It should be noted, however, that the theoretical figures apply only to missiles that operate perfectly up to the point which the missile has left the launcher and at least its first booster and guidance system are operating perfectly. Operational CEPs can only be "guesstimated", but will be much lower. Missiles generally do not have fail-safe warheads. A substantial number will have partial failures and deliver their warhead far from their intended targets. Jane's Defense Weekly, October 1, 1990, pp. 744-746; Fred Donovan, "Mideast Missile Flexing", Arms Control Today, May, 1990, p. 31; Shuey, Lenhart, Snyder, Donnelley, Mielke, and Moteff, Missile Proliferation: Survey of Emerging Missile Forces, Washington, DC, Congressional Research Service, Report 88-642F, February 9, 1989.

²⁴¹ Jane's Defense Weekly, October 1, 1990, pp. 744-746, July 30, 1997, p. 17; Fred Donovan, "Mideast Missile Flexing", Arms Control Today, May, 1990, p. 31; Shuey, Lenhart, Snyder, Donnelley, Mielke, and Moteff, Missile Proliferation: Survey of Emerging Missile Forces, Washington, DC, Congressional Research Service, Report 88-642F, February 9, 1989.

²⁴² Defense News, October 17, 1994; Letter to Honorable Randal H. Brown, October 6, 1994 by 63 US senators.

²⁴³ Defense News, March 17, 1997, p. 3; Associated Press, May 12, 1997, 0251; Jane's Defense Weekly, July 30, 1997, p. 17.

²⁴⁴ Jane's Defense Weekly, June 16, 1999, pg.14.

²⁴⁵ Middle East Economic Digest, January 17, 1992, pp. 4-5, March 20, 1992, pp. 10-16.

²⁴⁶ ACDA, World Military Expenditures and Arms Transfers, 1995, p. 92.

²⁴⁷ Data are taken from working papers distributed during the Royal Institute of International Affairs conference on Saudi Arabia in October 4-5, 1993.

²⁴⁸ Reuters, May 6, 1999.

²⁴⁹ Stephen Dagget and Gary J. Pagliano, "Persian Gulf War: US Costs and Allied Financial Contributions," Congressional Research Service IB91019, September, 21, 1992, pp. 11-13.

²⁵⁰ Jane's Intelligence Review, November 1, 1994, p. 500.

²⁵¹ Dale Bruner, "US Military and Security Relations with the Southern Gulf States," Washington, NSSP, Georgetown University, May 8, 1995.

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²⁵² Defense Security Assistance Agency (DSAA), Foreign Military Sales, Foreign Military Construction Sales, and Military Assistance Facts As of September 30, 1993, Washington, DC, pp. 10-11; US Department of State, Congressional Presentation: Foreign Operations Fiscal Year 1996, p. 499.

²⁵³ At one point, the US seems to have considered a plan to preposition enough equipment for an entire Corps of three divisions and 150,000 men. New York Times, October 15, 1992, p. A-1.

²⁵⁴ It should be noted that the US already had 300 combat aircraft in Saudi Arabia and 150 on two carriers, and that Saudi Arabia objected to additional deployments, not to cooperation with the US New York Times, September 25, 1991, p. A-14, September 27, 1991, p. A-1, September 30, 1991, p. A-5.

²⁵⁵ Ibid.

²⁵⁶ See Jane's Defense Weekly, July 10, 1996, p. 10; USA Today, July 15, 1996, p. 7A; Baltimore Sun, July 15, 1996, p. 1A;

²⁵⁷ Middle East Economic Digest, September 19, 1997, p. 25.