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**Saudi Arabia Enters the 21st Century:
The Military and Internal Security Dimension**

IV. The Saudi Army

Final Review

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October 30, 2002

Introduction

This analysis is being 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 also examines 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.

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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IV. 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 only 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.¹ By the time the Air-Land 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.

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 spite of this expansion, the Saudi Army faces major challenges. It must deal with two major potential threats -- Iran and Iraq -- that both have far larger ground forces. Iraq poses a particularly serious challenge along a common border with few terrain features that aid the Saudi Army in defending the oil-rich areas along the Gulf coast. At the same time, the Saudi army still faces a potential threat from Yemen and must have some forces to cover its border with Jordan and Syria. This means a relatively small army must defend a territory roughly the size of the US east of the Mississippi, while there are limits to the extent the Saudi Army can concentrate its forces to meet a single threat.

Saudi Combat Unit Strength and Deployments

Saudi Army has compensated for its lack of force strength and experience in modern military operations by deploying forces in large military cities that can fully house and support its army combat units. This both allows them to deploy near possible fronts and minimizes the risk that some coup attempt might be launched near the capital, holy places, or key ports and oil facilities.

These factors explain why the Army has a base near Abha – half way between Jiddah and Jizan to cover the Yemeni border, plus King Abdul Aziz military city at Khamis Mushayt and 10 Mechanized Brigade and other combat elements at Shahrurah in the southeast. There are smaller garrisons at Najran and Jazan in the south and Dammam in the East. Another major army facility, called King Faisal Military City, is located near Tabuk in the West, which allows Saudi Arabia to cover any potential threat from Israel, Jordan, or Syria.

Saudi Arabia built a large base called King Khalid Military City near Hafr al Batin on the Iraqi and Kuwaiti borders during 1983-1987. This city houses some 65,000 military personnel and civilians. The Gulf Cooperation Council Peninsular Shield Force is located at this city, which is capable of housing and supporting three full Saudi army brigades. A fourth major base or military city has been under construction at Jizan, near the Western end of the Saudi-Yemeni border, since 1996. A naval port and air base are also under construction at Jizan.

These bases have eased many of the kingdom's deployment and logistical problems. They also have served the political purpose of keeping Saudi ground forces away from the kingdom's political centers of power. At the same time, they now place too many of the kingdom's ground forces in remote areas near the Yemeni border, and in Tabuk to deal with an Israeli ground threat that seems very unlikely to materialize. They also have encouraged a static, defensive mentality in the Saudi Army, which has been reinforced by a lack of meaningful emergency and cross-reinforcement exercises. In fact, until Khalid Bin Sultan became Assistant Minister of Defense in 2001, Saudi Arabia conducted little more than token set piece exercise activity—and then only with long periods of preparation and warning—between 1992 and 2002.

The Saudi Army is not yet capable of conducting division-sized operations. In 2002, the combat strength of the Saudi Army 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.² 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. The Army also has an Army Aviation Command, which was formed in 1986, and that operated Saudi Arabia's Bell 406 armed helicopters and AH-64s. There also were security garrisons at most major Saudi cities, including Dhahran, Jeddah, and Riyadh.

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

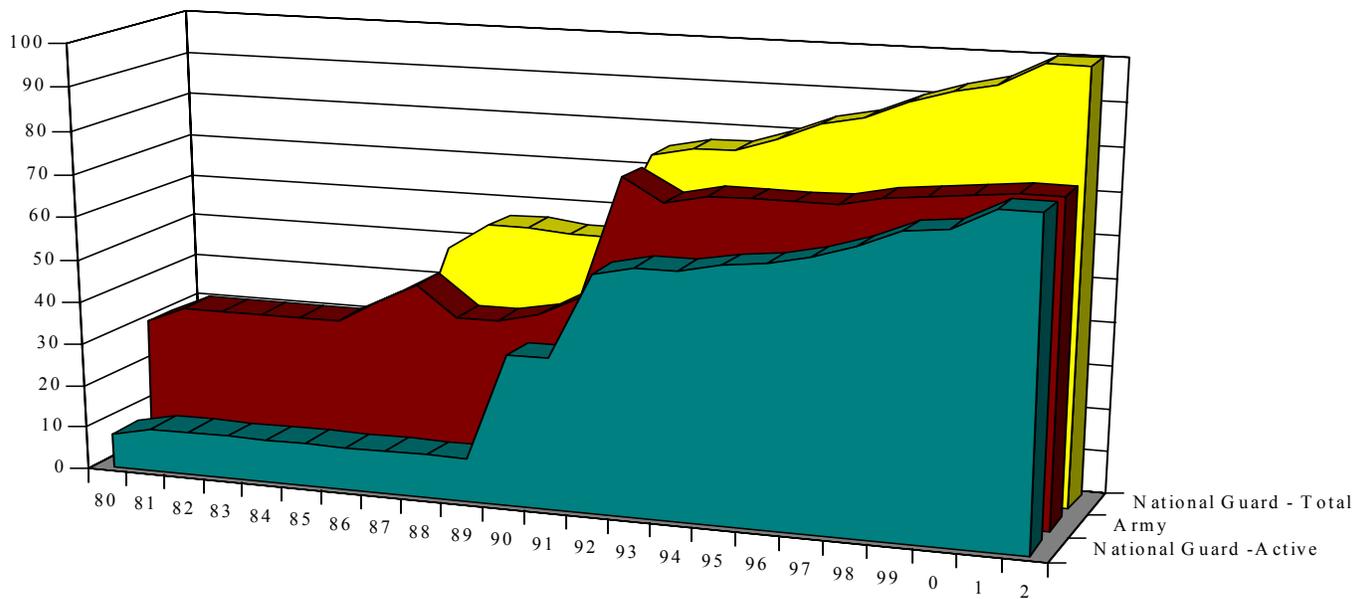
The trends in the build-up of the manpower in Saudi land forces are shown in Chart 4.1, and the comparative level of Saudi and other Gulf army manpower is shown in Chart 4.2. The Saudi Army has encountered growing problems in expanding to the force levels required to secure Saudi Arabia's northern borders, 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 2002, 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 of manpower is adequate to man about two US light division "slices," with only minimal manning for combat, combat support, and service support units. In the US Army, it could support a total force with a maximum of around 600 tanks and 1,000 other armored vehicles. In practice, however, the Saudi Army's manpower must be divided into force structure has an order of battle equivalent to around three heavy divisions, and with an equipment pool at least that size. This requires more manpower than Saudi Arabia has available.

Chart 4.1

Saudi Active Land Force Manning – 1980-2002

(1,000s of Personnel)



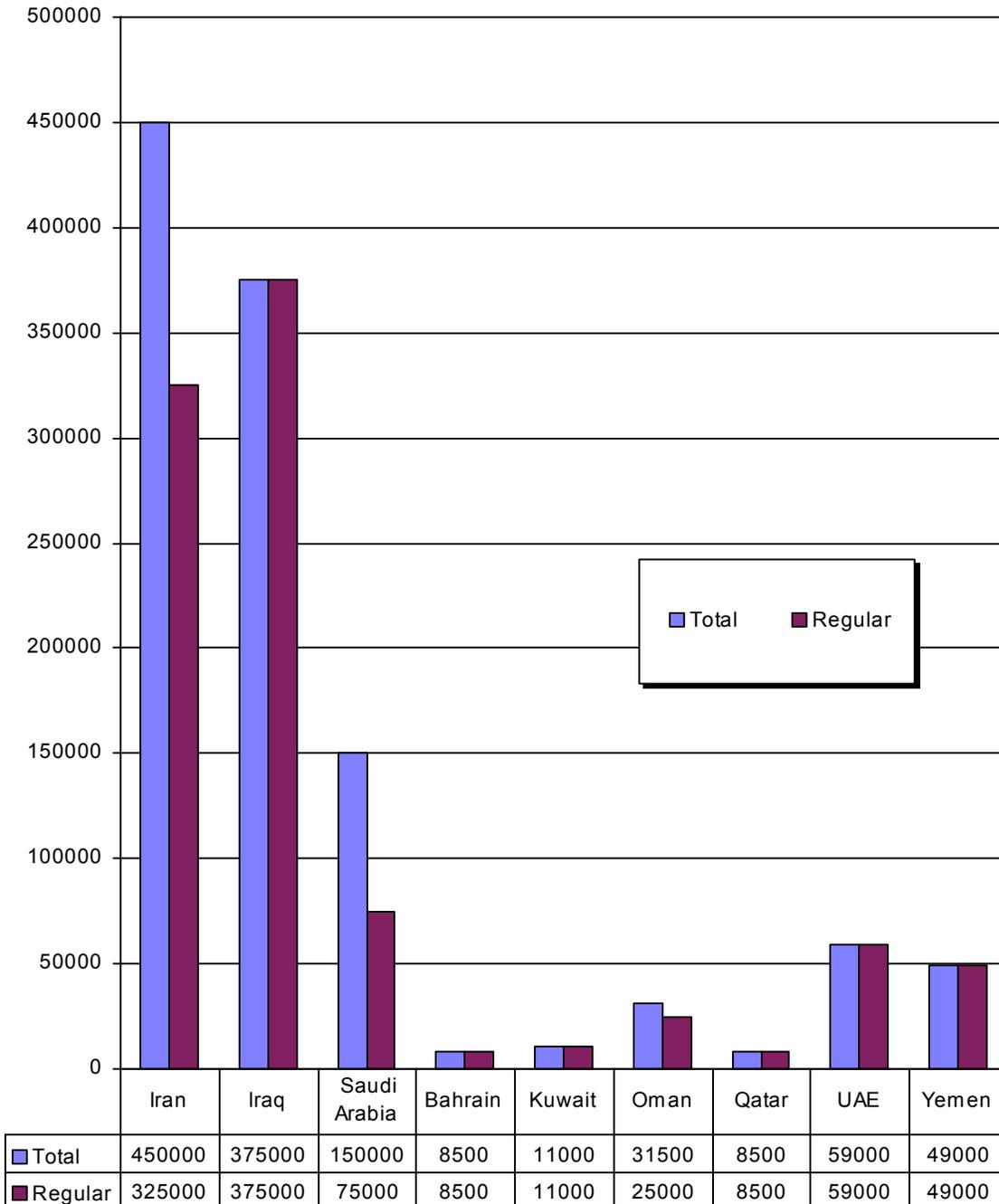
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	2
■ National Guard -Active	8	10	10	10	10	10	10	10	10	10	35	35	55	57	57	59	60	62	65	69	70	75	75
■ Army	31	35	35	35	35	35	40	45	38	38	40	45	73	68	70	70	70	70	72	73	74	75	75
■ National Guard - Total	20	30	25	25	25	25	25	50	56	56	55	55	75	77	77	80	84	86	90	93	95	100	100

Note: Statistical base differs somewhat from that used for Charts 3.2 and 3.3.

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.

Chart 4.2
Comparative Trends in Gulf Total Active Military Manpower: 1979-2002

(Total includes Iranian Revolutionary Guard, Saudi National Guard, and Omani Royal Guard)



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

Saudi Army Force Expansion

Saudi Arabia's manpower problems raise serious doubts about the ambitious force expansion plans that Saudi Arabia has discussed since the Gulf War, and which the Kingdom would need to implement to be able to defend against the Iraqi threat 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 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, although 90,000 men would normally only be enough to fully man and support a Western force of three two-brigade divisions.³

The Saudi Army was soon forced to adopt more modest goals, but even these goals still 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 called for the use of 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 would have had limited combat endurance and sustainability, and they required at least 130,000 men to provide a full mix of sustainability and support forces.

The Saudi Army faced serious problems.

- 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.
- The Saudi command structure had not progressed to the point where it could carry out the battle management for integrated combat operations at the divisional level.

- 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.
- Saudi Arabia did consider creating two to three additional light divisions and adding a mobilization or reserve component to its support forces.⁴ Such support forces would have limited manning in peacetime, but would use temporary duty civilians in their support forces in a major crisis. However, the Saudi Army failed to create such forces and lay the groundwork for a rapid build-up in a crisis.
- 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.

Although Prince Sultan continued to talk about expanding the Army to at least 90,000 men, long after the Gulf War, it became clear by the late 1990s that Saudi Arabia would have serious problems in funding the substantial additional purchases of equipment it would need to equip such a force at a time when funds were becoming increasingly tight. Any such expansion would require additional tanks, infantry fighting vehicles, self-propelled artillery and mobile air defense systems. Funding these items would also present potential conflicts with the priorities of both existing Army units and the different funding priorities of the Saudi the National Guard.

It is not surprising, therefore, that the Saudi Army has kept its brigade-oriented force structure, and its total forces still remain at under three division equivalents. It also is not surprising that this force structure has serious manpower quality, equipment maintenance and upgrade, sustainability, support, and training problems and needs substantially more well-trained actives. Stretching limited manpower, equipment, and support capabilities to create added combat units would serve little purpose. Many US advisors feel that the Saudi Army should focus on improving its existing force structure rather than force expansion, although some elements of the leadership of the Saudi Army would like to add two more light brigades.

One thing is clear: 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 and allies like the US and Britain. The Saudi Army will not be able 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 have been compounded by need to absorb the massive equipment build-up that took place before and after the Gulf War. The scale of this build-up is shown in Chart 4.3. 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 Chart shows that build-up through the mid-1990s was extremely large and rapid.

Saudi Army equipment problems are more than a matter of numbers. The 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.

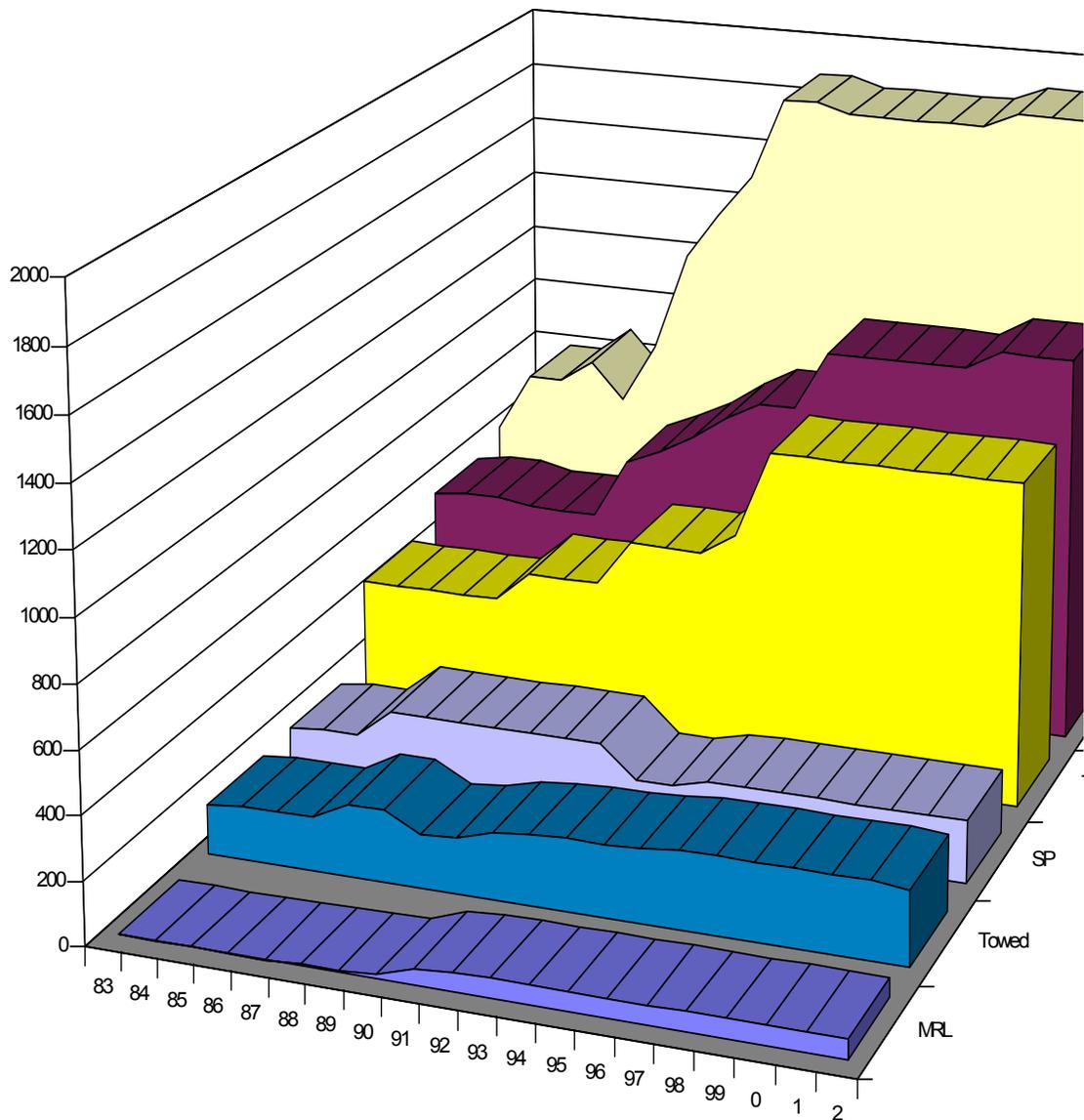
Saudi Arabia's unique weather, terrain, and desert warfare conditions also create special demands in terms of support and sustainability. Much of the equipment the Saudi Army has

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 uniformed Saudi combat support and service support capabilities that can deploy and fight in the field, and the Saudi Army's standardization and interoperability problems are compounded by the need to support equipment in remote and widely dispersed locations. The Saudi Army has tried to reduce such problems by creating an advanced logistic system, but some experts feel this effort has been overly ambitious and has lacked proper Saudi and US advisory management.

Chart 4.3

The Growth in Saudi Army Weapons Strength - 1979-2002



	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	
MRL	0	0	0	0	0	6	6	12	50	60	60	60	60	60	60	60	60	60	60	60	60
Towed	160	171	171	171	230	230	168	180	210	224	230	230	238	248	248	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	200	200
Tanks	450	450	450	450	450	550	550	550	700	700	696	770	1055	1055	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	1205	1205	1205	1205

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.

Saudi Tanks

Saudi Arabia has made a massive investment in armor. The growth of Saudi armored strength is shown in Chart 4.5, and the trends shown in this chart reflect a steady increase in total inventory, and one that has been too rapid for Saudi Arabia to properly crew or support. The Saudi Army 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 4.4. 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 2002, Saudi Arabia had a total 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 AMX-30

Saudi Arabia's inventory of 290 French AMX-30s is concentrated in the Khamis Mushayt area, and is the Achilles heel of its tank force. 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.

In practice, most Saudi AMX-30 tanks never had more than token exercise use during any point in their life cycle, and some have only 30-50 miles of total travel. Nearly 50% of Saudi

Arabia's 290 AMX-30s are now in storage, but Saudi Arabia is unlikely to fully phase the AMX-30 out of its forces in the immediate future. 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-60A3

Charts 4.5 through 4.8 show comparative armor and tank strength in the Gulf region. Iranian and Iraqi threat is impressive—at least in terms of the total numbers—and the Saudi Army's 450 M-60A3s and 315 M-1A2s are the only part of its tank force that really meet Saudi needs. 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 has 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 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.⁵

The M-1A2 Upgrade Program

The M-1A2 is currently the most advanced tank in Saudi inventory. 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 1989.⁶ (One US experts indicates that a total of 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:⁷

- 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 of its M-1A2s in service, and US advisors report that they have a 95% operational readiness rate. It is using advanced systems like MILES to train its tank crews, 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. Unfortunately, Saudi Arabia concentrates its M-1A2s at Tabuk, to deal with a low probability, Israeli invasion, and Saudi tank units have little long-range deployment and sustainment capability, and no effective combined arms support.

Supporting the M-1A2 with Additional Armor and Equipment

The Saudi Army's purchase of the M-1A2 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.⁸ It involved substantial offset programs, including the manufacture of radios, circuit boards, and wiring assemblies for the tank.⁹

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.¹⁰

Saudi Arabia also learned an important lesson from Iraq's experience during the Iran-Iraq War, and the movement of armor during the Gulf War. It bought some 300 heavy equipment transporters (HETs), and can now move more than a brigade set of heavy tanks rapidly using tractor trailers. The Saudi Army has practiced at least one such more by deploying a brigade out of Tabuk.

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

The Saudi Army has never been able to make effective use of the AMX-30 and needed to replace its AMX-30s for more than a decade. 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, and 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 first 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.¹¹

As a result, Saudi Arabia is still debating more than a decade after the Gulf War (a) exactly how many new tanks it will buy to reduce its dependence on the US, (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.¹² 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.¹³ Since that time, however, the Kingdom has been under serious sustained financial pressure, and there have been no indication of major purchase plans.¹⁴

Saudi tank purchases may continue to be delayed because of their cost, because of the problems in absorbing and manning and large additional number of modern tanks, and because of tensions with the US over the Second Intifada and “9/11.” In fact, some senior Saudi Army officers see no need for additional tanks in the near future, and would rather use any 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 and intense political lobbying efforts by various suppliers and supplier countries.

A number of Saudi officers have 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-30.¹⁵ 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.¹⁶ 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.¹⁷

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 3,000 km of endurance tests.¹⁸ 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. A Challenger Armored Repair and Recovery vehicle also accompanied the Desert Challenger. 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 was 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.¹⁹

The Problems in Buying Several Types of Main Battle Tank

Saudi financial and budget deficit problems have delayed any major procurement decisions, but this competition continues. For example, high Saudi oil revenues in 2000 again led the MODA to consider tank buys, although the drop in revenues in 2001 may again have pushed such decisions several years into the future.

This ongoing competition between the M-1A2, Le Clerc, and Desert Challenger involves more than financial issues. It creates a serious risk that the Saudi Army could eventually end up being equipped with two very different types of advanced main battle tanks -- each with significantly different training, support, maintenance and tactical requirements. The US M-1A2 tank may 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 US equipment.

There also is no question that the US Army is the only Western force that can provide major armored reinforcements to the Saudi Army. 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.

Limiting Main Battle Tank Buys and Numbers, as Well as Those of other Army Equipment, and Relying on Force Effectiveness, Coalition Warfare, and the Air-Land Battle

One option would be to avoid another major tank buy indefinitely the Saudi Army. It already has a total of 765 M-60A3s and M-1A2s in inventory. This is enough for three mechanized divisions and a limited additional buy of 100-150 additional M-1s would give Saudi Arabia enough high performance tanks to equip two full divisions and still allow it to use the remaining M-60A3s to fully equip the rest of its forces.

Saudi Arabia does not have to size its land forces against Iran because Iran has no “landbridge” to deploy against Saudi Arabia without moving through a hostile Iraq, and Iran only has limited amphibious lift. Staying with a force of roughly 800-900 US-supplied tanks would give the Saudi Army the equivalent of three heavy armored divisions or four light divisions worth of tanks that are considerably more advanced than those in Iraqi inventory. Slowly expanding the holdings of its 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 2,200-odd tanks in Iraqi forces, Iraqi tank numbers do not reflect Iraqi tank quality. 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.

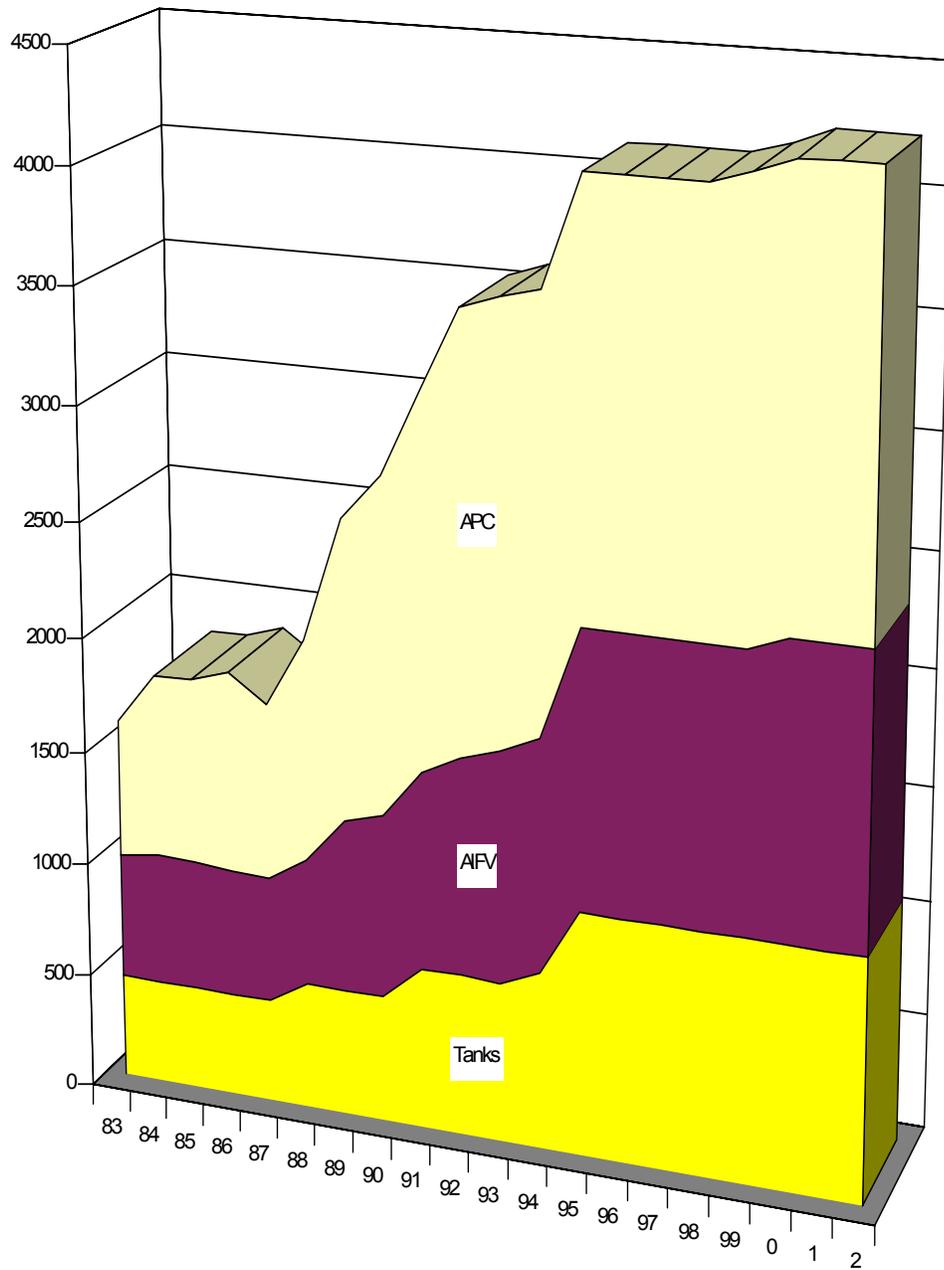
Furthermore, the fact the US has prepositioned armored brigade sets in Kuwait and Qatar, as well as additional unit sets at sea, makes the issue of parity largely moot. Saudi Arabia should not rely on US reinforcement to the point of failing to fund its own defense. At the same time, a combination of US air and land power does allow the Kingdom to concentrate on making its

forces effective rather than simply large. This allows it to down-size its near and mid-term tank and other arms purchases with considerable safety and to concentrate on improving manpower and sustainability. The Kingdom also has the option of developing a more integrated coalition with Kuwait and Bahrain that has detailed contingency plans for US, British, and other Southern Gulf country reinforcements. This coalition warfare approach not only would strengthen the land defense of the Kingdom, it would allow the Kingdom to solve many of its future arms buy and Army force expansion plans.

Saudi Arabia also has an additional option. It can count on US and British air reinforcements that can deploy far more quickly than US and British land forces. It also now has large numbers of modern F-15s that can make very effective use of air-to-surface guided missiles and laser and GPS guided-bombs. It is developing the cadre of an effective attack helicopter force that offers far more range and deployment speed than armor. If Saudi Arabia was to shift toward planning to fight effective joint warfare – rather than leave its army, air force, and National Guard as largely independent services – it could plan on fighting the kind of air-land battle that Iraq and Iran are both now totally unequipped to fight. Heavy armor is not obsolete, but there is no reason that the Kingdom has to rely on the force mixes that were appropriate at the time of the Gulf War. Improvements in offensive air power – and the lack of Iranian and Iraqi air modernization – give the Kingdom an alternative with proven combat effectiveness.

Chart 4.4

The Growth in Saudi Armored Weapons Strength - 1979-2002



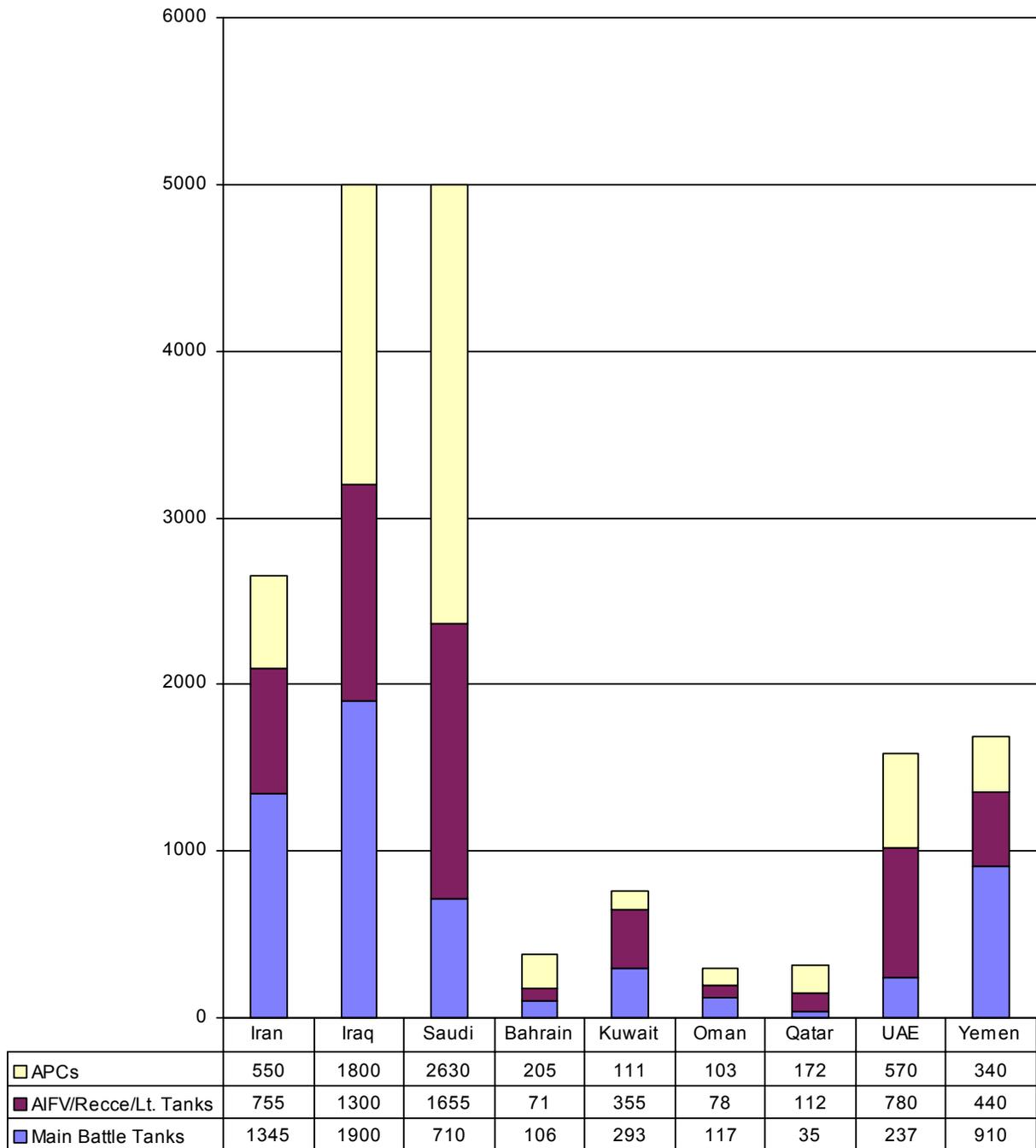
	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02
APC	600	800	800	880	760	960	1300	1450	1600	1880	1880	1850	1850	1850	1850	1850	1900	1900	1900	1900
AIFV	550	570	570	550	550	550	750	800	860	940	1005	1005	1205	1205	1205	1205	1205	1205	1205	1205
Tanks	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450

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.

Chart 4.5

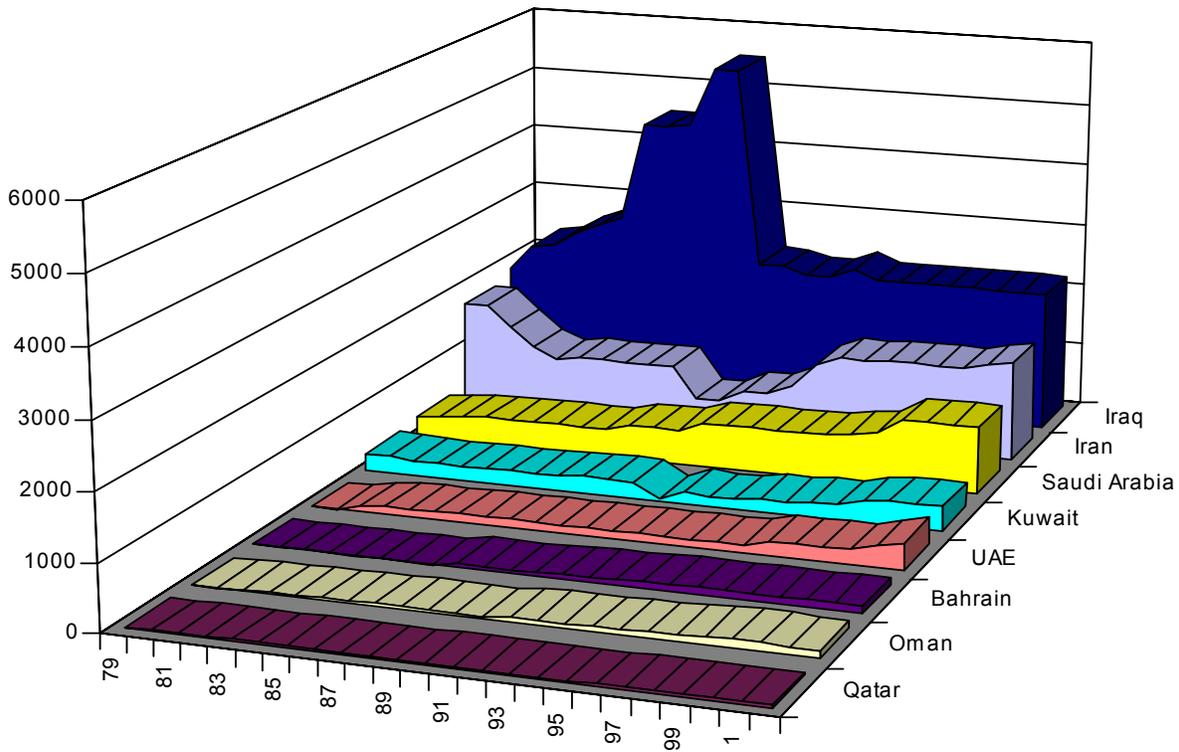
Total Gulf Operational Armored Fighting Vehicle Strength in 2002



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

Chart 4.6

Trends in Total Gulf Main Battle Tank Inventory: 1979-2002

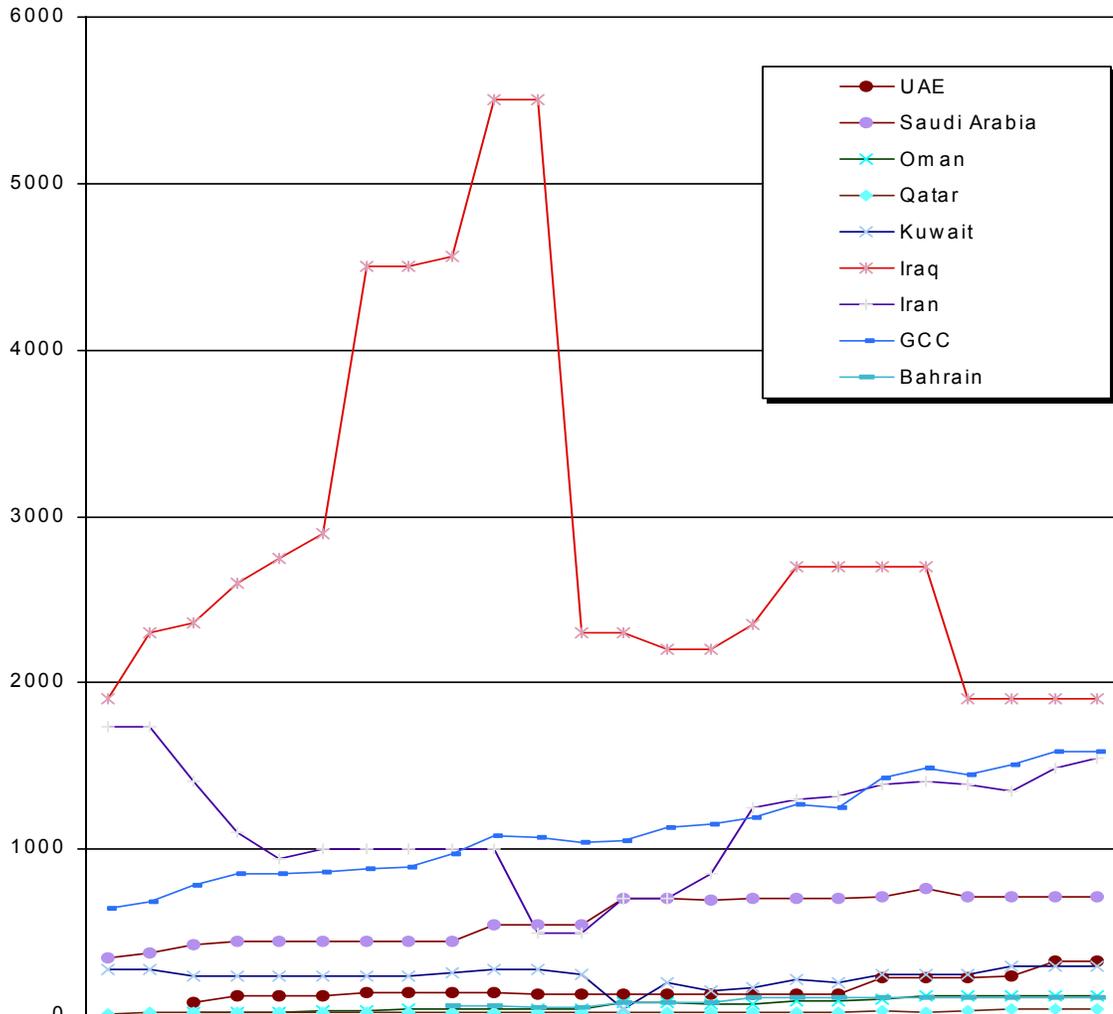


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	2
■ Qatar	12	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	34	34	44	35	35
■ Oman			18	18	18	26	33	39	39	39	39	39	82	78	73	73	91	91	97	117	141	141	117	117
■ Bahrain									60	60	54	54	81	81	81	106	106	106	106	106	106	106	106	106
■ UAE			75	118	118	118	136	136	136	136	131	131	131	131	125	125	133	133	231	231	231	237	335	411
■ Kuwait	280	280	240	240	240	240	240	240	260	275	275	245	36	200	150	164	220	198	249	249	341	385	385	385
■ Saudi Arabia	350	380	430	450	450	450	450	450	450	550	550	550	700	700	696	700	700	700	765	810	105	105	105	105
■ Iran	173	173	141	110	940	100	100	100	100	100	500	500	700	700	850	124	139	139	141	141	141	141	149	156
■ Iraq	190	230	236	260	275	290	450	450	456	550	550	230	230	220	220	235	220	220	220	220	220	220	220	220

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

Chart 4.7

Total Operational Main Battle Tanks in All Gulf Forces 1979 to 2002

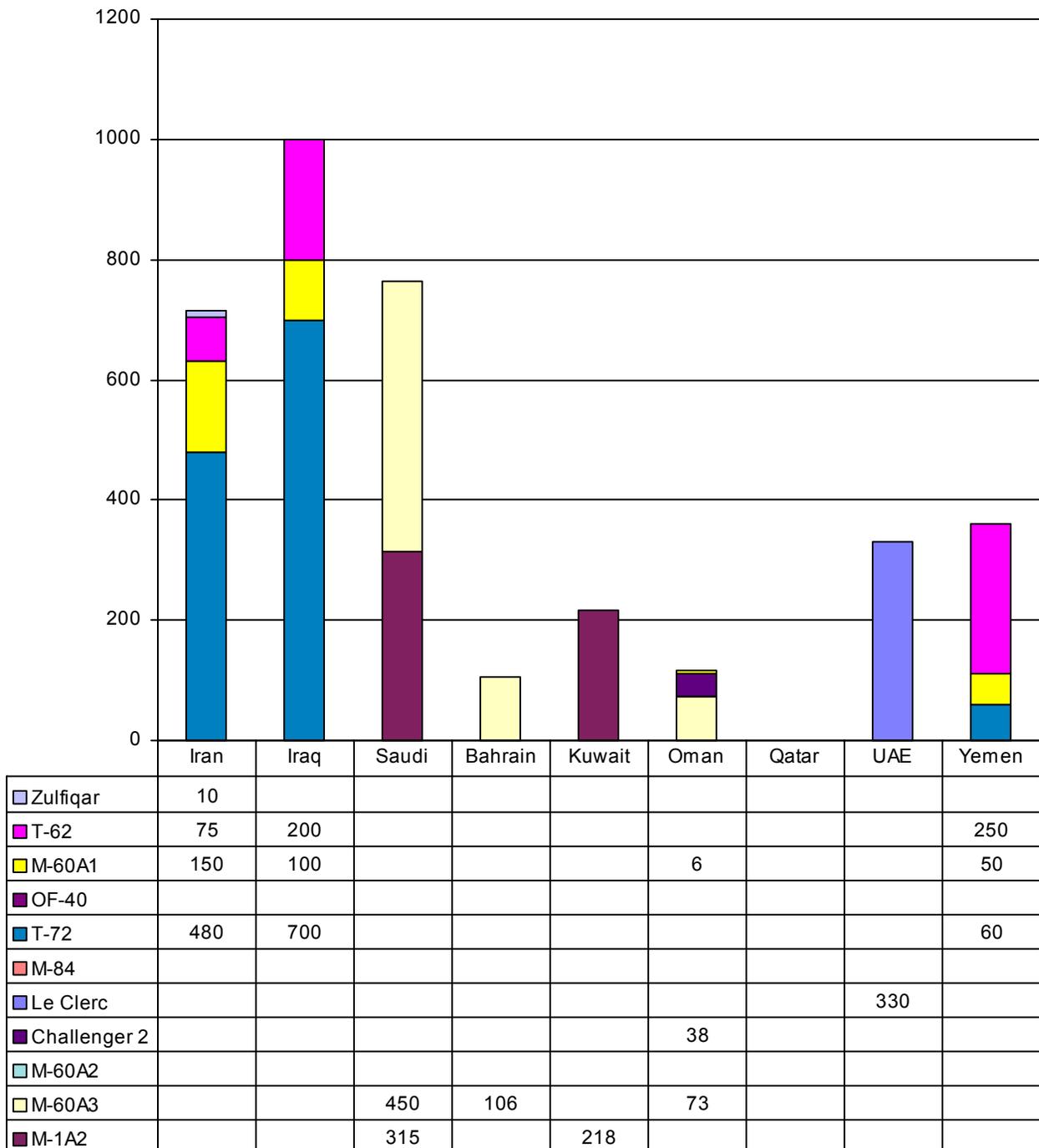


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	2	
● UAE			75	118	118	118	136	136	136	136	131	131	131	131	125	125	133	133	231	231	231	237	330	330	
● Saudi Arabia	350	380	430	450	450	450	450	450	450	550	550	550	700	700	696	700	700	700	710	760	710	710	710	710	710
✕ Oman			18	18	18	26	33	39	39	39	39	39	82	78	73	73	91	91	97	117	117	117	117	117	117
● Qatar	12	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	34	24	34	35	35	35	35
✕ Kuwait	280	280	240	240	240	240	240	240	260	275	275	245	36	200	150	164	220	198	247	249	249	293	293	293	293
✕ Iraq	190	230	236	260	275	290	450	450	456	550	550	230	230	220	220	235	270	270	270	270	190	190	190	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	149	154	154

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

Chart 4.8

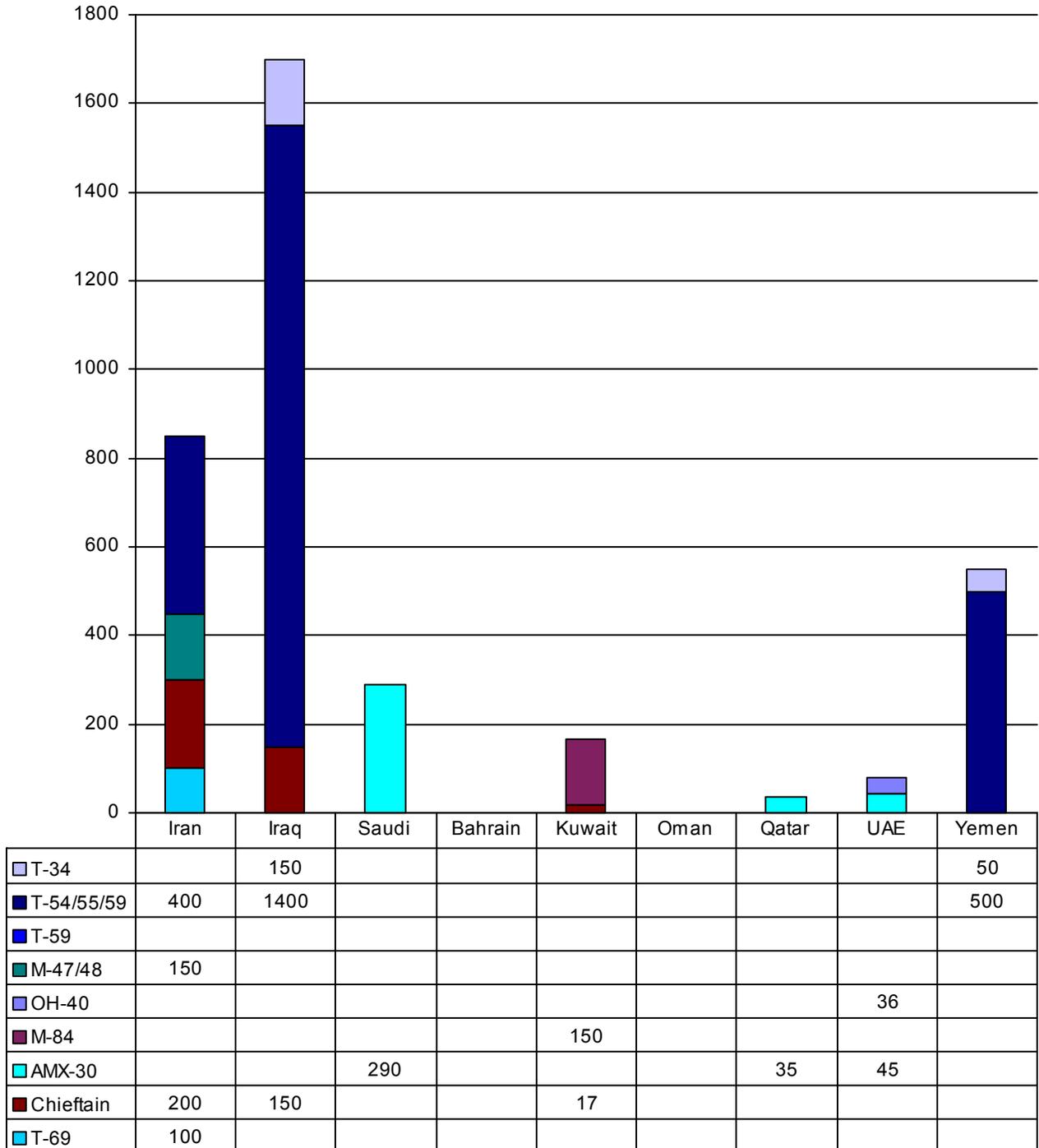
Medium to High Quality Main Battle Tanks By Type in 2002



Source: Adapted by Anthony H. Cordesman from the IISS, Military Balance, Periscope, Jane's Sentinel, and Jane's Defense Weekly.

Chart 4.9

Holdings of Low Quality Main Battle Tanks By Type in 2002



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

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 (300 reconnaissance, 970 armored infantry fighting vehicles, and 1,900 armored personnel carriers), and has a ratio of about 27 actives per other armored vehicle. In contrast, Iran has 1,455 other armored vehicles for 325,000 actives (450,000 if the Revolutionary Guards are included), and Iraq has about 2,700 for 375,000 men. These comparisons are shown in more detail in Charts 4.10 to 4.13. The Saudi Army also has large numbers of French and US-made armored recovery vehicles, armored bridging units, and large numbers of special purpose armored vehicles.²⁰

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 early 2002, however, the Saudi Army's holdings of armored infantry fighting and command vehicles seem to have included 400 M-2A2 Bradleys, 150 M-577A1s, and 570 AMX-10Ps, It had 300-330 AML-60, AML-90, and AML-245 reconnaissance vehicles, of which roughly 235 remained in active service.

The Saudi Army had 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, but only 150 Panhard M-3s, however, remained in active service

It is obvious from these totals that the Saudi Army's holdings of OAFVs include enough US-supplied equipment to provide reasonable levels of standardization for all of the Saudi army's full-time active manpower, as well as a high degree of interoperability with US forces. At the same time, the Saudi Army's total inventory of such weapons includes far too many types of weapons that have been bought from far too many suppliers over the years and presents serious problems in operability, standardization and modernization. Many types are highly specialized and difficult to properly integrate into Saudi forces in small numbers. Some purchases are also

the result of political efforts to give foreign suppliers a share of the Saudi market, regardless of military need.

The end result is that the Saudi Army has so many different types of other armored vehicles that many are no longer in active service – or even useful as spare parts – and even the equipment which is active is still so diverse that it presents training, maintenance, logistic, maneuver, and readiness problems.

The 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.²¹

The Bradley is particularly important because it is the only armored fighting vehicle in Saudi Army inventory with the combination of speed, protection, and firepower necessary to support the M-1A2 in battle. 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-2A2.²²

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.²³ 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, is 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 had 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.²⁴ 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 Abdullah 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.²⁵

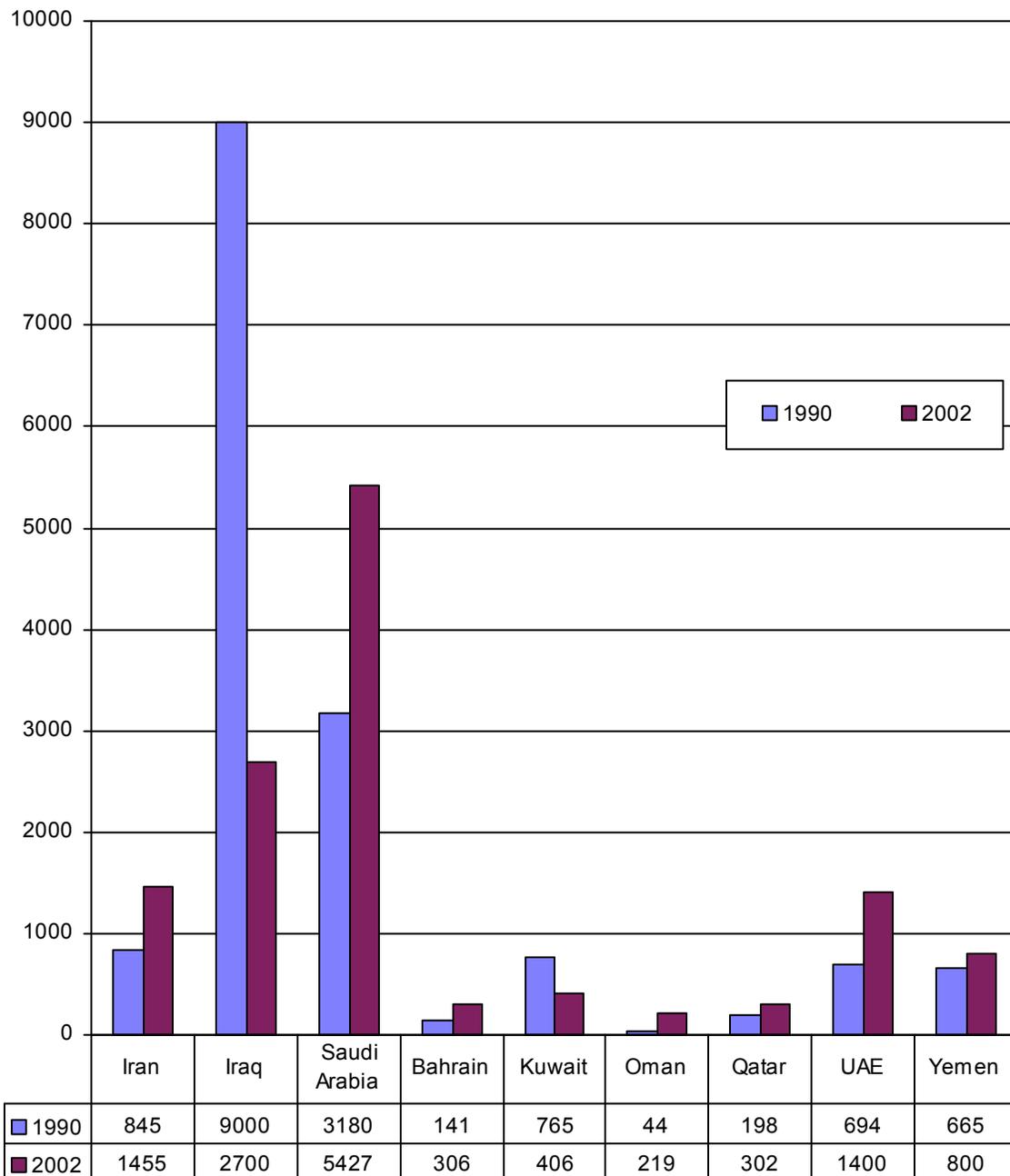
Once again, the Saudi Army needs to give more attention to standardization, interoperability, and ease of training, as well as to stressing force effectiveness over force size,

and putting more reliance on coalition warfare and the air-land battle. As in all other areas of Saudi Army equipment, the key priority is not more or better equipment, it rather is to “train, maintain, and sustain” the force in ways that make its existing holdings combat effective. It is to organize for effective combined arms warfare at the brigade level and for effective joint warfare with both the Saudi Air Force and coalition forces.

If it does buy more OAFVs, it needs to emphasize speed and firepower over numbers. 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 “Fastest with the mostest!” is far more important than any of the technical differences between various types of other armored vehicles.

Chart 4.10

Total Operational Other Armored Fighting Vehicles (Lt. Tanks, Scout, AIFVs, APCs, Reconnaissance Vehicles) in Gulf Forces: 1990-2002



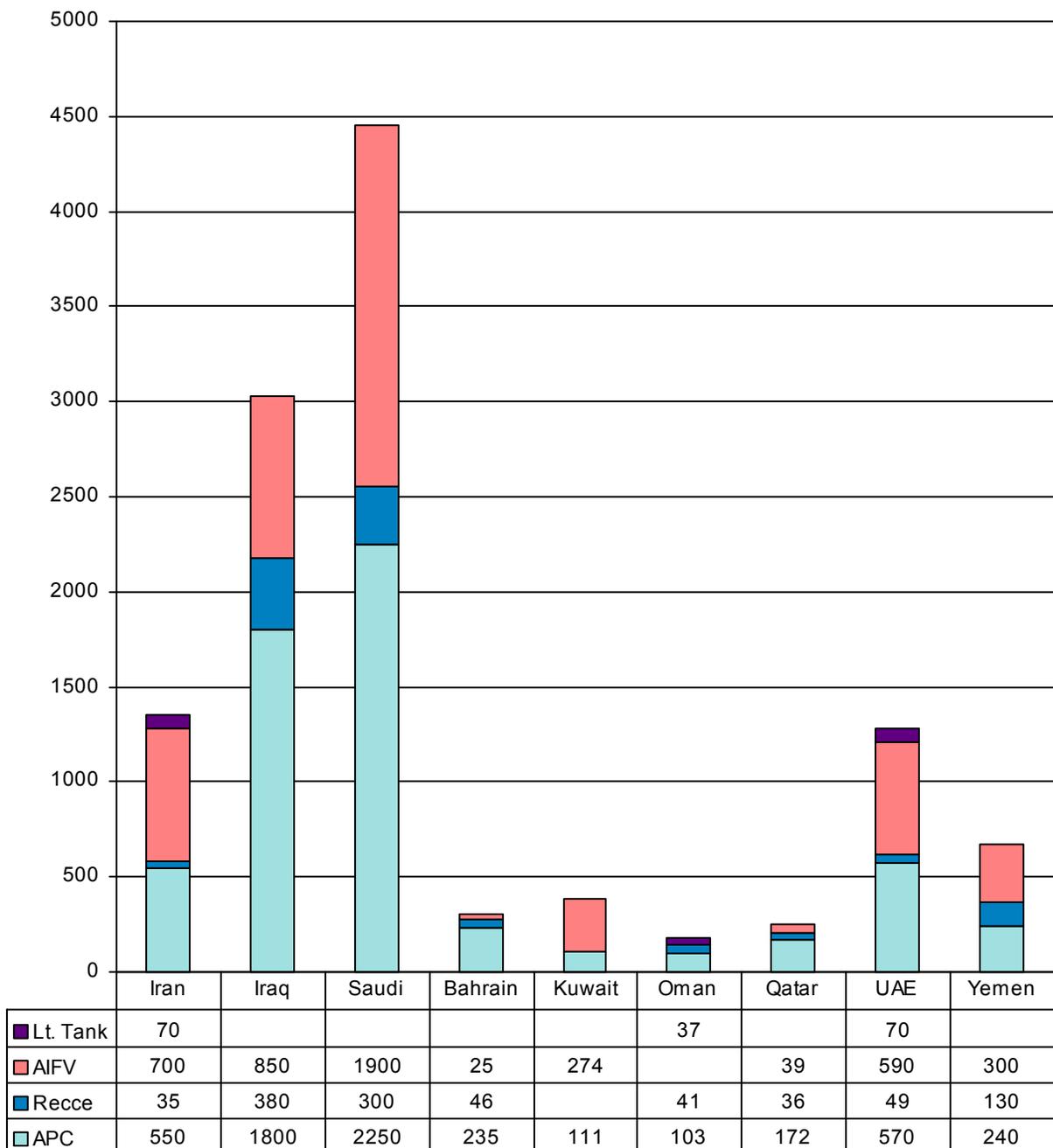
Note: Iran includes active forces in the Revolutionary Guards. Saudi Arabia includes active National Guard.

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

Chart 4.11

Gulf Active Other Armored Fighting Vehicles (OAFVs) by Major Category – 2002

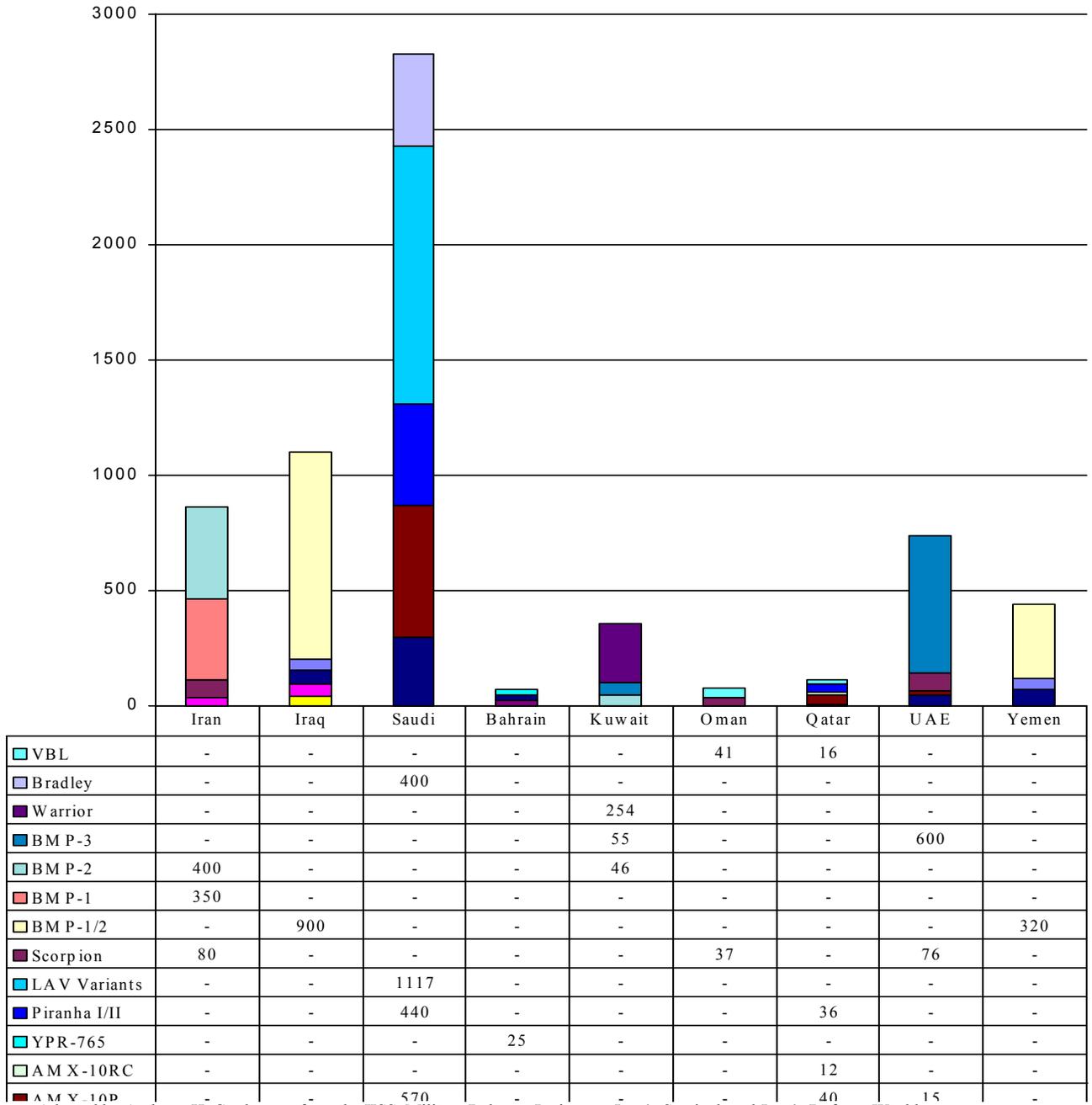
(Includes National Guard, Revolutionary Guards, and Royal Guards)



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

Chart 4.12

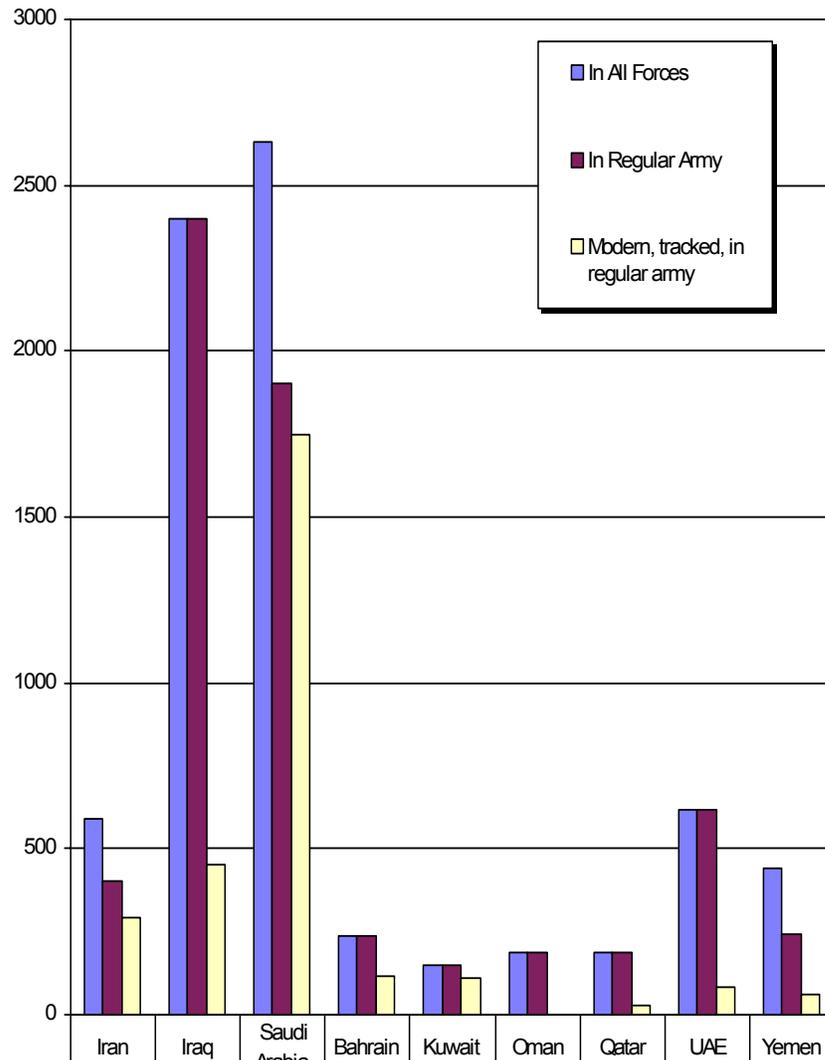
Advanced Armored Infantry Fighting Vehicles, Reconnaissance Vehicles, Scout Vehicles and Light Tanks by Type in 2002



Source: Adapted by Anthony H. Cordesman from the IISS, *Military Balance*, *Periscope*, *Jane's Sentinel*, and *Jane's Defense Weekly*.

Chart 4.13

Armored Personnel Carriers (APCs) in Gulf Armies – 2002



In All Forces	590	2400	2630	235	151	189	190	620	440
In Regular Army	400	2400	1900	235	151	189	190	620	240
Modern, tracked, in regular army	290	450	1750	115	111	0	30	80	60

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

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

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 a total of some 950 TOW launchers with some 200 TOW launchers mounted on VCC-1 armored fighting vehicles, and an additional 300 mounted on M-113A1s or other US supplied armored vehicles. It had 100 HOT launchers and 90 HOT launchers mounted on AMX-10P armored fighting vehicles.

The Army also had large numbers of TOW crew-portable and roughly 1,000 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 75mm, 84mm, 90mm (100) and 106mm (300) 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, 150 more TOW-2A missile launchers with night vision sights and support equipment on September 27, 1990, and still more TOW-2A missiles in the later 1990s.²⁶ 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 TOW-2A missiles can kill T-72A, T-72M1, T-80 and other modern tanks. However, there are limitations to Saudi capabilities. The Dragon and HOT missile inventory is becoming obsolescent. 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 4.14, and its total artillery strength and artillery quality is compared to that of other Gulf States in Charts 4.15 to 4.19. In 2002, Saudi Arabia had a total

inventory of roughly 568 active major artillery weapons. This compares with 3,284 weapons for Iran and 2,250 for Iraq.

In 2002, the Saudi Army inventory included 60-70 Astros II multiple rocket launchers, and 110-120 M-109A1/A2 and 90 GCT 155 mm self-propelled howitzers.²⁷ The Army had 24 Model 56 and 90-100 M-101/M-102 105mm towed howitzers, and 40 FH-70 105mm towed howitzers, in storage. It had 40 M-198 and 50 M-114 155mm towed howitzers in service and 5-10 M-115 203mm towed howitzers and some other older towed weapons in storage. Its total mortar strength included over 400 120 mm and 4.2" weapons, over 1,000 81mm weapons, and large numbers of light 60mm weapons. It had 70 81mm, and 150 M-30 4.2" mortars on M-106 and M-125A1 armored vehicles, and roughly 200 81mm-120mm towed mortars.²⁸

Many Saudi artillery units are, however, what one senior officer terms, "25 years behind the training and effectiveness levels of what is needed." They 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 lacks 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 counter battery radars and fire control systems to rapidly mass and shift fires.²⁹

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 left 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 limited-to-moderate ability to use artillery in maneuver and combine arms warfare, to target effectively in counter-battery fire or at targets beyond visual range, and to shift and concentrate fires. Unless the Kingdom takes combined arms and maneuver warfare far more seriously in the future than it has to date, Saudi artillery units will

continue to seriously degrade the overall war fighting and defense capabilities of Saudi land forces.

Saudi Arabia 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.³⁰ The MLRS proved to be too expensive, however, and the Saudi Army has delayed any purchase of the MLRS indefinitely.

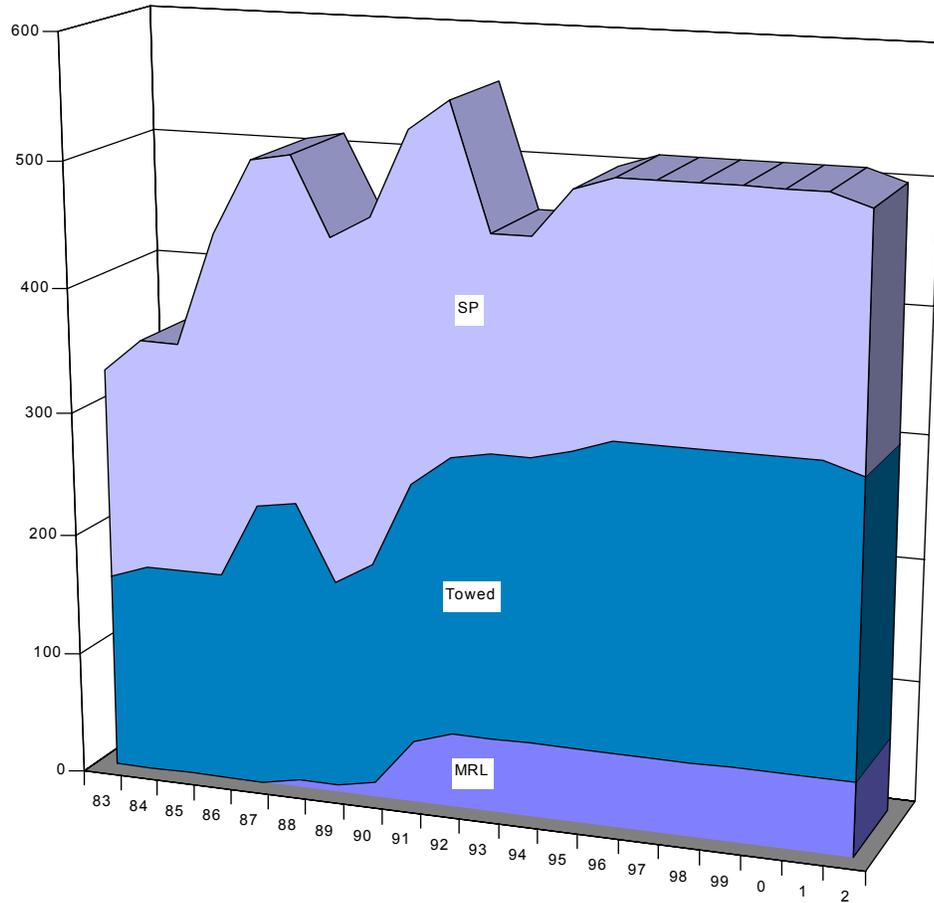
As a result, Saudi Arabia is now considering additional buys of self-propelled artillery weapons. Possible candidates include the South African G-6, the US M-109A6, the British AS-90, and the French GCT. These are all excellent artillery weapons, although non-US buys might present some minor standardization 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.³¹ 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 a result, it might end in creating new financial problems that slow down the purchase of higher priority systems like the MLRS.

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 4.14

The Growth in Saudi Artillery Weapons Strength - 1979-2002



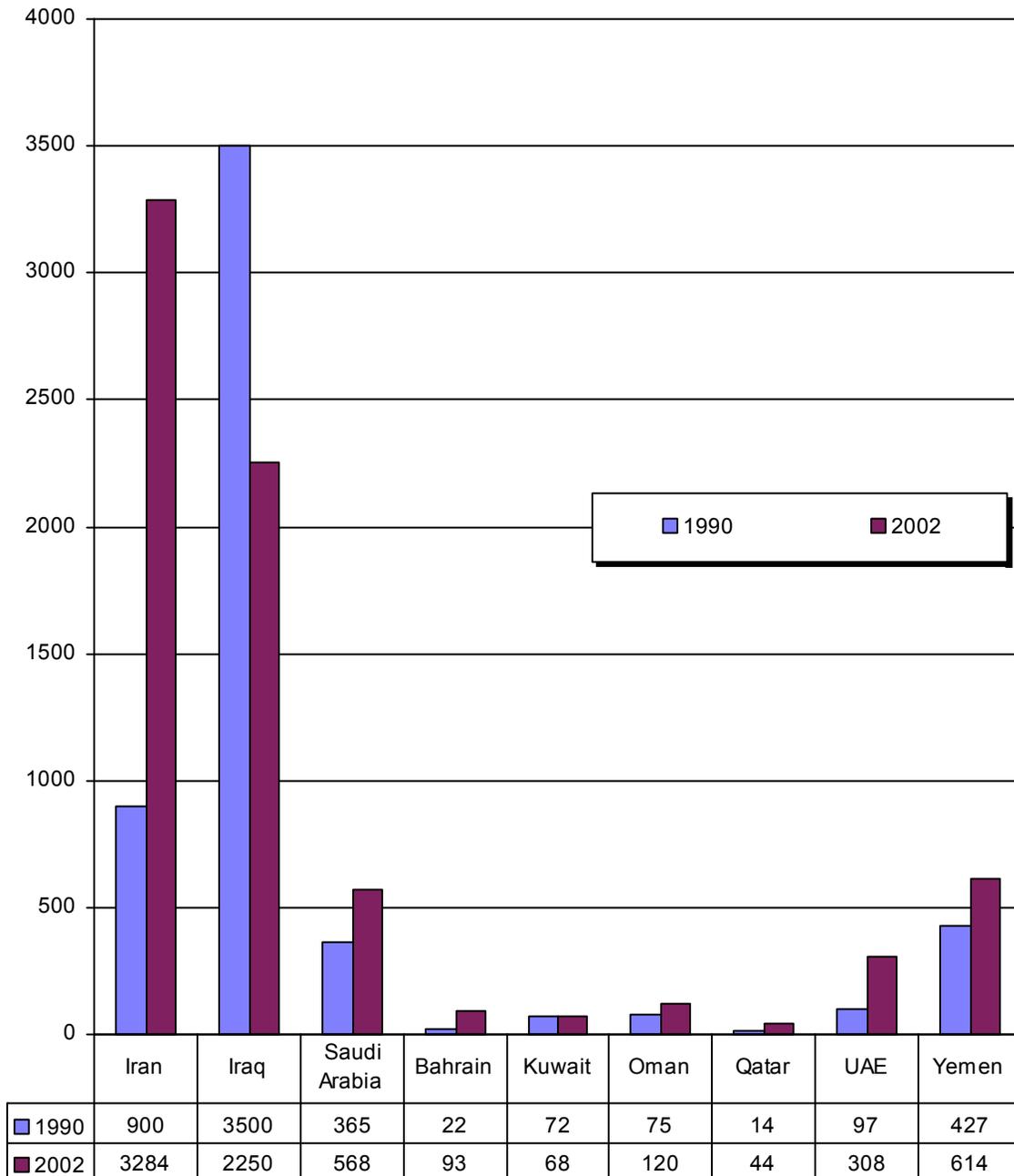
	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	2000	2001	2002
SP	170	185	185	275	275	275	275	275	275	275	170	170	200	200	200	200	200	200	200	200
Towed	160	171	171	171	230	230	168	180	210	224	230	230	238	248	248	248	248	248	248	248
MRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source:

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

Chart 4.15

Total Operational Self-Propelled and Towed Tube Artillery and Multiple Rocket Launchers in Gulf Forces 1990-2002

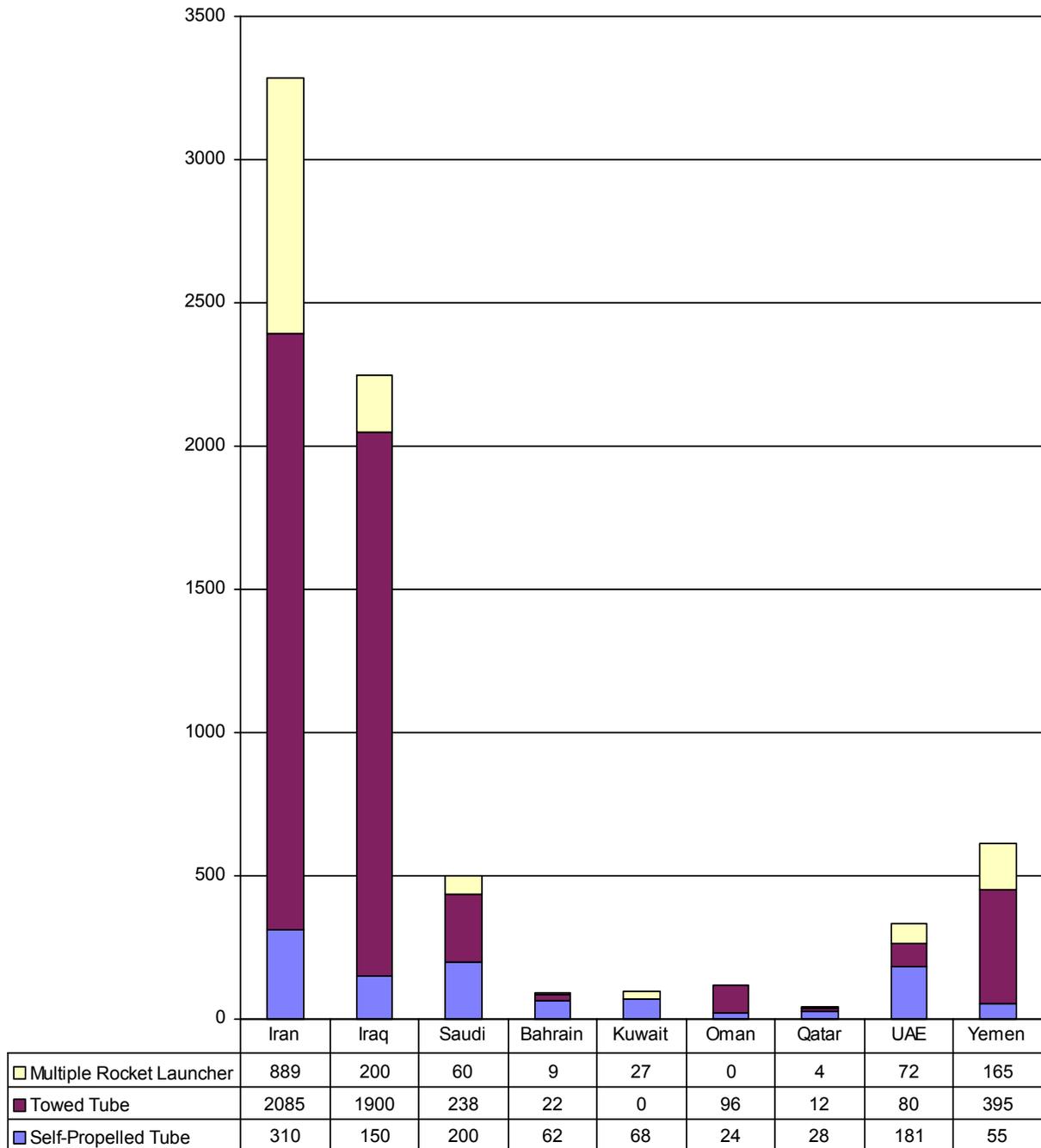


Note: Iran includes active forces in the Revolutionary Guards. Saudi Arabia includes active National Guard.

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

Chart 4.16

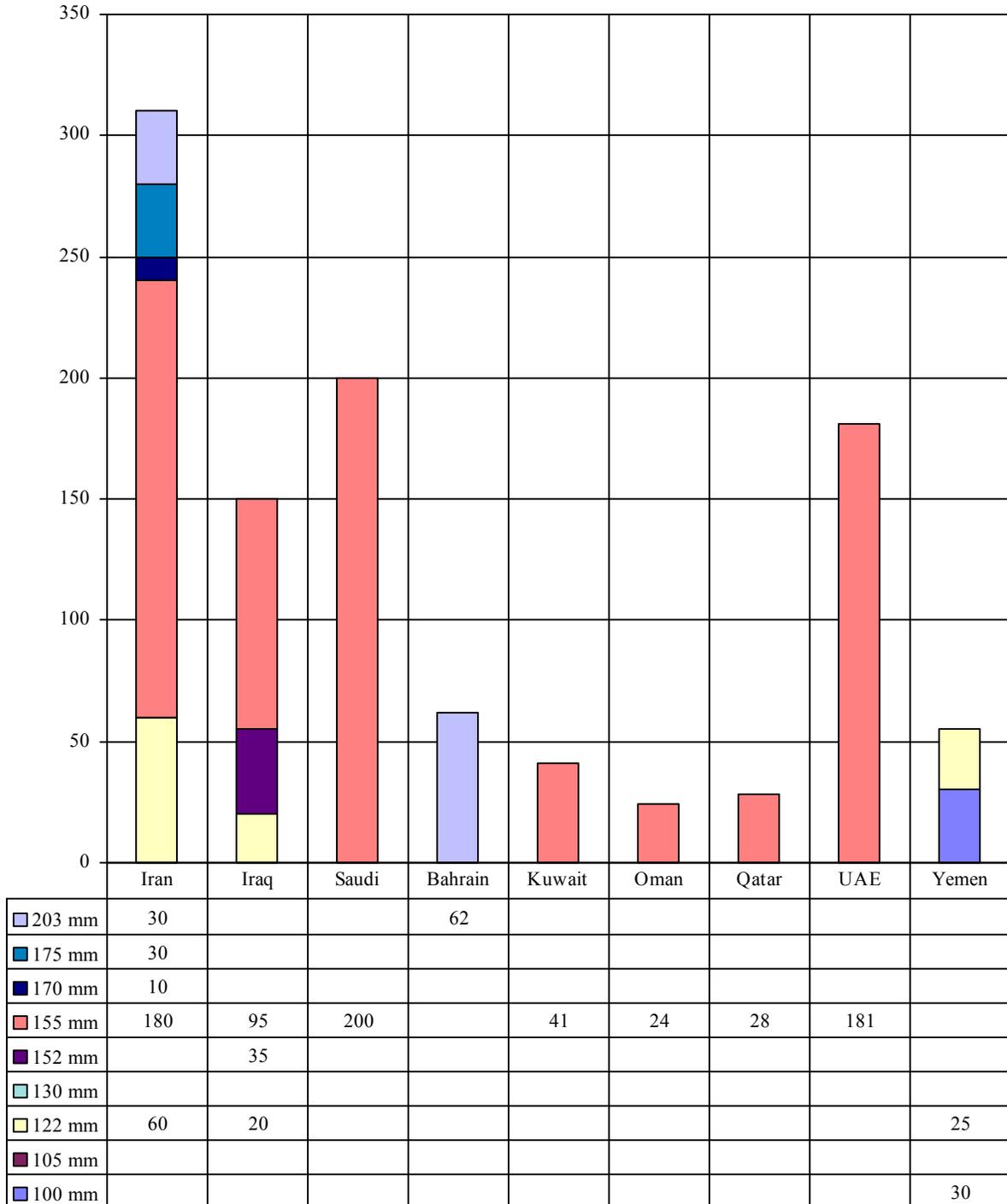
Total Gulf Self-Propelled, Toward and Multiple Launcher Gulf Artillery By Category - 2002



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

Chart 4.17

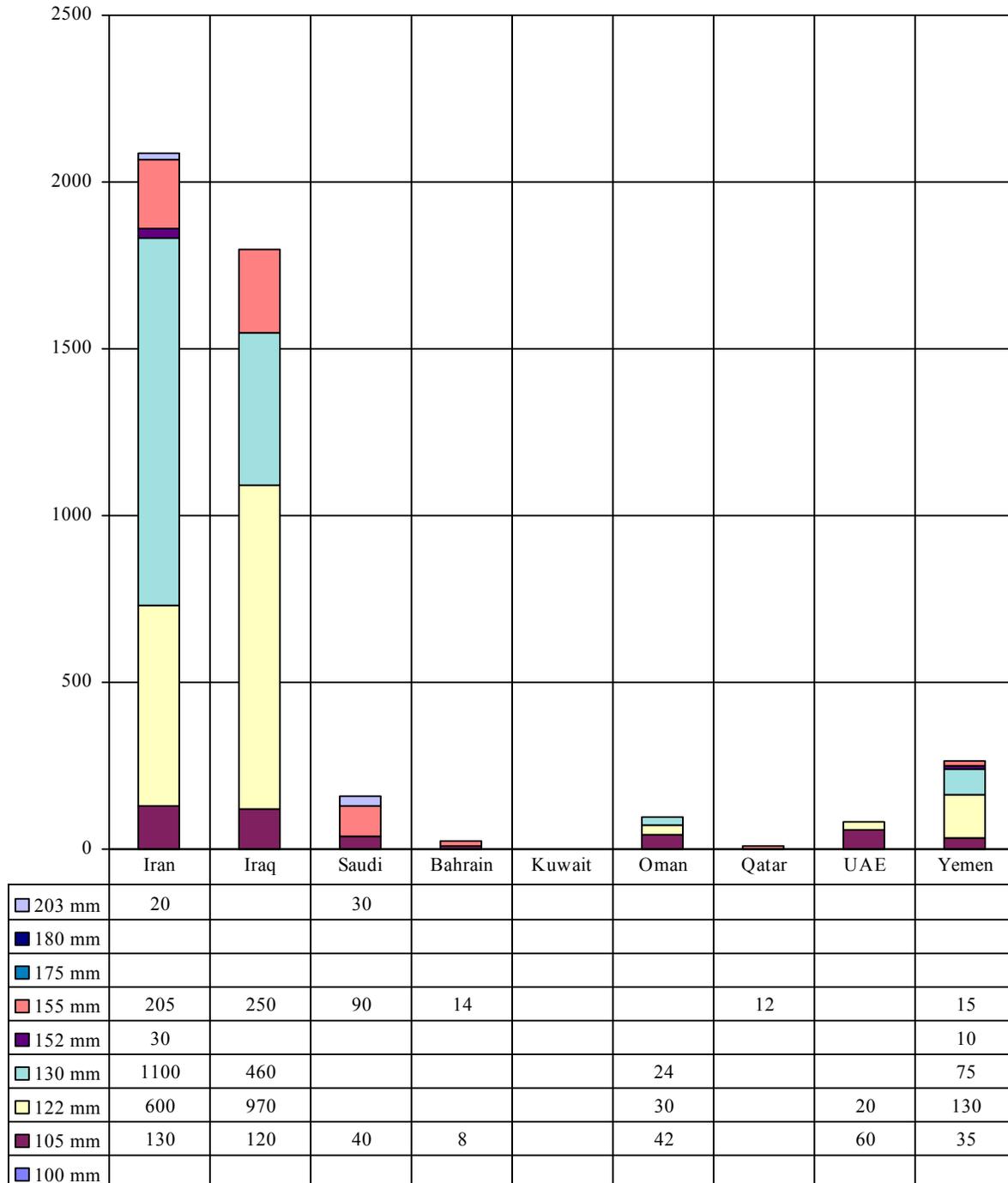
Gulf Inventory of Self-Propelled Artillery by Caliber in 2002



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

Chart 4.18

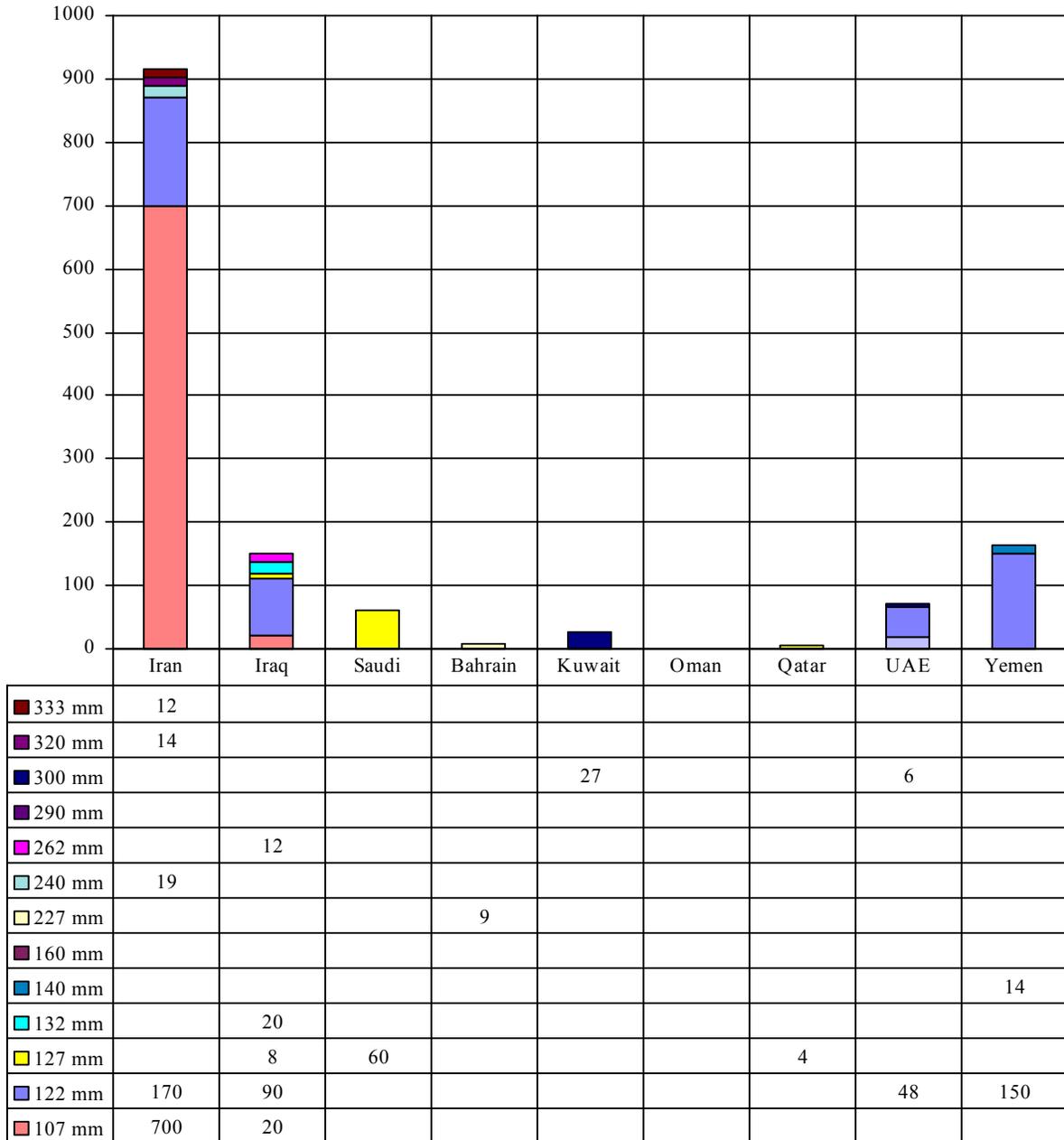
Gulf Inventory of Towed Artillery by Caliber in 2002



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

Chart 4.19

Gulf Inventory of Multiple Rocket Launchers by Caliber in 2002



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

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 2002, and is organized and equipped to protect its maneuver forces in combat.

Total Saudi holdings of short-range air defenses included 73 Crotale (Shahine) radar guided missiles on tracked armored vehicles and 19 shelter-mounted firing units, 36 AMX-30 self-propelled and 10 shelter-mounted Shahine acquisition units. Saudi Arabia also had large holdings of man-portable surface-to-air missiles. Its holdings included 700 Mistrals, some 200-500 Stingers (reporting on numbers is unusually uncertain), and 570 obsolescent Redeye man portable surface-to-air missiles. Saudi Arabia may have an unknown number of Kolomna KBM Igla (SA-16 Gimlet) weapons. Saudi Arabia bought 50 Stinger launchers and 200 Stinger missiles on an emergency basis in August 1990, and ordered additional Crotales and 700 French Mistral launchers and 1,500 missiles.³²

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, and 92 Vulcan M-163 20mm anti-aircraft guns. It also seems to have 150 Bofors L-60/L-70 40mm and 128 Oerlikon 35mm towed guns, and possibly 15 M-117 90mm towed anti-aircraft guns.

This is a reasonable mix of air defense assets, but training and readiness levels are moderate to low. The separate Saudi Air Defense Force – which controls Saudi Arabia heavy surface-to-air missiles and fixed air defenses -- is also a relatively static force that cannot easily support the army in mobile operations.

The Army's air defense units also consist largely of independent fire units, rather than an integrated system of netted 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 key important areas for future force improvement. Much of the Saudi Army is now deployed at least 500 miles from the Kingdom's main oil facilities in the Eastern Province, although a brigade is stationed in the new King Fahd military city in the Eastern Province, and combat elements of another brigade are deployed to the new Saudi Army base at King Khalid City, near Hafr al-Batin, in 1984. For the foreseeable future, the Saudi Army will be dispersed so that much of its strength will be deployed near Saudi Arabia's borders with the angles located at Tabuk, Hafr al-Batin, and Sharurah-Khamis Mushayt.

Helicopters offer a partial solution to these deployment problems. They can provide rapid concentration of force and allow Saudi Arabia to make up for its lack of experience in large-scale maneuver. These factors first led the Saudi Army to seek attack helicopters in the early 1980s. 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 Blackhawk helicopters from Westland in Britain. Roughly 80 of these Westlands were to be attack helicopters equipped with TOW-2. The rest were to be configured for SAR missions. The order was divided into batches of 40 and 48 aircraft.

The Gulf War again changed Saudi plans. It created the political conditions in which Saudi Arabia could buy the AH-64 from the US.³³ 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.³⁴

The AH-64s began to enter Saudi service in 1993, and the Saudi Army now has a helicopter strength that includes 12 AH-64 attack helicopters, 15 Bell 406CS armed helicopters, 12 S-70A1 Sikorsky Blackhawk transport helicopters, six SA-365N medical evacuation helicopters, and 10 UL-60 Blackhawk medical evacuation and 12 UH-60 transport helicopters.³⁵

The AH-64s are a potential force multiplier for the Saudi Army, and give the Saudi Army still further interoperability with the US Army. At the same time, 12 AH-64s are not a large force and the Saudi Army needs extensive US support to maintain them, since attack helicopters are as sophisticated as the AH-64 and 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.³⁶

In April 2001, Saudi Arabia began preparing a formal request to buy advanced AH-64D equipped with the sensitive Longbow radar. The Pentagon, however, turned down a recent request by Egypt for 35 AH-64D Lt. Col Shaddah Al-Asmri, Apache operational chief for the Royal Saudi Arabian Army said April 5, "We understand it is a priority of the U.S. to protect its technology, but we believe in a matter of time they will support us".³⁷ 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 had maintenance problems with its helicopter fleet, although standards seem to be much higher than in Iran and Iraq. It also tends to use helicopters more for service and medical evacuation functions than to achieve tactical mobility. This again presents problems in compensating for the dispersal of the Saudi Army and in deploying forward defenses.

Saudi Sustainment, Infrastructure, and Support

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

The Saudi Army still has extensive foreign support in spite of cutbacks in foreign manpower and support contracts. It has had longtime 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 the US Military Training Mission (USMTM). The history of the USTM dates back to the first 12 men 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.

The Saudi Army has not, however, adopted the modern management systems its needs to management sustainment and support under demanding war-fighting 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 caserme-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 War fighting Capabilities

The Saudi Army showed during the Gulf War that it could fight against Iraqi armored and mechanized forces: the kind of threats it faces in the Gulf region. Nevertheless, the previous analysis has shown that the Saudi Army faces serious problems in many areas. It does not have the manpower and training necessary to operate all of its new major equipment orders properly. The Saudi Army now does not have a single combat brigade that is now truly combat ready in terms of the ability to rapidly deploy at full strength and then sustain operations at any distance from its peacetime casernes. Every brigade has shortfalls in its active combined arms strength, usually in artillery and mechanized elements, or both. Every brigade is short with some elements of combat and service support capability.

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.

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 to the use of constant ongoing deliveries of complex new equipment. Its training plans often are not properly executed, and maneuver training has been mediocre. Until Khalid bin Sultan forced the army to begin emergency development exercises in 2002, the Army had not conducted any meaningful major rapid deployment activities since 1992, and when brigades did start to move from Khamis Mushayt and the North towards Tabok, the exercises revealed serious weaknesses.

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 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 leased the US Army Multiple Integrated Laser Engagement Systems (MILES) for advanced realistic combat training, and took delivery in 1996.³⁸ These deliveries give the Saudi Army the only advanced land warfare training capabilities in the Southern Gulf but little effective use has yet been made of the system. The Army is, however, beginning to conduct realistic command post exercises, and is sending brigade 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. This training halted as a result of "9/11," but Khalid bin Sultan agreed to reinstate it in September 2001. The question is whether these developments will eventually result in effective training. The Saudi Army now over-emphasizes numbers of combat units and weapons at the expensive 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 realistic war fighting training for Saudi land forces with the coalition warfare training of other GCC land forces. High technology training offers Southern Gulf forces still another potential force multiplier over potential threats from the Northern Gulf. It -could provide 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 serve little practical purpose, is not, however, a reality that any senior Saudi, as yet, seems ready to act upon.

Command post and showpiece exercises do not create effective coalition forces, and serious questions exist 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.

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, although there are security and integration problems in Saudi Army equipment. 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 designed to deal with the Iraqi threat and contingency threats from Iran and Yemen. It should emphasize forward defense, the ability to rapidly concentrate, and 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 short of all 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 lack of proper attention 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 larger exercises are being discussed that would increase in frequency and size and to include brigade-sized exercises including US and other Gulf Cooperation Council (GCC) forces.

Senior Saudi officials and officers do, however, emphasize interoperability with the US over interoperability with other Gulf states. They feel there is little 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.³⁹ Even at the highest levels, Saudi officials and officers privately dismiss efforts to create larger “GCC forces” as useful political fictions with little war fighting capability. They see no practical prospect that 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.

There is considerable validity in this Saudi position. Regardless of whether the Peninsula Shield Force should be called a façade or a farce, the elements from other Southern Gulf countries that are now forward deployed near King Khalid Military City and Hafr al-Batin seem to have little or no war fighting 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.

While Saudi officials are certainly right that it will be years before the GCC as a whole can become a meaningful defensive alliance, however, this same excuse has deferred any major effort to change the situation for more than a decade. The Saudi Army has also failed to exercise effectively with the National Guard and Saudi Air Force, and its exercises with US and British forces have been far too infrequent, too small, and too command post-oriented.

Until Iraq has stable and moderate leadership, Iran is firmly under moderate leadership, and the future political stability of Yemen is clear, the Saudi Army cannot be left as a façade or a force that it would take months or years to be fully combat effective. 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. 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.

Endnotes

¹ 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; Jaffee Center for Strategic Studies, The Middle East Military Balance, Tel Aviv University, Tel Aviv; on-line editions of Jane's Sentinel series and Periscope, Jane's Intelligence Review, and Jane's Defense Weekly. The cut-off date for such material is January 2002.

Other sources include interviews with Saudi officials and military inside and outside of Saudi Arabia, US experts, and British experts. These are not identified by source by request of those interviewed. They also include 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. Atkenson, 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; and various editions of USCENTCOM, Atlas, MacDill Air Force Base, USCENTCOM; Jane's Helicopter Markets and Systems; Jane's All the World's Armies; Jane's Armor and Artillery; Jane's Land-Based Air Defense; Jane's Military Vehicles and Logistics.

² An airborne ranger battalion is deployed at Tabuk.

³ 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.

⁴ Defense News, April 14, 1997, pp. 2, 23.

⁵ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.

⁶ Inside the Army, April 6, 1992, p. 1; Inside the Pentagon, April 9, 1992, p. 2.

⁷ Department of Defense, "Sale of Abrams Tanks to Saudi Arabia", Background Information, 1 November, 1989.

⁸ Department of Defense fax, July 18, 1990; Defense Week, March 12, 1990. p. 3.

⁹ Executive News Service, September 23, 1995, 0557.

¹⁰ 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.

¹¹ Jane's Defense Weekly, February 26, 1994, p. 4.

¹² 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.

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- ¹³ 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.
- ¹⁴ 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.
- ¹⁵ 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.
- ¹⁶ Jane's Defense Weekly, April 17, 1996, p. 10.
- ¹⁷ Jane's Defense Weekly, August 6, 1997.
- ¹⁸ Jane's Defense Weekly, August 28, 1996, pg.19.
- ¹⁹ Jane's Defense Weekly, November 4, 1995, p. 8; Defense News, April 14, 1997, p. 3.
- ²⁰ 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.
- ²¹ 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.
- ²² Defense News, June 6, 1994; Washington Times, July 23, 1997, p. A-6.
- ²³ Jane's Defense Weekly, August 19, 1998, pg.19.
- ²⁴ 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.
- ²⁵ Jane's Defense Weekly, April 9, 1996, p. 14.
- ²⁶ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.
- ²⁷ The IISS reports 90 GCT-1s, but Giat only reports the sale of 51.
- ²⁸ 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.
- ²⁹ Jane's Defense Weekly, March 11, 1989, p. 393.
- ³⁰ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.
- ³¹ Defense News, April 14, 1997, p. 3.
- ³² 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)..

³³ Aviation Week, April 2, 1990, p. 44; Jane's Defense Weekly, November 16, 1991, p. 927; Wall Street Journal, October 7, 1991, p. 16.

³⁴ 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.

³⁵ 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.

³⁶ Journal of Electronic Defense, February, 1994, p. 17.

³⁷ Defense News, April 9, 2001, p. 3.

³⁸ Department of Defense Notice Pursuant to Section 62(A) of the Arms Export Control Act, Transmittal No. 9-93, July 19, 1993.

³⁹ 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.