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**Center for Strategic and International Studies
1800 K Street N.W.
Washington, DC 20006
(202) 775-3270
(To comment: Acordesman@aol.com)**

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

VI. The Saudi Navy

Final Review

**Anthony H. Cordesman
Arleigh A. Burke Chair for Strategy
Center for Strategic and International Studies**

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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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VI. The Saudi Navy

The Saudi Navy has grown steadily over the last ten years, and now has east and West fleets for its Gulf and Red Sea coasts. The Saudi Navy also has growing effectiveness, particularly in defensive roles like mine warfare.¹ It has expanded from active strength of around 6,000 men in the mid-1980s to much higher levels. In 2002, it had a total active strength of 13,500-15,500, including 3,000 marines.²

The Saudi navy is headquartered at Riyadh. Its ranking officers are the Chief of Naval Staff (Vice Admiral Talal Salem al Mofadhi); Commander, East Fleet (Rear Admiral al Hamdi); and Commander, Western Fleet (Rear Admiral Mohammed Abdullah al Ajalen). The Coast Guard is part of the Frontier Force and has a separate command chain under Lt. General Mujib bin Muhammed al Qahtani.

The Navy has a modern headquarters staff with five major branches -- G1 Personnel, G2 Intelligence and Security, GS Operations and Training, G4 Logistics, and G5 Civil and Military Affairs. Its operational command is divided into two major fleets, plus command of the Marine regiment. The Arabian Gulf Division is headquartered at Al Jubail and has bases at Dammam, Ras Tanura, and Al Qatif, plus a naval aviation element. The Red Sea Division is headquartered at Jeddah, and has bases at Haqi, Al Wajh, and Yanbu. There are small bases at Al Sharmah, Duba, Ras al-Mishab, and Tamwah. The main base of the Coast Guard is at Aziziah.³

Saudi Arabia has also begun the construction of a new military city at Jizan, on the Red Sea near the Saudi-Yemeni border. The new facility will include a naval base, an air base, and a dry dock. This adds naval and air capability in an area where Saudi Arabia already has a military city at Abha, which it uses to base its land forces, and a major air base at Khamis Mushayt.⁴

Current Saudi Naval Forces

Charts 6.1 show the manpower strength of the Saudi Navy relative to other Gulf navies. Charts 6.2 to 6.6 show similar data on ship and aircraft strength. Any purely numerical comparisons, however, are misleading. The Iranian Navy has not acquired any major surface ships since the fall of the Shah, although it does have modern missile patrol boats, shore-based

long-range anti-ship missiles, and three submarines. The Iraqi Navy was never strong and was virtually destroyed during the Gulf War. The Omani Navy is the only Southern Gulf Navy with relatively high proficiency, but is not equipped with ships anywhere as advanced as those of the Saudi and UAE navies. The key issue in the Gulf is not ship numbers, but ship quality, crew capability, and the ability to employ ships in meaningful missions in combat.

Saudi Navy Combat and Auxiliary Ship Strength

In 2002, the combat strength of the Saudi Navy included four Madina-class (F-2000) frigates, four Badr-class missile corvettes, and nine Al Siddiq-class guided missile ships. It also included 3 Dammam-class (German Jaguar) torpedo boats, 20 Naja 12 inshore fast craft, 17 Halter-type coastal patrol craft (some in the Coast Guard), and three Al Jawf (British Sandown) and four Safwa (Addriyah)-class (ex-US MSC-322 Bluebird) mine warfare ships.

There were four Afif-class LCU amphibious craft, 4 LCMs, two other amphibious craft, 2 10,500-ton Boraida-class (French Durance) support ships, 4 smaller support vessels, 14 tug boats, and large numbers of small patrol boats including 40 Simmoneau Type 51 inshore patrol boats. Auxiliary ships included 3 Radhwa-class ocean-going tugs, 3 Radhwa-class coastal tugs, 2 Buraida-class replenishment oilers (French Durance-class), 1 Al Riyadh royal yacht, and the Al Azizah hydrofoil yacht tender. The royal yachts are based at Dammam.

Saudi Marine Corps Strength

The 3,000-man Saudi marine forces are organized into one regiment with two battalions. It initially was equipped with 140 BTR-60Ps.⁵ It is now equipped with 140 Spanish Santa Barbara SBB BMR-600 6x6 amphibious APCs. It seems to have received nearly 100 Al Fahd 8x8 Armored personnel carriers during 2001.

The basic Al-Fahd can be armed with a cupola-mounted 12.7mm machine gun, but other weapons systems are being considered, including anti-tank systems armed with the 106mm recoilless rifle, the Delco 120mm Armored Mortar system, and the Delco LAV-25/tube-launched optically-tracked, wire-guided (TOW) turret system. The LAV-25/TOW turret is armed with a stabilized Boeing 25mm M242 cannon and 7.62mm coaxial machine gun. Mounted on either

side is a launcher for a Raytheon TOW 3,750m-range anti-tank guided missile. A total of six TOW missiles are carried.⁶

Saudi Naval Aviation

Saudi naval aviation is based at Al Jubail. Various sources report different holdings for Saudi naval aviation. In 2002, it seems to have included 15 operational SA-565F Dauphin ASW and anti-ship missile helicopters with AS-15TT missiles, and four SA-565s equipped for the search and rescue mission. The SA-365Fs have only limited ASW capability, and are configured primarily for the surface search and attack roles. Each combat-equipped SA-365F carries four missiles and has an Agrion search/attack system. They have Crouzet MAD systems and can carry two Mark 46 torpedoes.

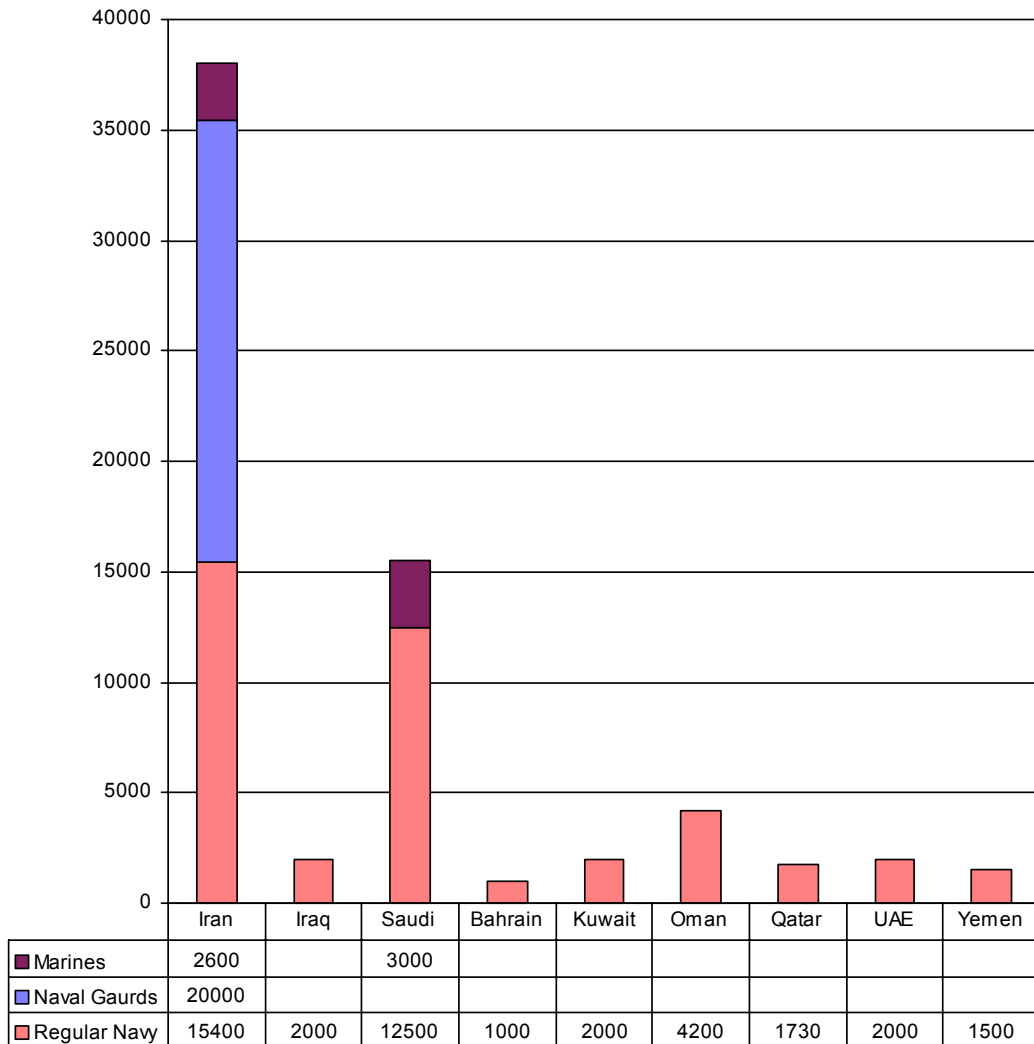
The Saudi Navy also had 3 Westland Sea King Mark 47 ASW helicopters, and 12-21 land-based AS-332SC(B/F) Super Puma helicopters. Some reports indicate the AS-332s included 12 aircraft with Omera search radars, nine with Giat 20mm cannon, and 12 with Exocet or Sea Eagle air-to-ship missiles. Other reports indicate the AS-332s included only six transport aircraft, plus another six with Exocet air-to-ship missiles.⁷

The Saudi Coast Guard

The Saudi Coast Guard has up to 4,500 men and has its main base at Azizam. Its equipment includes two large Yarmouk-class patrol boats, two fast missile attack craft with AS-15TT missiles, four large Al-Jouf-class patrol boats, two large Al Jubatel-class patrol boats, 25 Skorpion-class patrol boats, 13 other coastal patrol boats and four SRN-6, Model 4 Hovercraft, 16 Slingsby SAH 2200 Hovercraft, large numbers of inshore patrol craft, three royal yachts, three small tankers, fire fighting craft, and three tugs. Its primary mission is anti-smuggling, but it does have an internal security mission as well.⁸

Chart 6.1

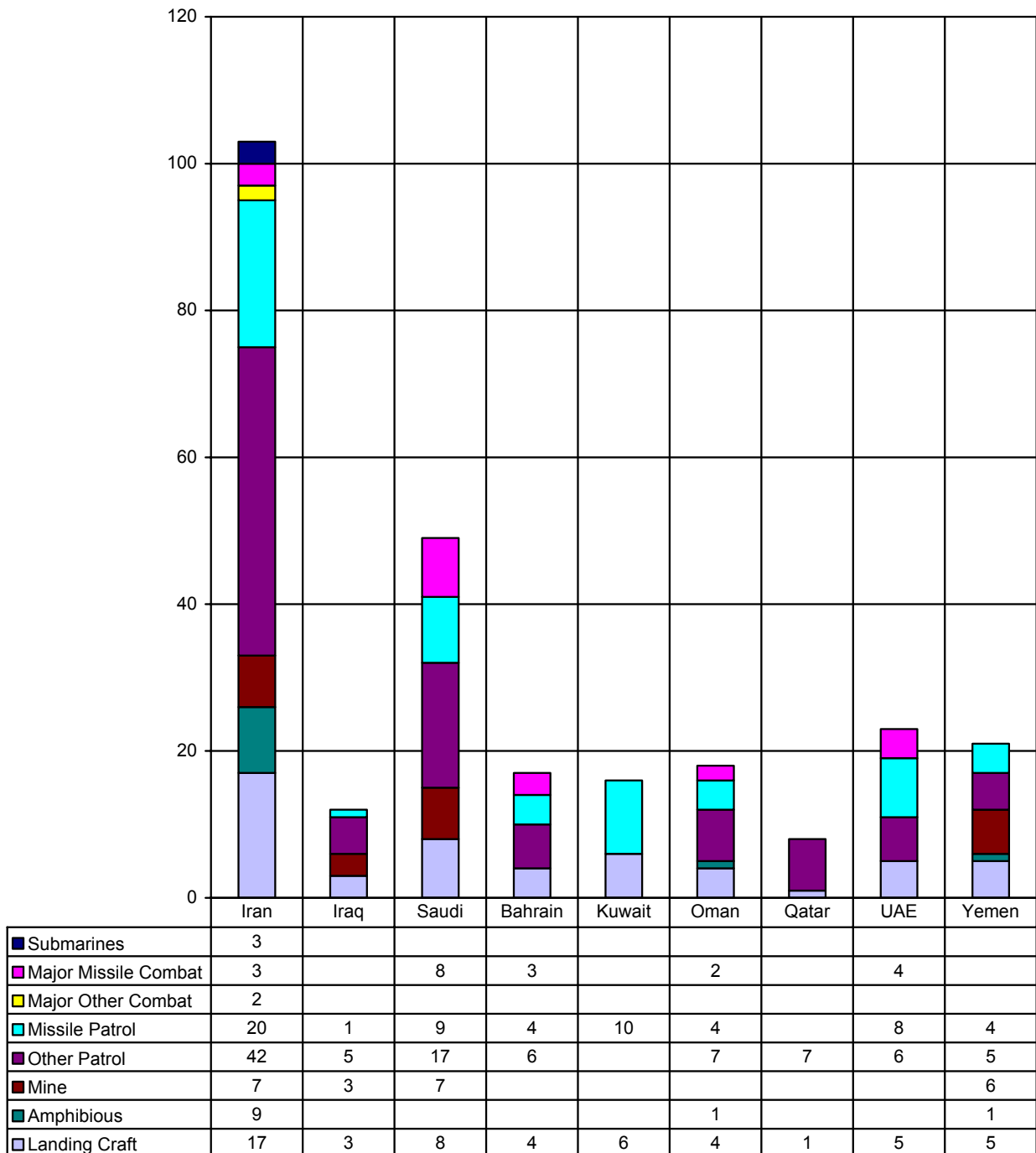
Total Gulf Naval Manpower: 2002



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

Chart 6.2

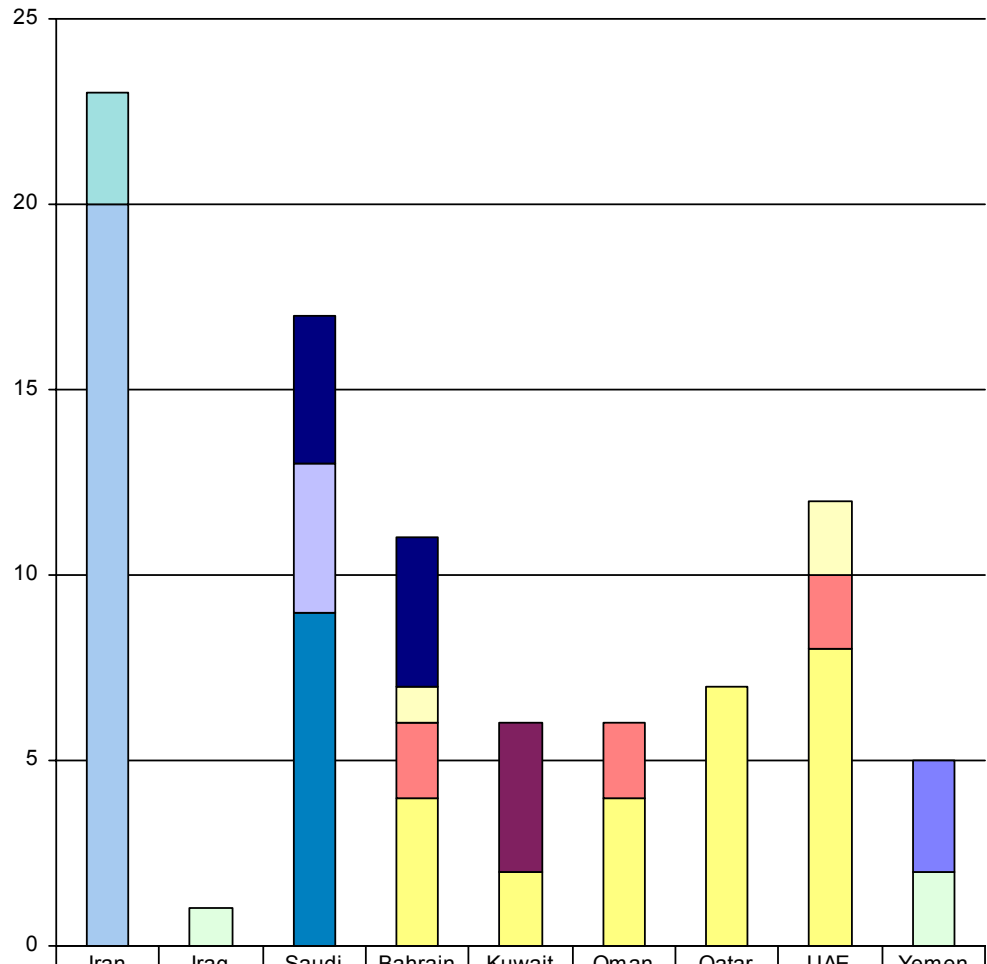
Gulf Naval Combat Ships by Category in 2002



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

Chart 6.3

Gulf Warships with Anti-Ship Missiles in 2002

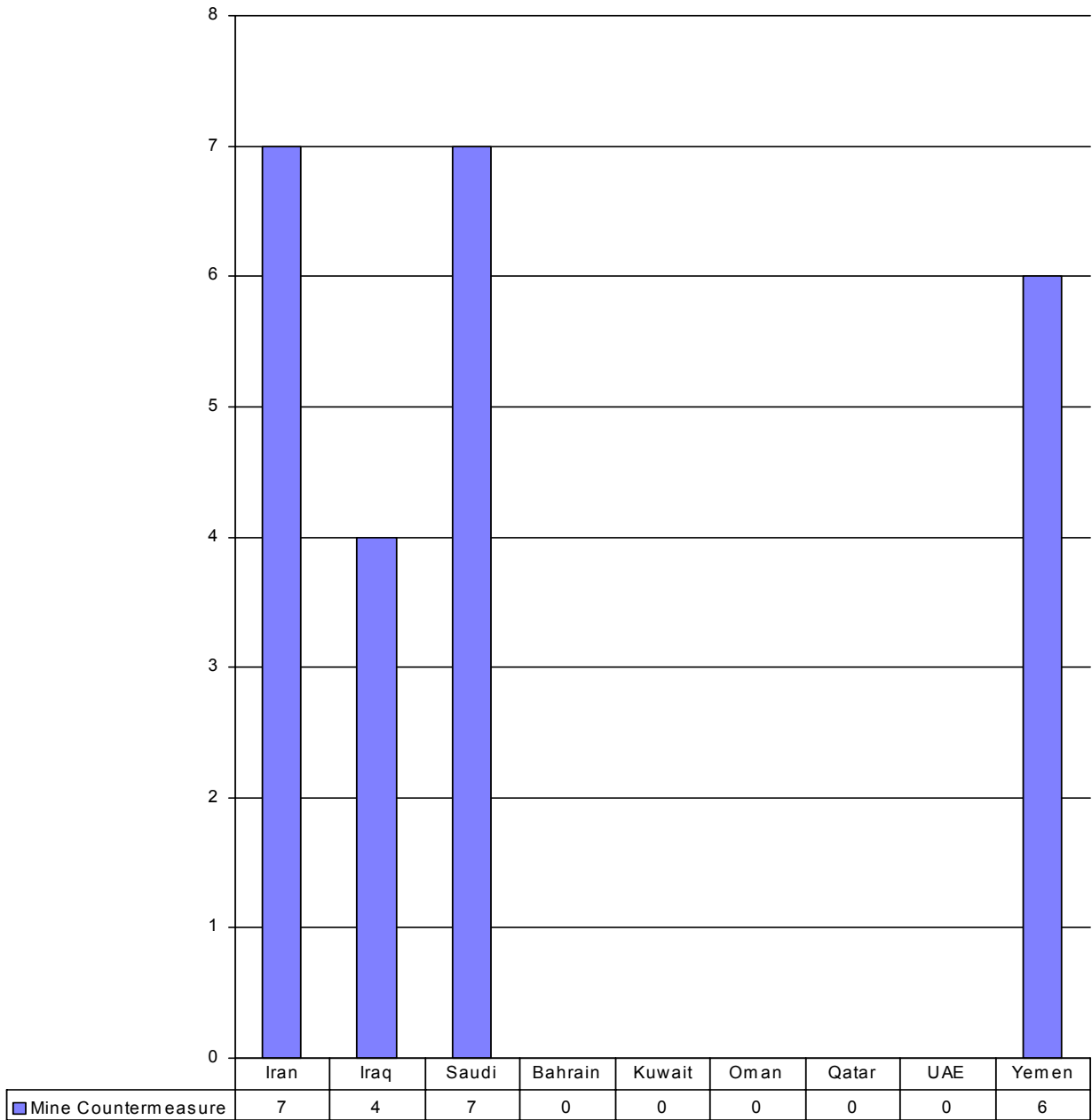


	Iran	Iraq	Saudi	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
■ Frigates with Exocet	-	-	4	4	-	-	-	-	-
□ Frigates with Harpoon	-	-	-	1	-	-	-	2	-
■ Frigates with Sea Killer	3	-	-	-	-	-	-	-	-
■ Corvettes with Exocet	-	-	-	2	-	2	-	2	-
■ Corvettes with Harpoon	-	-	4	-	-	-	-	-	-
■ Patrol Craft with Harpoon	-	-	9	-	-	-	-	-	-
■ Patrol Craft with C-802	20	-	-	-	-	-	-	-	-
■ Patrol Craft with Sea Skua	-	-	-	-	4	-	-	-	-
■ Patrol Craft with Exocet	-	-	-	4	2	4	7	8	-
■ Patrol Craft with C-801	-	-	-	-	-	-	-	-	3
■ Patrol Craft with SS-N-2A	-	1	-	-	-	-	-	-	2

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

Chart 6.4

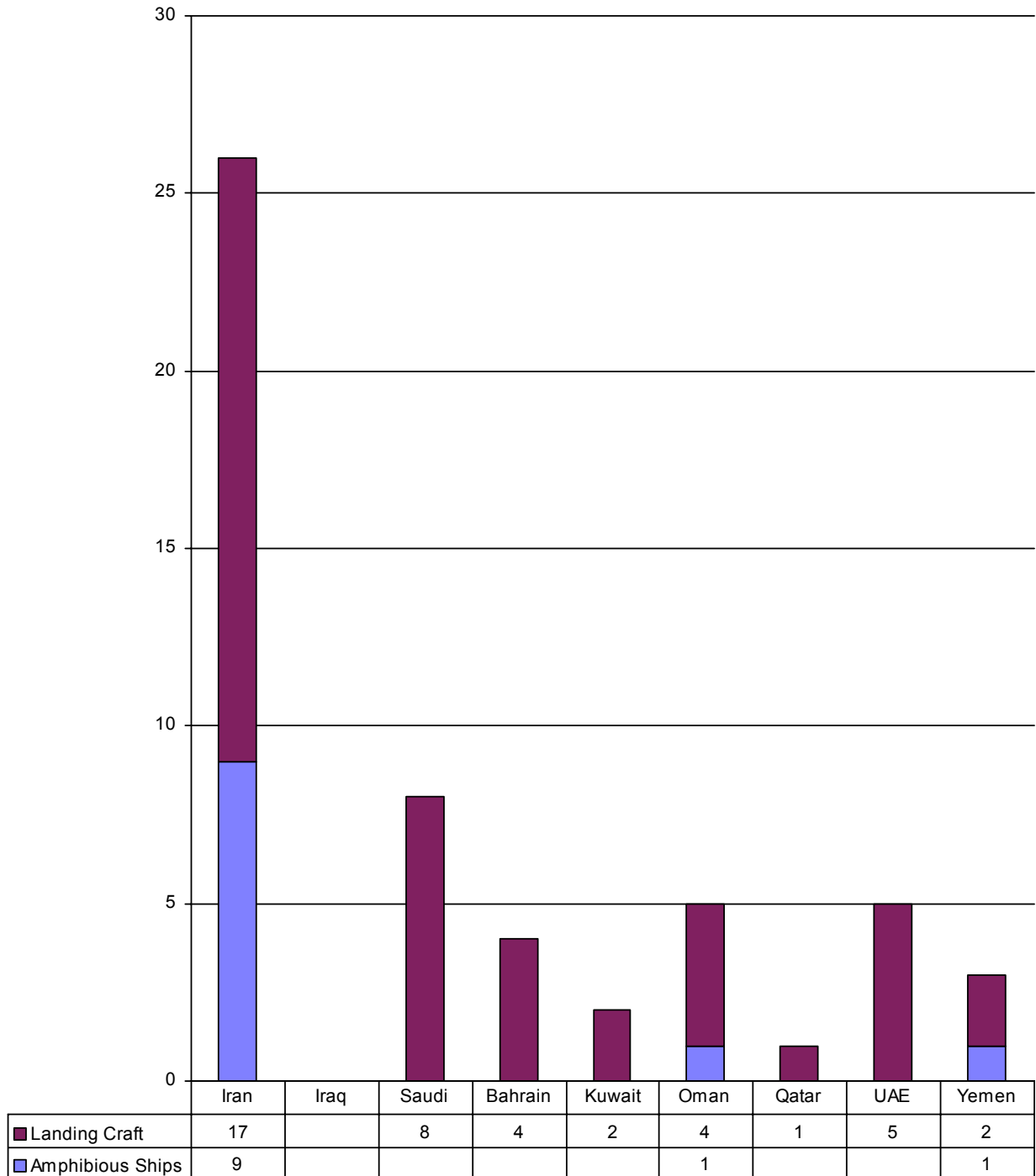
Gulf Mine Warfare Ships in 2002



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

Chart 6.5

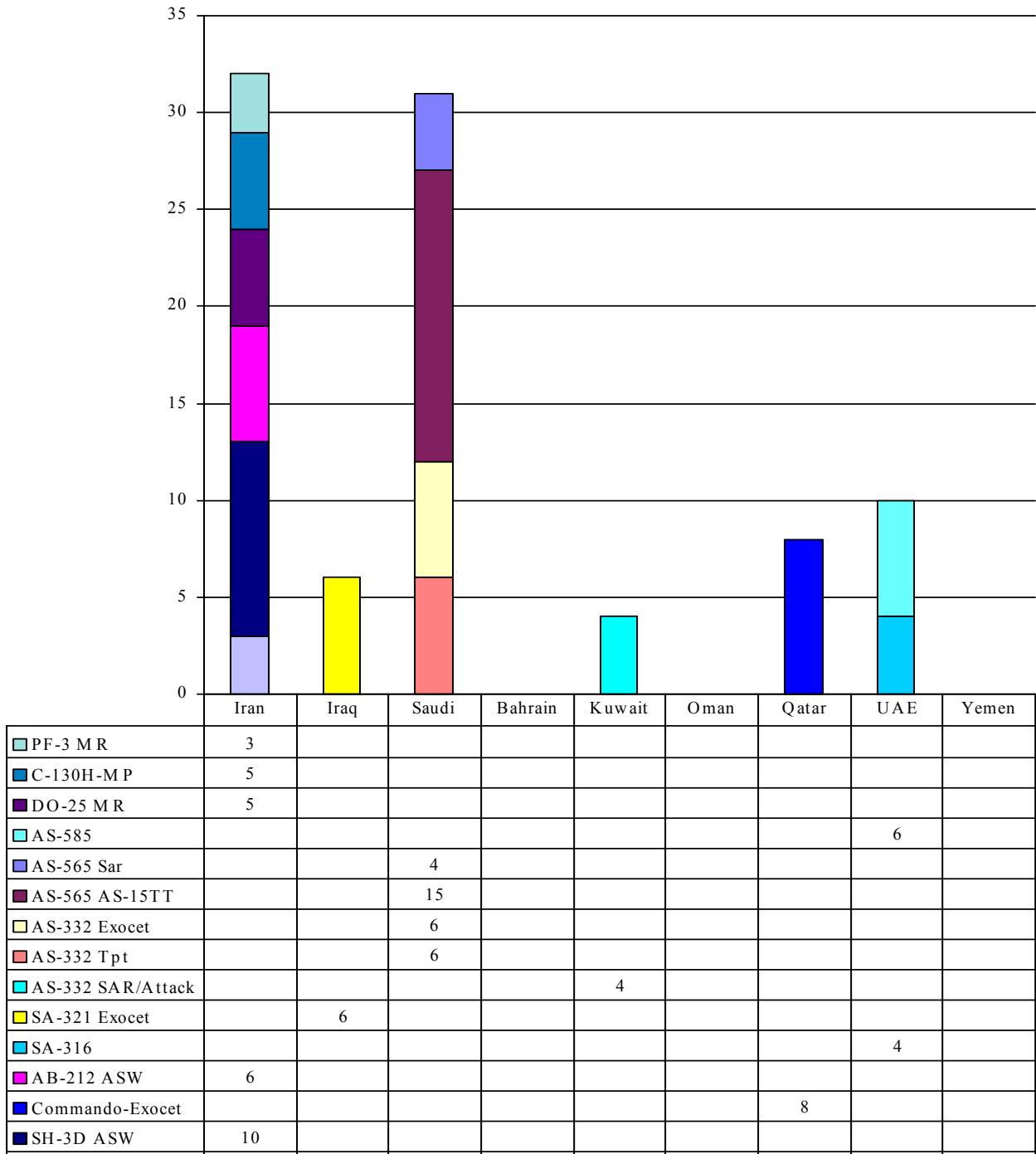
Gulf Amphibious Warfare Ships in 2002



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

Chart 6.6

Gulf Naval Aircraft and Helicopters Aircraft in 2002



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

Saudi Naval Development

The Saudi Navy began its development by relying on US support and equipment, but it now relies on French equipment and support for its larger ships and US support for its smaller weapons systems. The Saudi Navy is making progress in developing combat effectiveness, and exercises with US, British, and French forces as well as those of other GCC states. It has cadres of French and US advisors, and coordinates closely with the US Navy Central Command (NAVCENT), which is forward based in Bahrain.

Badr-Class Corvettes and MSC-322 Coastal Mine Sweepers

Major deliveries under the US phase of the Saudi naval expansion effort have been completed for well over a decade.⁹ The US delivered a total of nine 478-ton Al Siddiq-class patrol-gunboat, guided missile (PGG) craft, each armed with two twin Harpoon missile launchers, 1 76 mm gun, and light AA weapons. Although, the Saudi Navy has lagged behind Saudi air and land forces in Saudi Arabia's military modernization program, but it is now being accorded greater priority partly due to Iran's acquisition of Russian 'Kilo'-class submarines.¹⁰

The US also delivered four larger patrol-chaser missile (PCG) craft, or Badr-class, ships which the Saudis class as frigates but which most foreign sources class as corvettes.¹¹ The Badr-class vessels displace 1,038 tons fully loaded, and have two quad Harpoon missile launchers, one 76 mm gun, Vulcan and 20 mm guns, and six 324 mm torpedo tubes. They are being modernized in Saudi Arabia with US assistance.

The Badr-class ships are all based at Jubail on Saudi Arabia's east coast, but they occasionally deploy to the Red Sea. Although the Saudi Navy claims to be a two-sea navy, its forces generally avoid the Indian Ocean and Gulf of Oman, and deploy to either the Gulf or Red Sea.¹²

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

Sawari (Mast) I

Saudi Arabia turned to France as the major source of its naval ships and weapons in the early 1980s, partly because of dissatisfaction with the US Navy advisory effort. Saudi Arabia also turned to France, however, because of both French political pressure and because it felt France could offer ships that were better equipped and better suited to its mission requirements, to provide France with a share of Saudi arms purchases, and to reduce Saudi reliance on the US. The Saudi Navy did, however, continue to purchase US naval sub-systems for use of its French ships. It retained several support contracts with US firms. . It also turned to Britain for support in mine warfare and held extensive discussions with Germany regarding the possible purchase of submarines.

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

The Madina-class Frigates

France delivered four missile-equipped Madina-class or Type F-2000S frigates by August 1986. These are 2,870-ton vessels when fully loaded. They have eight Otomat 2 missile launchers, eight Crotale surface-to-air missile launchers, 1 100 mm gun, 4 twin Breda 35 mm guns, 4 533 mm torpedo tubes, and 1 SA-365F helicopter.¹³ France also delivered two modified Durance-class fuel supply/replenishment vessels (Boraida class), Otomat missiles for the frigates, 24 SA-365 Dauphin 2 helicopters (20 missile-equipped and 4 SAR-equipped), AS-15 missiles for the helicopters, and additional training services. The Otomat is the longest-range anti-ship missile in Gulf service, with a range of 160 kilometers.¹⁴

These vessels are all based in Jeddah on Saudi Arabia's Red Sea coast and so far have had limited operational value. The Saudi Western fleet has only token combat readiness and conducts little meaningful exercise activity. Saudi crews trained in France to operate the vessels

and helicopters, but the ships are only at sea for a few weeks a year, and at least one ship has had a severe engine room fire that has evidently not been fully repaired. These ships will undergo a 13-month refit in France at a cost of \$1.7 billion.¹⁵ Ship wear and maintenance problems are still a serious problem with this class of Saudi vessels.¹⁶

The Sawari II Program

The Saudi Navy began to study plans for a Sawari II program in the early 1980s, which was initially estimated to cost \$1.6-\$2.12 billion. Prince Sultan met with France's President Francois Mitterrand and Defense Minister Charles Hernu to discuss this program in May 1983. The program he discussed would have provided Saudi Arabia with at least two more 2,000-ton frigates and possibly 4,000-ton frigates as well. It included selling mine-sweeping helicopters and maritime patrol aircraft as the first step in the procurement of much larger forces, including lift and troop-carrying helicopters, surveillance and intelligence equipment, and special warfare equipment.

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

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

Saudi Naval Infrastructure and C⁴I Capabilities

The Saudi Navy C⁴I system was still unable to support effective combat operations when the Gulf War began. As a result, the Saudi Navy purchased a \$307 million upgrade of its C⁴I system on September 27, 1990.¹⁷ Since that time, Saudi Navy C⁴I has been upgraded significantly, and it now has commercial data links to improve its interoperability. The Saudi

Navy has Link 16 secure communications capability and its C4I/BM links are fully compatible with those of the US Navy. Its overall training proficiency and readiness is now capable of supporting a complex combat operation.

Saudi naval facilities are good. The Saudi Naval bases are large and well equipped for a force the size of the Saudi Navy. The Jubail base is now the second largest naval base in the Gulf and stretches nearly eight miles along the coast. It already has its own desalinization facility, and is designed to be expandable up to 100% above its present capacity. The Saudi Navy is also slowly improving its exercise performance, and has begun to conduct joint exercises with the British, Egyptian, and US navies.¹⁸

The Saudi Navy is procuring an automated logistic system similar to the systems used by its other services, and extensive modern command and control facilities. The first major links in this C⁴I system became operational, along with hardened command centers at Riyadh, Jubail, and Jeddah, by the end of 1985. The system was supposed to have automated data links to the E-3A by the late 1980s, and be able to transfer data to Saudi ships by secure digital link from the Saudi E-3As as they operated in the ocean surveillance mode.

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

Saudi Navy Force Expansion Plans

During the Gulf War, Saudi Arabia placed a tentative order for three F-3000 frigates-Al Riyadh, Makkah and Al Dammal. These orders were then delayed, however, because Saudi Arabia gave priority to new orders for its air and land forces, and because of its economic

problems. The Saudi Navy only signed firm contracts for two new frigates on November 22, 1994, and did not order a third until May 20, 1997.¹⁹

Frigate Programs

The resulting program is called “Project Mouette” in France and “Sawari II” in Saudi Arabia. It seems to have a total cost of \$2.5 billion (19 billion French Francs). The first of three f3000s *Al Riyadh* was launched in August 2000 and is now at an advanced stage of fitting out. Sea seem to have begun in late 2001, with handover to the Royal Saudi Naval Forces scheduled for July 2002. *Al Riyadh* will subsequently sail to Toulon to undertake a nine month program of operational trials under the supervision of NAVFCO, the French Navy’s training facilitation organization. *Makkah* was due for launch in late July 2001 and to be handed over in April 2003. Early steelwork fabrication is underway for the third and final ship, *Al Dammal*, due for delivery in January 2004.²⁰

The first two ships will displace 3,700 tons fully loaded, and their design is based on the French La Fayette class of “stealth” frigates, with enhanced air defense capabilities. They have special radar cross-section shaping, IR paint, and reduced heat emission from their funnels. Their magnetic structure has been reduced through degaussing, and their acoustic signature has been reduced with the use of special machines, cradles, and propellers. They are 128 meters long and 16.2 meters wide. They have a crew of 139, with the ability to house a detachment of 25 additional personnel as marines or Special Forces. They have a range of 12,600 kilometers at 15 knots, and a top speed of 25 knots. They are stabilized to allow helicopter operations up to sea state five or six. They have enhanced survivability and damage control capabilities.²¹

The first two frigates will initially carry the Thomson-CSF AirSys Crotale Navale NG surface-to-air missile used in the F-2000S, but are expected to be upgraded to use the vertical launched Aster missile. They will carry eight Exocet missiles, a 100mm gun, two 20mm guns, four 324mm torpedo launchers, and 1 SA-365F helicopter. They will have decoy launchers, a COMINT suite, and a Thomson-CSF DR 3000 ESM suite. Their combat electronics will be much more advanced than those in the F-2000S class. They will include dual tactical computers, a highly automated combat information center, DRBV-26D long-range surveillance radar, and the DRBV-15C Sea Tiger Mark 2 E/F band two-dimensional surveillance radar. They will have

special Link 11 and over-the-horizon data link equipment to work with the E-3As in the RSAF, Saudi fighters and strike aircraft, and the Navy's helicopters.²²

The third ship will come with 32 Aster 15 anti-aircraft missiles and the Arabel radar. This same system will be retrofitted to the first two ships by 2005. The third frigate will also be equipped with the Exocet MM-40 Block 2 missile. It will have a more advanced V-26 radar, and will be 500 tons heavier and 10 meters longer than the first two frigates. It is not clear what sonar capability they will have, and they were originally ordered without sonars. This makes their capabilities against Iran's submarines somewhat problematic.²³

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

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

The modernization involves the improvement of the sonars, the replacement of the MacTaggart Scott helicopter handling system with the Samahe system, improvements in maintenance and repair subsystems, and improved NBC contamination detection and protection. The NBC enhancement will include an airtight gas citadel and high performance detection sensors. Missile upgrades primarily concern the OTO Breda/Matra Otomat anti-ship weapon system, which is being given additional capabilities both inside the missiles and in the ship-based control system, including enhanced search patterns to reattack missed targets. The VT1 round for the Crotale will not be provided, but improvements to the Castor 2B X-band radar will bring it up to the 2C standard.²⁴ France will also provide greatly improved maintenance and overhaul facilities in Jeddah and training for 750 personnel to crew the ships.²⁵

Other Modernization and Expansion Options

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

There are reports that Saudi Arabia has considered the purchase of several AEGIS-class warships to give it advanced battle management, Harpoon anti-ship missiles, Tomahawk strike capability, ASW, anti-aircraft, and anti-ship missile defense capabilities. The AEGIS-class ships are highly effective, but they cost roughly \$900 million to \$1 billion each, and require highly trained crews. As a result, it would be at least 2003-2005 before such a ship could be delivered. Saudi Arabia would also confront problems in obtaining release of some of the weapons and technologies involved.²⁶

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

Mine Warfare Programs

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

Saudi Arabia began to modernize its mine warfare capability in July 1988, when it agreed to lease two Hunt-class mine vessels from Britain. It did so in response to Iran's successful mining of the Gulf tanker routes during the "tanker war" of 1987-1988. It followed up by placing a tentative order for six to eight Vosper Sandown-class MCMVs, training by the Royal Navy,

and new port facilities for mine warfare vessels from Ballast Nedam, as part of its \$18 billion al-Yamamah 2 program.

The Saudi Navy, however, only signed firm contracts for three Sandown-type vessels, which became what the Saudi Navy calls the Al-Jawf class. These vessels are 500-ton ships built by Vosper-Thorneycroft. They have a crew of 34, a range of 3,000 miles, and a speed of 12 knots with diesel engines and 6 knots using electric engines for minesweeping. They have many advanced features, including vectored thrust with bow thrusters, a remote controlled mine disposal system, a computerized ship positioning system which is accurate to one meter, and a Plessey-Marconi variable depth sonar. It has Saudi enhancements including twin 30 mm Emerson Electric guns and a Contraves fire control system, larger engines, and upgraded Voith-Schneider propulsions.²⁷

According to press reports, the Saudi Navy has options to buy three to four more Al-Jawf class vessels, although the Saudi Navy has not yet exercised this option and may be considering purchase of French-built Tripartite mine hunters.²⁸ Kuwait, Bahrain, Oman, Qatar, and the UAE are also reported to be examining orders of the Sandown or Tripartite mine warfare vessels.²⁹

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

Deferring Coastal Submarines

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

This deferral was a wise decision. Iran's deployment of Kilo submarines has increased the submarine threat, but coastal submarines are not ideal hunter-killers, and it is unclear how the Saudis could make cost-effective use of submarines as a strike force in either the Gulf or Red Sea. Any Saudi purchase of submarines would result in a gratuitous waste of money. Saudi Arabia cannot lack the manpower and maintenance resources to operate submarines. The Gulf and Red Sea are poor operating areas for such vessels, Saudi Arabia could not use such submarines to fight Iranian submarines effectively, and the high salinity of the Gulf could present problems in terms of long-term operating life.

Deferring Maritime Patrol Aircraft

Saudi Arabia also seems to have deferred an order for two AND-BA Atlantique 2 (ANG) maritime patrol aircraft, and the order of two more Atlantique 2, Fokker F-27 Maritime Enforcers, or Lockheed P-3 Orions as part of a GCC maritime surveillance force. The AND-BA Atlantique 2 (ANG) maritime patrol aircraft proved to be too expensive. The aircraft supplemented the existing maritime surveillance coverage provided by Saudi E-3As and were intended to cover the rest of the Southern Gulf. A Saudi purchase for this mission depended on GCC cooperation, and partial funding of the aircraft. Neither was forthcoming.³⁰

Maritime patrol aircraft take a higher priority than submarines, but Saudi Arabia again seems to have made sound decisions. Saudi Arabia has a valid need for both modern mine warfare and maritime patrol (MPA) aircraft, but its E-3A AWACS aircraft have advanced maritime patrol capabilities and Saudi Arabia cannot yet make effective use of its AWACS. Saudi Arabia still has the option of substituting its E-3As for maritime patrol aircraft. Unfortunately, the Saudi E-3As will only acquire Link 16 secure data links to the Saudi Navy in the future, and are not really trained for this kind of joint warfare. Ironically, the US E-3As have a Link 16 capability and are trained for such a mission. As a result, the USAF can support the Saudi Navy better than the Saudi Air Force.

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

Saudi Naval Readiness and Warfighting Capabilities

The Saudi Navy has enough equipment on hand, and on order, to evolve into a relatively powerful force by regional standards, and US experts feel it is making some progress in becoming an effective force. Its readiness has been helped by intensified training efforts during Operation Earnest Will (1987-1989) and the Gulf War. However, funding has been limited since the mid-1990s. Its overall readiness has dropped and many ships rarely go to sea. Its current equipment mix requires a force of close to 18,000-20,000 men, and the Navy is badly undermanned.

The Saudi Western or Red Sea fleet has only token military capability. The Eastern Gulf fleet is better and has exercised regularly with the Navy, but is not ready to operate effectively on its own. In spite of these problems, Saudi Naval training standards have slowly improved since the early 1990s, as have operating rates and active training and exercise days. The Saudi Navy is working closely with the US 5th Fleet and held 11 exercises in 1999, including participating in joint mine warfare task forces. The performance of those ships that participate actively in such exercises get considerable praise from US officers. The Navy remains dependent on foreign maintenance and logistic support, however, and is having problems operating its new French frigates – partly because they are so packed with weapons systems and electronics that they are difficult to fight.

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

Although the Gulf is too shallow for large-scale underwater warfare, these vessels can fire wake-homing or wire-guided acoustic torpedoes as well as lay mines in strategic shipping lanes, seriously impeding the flow of crude oil and liquefied natural gas exports.³¹ Iran has also received 10 Hudong class FACMs from China and these vessels, along with the older Kaman class vessels are being armed with Chinese C-802 anti-ship cruise missiles.

Saudi Arabia scarcely has to meet these threats alone, however, and it is making enough progress so that US and British experts feel the Navy can now play at least a limited role in any future naval coalition warfare that does not involve joint warfare with air forces in spite of its manpower and readiness funding problems. The Navy has also taken some steps to bring force expansion back into better balance with readiness. As of June 1999, Saudi Arabia had already earmarked funds for the purchase of three French La Fayette-class frigates but had shelved its plans to continue its naval expansion due to the decrease in funding.³²

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

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

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, and Dr. Andrew Rathmell, "Saudi Arabia's Military Build-up -- An Extravagant Error," Jane's Intelligence Review, November, 1994, pp. 500-504; and various editions of Jane's Sentinel: The Gulf States; US Naval Institute, Jane's Fighting Ships, The Naval Institute Guide to the Combat Fleets of the World: Their Ships, Aircraft, and Armament, Annapolis, Naval Institute; and on-line editions of Periscope, "Saudi Arabia, Navy/Marines."

² Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002. Some estimates put its total active strength at 13,500-17,000 men

³ Historical sources for the analysis of the Saudi Navy include James Bruce and Paul Bear, "Latest Arab Force Levels Operating in the Gulf," Jane's Defense Weekly, December 12, 1987, pp. 1360-1361; and various editions of the "Middle Eastern, North African, and South Asian Navies," sections of the March issue of Proceedings.

⁴ Jane's Defense Weekly, May 15, 1996, p. 3.

⁵ Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002.

⁶ Jane's Defense Weekly, April 7, 1999, pg.21.

⁷ Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002.

⁸ Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002.

⁹ These include 20 AS-365N Dauphin helicopters with AS-15TT air-to-surface missiles, and 4 search and rescue versions of the same helicopter.

¹⁰ Jane's Defense Weekly, July 10, 1998, pg.33.

¹¹ They are Tacoma-class ASUWs, with 2X4 Harpoon launchers, and 2X3 ASTT (Mark 46 light weight torpedo launchers).

¹² Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002.

¹³ These are French F-2000 class vessels with 4 X 533 mm and 2 X 406 mm ASTT torpedo launchers, one Dauphin helicopter, one 100 mm gun, and 8 Otomat 2 missile launchers.

¹⁴ Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002.

¹⁵ Jane's Defense Weekly, July 10, 1996, pg.33.

¹⁶ Based on Jane's Fighting Ships, 1996-1997, 1999-2000, and 2000-2001; IISS, Military Balance, 1996-1997 and 1999-2000 and 2001-2002.

¹⁷ Richard F. Grimmett, "Arms Sales to Saudi Arabia," Congressional Research Service, IB91007, August 28, 1991, p. 4.

¹⁸ Executive News Service, July 25, 1995, No. 1749.

¹⁹ The new contract had a total value of \$3.6 billion; 35% to be offset. Jane's Defense Weekly, October 8, 1994, p. 1; November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515, May 28, 1997, p. 4; Defense News, February 7, 1994, p. 36; Financial Times, January 10, 1994, p. 4; Middle East Economic Digest, September 15, 1995, pp. 13-14, Reuters, May 20, 1997, 1611.

²⁰ Jane's International Defense Review, June 2001, p.8.

²¹ Jane's Defense Weekly, December 17, 1988, p. 1546, June 25, 1989, p. 1296, October 8, 1994, p. 1, November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515; Defense News, February 7, 1994, p. 36 London Financial Times, June 13, 1989, p. B-5; Wall Street Journal, June 7, 1988, p. 31; International Defense Review, 7/1989, p. 884.

²² Jane's Defense Weekly, December 17, 1988, p. 1546, June 25, 1989, p. 1296, October 8, 1994, p. 1, November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515; Defense News, February 7, 1994, p. 36 London Financial Times, June 13, 1989, p. B-5; Wall Street Journal, June 7, 1988, p. 31; International Defense Review, 7/1989, p. 884.

²³ Reuters, May 20, 1997, 1611, Jane's Defense Weekly, June 26, 1996, p. 26, March 12, 1997, pp. 78-80, May 28, 1997, p. 4, International Defense Review, 7/1997, p. 9.

²⁴ Jane's Defense Weekly, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515

²⁵ Jane's Defense Weekly, October 8, 1994, p. 1; November 22, 1993, p. 18, December 3, 1994, p. 4, June 26, 1996, p. 26, March 12, 1997, pp. 78-80; Jane's Intelligence Review, November, 1996, p. 515; Defense News, February 7, 1994, p. 36; Financial Times, January 10, 1994, p. 4; Middle East Economic Digest, September 15, 1995, pp. 13-14.

²⁶ Washington Times, May 27, 1995, p. A-11.

²⁷ The Sandown class ships have glass reinforced plastic hulls, Type 2903 Variable Depth Sonar, remote control mine disposal systems, and Plessey NAUTIS-M command, control, and navigation systems. Defense News, March 20, 1989, p. 24, April 24, 1989, p. 28; Jane's Defense Weekly, October 26, 1991, p. 770, and February 20, 1993, p. 15; Jane's Intelligence Review, November, 1996, p. 515.

²⁸ Jane's Defense Weekly, July 10, 1996, p. 33, Military Technology, World Defense Almanac, 1992-1993, Vol. XVII, Issue 1-1993, ISSN-0722-3226. pp. 157-159; Jane's Intelligence Review, November, 1996, p. 515.

²⁹ Jane's Defense Weekly, July 16, 1987, p. 58.

³⁰ Jane's Defense Weekly, December 12, 1987, pp. 1360-1361.

³¹ Jane's Intelligence Review, November 1996, pg.514; Defense News, June 7, 1999, pg.10.

³² Defense News, June 7, 1999, pg.8.