

SEA POWER

THE COALITION AND IRAQI NAVIES



PETER GILCHRIST

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Frontcover *Guns to starboard, USS Missouri (BB63) unleashes a full broadside, the 45,000 ton battleship physically recoiling to port under the shock of the 16-in main armament. Missouri, along with USS Wisconsin (BB64), engaged Iraqi artillery that was shelling Marine Corps emplacements just south of the Saudi/Kuwaiti border. Needless to say, once the big guns started firing the Iraqi positions soon fell silent. (Frank B Mormillo/Arms Communications)*

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SEA POWER

ARGENTINA

Despite meeting considerable political opposition in Buenos Aires (and a good deal of public disquiet generated by memories of the disastrous Falklands war), the Government of Argentina agreed to deploy two ships to join the coalition forces. The Meko Type 360 destroyer ARA *Almirante Brown* (D10) was accompanied by the Meko Type 140 frigate, ARA *Spiro* (F12). The vessels departed the Naval Base at Punta Alta on 26 September, bound for the Gulf of Oman. They were given clearance to assist in interception, shadowing and boarding operations connected with the UN embargo on trade with Iraq, but it was not envisaged that either ship would enter the Persian Gulf itself, nor engage in any combat operations unless directly attacked. The force was more symbolic than anything else, but nevertheless it was a useful addition to the eyes and ears of the whole blockade effort. In common with most Argentinian surface combatants, the two ships were armed with Exocet surface-to-surface missiles and a pair of three-shot ILAS 3 torpedo tubes, and each carried an Alouette III observation helicopter. For air defence

the ships were equipped with Breda/Bofors 40 mm L/70 guns, and the destroyer carried an Albatros SAM system which integrates the semi-active radar homing Aspide missile with the ship's gunnery fire-control system.

AUSTRALIA

The initial Royal Australian Navy (RAN) deployment consisted of two US-built FFG7 class frigates, HMAS *Adelaide* (01) and HMAS *Darwin* (04) – both home-ported in Sydney as part of the 2nd Destroyer Squadron. These were supported by the 18,000-ton *Durance* class underway replenishment tanker, HMAS *Success* (AOR304). The frigates were protec-

The Royal Australian Navy's Damask Task Group seen alongside at the HMAS Stirling fleet support facility in Western Australia on 22 August. The guided-missile frigates HMAS Darwin (F04) and HMAS Adelaide (F01) are forward of the underway replenishment ship HMAS Success

(AOR304). The water/oil fuel lighter Wyulda (WFL8004) is outboard of Success, and the destroyer escorts HMA Ships Derwent (DE49) and Stuart (DE48) are berthed in the background, along the Oberon class submarine HMAS Oxley (557). (Royal Australian Navy)





Above Gulf bound, HMAS Adelaide arrives at Stirling on 21 August for a 28-hour stopover en route to the Middle East. The first of four American-built Oliver Hazard Perry class frigates delivered to the Navy, Adelaide was handed over to the Australians in November 1980. Designed around the LAMPS III anti-submarine warfare (ASW) Seahawk helicopter, Adelaide embarked with a pair of S-70B-2s from HS-816 aboard for the very first time during the Gulf

deployment. Seen here on the recently lengthened and RAST-equipped flightdeck, the Seahawk detachment was, technically, still undergoing trials before entering frontline service later in 1990. However, circumstances in the Gulf quickly curtailed the evaluation programme and the helicopter was rapidly ushered into service.
(Royal Australian Navy)

Below A modern oiler which suffered some gestation problems during its construction in New South Wales, HMAS Success has since gone on to prove its worth with the fleet over the past five years. Based on the French Navy's Durance class of oilers, Success has the capacity to carry over 8200 tons of distillate fuel; 1130 tons of avgas; 170 tons of munitions; 180 tons of provisions; 260 tons of water; and 45 tons of spare parts. Like most fleet oilers, Success lacks a truly

effective anti-aircraft protection system. Usually having to rely on a pair of 40 mm Bofors guns mounted just below the bridge, and four 12.7 mm machine guns scattered amongst the superstructure, Success embarked an Australian Army unit from Adelaide equipped with the Bofors RBS.70 man-portable surface-to-air missile (SAM) system.



ted against air attack by their Standard SM-1 surface-to-air missile systems, and each was fitted with an aft-mounted 20 mm Vulcan Phalanx close-in weapons system to give some defence against sea-skimming missiles. The tanker, however, was not so well protected, and its normal armament of three 40 mm Bofors guns (plus light machine guns) was augmented before departure by the embarkation of an Australian Army low-level air-defence unit equipped with Bofors RBS-70 man-portable SAM systems.

Prime Minister Bob Hawke originally limited the role of the Australian task force to the interception and interrogation of any vessel approaching the Straits of Hormuz from the south. This natural choke-point at the northern end of the Arabian Sea became a magnet for a number of navies that wanted

A veteran of the Vietnam War, the Charles F Adams class destroyer HMAS Brisbane (DDG41) stopped over at Stirling just long enough to store-up. Seen here departing on the morning of November 20, the Brisbane, along with HMAS Sydney (Fo4), replaced Adelaide and

Darwin on blockade patrol duties in early December. Commissioned back in December 1967, Brisbane had only just completed a thorough refit before being despatched to the Middle East, the major modification carried out at the Cockatoo Naval Dockyard, in Sydney,

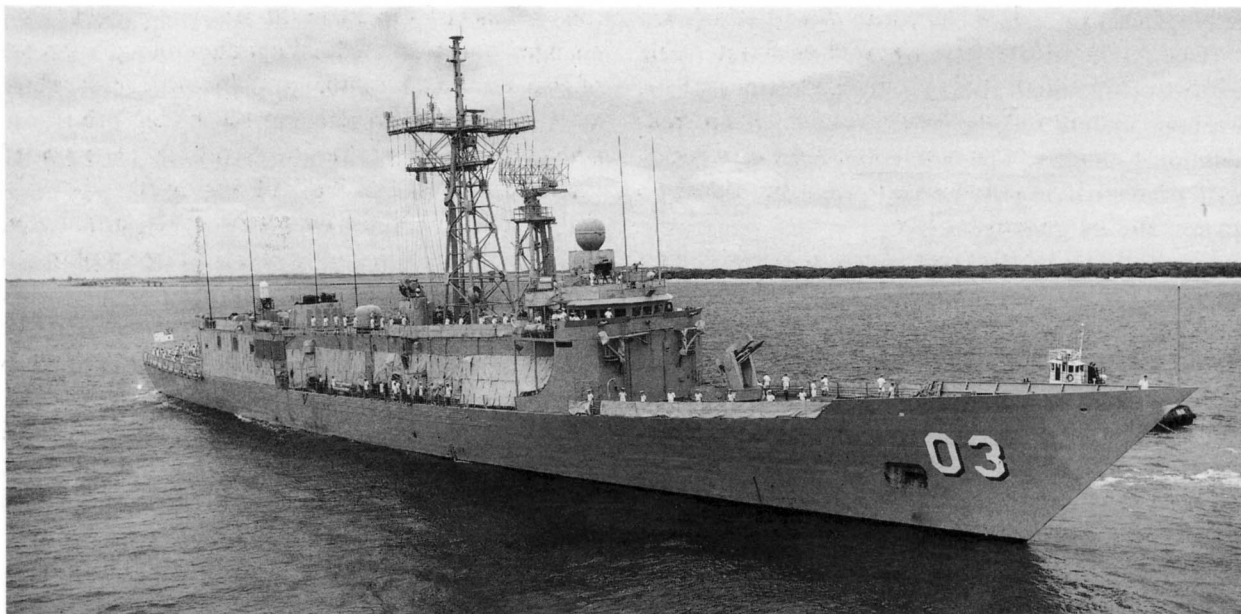
to be involved in the blockade operation as a whole, but for military or political reasons did not want to enter the more risky waters of the Persian Gulf itself. The area around the Gulf of Oman therefore became quite crowded in maritime terms, with a variety of assets competing for 'trade' as each potential sanctions-breaker appeared over the horizon.

Partly to overcome this problem, the early restrictions imposed on the RAN were lifted, allowing the ships to operate north of Hormuz. They were under the overall command of the Australian Defence Forces HQ Command and Control Centre in Canberra, but their in-theatre tactical control was put at the disposal of the US regional commander. This meant that they could be temporarily assigned to multi-national task groups as necessary, and *Adelaide* was subsequently reported working with two Royal

being the fitment of a pair of General Dynamics Mk 15 Phalanx gatling guns on either side of the rear funnel. As with the Damask patrol group, Brisbane and Sydney were thoroughly tested on anti-missile and anti-aircraft techniques during their transit across from New

South Wales by F/A-18 Hornets and F-111s from the Royal Australian Air Force. Once on the West Coast the vessels were even 'worked over' by the diminutive MB.326H Macchis from No 25 'City of Perth' Sqn (based at RAAF Pearce). (Royal Australian Navy)



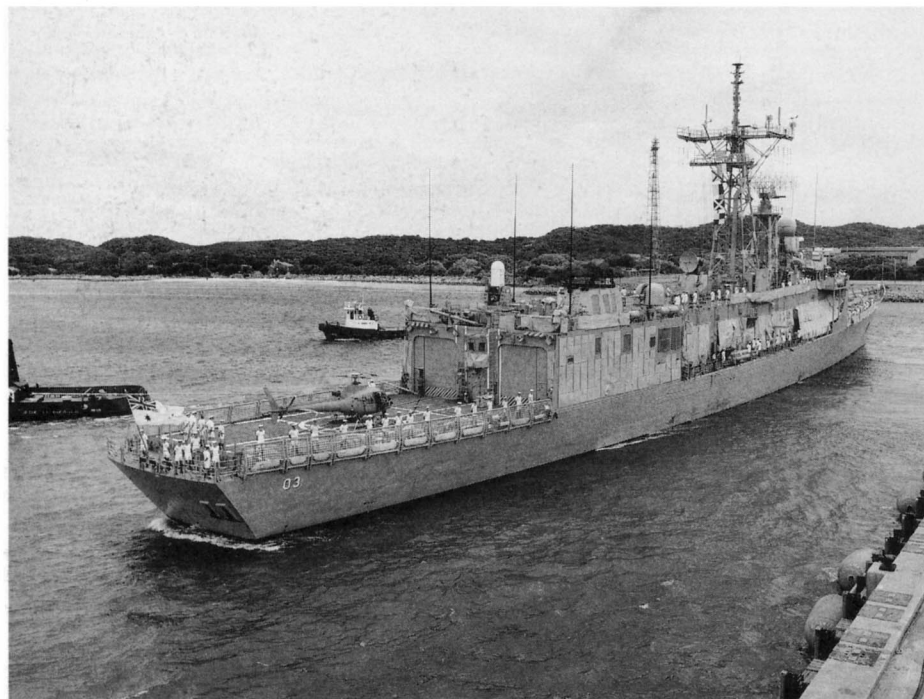


Along with Adelaide, Canberra and Darwin, HMAS Sydney (F03) is usually assigned to the Garden Island-based 2nd Destroyer Squadron. However, once in the Gulf the vessel operated as part of the USS Midway's (CV41) protective battlegroup, the frigate's American-built RIM-66

Standard SM-1A missile system tying in perfectly with the US Navy's SAM umbrella. Loaded up with a dummy acquisition round, the Mk 13 Mod 4 launcher forward of Sydney's bridge can fire either the Standard SAM or the deadly AGM-84 Harpoon anti-ship missile. Possessing a fully

automated loading system fitted immediately below the launcher, the Sydney can fire up to 40 Standard or Harpoon rounds. Targets are picked up by the large SPS-49 air-search radar antenna mounted immediately forward of the communication mast, whilst missile firing and guidance is controlled by

the Sperry Mk 92 fire-control system, the combined antennae for which are contained in the protective egg-shaped radome above the bridge. (Royal Australian Navy)



Assisted by the naval tugs Tammar (OT2601) and Quokka (OT1801), Sydney slowly moves away from the escort wharf at Stirling. Unlike its sister-ship Adelaide, Sydney has yet to receive the flightdeck modifications which will see the vessel's stern lengthened by 2.2 metres. Some aerial mobility was afforded the frigate, however, as an AS.350B Squirrel was embarked, the Nowra-based light helicopter donning a special overall grey scheme for the cruise. From this view, square canvas-like patches applied to Sydney's superstructure can be clearly seen, this modification being effected to perhaps minimize the radar signature of the 'boxy' frigate. (Royal Australian Navy)

Navy Frigates – HM Ships *Battleaxe* (F89) and *London* (F95) – and the *Knox* class frigate USS *Reasoner* (FF1063). This group made some of the earliest headlines of the blockade effort when shots were fired across the bows of an Iraqi cargo vessel, forcing it to stop and submit to an inspection by a Royal Marines boarding party.

During mid-November the two frigates were replaced in the area by the 1st Destroyer Squadron's *Perth* class guided missile destroyer HMAS *Brisbane* (41), and yet another FFG7 from the 2nd Squadron, HMAS *Sydney* (03). To counter the significant threat from Iraqi Air Force Exocet and Iraqi SS-N-2 *Styx* missiles, *Brisbane* was fitted with a Vulcan Phalanx CIWS immediately before departure. The tanker *Success* remained on station for some weeks after the rotation of the combatants, but it too was replaced in early January by the new supply vessel, HMAS *Westralia* (AO195).

With Desert Shield operations increasingly focused on the 15 January UN deadline, the role of

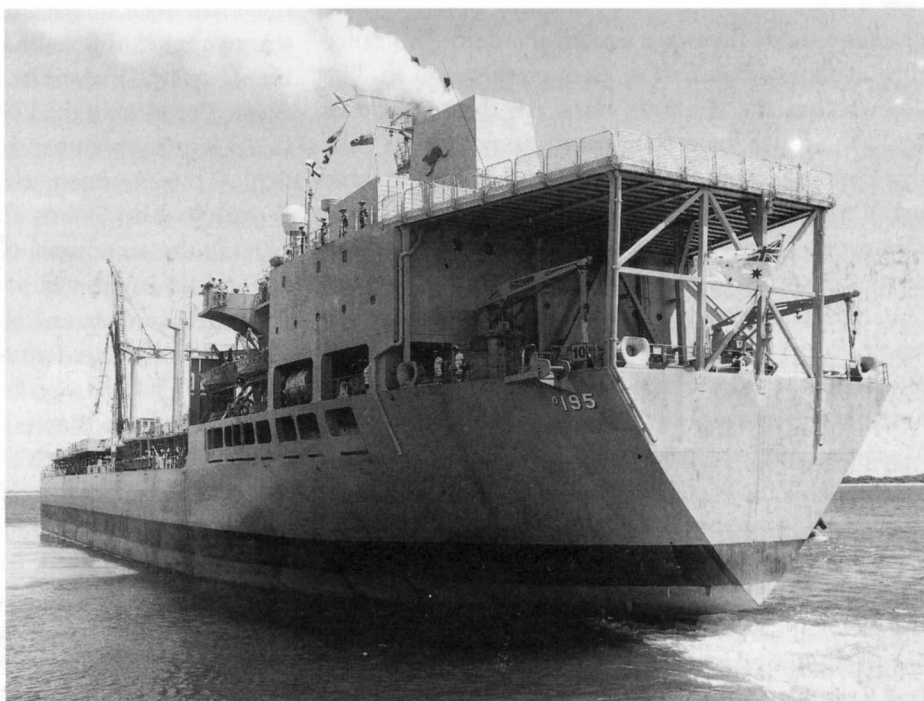
The last Australian naval vessel despatched to the Gulf was the recently commissioned HMAS Westralia (AO195), the oiler departing Stirling on the first leg of its trip on 2 January. Once the Royal Fleet Auxiliary's Appleleaf (A791), the oiler was leased to the Australian Navy in late 1989. Totally refitted in Singapore, Westralia arrived back at Stirling in mid-1990 and was immediately put to work replenishing locally based destroyer escorts on patrol in the Indian Ocean. The vessel was further modified at Stirling in late 1990 when a helicopter landing platform was constructed over the stern of the ship, but due to space limitations no hangarage facilities were built. Westralia's sister-ship, RFA Orangeleaf (A110), also saw extensive service supporting Royal Navy and coalition forces in the Gulf. As with HMAS Success, Westralia embarked an Army detachment equipped with the RBS.70 SAM system. Once Westralia was in the

Gulf in late January, Success headed for home after completing almost six months on station. (Royal Australian Navy)

the various task groups in the area was progressively changed to accommodate the requirements of a more offensive military campaign. Most of the warships were switched from policing the trade embargo to providing an escort for the hundreds of unarmed merchantmen and auxiliaries bringing allied vehicles and supplies into the Gulf and Red Sea ports. Later, as the big US battlegroups and Marine amphibious forces arrived, some of the surface combatants were re-tasked to provide effective air defence for the gathering armada. The Australian contingent was assigned to the USS *Midway* (CV41) Carrier Battle-group, newly arrived in the restricted waters of the Gulf from its Yokosuka (Japan) home port. As soon as hostilities began, the Rules of Engagement for the RAN ships were widened to include shore-bombardment in support of any amphibious landing.

BELGIUM

On 17 August two Belgian Tripartite minehunters, BNS *Iris* (M920) and BNS *Myosotis* (M922), were deployed to the area, together with the 2600-ton support ship, BNS *Zinnia* (A961). The minehunters themselves were designed and built as part of a co-operative venture with France and The Netherlands (hence the Tripartite description) and all three





Belgium's military commitment to Operation Desert Shield was severely criticized by the Western European Union in September 1990, as up until that point only two minehunters and a support vessel had been despatched south. Stung into action, the Belgian Navy rapidly prepared the Wielingen class frigate BNS

Wandelaar (F912) for blockade duties. Possessing a total weight of 2283 tons fully loaded, and armed with Exocet and Sea Sparrow missiles, plus a 100 mm gun and ASW mortar launchers, the Wandelaar dramatically increased Belgian fire power in the region.
(STANAVFORLANT)

nations operate them to a similar standard. In France they are known as *Eridan* class vessels, and in The Netherlands the *Alkmaar* class. All three countries build their own glass-reinforced plastic (GRP) hulls to a common design, and the ships all use the same main machinery (Dutch), minehunting gear and electronics (French) and electrical equipments (Belgian). Like most mine countermeasures vessels (MCMVs), the class is only lightly armed with a single 20 mm cannon and a pintle-mounted 12.7 mm machine gun, so the two Belgian ships sent to the Gulf each carried a three-man team of Dutch Marines, equipped with Stinger shoulder-launched SAMs.

The support ship *Zinnia* is no stranger to the task of assisting an international mine-clearance effort. During 1987–88 it was deployed to the same area to support ships working in the Gulf itself, as part of an operation to clear vital sea lanes at the end of the long Iran/Iraq conflict. This time the three Belgian vessels

were operating off Fujairah in the Gulf of Oman, providing an on-call MCMV capability for the Straits of Hormuz. *Zinnia* is fully rated as a command and logistics ship, with a bunkering capacity of 500 tons of fuel oil. It is armed with three 40 mm Bofors cannon, and carries an Alouette III observation helicopter in a stern-mounted telescopic hangar.

In the early stages of Operation Desert Shield there had been some criticism of Belgium's relatively scant support of the allied effort, and at a meeting of the Western European Union (the co-ordinating agency for most of the European assets deployed to the Gulf) on 26 September, it was agreed that they would deploy the *Wielingen* class frigate BNS *Wandelaar* (F912) to help police the UN trade embargo. At roughly the same time, the Royal Navy was sending the logistic landing ships RFA *Sir Galahad* (L3005) and RFA *Sir Percivale* (L3036) to the area, carrying vehicles and equipment for the UK's 7th Armoured Brigade. The *Wandelaar* departed Zeebrugge on 4 October and eventually joined the two British ships to escort them through the potentially hostile waters of the Red Sea, before taking up operational station in the Bab el Mandab Straits, at the western end of the Gulf of Aden. Here it was working with the French *Commandant Rivière* class frigate *Doudart de Lagrèe* (F728) and P400 class fast attack craft *La Rieuse* (P690), which is normally based with the French Navy at Mayotte in the Indian Ocean.



CANADA

The Canadian Government's response to Operation Desert Shield was virtually immediate. In early August work started at the Atlantic naval base in Halifax to bring two combatants and a support ship up to full wartime standard. The *Iroquois* class destroyer HMCS *Athabaskan* (282) and the Improved *Restigouche* class frigate HMCS *Terra Nova* (259) were fitted with improved communications and upgraded combat sensors, and both were equipped with new chaff launchers and a single Vulcan Phalanx close-in weapons system. The much bigger (24,000-ton full load) operational support ship HMCS *Protecteur* (AOR509) was fitted with two Phalanx systems and an improved communications suite. All three vessels were fitted with Bofors 40 mm cannons and 12.7 mm machine guns, and the destroyer carried two CH-124A Sea King ASW helicopters.

Before departure on 24 August, all three ships embarked detachments of soldiers from No 119 Air Defence Battery, equipped with brand-new Shorts Javelin low-level air defence missiles. These had been delivered by the manufacturers only 48 hours after the request arrived in Belfast, and training was carried out in Canada by British Army instructors. It is understood that the troops received both single-shot (man-portable) and lightweight multiple launchers. The Battery was originally equipped with

Although not physically deployed to the Gulf, the Canadian Armed Forces frigate HMCS Fraser (DDE223) nevertheless played its part by preparing other elements of the fleet for anti-ship attacks. Acting as a 'hostile', the ageing St Laurent class frigate made repeated attacks on Athabaskan (DDH282), Terra Nova (DDE259) and

Protecteur (AOR509) as the trio left Halifax. To increase the realism of the threat, Fraser was supported by CF-18 Hornets, CP-140 Auroras and CE-144 Challengers from various airbases nearby. (Walter Sartori)

Blowpipe missile systems, and these were also taken on board.

The three ships left Halifax in company with the *St Laurent* class frigate HMCS *Fraser* (233), which had not been brought up to the same standard. Soon after departure, *Fraser* split away from the main formation and began a series of manoeuvres designed to work up the combat readiness of the Gulf task group. It was joined in these 'free-play' exercises by CP-140 Aurora maritime patrol aircraft, CE-144A electronic support aircraft and a number of CF-18A fighters. Some of these aircraft were operating from bases in Canada, while others were deployed to Gibraltar or Cyprus to ensure that the ships would be under constant threat of 'attack' all the way down to the eastern Mediterranean. Once on station in the Gulf of Oman, the Canadian ships joined other units from Australia, France, Italy, The Netherlands, Spain, the United Kingdom and the United States in

policing the embargo and escorting transport vessels through the Straits of Hormuz.

Because of increasing tension in the area, the Canadian Government decided to provide full air cover for its ships. On 29 September, No 409 Squadron from Baden-Söllingen in Germany deployed 18 CF-18As to Qatar, and this detachment was reinforced in early January when another six Hornets and a CC-137 (Boeing 707) tanker arrived. Nicknamed the 'Desert Cats', the fighters were specifically tasked to fly combat air patrols (CAPs) over allied shipping, but their Rules of Engagement were later changed to include escort duties and then offensive operations over Iraqi territory.

DENMARK

During October the Danish Navy deployed the 1320-ton *Niels Juel* class frigate HMDS *Olfert Fischer* (F355), and it was subsequently reported working in the Gulf of Aden. One of a class of three similar vessels, the frigate is equipped with Harpoon surface-to-surface (anti-ship) missiles, and a Sea Sparrow SAM system. Before departure for the combat area, the ship's air defences were augmented by a small number of Stinger shoulder-launched SAMs borrowed from the Royal Netherlands Army, and some of the crew were given special training on the weapon in the simulator dome at Ede barracks, near Arnhem.



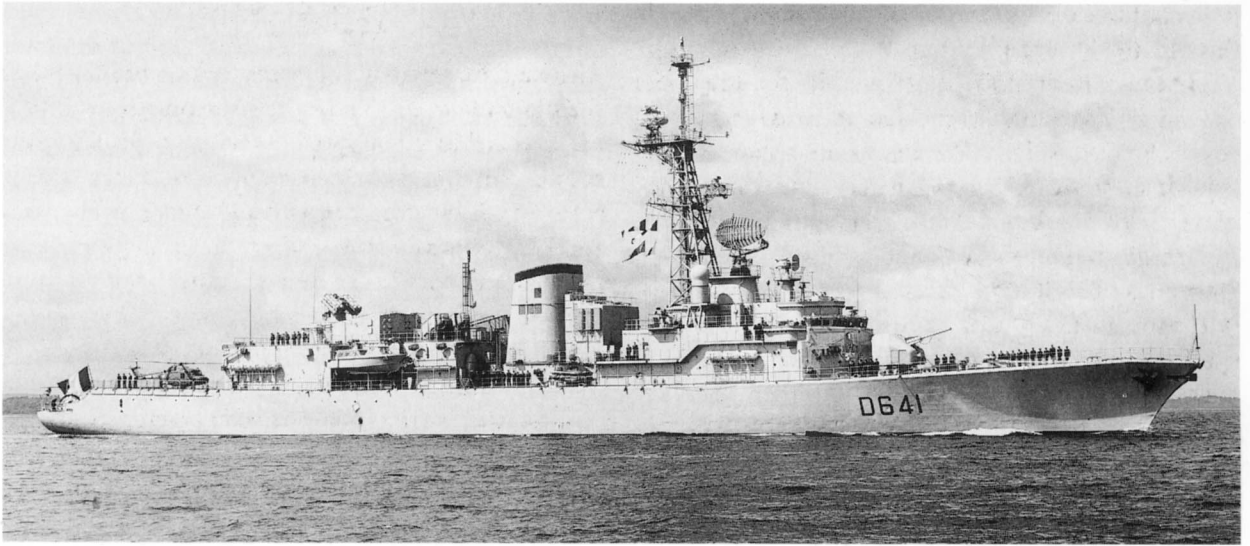
Not usually spotted in such warm climes, the Danish frigate Olfert Fischer (F355) was one of the first NATO vessels to arrive in the region. Seen here departing Mina Jebel Ali, in the United Arab Emirates, after a brief bunkering stop, the Niels Juel class frigate soon returned to its policing duties in the southern Gulf. Impressively armed with Harpoon and Sea Sparrow missiles, plus an OTO Melara 76 mm gun, the Olfert Fischer also embarked a small number of Stinger shoulder-launched SAMs borrowed from the Dutch Army. (DPR Navy)

EGYPT

Although Egyptian naval forces took no part in either the blockade operation or the subsequent hostilities, the national army adopted a very high profile (over 20,000 men and 300 M60 main battle tanks) in the land war. This presence enraged Saddam Hussein, and threats were made against the security of 'vital installations' in Egypt. As a result, patrols were stepped up along the entire length of the Suez Canal, which was carrying more capital ships than at any time in its history. Of particular concern were the bulk cement carriers that are so characteristic of the region: if one of these were sunk it would effectively block the canal for many weeks, severing the most important logistics route into the Desert Storm area. The major operational threats were from terrorist action (rocket or gunfire from the canal banks, or a bomb placed inside a vessel), or from covert delivery of mines by innocent-looking 'commercial' traffic. The waterway was closed for eight years following mining operations during the 1967 Six Day War.

FRANCE

France has long-standing interests in the Indian Ocean, and generally keeps at least a small naval presence in the area. It also has extensive military and commercial ties with the former French colony of



Djibouti, which strategically overlooks the narrow Strait of Bab el Mandab, between the Red Sea and the Gulf of Aden. Several fast patrol boats are permanently based in Djibouti, and the *Commandant Rivière* class frigate *Protet* (F748) was also on station at the time of the invasion of Kuwait in early August. It was quickly joined by the *D'Estienne D'Orves* class frigate *Commandant Ducuing* (F795), and on 10 August the two *Georges Leygues* class ASW destroyers *Dupleix* (D641) and *Montcalm* (D642) sailed for the area. *Montcalm* initially took up station in the Straits of Tiran with ships from Greece, Spain and the United States, while *Dupleix* continued through the Red Sea to join up with the *Commandant Ducuing* and *Protet* on 15 August in the Gulf of Oman. Meanwhile the aircraft carrier *Clemenceau* (R98) left Toulon on 13 August in company with the cruiser *Colbert* (C611) and the *Durance* class replenishment tanker *Var* (A608). The carrier did not embark its usual fixed-wing air group on board, but instead carried about 48 helicopters (mainly Pumas and Gazelles) of the 5th *Régiment d'Helicoptere de Combat*. These were eventually destined to join the French ground forces in the Hafar-al-Batin region of Saudi Arabia, about 100 km from the Kuwaiti border, but their first port of call was Djibouti, where they were able to work up to combat readiness in a desert environment alongside the French forces that are permanently based in the area. After finally delivering the helicopters and much of their support equipment to the Gulf, *Clemenceau* and her escorting

Along with the Americans and the British, France committed itself wholeheartedly to freeing Kuwait. One of the first visible signs of this commitment was the deployment of a large task force of destroyers and frigates, rapidly followed by the carrier Clemenceau (R98) and the cruiser Colbert (C611). Amongst the early arrivals in the Red Sea was the sleek ASW

destroyer Dupleix (D641), one of a pair of Georges Leygues class vessels despatched on 10 August. Celebrating its tenth year of frontline service only months before the crisis occurred, the 4170-ton Dupleix sailed up to the Gulf of Oman to operate alongside the frigates Commandant Ducuing (F795) and Protet (F748). (Walter Sartori)

cruiser left the area and returned to Toulon, amid much speculation that it was preparing to embark its own air group before re-joining the allied effort in the Red Sea.

After the French Ambassador's residence in Kuwait City was sacked by Iraqi troops on 14 September, a meeting in Paris decided that the French component of Operation Desert Shield should be considerably increased. This involved a large number of ground forces, and these new elements were transported in a number of chartered cargo vessels and car ferries, operating as four separate convoys code-named *Angela*, *Alice*, *Arlette* and *Amelie*. Several more warships were also deployed to act as escorts to these unarmed ships, and to bolster the sanctions operation as soon as the merchantmen had left the area. These ships included the *Commandant Riviere* class frigates *Doudart de Lagrée* (F728) and *Commandant Bory* (F726), the *Kersaint* class guided missile destroyer *Du Chayla* (D630) and



The 1250-ton D'Estienne D'Orves class frigates have seen considerable service with the French Navy in the Gulf region for well over a decade now, sailing out of the former French colony of Djibouti. Capable of carrying Exocet anti-shiping missiles, as well as ASW torpedoes,

mortars and a 100 mm fully automatic gun, these small vessels pack a punch disproportionate to their size. The Jean Moulin (F785), sister-ship to the Commandant Duceing (F795), is seen here arriving at Portsmouth on 24 September 1985. (Robin A Walker)

the *George Leygues* class ASW destroyer *La Motte-Picquet* (D645).

After operating for about two weeks in a purely shadowing role, the French warships were given new Rules of Engagement that would allow them to forcibly stop and search any suspect vessel. This change followed the adoption by the UN Security Council of Resolution 665, dated 25 August. Most of the commercial ships in the area were happy to give any information necessary about their cargo and destination, and only about five per cent of them caused enough suspicion to be boarded. Any deliberate breaking of the sanctions would result in the arrest or diversion of the ship concerned, with any doubtful vessels being shadowed by a warship until they were well clear of the problem area. There were, however, dissenters, and in early October the French frigate *Doudart de Lagrée* had to fire several warning shots in order to stop the North Korean cargo vessel

Sam Il Po as it was about to enter the Red Sea. The vessel was forcibly boarded and searched, but later allowed to proceed about its business. Such actions were thankfully rare, and all were treated with extreme sensitivity because without the UN backing they could have been construed in law as piracy on the high seas.

The French ships were operating in all three major choke-points; in the Bab el Mandab Straits and the Gulf of Aden they were working mainly with units from Belgium and the United States; in the Straits of Hormuz and Gulf of Oman with vessels from Australia, Canada, Italy, The Netherlands, Spain, the UK and the United States; and in the Straits of Tiran and Gulf of Aqabah with the Greek, Spanish and US navies. Individual ship assignments are difficult to track down because escort and shadowing duties (in both directions) would occasionally require a vessel to break away from one task group and accompany a cargo ship, or an incoming combatant, into or through another patrol area.

Most western navies are used to co-operating with each other on these international operations, and the sharing of logistical support is a familiar part of their routine. The French ships were picking up fuel and supplies from a variety of tankers and stores vessels and in return were replenishing other navies from their own tanker *Var*, which was one of the first

such vessels on station. *Var* left the area after some weeks to resume its duties as the Command Ship to the French Admiral in charge of Indian Ocean patrols (ALINDIEN) and was replaced in the Gulf by the lead ship in this class, the replenishment tanker *Durance* (A629). *Durance* herself was later relieved by the much smaller (8700-ton full load) Italian tanker *Stromboli* (A5327), which in turn was replaced by a British RFA. These rotations were a continuous feature of the whole Desert Shield and Desert Storm period, and they will certainly go on for some time yet.

During mid-February the aircraft carrier *Clemenceau* left Toulon again for what was officially described as 'an eastern Mediterranean training mission.' Its usual air group of *Étendards*, *Crusaders* and *Alizés* was embarked, and there were rumours that the carrier was going to be used 'in a wider capacity' in the Gulf. In the event *Clemenceau* did not pass through the Suez Canal and it now seems likely that its cruise was designed to act as a deterrent against any seaborne attack on Israel, Egypt or

Cyprus, all of which were directly or indirectly involved in the conflict. The carrier's air-fighting capability would also have given considerable reassurance to coalition ships passing through the area on the way to the Suez Canal.

The French Navy has a well-equipped and highly skilled mine countermeasures force, and some observers were a little surprised that none of these ships

An impressive head-on view of elements of Armilla Patrol Group W, steaming up the Gulf like pre-World War 1 dreadnoughts. Leading the formation is the Type 42 Batch III destroyer HMS York (D98), followed by the Type 22 Batch I frigate HMS Battleaxe (F89), the Type 42 Batch III destroyer HMS Gloucester (D96) and the Hunt class mine counter measures vessel (MCMV) HMS Cattistock (M31). Prominent from this angle are the SCOT

satellite communication radomes mounted in pairs on the leading three vessels. Functioning on a frequency not far removed from that used by the vessels' missile-seeker and fire control radars, the operational use of SCOT has often led to these vital systems being shutdown for brief periods at a time, thus rendering the warship temporarily 'blind'. One such period of 'blindness' almost a decade ago allegedly contributed to the loss of HMS Sheffield (D80). (DPR Navy)



were sent to the main operating areas in the Gulf. Three of the *Eridan* class, *Pégase* (M644), *l'Aigle* (M647) and *Sagittaire* (M650), were deployed in early February, in company with the *Rhin* class support ship *Loire* (A615), but this was done at the request of the Egyptian Government, not the Allied Commander. The small task force proceeded to Port Said, where it was used to bolster defences in the sea lanes approaching the Suez Canal.

GERMANY

The constitution of Germany does not allow its armed forces to deploy operationally outside the NATO area, unless a fellow NATO country is under attack, in which case the out-of-area retaliation would be under the NATO banner. This restriction, which was imposed by the occupying powers while Europe was recovering from World War 2, effectively



Illustrating the multi-national commitment to freeing Kuwait, Royal Navy frigates Battleaxe (F89) and Jupiter (F60) exercise with the sleek Leahy class cruiser USS England (CG22). Just as the British frigates were performing Armilla Patrol duties when Iraq invaded Kuwait in August, so too was USS England fulfilling its obligations to the 7th Fleet's Middle East Task Force when the tanks rolled across the border. (DPR Navy)



blocked any direct German involvement in Desert Shield or Desert Storm. However, the German Government was able to help in several ways by plugging conspicuous gaps in NATO's day-to-day defences while other assets were away in the Gulf, and by supplying training facilities or equipment to countries that were less constrained by a difficult legal framework. Germany also made a big financial contribution to the coalition effort, despite having her

own problems brought about by the rapid reunification of the country.

To strengthen mine countermeasures activity in the eastern Mediterranean area, a flotilla of German MCMVs left Wilhelmshaven on 16 August, bound for a temporary home in Crete. These included the *Lindau* class minesweepers FGS *Koblenz* (M1071), FGS *Wetzlar* (M1075) and FGS *Marburg* (M1080) from the 4th MCM Squadron at Wilhelmshaven, and



Left Showing signs of hard cruising in the Gulf region, HMS *Jupiter* (F60) slowly eases its way into the vast facility at Mina Jebel Ali for a brief period of rest and recreation. As luck would have it, the crew of *Jupiter* were enjoying a pleasurable spot of R and R in Penang when Saddam's troops invaded Kuwait, the Malaysian portcall being abruptly cancelled and the frigate rapidly despatched westward to the Gulf. Commissioned in 1969 as a standard Leander class

frigate, *Jupiter*, and four sister ships, was converted in the early eighties to carry *Exocet* and *Sea Wolf* missile systems in place of its venerable 4.5-in gun. Also possessing a towed array ASW sonar system in the stern and an enlarged flightdeck and hangar bay for a *Lynx* helicopter, *Jupiter*, and its sisters, are the most capable Leanders in service with any navy today. (DPR Navy)

Reminiscent of a World War 2 convoy, the enlarged Armilla Patrol Group X leisurely cruises up the Gulf in early January. Led by the Commander Task Unit's flagship, the Type 22 Batch II frigate HMS *London* (F95), the vessels appear in the following order row by row from left to right; Hecla class MCM support ship HMS *Herald* (A138); Hunt class MCMVs HMS *Cattistock* (M31), HMS *Atherstone* (M38) and HMS *Hurworth* (M39); Batch I Type 42 destroyer HMS *Cardiff* (D108); Batch

I Type 22 frigate HMS *Brazen* (F91); Batch III Type 42 destroyer HMS *Gloucester* (D96); Sir Lancelot class landing ship RFA *Sir Galahad* (L3005); Fort class combat stores ship RFA *Fort Grange* (A385); Regent class oiler RFA *Resource* (A480); Sir Lancelot class landing ship RFA *Sir Percivale* (L3036); and bringing up the rear, helicopter training ship cum floating hospital RFA *Argus* (A135). (DPR Navy)

the *Hameln* class fast mine warfare boats FGS *Uberherrn* and FGS *Laboe*, both from the 5th MCM Squadron based at Olpenitz. They were accompanied by two support vessels, the *Rhein* class depot ship FGS *Werra* (A68) and the Type 760 ammunition transport FGS *Westerwald* (A1435).

In addition to this large minehunting capability,

German destroyer and frigate patrols in the NATO area of operations increased significantly during the Gulf crisis. Most of Europe's territorial waters (and beyond) are regularly patrolled by NATO warships, but with so many assets committed to the liberation of Kuwait, there was a severe shortage of ships to maintain this vital task.



Along with the oiler Olna, the Fort class fast stores ships RFA Fort Grange (A385) was despatched to the Middle East in mid-August. Assigned two HC.4 'Junglies' from No 846 Sqn, Fort Grange proceeded southward at great speed loaded up with fuel oil, ammunition, food, and spares. Weighing in at an impressive 22,749 tons fully loaded, Fort Grange was a vital link in the Royal Navy's fast replenishment supply chain. (Tony Holmes)

Right In the weeks leading up to the commencement of hostilities, the Royal Navy and the RAF worked closely with each other on sharpening up their respective anti-aircraft and anti-shiping techniques. Thirty feet above the deck and rapidly pumping out anti-missile flares, a pair of Jaguar GR.Mk 1As from Bahrain test the defences of HMS York. (DPR Navy)



Left The Royal Fleet Auxiliary contributed nine vessels in support of the coalition forces, performing such widely varying tasks as refuelling, tank transporting and ship repairing. Perhaps the most specialized RFA asset in the Gulf was the helicopter training ship Argus (A135), the vessel's capacious hanger deck being rapidly converted into a forward receiving centre for wounded troops airlifted from the battlefield. Embarking its own detachment of four Sea King HC.4s from No 846 Sqn, Argus completed its fitting out in less than a month and departed Devonport on 31 October. (DPR Navy)

GREECE

With 20 or so large surface combatants (frigates and destroyers), the Hellenic Navy looks numerically fairly powerful, but 90 per cent of these ships are ex-US Navy stock, launched during World War 2 and poorly equipped to face a modern war involving missiles and low-level air attack. The only exceptions are two ships purchased from the Royal Netherlands Navy during the early 1980s. These are *Kortenaer* class frigates, armed with Harpoon surface-to-surface missiles and a modern integrated air defence system using the Selenia Aspide SAM. The ships also carry two twin-engined Agusta-Bell AB.212 attack helicopters, and each has a fairly modern radar and sonar suite. One of these ships, HS *Limnos* (F451), was deployed to the Gulf area in early September, where it was reported working with units from France, Spain and the United States, helping to police the embargo in the Straits of Tiran.

IRAQ

At the start of Operation Desert Shield it was widely reported that the Iraqi Navy possessed five frigates, including four Italian-built *Lupo* class vessels. In fact this was not so. The Iraqis certainly ordered six *Assad* class corvettes and the four *Lupo* frigates from Italian yards in February 1981 – at the same time a *Stromboli* class replenishment tanker and a 6000 ton-capacity floating dock were also ordered. All 12 vessels were structurally completed and launched between 1982 and 1988, but the warships were never armed, and certainly not delivered. The tanker *Agnadeen* (A102) and the floating dock were caught up in the arms embargo at the start of the Iran/Iraq war and both are now laid up in Alexandria Harbour in Egypt, where they have been since 1982/83. In May 1990 the Italian Government finally agreed to the delivery of all 12 vessels, but this was held back by the builders until financial and equipment standards had been





agreed by the Iraqi Government. These negotiations were on the verge of settlement when Kuwait was invaded. The ships were immediately impounded again and it now seems unlikely that they will ever be delivered.

The Iraqi Navy did, however, take delivery of a

One for the record books. All surface vessels in the Gulf embarked a Royal Marine detachment which usually numbered 12 men, commanded by a sergeant. Split into air defence or boarding party teams, the marines made an

important contribution to the policing of the Gulf. Seen here carrying standard issue Royal Ordnance SA.80 automatic rifles, this boarding team were embarked aboard HMS Battleaxe. (DPR Navy)

Yugoslav-built frigate in 1981 (believed to be either *Ibn Khaldoun* or *Ibn Marjid*, with the pennant number 507), but this ship has not been seen for some time. Various claims were made for its sinking during the long Iran/Iraq war, but if it survived that conflict it was almost certainly laid up some time ago through lack of spares for its Rolls-Royce Olympus main propulsion engine.

In the absence of the frigates, Iraq's most powerful naval assets at the start of Operation Desert Storm were nine ex-Soviet *Osa-I* and *Osa-II* class fast attack craft. The *Osa-II* is more powerful and slightly faster than the earlier vessel, but both classes are highly manoeuvrable and capable of speeds approaching 40 knots. Both are armed with four box-launched SS-N-2 *Styx* SSMs, a subsonic anti-ship weapon with a range of 25 nm and either active radar or IR homing.

During the invasion, the Iraqis also captured six Kuwaiti FNS-5 and two FPB-57 fast attack craft. These eight vessels represented a much greater threat than the *Osa* class because they were all armed with Exocet MM40 missiles, which are a full generation ahead of the *Styx* and much more difficult to knock down. Luckily the Exocet system is also a lot more sophisticated than the Soviet equipment, and the allied commanders doubted that untrained Iraqis would be able to use it to any great effect.

The biggest active ships in the Iraqi Navy were three ex-Soviet *Polnochny* class LCTs (landing craft, tank), each modified amidships to take a small helicopter platform. These ships are comparatively lightly armed with four 30 mm guns and two 18-tube artillery-type rocket launchers, but each can carry up to six main battle tanks and deliver them on-shore through a ramp in the bow. The Kuwaiti Navy had six landing craft, all built by Vosper during the 1970s, although these were much smaller than the *Polnochny* class, and their primary function in Kuwaiti service was to support landing parties working at off-shore island oil installations. None of them were armed, but the allied commanders were well aware of their potential as minelayers and they became high-value targets as soon as they were captured.

At the start of the Kuwaiti conflict the Iraqi Navy had eight dedicated mine warfare vessels, and dozens of small craft that were equally capable of releasing



Holding the 'fort' whilst other members of the boarding team check out a merchantman's cargo, two Marines keep a close eye on their 'cab', and their

ship. The Battleaxe can just be made out keeping formation about half a mile astern and to port. (DPR Navy)

mines in small numbers. Of the specialist ships, by far the biggest were the two ex-Soviet T-43 class ocean minesweepers *Al Yarmouk* (465) and *Al Kadisia* (467). These 580-ton steel-hulled vessels were armed with two 37 mm and two 25 mm guns, two depth charge throwers and a ready-prepared magazine for releasing up to 20 mines. The three 80-ton *Yevgenya* class inshore minesweepers were tiny by comparison, and very lightly armed, but they were certainly capable of causing problems for allied shipping by laying mines in the path of any proposed amphibious landing. The remaining three vessels were Yugoslav-built *Nestin* class river minesweepers, the lightest class of all, but nevertheless capable of laying mines in any shallow water, and therefore highly dangerous to the allies.

The rest of the Iraqi fleet consisted of a wide

variety of attack and patrol craft (both indigenous and captured) numbering some 70 vessels in all and ranging from the torpedo and gun-armed ex-Soviet P6 class of fast attack craft (capable of 45 knots), down to the military patrol equivalent of a 20 ft family cruiser. Practically all of these could carry mines or perhaps a dozen men armed with automatic rifles, so they were all treated as potentially hostile.

ITALY

The Italian Government decided against sending any ground troops to assist in Operation Desert Storm, but the naval and air forces played a significant part in both the embargo screen and the actual fighting. The relatively new *Minerva* class corvettes *Sfinge* (F554) and *Minerva* (F551) departed on 16 August to take up station in the eastern Mediterranean, just to the south of Cyprus. This allowed a measured degree of protection to the island (which was an important staging post and base throughout the conflict), and released ships of the US 6th Fleet, allowing them to proceed into the Red Sea via the Suez Canal. Three days after the departure of the corvettes, the *Maestrale* class frigate *Libeccio* (F572) sailed for the operational areas of the Gulf, and it was joined the following day in the Ionian Sea by the *Lupo* class frigate *Orsa* (F567). These two ships then proceeded

through the Suez Canal together and were quickly operational off Muscat in the Gulf of Oman.

At the beginning of September the Italian replenishment tanker *Stromboli* (A5327) arrived in the area to relieve the French tanker *Durance*. After about a month of operations by the two frigates it became obvious that the task group would need some reinforcement, if only to allow a degree of rotational shore leave for the hard-pressed crews. To achieve this flexibility, the *Maestrale* class frigate *Leffiro* (F577) was despatched to the area, eventually joining up with the group near the Straits of Hormuz.

As tension in the Gulf began to increase, the original ships were rotated back to their home ports and replaced in the area by the guided missile destroyer *Audace* (D551) and the two *Lupo* class frigates *Lupo* (F564) and *Sagittario* (F565). The destroyer was added to the group to improve its overall air defence capability. Accompanying the combatants was the *Stromboli* class replenishment tanker *Vesuvio* (A5329). Also reported in the Gulf during February was the *San Giorgio* class amphibious transport dock *San Marco* (L9893).

It was clear that many of the ships bringing men and supplies into the Gulf represented tempting targets during their long transit through the Mediterranean. There was a constant fear of renegade mining operations, and allied forces increased maritime



One of the eleven Italian naval vessels directly involved in Gulf operations was the sleek Lupo class frigate Orsa (F567). Sent south with the Maestrale class frigate Libeccio (F572) on 20 August, Orsa quickly transitted the Suez Canal and took up station off Muscat in the Gulf of Oman. Had it not been for an EEC arms embargo placed on Iraq during their long war with Iran, Orsa may have opposed four enemy Lupo class frigates in the northern Gulf. Built in La Spezia as part of a ten-ship/£1.45 billion deal signed in 1981, the vessels Hittin, Imi Qar, Al Qadissiya and Al Yarmouk have remained in mothballs in Italy since their completion in 1986. (Robin A Walker)

Dwarfed by the behemoth supertanker Chevron South America, a Lynx from No 815 Sqn hovers over the bridge wings awaiting the return of its 'passengers'. Crouched down by the fire hose cabinet at the bottom of the antenna mast, a Royal Marine covers the tracks of the returning boarding party. Assigned to the Type 42 Batch III destroyer HMS York (D98), both the helicopter and the Marines were kept busy policing the waters of the southern Gulf in the opening months of the Desert Shield campaign. (DPR Navy)



patrol flights over the major sea routes and deployed additional minehunting assets into the area. Among the ships carrying out precautionary patrols along the sea lanes were the Italian Navy's *Lerici* class minehunters *Milazzo* (M5552) and *Vieste* (M5553), and the ex-US Navy *Adjutant* class coastal minesweeper *Platano* (M5516) – these three were supported by the MTS1011 class ramped transport ship *Tremiti*. Four Italian *Agave* class coastal minehunters were also reported to be in the Gulf of Aqabah, although this has not been confirmed.

KUWAIT

In relation to its national wealth and off-shore assets, Kuwait's naval forces were surprisingly insubstantial, consisting mainly of fast attack craft, coastal patrol vessels and unarmed landing craft. The eight Exocet-equipped fast attack boats were used primarily to deter ship-borne attacks on the many oil installations dotted around the coastal regions and off-shore islands. The only other armed vessels in the inventory were 15 coastal patrol craft, each equipped with a light machine gun or two to combat the possible threat of terrorism or smuggling. The remainder of the fleet, perhaps 40 individual vessels, were all unarmed and used primarily for community-related work such as search and rescue, coast guard

duties and oil industry support. Although the Kuwaiti naval forces are funded by the Ministry of Defence, they are actually administered by the Ministry of the Interior and manned by about 1200 regular Coast Guard personnel.

After the invasion virtually all Kuwaiti vessels fell into Iraqi hands, and because of their potential mine laying capability they became immediate targets for the allied forces. At the present time it is impossible to say how many of the vessels survived intact, but the allied commanders reported in early February that the Iraqi Navy (which then included all captured equipment) was 'combat ineffective'. At that stage coalition forces claimed to have sunk 41 'Iraqi' vessels, and severely damaged another 42. Obviously some of these losses must have included former Kuwaiti equipment.

THE NETHERLANDS

The Royal Netherlands Navy has always been an enthusiastic supporter of international maritime task groups, and through its NATO and Western European Union membership frequently makes assets available for out-of-area operations. Within a day or two of the invasion of Kuwait, the *Jacob Van Heemskerck* class air defence frigate HrMs *Witte de With* (F813) and the *Kortenaer* class frigate HrMs

Pieter Florisz (F826) were being prepared for service at the Dan Helder naval base. Both ships were fitted with additional 20 mm Oerlikon guns and had 12.7 mm machine guns mounted on the bridge wings, the latest NBC protection gear also being taken aboard as a precautionary measure. The *Pieter Florisz* carried two Lynx SH-14B helicopters, upgraded to include 12.7 mm machine gun packs, whilst both ships were equipped as standard with a Signaal Goalkeeper close-in weapons system.

The two frigates left Dan Helder on 20 August in company with the fast combat support ship *HrMs Poolster* (A835). It was always intended that *Poolster* would only escort the frigates into the eastern Mediterranean. It would then refuel and re-supply them both, before returning to Holland, leaving the task group to go through the Suez Canal alone. Prior to the establishment of overall US command, the Dutch ships had planned to work under British command with units of the Royal Navy's Armilla



Aside from the launcher-mounted Sea Dart and Sea Wolf SAMs fitted to destroyers and frigates in the Gulf, Royal Navy warships also carried the shoulder-launched Short Brothers Blowpipe and Javelin missiles. Operated by six-man Royal Marine air defence detachments, the short-ranged SAMs were also embarked on RFAs to help bolster their basic point-defence systems. These Marines are seen practising their sighting techniques with a Javelin aboard Jupiter. Now replacing Blowpipe as the standard very short range ships' self-defence missile, Javelin was first used operationally aboard Royal Navy minesweepers in the Gulf in November 1986. (DPR Navy)



Wearing a flak jacket, anti-flash gloves and mask, and a standard issue helmet (without camouflage cover), a member of Battleaxe's Marine air defence detachment aims his GPMG over the bow of the frigate. Every second 7.62 mm round is marked with red paint to denote that it is a tracer round. Lashed to the bridge wings and roof, plinth mounted on the flight deck, and fixed to strategic positions in the ship's superstructure, the ubiquitous 'Gimpy' machine gun performed the role of 'last ditch defender' aboard Armilla Patrol vessels. (DPR Navy)

Patrol, and discussions had been held in London to agree common Rules of Engagement for a joint task group. In the event the command arrangements in the area were remarkably flexible and The Netherlands contingent took up station in the Gulf of Oman and Straits of Hormuz, working with ships from seven other nations.

After only a few weeks of operation in the area the Dutch task group ran into difficulties when HrMs *Witte de With* developed engine trouble, which is reported to have affected one of the Olympus TM3B gas turbines and one of the Rolls-Royce Tynes. The ship was taken out of service at Mina Jebel Ali, south of Dubai, and a repair team with new turbines for both engines had to be flown out to deal with the problem.

On 19 November the air defence frigate HrMs *Jacob Van Heemskerck* (F812) and the *Kortenaer* class frigate HrMs *Philips Van Almonde* (F823) were sent to the Gulf to relieve the original pair. They were accompanied all the way into the operational area by the *Poolster* class fast combat support ship HrMs *Zuiderkruis* (A832). In anticipation of being required for Gulf service, this ship had been fitted with a Goalkeeper CIWS at the HVO Yard in Vlaardingen, near Rotterdam.

As the inevitable war approached, the deployment of many of the ships in the area changed, and the emphasis switched from embargo enforcement to

the escort and protection of the big warship groups. The Dutch trio was assigned to the USS *Midway* (CV41) Carrier Battle Group and formed part of a rotational plan that provided each ship in the group with mutual defence and support. The *Jacob Van Heemskerck* was part of the air defence screen, the *Philips Van Almonde* provided an escort for the various support ships and tankers that were moving in and out of the Battle Group area, and the *Zuiderkruis* replenished other ships in the groups as required.

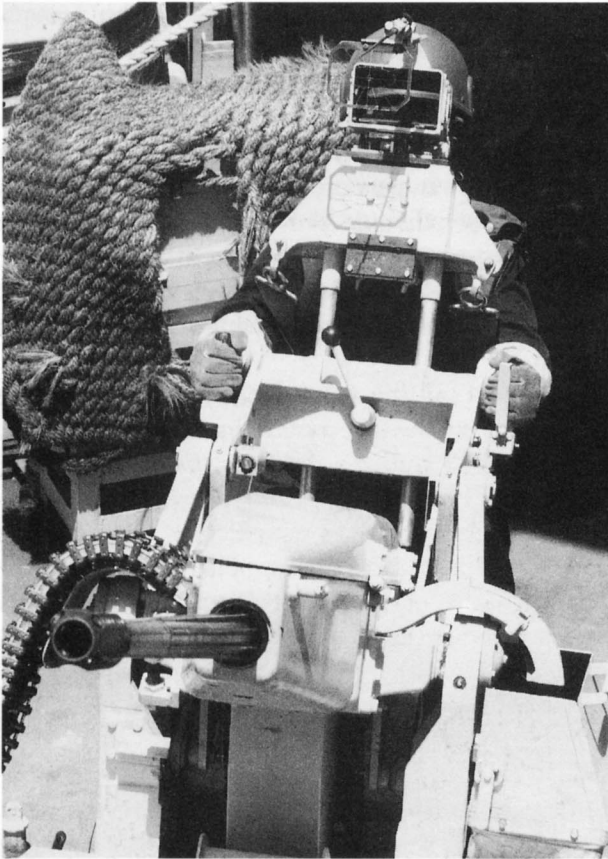
As part of the continuing watch for mining operations in the sea routes through to the Gulf, NATO's Standing Naval Force Channel (STANAVFORCHAN) was unusually taken out of its normal operating area on 25 January and deployed to the central Mediterranean. This specialist mine-hunting force included the Dutch *Alkmaar* class minehunters HrMs *Alkmaar* (M850) and HrMs *Zierikzee* (M862), as well as similar vessels from Germany (2), Belgium, the UK and Norway.

NORWAY

Although the description 'coastguard cutter' suggests a fairly small ship, the Norwegian *Nordkapp* class vessel KVS *Andenes* (W322) is far from that. At 3240 tons (full load) it is as big as most frigates, and armed with a 57 mm Bofors gun and four 20 mm cannon; the KVS *Andenes* also carries its own Lynx helicopter,

As a result of lessons learnt in the Falklands conflict, the Royal Navy quickly refitted most of its warships with 20 and 30 mm Oerlikon cannon. Usually mounted on either side of the bridge superstructure and hanger bay, the manually sighted and operated cannon is manufactured in Britain by BMARC and designated GAM-BO1 by the Royal Navy. Capable of firing up to a 1000 rounds per minute over a maximum range of 2000 metres, this GAM-BO1 is seen in an operational attitude abroad York. (DPR Navy)





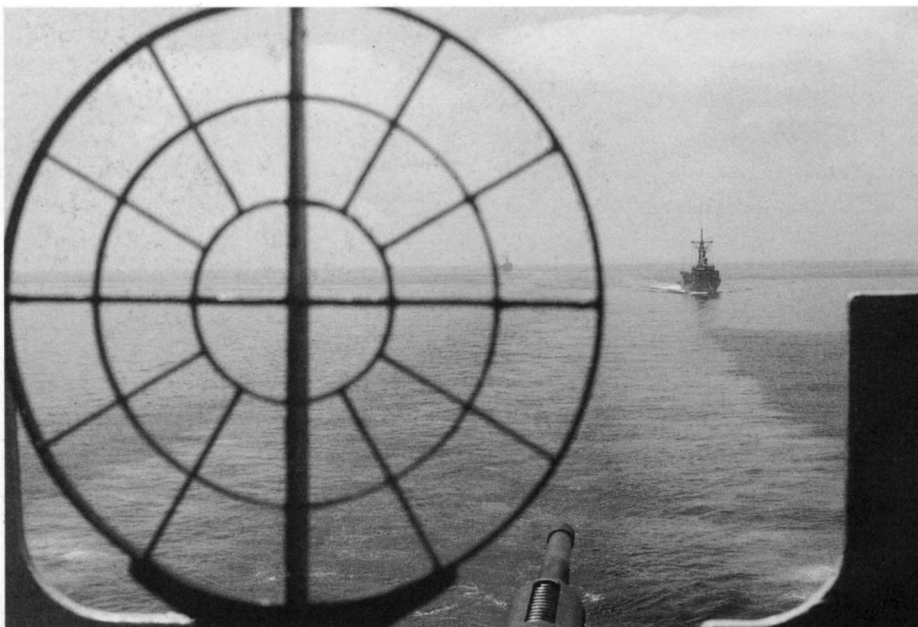
Looking like a Cyberman, a sailor trains his BMARC skyward. Although manually sighted, the gun is electrically traversed

and fed, the magazine belt being clearly visible clipped into the breech of the Oerlikon. (DPR Navy)

which is probably why it was selected for Gulf operations. *Andenes* was deployed in late October to assist the sanctions enforcement groups, but the vessel's operational areas and time on station are not known. In addition to this direct involvement in Desert Shield, the Norwegian Navy stepped in with its *Oslo* class frigates and *Sleipner* class covettes to provide a near-normal range of NATO coastal patrols while other assets were away in the Gulf. The Norwegians also provided one of the minesweepers that were deployed to the Mediterranean in January with NATO's Standing Force.

PORTUGAL

As a member of both NATO and the Western European Union, Portugal's response to the Gulf crisis was disappointing. No armed vessels or ground troops were deployed, but the Government did agree to send 'transport ships' to the area, and improve the facilities for air transport of American forces and supplies through the air bases at Lages and Santa Maria in the Azores. The only transport vessel so far noted was the logistic support ship NRP *São Miguel* (A5208), which was reported at the Marchwood military port on 31 October loading supplies for the UK forces in Saudi Arabia. How many journeys this ship made, or whether any other ships were involved, is not known.



The view through the site of a 20 mm Oerlikon Mk 4AA mounting on the stern of RFA Olna. Closing up behind the oiler in preparation for a replenishment at sea are a pair of Oliver Hazard Perry class frigates of the US Navy's Middle East Task Group. (DPR Navy)

SAUDI ARABIA

The Saudi Arabian Navy has a reasonably modern force of frigates and corvettes, all of them well-defended against sea-skimming missile and air attack. Despite this, nothing was heard of them during the Desert Shield or Desert Storm operations. Some of the nine *Al Siddiq* class of fast attack craft (each protected by a 20 mm Vulcan Phalanx CIWS) certainly appear to have been in operation because the Saudis claimed that one had been used on 23 January to sink an Iraqi minelaying vessel, although details of the engagement are sketchy. Another minelayer was claimed on the following day, again with no firm details of the actual combat.

It is known that the Saudi MSC 322 class coastal minesweepers *Addiryah* (412), *Al Quysumah* (414), *Al Wadeah* (416) and *Safwa* (418) did see considerable service during the conflict, and will probably continue to do so for some months to come. They formed part of a joint mine-clearing effort and worked most frequently with the American *Avenger*, *Acme* and *Aggressive* classes. These ships, together with the British *Hunt* class, achieved considerable success during the campaign and accounted for well over 100 Iraqi mines.

SPAIN

The Spanish Government reacted very quickly to the Gulf crisis and by early September three combatants and a supply vessel were on patrol. The new FFG-7 class frigate *Santa Maria* (F81) linked up with the two Dutch frigates in the Gulf of Oman, while the two *Descubierta* (F30) class corvettes *Descubierta* (F31) and *Cazadora* (F35) joined the two Belgian

In contrast to the totally manual Oerlikon, the General Dynamics CWS Mk 15 is fully automatic – except when it comes to magazine reloading! Seen here threading 989 uranium-depleted 20 mm rounds into the magazine fitted below the mounting, five sailors from York perform a task which can take anywhere up to 30 minutes to complete – a figure which contrasts markedly with the

system's impressive 3000 rounds a minute rate of fire. Based on the ubiquitous Vulcan cannon, the Phalanx system relies on its dome encased radar for both detection and tracking. The advanced system can track outgoing rounds from the Vulcan, predict their point of closest interception to the enemy aircraft or missile, and correct the fall of shot for the ensuing burst. (DPR Navy)

minehunters, which had moved to the Straits of Tiran after a short stint of patrolling off the coast of Fujairah. The corvettes, which are armed with a Sea Sparrow SAM system, were basically there to offer air protection to the minehunting group, while the frigate was using its helicopter to observe and challenge possible sanctions breakers. The Spanish warships had sailed in company with the 16,800-ton (full load) ex-US *Paul Revere* class supply ship, *Aragón* (L22), which remained on station for some weeks.

On 18 September it was announced that the three combatants would be rotated back to their home ports and be replaced in the same areas by the FFG-7 class frigate *Numancia* (F83) and two more *Descubierta* class corvettes, *Diana* (F32) and *Infanta Cristina* (F34). The new ships left Rota (FFG-7) and Cartagena (F30s) on 31 October, arriving in the operational areas during early November.



SOVIET UNION

Although the Soviet Union was not formally involved in the blockade operation, its naval forces did offer some assistance with shadowing manoeuvres from time to time. When the crisis first developed in August the *Udaloy* class destroyer *Admiral Tributs* was in the area, together with another (unnamed, but believed to be a modified *Kashin* class) destroyer and a support ship. These were later reported to be accepting information about suspect ship movements from RAF Nimrod maritime patrol aircraft operating out of Seeb, Oman, and the co-operation was said to be working well!

On 4 October the *Slava* class missile cruiser *Chervona Ukraina* and the *Sovremenny* class destroyer *Bystry* passed through the Suez Canal, and it

The Soviet Navy generally kept its distance from coalition forces during the Gulf war, preferring to shadow warships and merchantmen alike, glean information from coded SATCOMM and data link communications as and when it could. One of the vessels that briefly showed its face in the area in early October was the Sovremenny class

destroyer Bystry, this powerful warship escorting the Slava class missile cruiser Chervona Ukraina through the Suez Canal and across the Straits of Bab el Mandab. Photographed in the Barent Sea from an RAF Nimrod of No 206 Sqn, the Sovremenny class destroyer Otlichnyy (403) is an older sister-ship of the Bystry. (No 206 Sqn)

was thought that they might accept blockade-related 'trade' while they were in the Red Sea. In the event this was not so, and they proceeded directly to the Strait of Bab el Mandab without delay on their way through to join the Soviet Pacific Fleet.

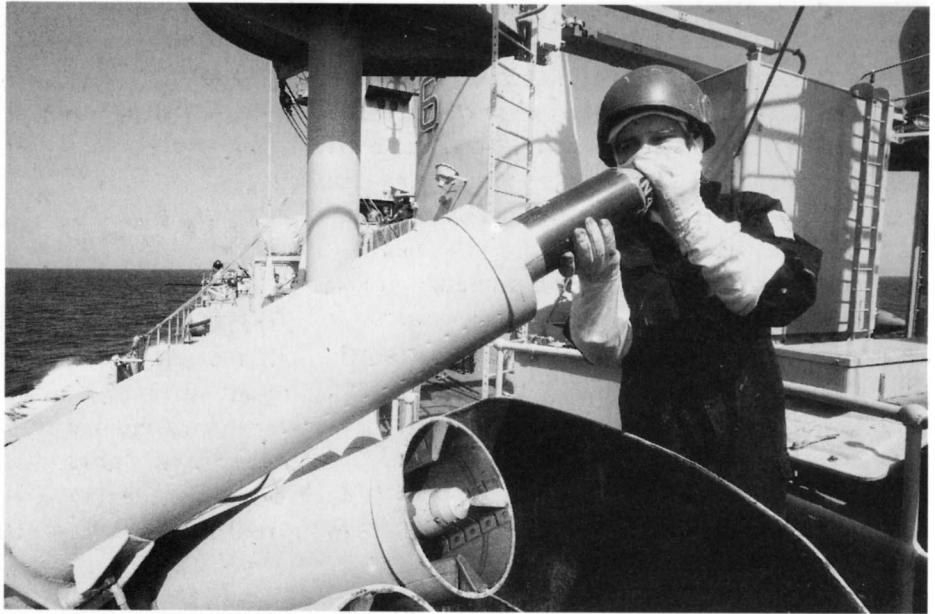
UNITED KINGDOM

At the beginning of Operation Desert Shield the Royal Navy had just four ships in the Gulf region, and even they were unusually widely dispersed. The regular Armilla Patrol normally consists of three combatants and one supply ship working basically as a single task group, but not necessarily staying together all the time. When Kuwait was invaded the Armilla ships were the Batch III Type 42 destroyer HMS *York* (D98), the Batch I *Broadsword* class frigate HMS *Battleaxe* (F89), the Batch IIIA broad-beamed *Leander* class frigate HMS *Jupiter* (F60) and the 37,700-ton (full load) *Appleleaf* class support tanker HMS *Orangeleaf* (A110). As often happens on these occasions, when the trouble flared up in early August, *Battleaxe* and *Jupiter* were on port visits in Mombasa and Penang, leaving *York* and *Orangeleaf* to show the flag in the operational area.

The absent frigates were recalled immediately to a rendezvous with the rest of the patrol in the North



Besides missiles and gun, most British ships mounted at least two Knebworth/Corvus fully traversable chaff launchers on either side of the superstructure. Capable of creating an 'aluminium warship' in seconds, the eight-tube device can confuse most anti-ship missiles. This particular launcher is one of a pair mounted just astern of the SCOT radomes on the Sea Wolf Leander Jupiter. (DPR Navy)



Arabian Sea. At the same time the mine counter-measures squadrons at Rosyth were alerted and three *Hunt* class coastal minehunters, HM Ships *Cattistock* (M31), *Atherstone* (M38) and *Hurworth* (M34), were brought up to full 'Gulf standard', with improved gunnery, chaff decoys and ESM equipment. These were deployed with their support vessel, the Improved *Hecla* class survey ship HMS *Herald* (A138), in mid-August, initially to the eastern Mediterranean, and then through to the Gulf itself. These ships were to play a key part in the successful conclusion of Operation Desert Storm.

The next few weeks saw a number of new deployments, both to reinforce the combat capability of the Gulf task group and to support and re-supply the growing armada of ships in the area. Another Batch I *Broadsword* frigate, HMS *Brazen* (F91), was despatched followed by a Batch II vessel, HMS *London* (F95), which was to act as the Royal Navy's command ship in the Gulf. The Type 42 destroyer HMS *Gloucester* (D96), a sister ship to the *York*, added considerable air defence firepower to the group with its Sea Dart SAM system, as the *Iowa* class battleship USS *Missouri* (BB63) would testify to some weeks later.

The size and disposition of the fleet was already presenting support problems so the large fleet tanker RFA *Olna* (A123) and the 23,300-ton (full load) fleet replenishment ship RFA *Fort Grange* (A385) were

sent to the area, whilst the *Stena* Type forward repair ship RFA *Diligence* (A132) was brought in from the Falkland Islands to take up station at Mina Jebal Ali, south of Dubai. To assist with the distribution of supplies, *Olna* and *Fort Grange* were both equipped with two Sea King helicopters.

Following the decision to commit the UK's 7th Armoured Brigade to the gathering ground forces, the need for transport ships became acute. More than 30 commercial cargo vessels had to be chartered to complete the move from Germany to Saudi Arabia, and much of the Brigade's supplies and equipment had to be drawn from war stocks held in UK. The logistic landing ships RFA *Sir Galahad* (L3005) and RFA *Sir Percivale* (L3036) were deployed to accomplish this task, and both were brought up to full wartime standard before departure. Four single-barrel 20 mm Oerlikon guns were fitted to each ship, two abeam the funnel and two on the forecastle – *Sir Galahad* was also fitted with the Marisat satellite communications system. *Sir Galahad* left Portsmouth on 6 October for loading at Marchwood, and departed from there on the following day. *Sir Percivale* followed two days later, and both ships eventually joined up with the Belgian frigate *Wandelaar*, which escorted them through to the Gulf.

During this period the Batch I Type 42 destroyer HMS *Cardiff* (D108) was also deployed, bringing to seven the number of large combatants already com-



mitted by the Royal Navy. The aviation training ship RFA *Argus* (A135) was extensively modified internally to become a forward receiving station for casualties, and it sailed from the UK with a large number of medical personnel on board. The ship's very large flight deck, hangar space and accommodation block made it ideal for this purpose, and it was planned to use the vessel as far forward as possible to minimize the time taken to get a casualty from the battlefield to immediate medical care.

The diplomatic moves were showing no sign of weakening Saddam Hussein's hold on Kuwait, and by the middle of November it was beginning to look as though Operation Desert Shield would eventually turn into a full-scale war. The Royal Navy had been on station in one capacity or another since the start of the crisis and every ship had been exercised regularly to ensure a high state of readiness – they were all being held on 24-hour 'defence watch' status, which is only one step down from full 'action stations'.

Most of the coalition ships in the area were kept

Left Armourers aboard Battleaxe illustrate the inherent problem of deck mounted missile launchers – manual reloading. Unlike the new Duke class Type 23 frigates now entering service with the Royal Navy, the Type 22s do not possess a vertical

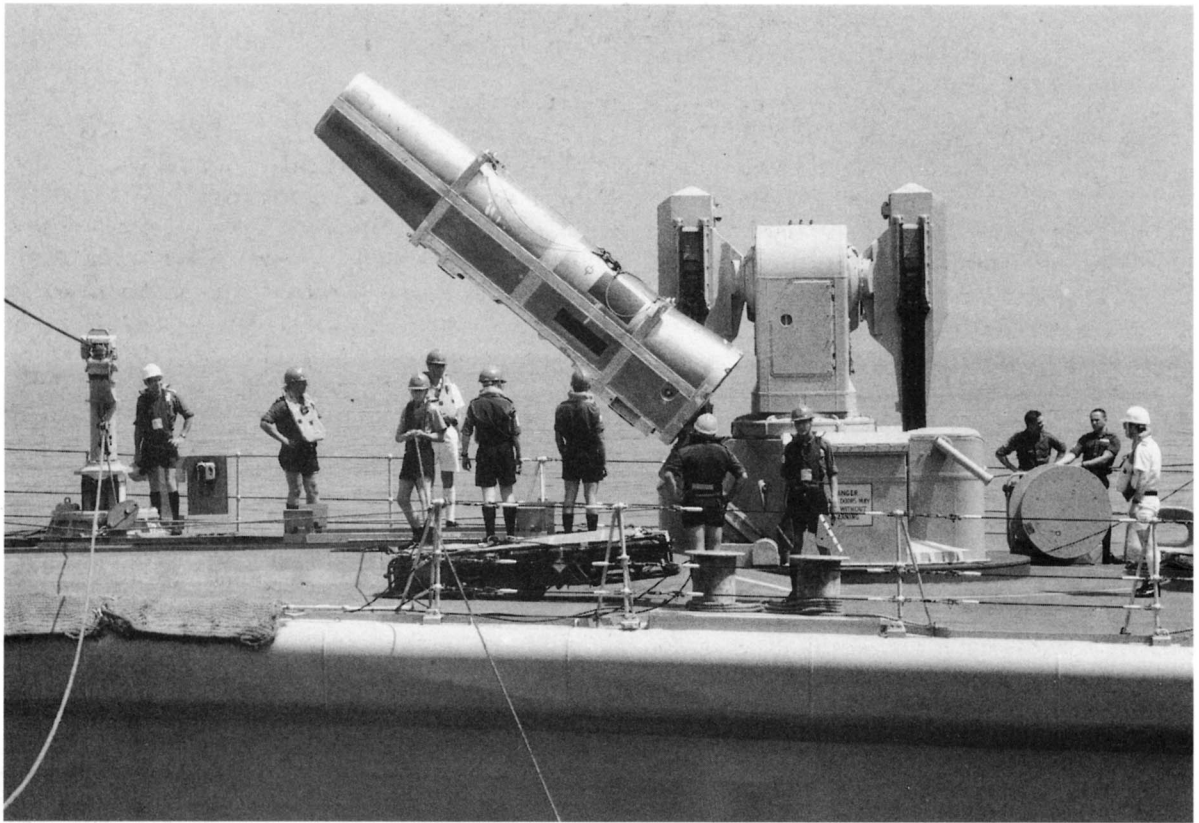
launch system, replacement Sea Wolf rounds having to be manhandled into their respective silos. In this shot, Battleaxe appears to be trailing in the wake of RFA Orangeleaf (DPR Navy)

busy with escort duties (there were still some very high-value targets around) and with enforcing the blockade on Iraq. The minehunting forces all had their unique tasks, and the number of mines being discovered and neutralised was beginning to worry the allied commanders. In preparation for a possible amphibious assault, the US Navy asked the British mine-clearing team to tackle the northern end of the Gulf, probably the most dangerous area of all because the mines were likely to be concentrated there, and because of its proximity to the Iraqi forces in Kuwait. Two more *Hunt* class vessels, HMS *Dulverton* (M35) and HMS *Ledbury* (M30), were deployed in late November together with the command ship HMS *Hecla* (A133), and on 6 February three relief ships, HMS *Brecon* (M29), HMS *Brocklesby* (M33) and HMS *Bicester* (M36), were sent out in anticipation of the large clearing-up operations at the end of the war.

The last Royal Navy ships to deploy before the outbreak of hostilities were the *Broadsword* class frigates HMS *Brilliant* (F90) and HMS *Brave* (F94). These both left Devonport in the early morning of 14 January, just one day before the UN deadline for Iraq to quit Kuwait. The ships were reported to be rotational reliefs for the Armilla Patrol frigates. The departure of HMS *Brilliant* was notable because she had 15 Wren ratings on board, and this was believed to have been the first time in British naval history that a ship has carried female junior ranks into a war zone.

*Each Sea Wolf round weighs in at 180 lbs (82 kgs), 31 lbs (14 kgs) of which is the warhead. Only a short range weapon which has an effective operational radius of approximately 5500 yards (5 kms), the Sea Wolf is nevertheless a most potent anti-aircraft and anti-missile missile. Blooded in the Falklands, the British Aerospace-designed weapon was ordered by the Royal Navy as a Sea Cat replacement back in June 1967. The missile was thoroughly tested throughout the 1970s before finally going into service aboard HMS *Broadsword* (F88) in May 1979. (DPR Navy)*



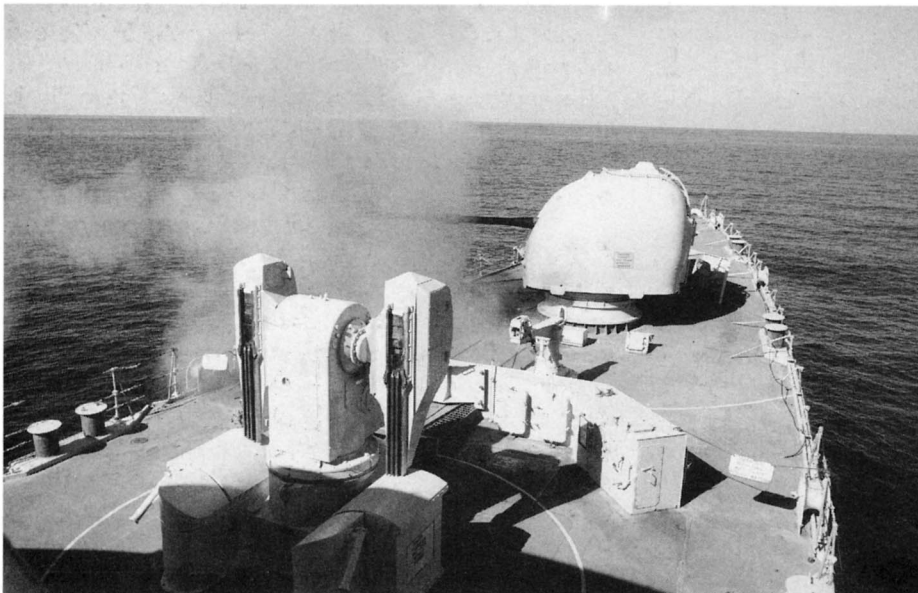


Although Sea Wolf is undoubtedly the most effective anti-missile currently in Royal Navy service, the only surface to air kill credited to the Armilla Patrol during Desert Storm was

achieved by a pair of Sea Darts. Fired from Gloucester is a pre-dawn engagement off the coast of Kuwait on 25 February, two Sea Darts successfully tracked and intercepted an incoming Silkworm

missile locked on to the battleship Missouri. In this unusual photograph, two Sea Dart rounds encased in their protective cannister are carefully winched across to Gloucester from the combat stores ship

Fort Grange. These missiles will soon be struck down below decks into the destroyer's magazine, the Type 42s carrying up to 20 Sea Dart rounds. (DPR Navy)



Aside from the Sea Dart, Gloucester's other main armament, the Vickers 4.5-in Mk 8, was also used in action against Iraq. Both Gloucester and Cardiff used their fully automatic 4.5s to shell Iraqi troop emplacements on several occasions in mid-February, lending support to Missouri and Wisconsin's rather more potent barrage. Capable of firing 25 rounds a minute over a maximum range of 24,000 yards, the 4.5 can open fire in only 10 seconds from a shutdown start. Here, the crew of York keep their hand in during target practice in the southern Gulf. (DPR Navy)

THE PLATES

A: Looking rather weary after spending many months patrolling the warm waters of the Gulf, HMS *Jupiter* (F60) gently ploughs its way through a slight swell. Part of Armilla Patrol Group W that was on station when the invasion of Kuwait occurred, *Jupiter* performed blockade patrols up until early November. Clearly visible in this superb head-on view is the British Aerospace GWS 26 Sea Wolf launcher, mounted just forward of the MM38 Exocet silos. Also providing anti-aircraft cover for the ship are a pair of veteran 20 mm Oerlikon cannons, fixed on either side of the bridge, and two plinth-mounted FN 7.62 mm GPMGs (General Purpose Machine Gun) lashed to the wings. (DPR Navy)

B1: Arguably the most effective short-range surface-to-air missile in service in the Gulf was the Sea Wolf, this live round being delicately fed into a six-shot launcher aboard the Type 22 Batch I frigate HMS *Battleaxe* (F89). A tried and tested weapon that performed impeccably during the Falklands conflict in 1982, the Sea Wolf is guided on to its designated target by the Marconi Type 911 pulse-doppler radar. Rather ironically, an early export customer for Sea Wolf was Kuwait, their order for the British Aerospace system being blocked by the Ministry of Defence in March 1988 on the grounds that the technology involved could easily be passed on to unfriendly nations in the immediate region. (DPR Navy)

B2: Rarely seen this close together during Armilla Patrols, Royal Navy frigates *Battleaxe* and *Jupiter* flank the guided-missile cruiser USS *England* (CG22) in the northern Gulf. All three vessels are primarily optimized for anti-aircraft operations, the British frigates being equipped with the Sea Wolf system and the *Leahy*-class cruiser toting a Standard SM-2 long range missile launcher both forward and aft. The missile guidance Type 911 radars are visible in the upper superstructure of *Battleaxe*, whilst the two dome-shaped excrescences on either side of the funnel are SCOT high frequency satellite communications radomes. (DPR Navy)

C1: Many merchant ships were boarded by coalition vessels in the early months of the conflict in an effort to enforce the United Nations sanctions on Iraq. Obviously heading north to load up with crude oil, the behemoth *Chevron South America* has just received a visit from the Royal Marine detachment embarked aboard HMS *York* (D98). Passed without any problems, the supertanker slowly continues on its journey whilst the Type 42 Batch III destroyer accelerates away. The *York* served as the Commander Task Unit's 'flagship' for the Armilla Patrol Group W up until the vessel was relieved by HMS *London*

(F95) in late October. (DPR Navy)

C2: The 'sharp end' of the Type 42 Batch III destroyer HMS *Gloucester* (D96). Heavily involved in Operation Desert Storm, the *Gloucester* operated in the hostile waters of the northern Gulf for most of the conflict, assigned to the USS *Missouri*'s (BB63) battlegroup. Whilst acting as a radar picket ship ('riding shotgun') for the *Missouri* on 25 February, *Gloucester* picked up an inbound CSSN-1 Silkworm anti-ship missile heading for the battlegroup. Tracked by the destroyer's Marconi Type 1022 Surveillance-and-Target-Indication radar, the Silkworm homed in on the largest vessel in the vicinity – *Missouri* – and commenced its final dive profile. *Gloucester* immediately launched two GWS 30 Sea Dart missiles which, due to successful illumination of the target by the Type 909 radar, homed in on the rapidly closing weapon and 'splashed' it. (DPR Navy)

D&E: Originally scheduled to be open to the British public during the annual Portsmouth Navy Days in late August, *Gloucester* was withdrawn from the programme of events at the last minute and the ship's company told to prepare for deployment to the Gulf. Frantically stored up and repainted a lighter shade of gull grey, the destroyer left port on 30 August and became a late addition to the ranks of Patrol Group W. When this group was relieved in mid-October, *Gloucester* remained on station and joined the X detachment, the vessel having actually been originally assigned to this Armilla Patrol in the first place! (Tony Holmes)

F1: Having passed through the Suez Canal and transitted down the length of the Red Sea, *Gloucester* briefly cruised across the Indian Ocean before entering the Gulf in late September. The vessel's first port of call was Mina Jebel Ali, a sprawling supertanker facility in the United Arab Emirates. In this view the large radomes forward and aft of the funnel that house the antennae for the Type 909 radar can be clearly seen, this system also being fitted to the Royal Navy's *Invincible* class aircraft carriers. A relatively old and heavy radar, the '909 has suffered from unreliability in the past, the Navy having to modify the system's software after the Falklands conflict. (DPR Navy)

F2: Although perhaps not as glamorous as the sleek Type 42 destroyers or Type 22 frigates, the *Hunt* class mine countermeasures vessels (MCMV) of the Royal Navy's 2nd and 4th Mine Counter Measures (MCM) Squadrons nevertheless performed a vital task in clearing the northern waters of the Gulf of Iraqi and Iranian mines. HMS *Hurworth* (M39), along with *Cattistock* (M31) and *Atherstone* (M38), departed Rosyth on 13 August and then spent

five days storing up and priming their systems off Portland before heading for the Middle East. Jam packed with remote-controlled mine locators, acoustic sonar and wire sweeping gear, these vessels are arguably the most capable mine warfare ships ever built. Besides the trio of *Hunt* class vessels mentioned previously, HMS *Ledbury* (M30) and HMS *Dulverton* (M35) from the 4th MCM Squadron were despatched from Rosyth to bolster the coalition mine hunting force on 11 December. (*DPR Navy*)

G: Although the Fleet Air Arm's contribution to Gulf operations was numerically very small, the feats achieved by the handful of Lynx HAS.Mk3(GM)s from Nos 815 and 829 Sqns easily made up for their paucity in the coalition ranks. This particular Lynx was attached to the Type 22 frigate HMS *Battleaxe*, and it carries all the special bolt-on Gulf kit like the Whittaker Microwave Systems AN/ALQ-176(V) Yellow Veil anti-ship missile jammer on the port Sea Skua rack; smoke markers between the rear wheels; and Tracor M-130 chaff/flare dispensers at the base of the tailboom. Returning briefly to the Yellow Veil pod, the Royal Navy ordered this US-built system in 1987 expressly for Lynx helicopters operating on the Armilla Patrol. Capable of jamming an anti-ship missile's seeker head or protecting a Lynx from hostile anti-aircraft sensors during a Sea Skua attack, the pod's only drawback is that its an active (illuminated) rather than a passive system. (*DPR Navy*)

H1: Lt Guy Heywood listens to the intercom as he sits waiting for the deck crew to finish loading a pair of British Aerospace Sea Skua missiles to his Lynx. Embarked aboard HMS *Cardiff* (D108), Lt Heywood and his observer, Lt Philip Needham, accounted for six Iraqi warships between January 29 and February 11. The Sea Skua proved effective against all types of enemy vessels encountered in the northern Gulf ranging in size from the diminutive 48-ton *Zhuk* class patrol boat to the 500-ton *T-43* class fleet minesweeper. The yellow bands around these missiles indicate that they are both live rounds, and the metal box on the deck near the sailor's leg contains the all-important aerodynamic guidance fins. (*DPR Navy*)

H2: In stark contrast to the fully armed Lynx from No 815 Sqn featured in the last photograph, this No 829 Sqn machine, embarked on HMS *Jupiter* is as clean as they come. The 7.62 mm GPMG lashed to the deck in the foreground is a standard modification fitted to virtually all Royal Navy vessels on the Armilla Patrol. 'Optically guided' by a suitably trained sailor, the GPMG can fire between 700 to 1000 rounds per minute, thus putting out an extremely effective cone of fire in the relatively unprotected stern area of the ship. Obviously a rather crude 'last ditch' defensive weapon, the machine gun nevertheless makes up in a small way for the lack of a

dedicated Phalanx mounting on the hanger roof of the *Leander* class frigates. (*DPR Navy*)

I: Whilst the smaller destroyers and frigates exclusively operated Lynxs, the larger Royal Fleet Auxiliary (RFA) vessels embarked up to four Sea Kings. This particular 'cab' is a HAS.Mk 5 from No 826 Sqn, one of two helicopters that comprised 'D' flight aboard the fleet oiler RFA *Olma* (A123). Although the Sea Kings were pulled from No 826 Sqn ranks, this particular helicopter is being flown by a lieutenant from No 820 Sqn, hence the shoulder flash which states his allegiance to HMS *Ark Royal's* (RO6) air group. Below him, an anonymous supertanker in ballast heads up the Gulf towards a Saudi oil refinery. (*DPR Navy*)

J1: The first RFA vessel called up for duty in the Gulf was the majestic 'O boat' *Olma* (A123), the 36,000 ton oiler fuelling up and departing Devonport on 17 August. Along with fellow RFA's *Fort Grange* (A385) and *Orangeleaf* (A110), the *Olma* supported vessels from all the coalition navies. *Olma* was the last of three *Ol* class oilers to enter service with the RFA way back in 1966, the vessel having been regularly refitted over the ensuing years to help it keep abreast of modern naval refuelling trends. Photographed in May 1990 replenishing HMS *Cumberland* (F85) during exercise *Westlant 90*, *Olma* spent the early part of the year operating in the western Atlantic before being despatched to the Gulf. (*Tony Holmes*)

J2: An oiler is a rather slow and tempting target for a sea-skimming missile or a bombed-up Mirage F.1, its heavy slab sides and sheer bulk appearing as a large blip on a fast jet's radar scope. Not wishing to be total sitting ducks, *Olma's* crew manned the guns during all daylight hours, even when the tanker was undertaking a RAS (replenishment at sea). Steadily tracking down the tanker for an avgas 'transaction' is the sleek *Oliver Hazard Perry* class FFG, USS *Reid* (FFG30). Once the frigate has finished its RAS – an operation that typically takes about 30 minutes for a vessel of this size – its sister-ship, maintaining station about half a mile astern, will close up to refuel. Like many modern US Navy vessels, the *Reid* is powered by two General Electric LM2500 gas turbine engines, these powerplants giving the ship an excellent turn of speed. (*DPR Navy*)

K1: The *Perry* class shipbuilding programme, instigated by the US Navy in the late 1970s, saw no less than 51 frigates roll down the slipways at the Bath Iron Works and Todd shipyards at regular intervals. A huge order even by Soviet or Chinese standards, the *Perry* class vessels are the workhorses of the modern navy, capable of performing ASW or anti-air tasks. As denoted by its Navy code number on the bow, this particular FFG, USS *Vandegrift* (FFG48), was the 48th unit to enter service with the fleet.



HMS *Jupiter* (F60)

1



Sea Wolf launcher

2



B The frigates *Jupiter* (F60) and *Battleaxe* (F89) formate on the cruiser *USS England* (CG22)



Chevron South America is intercepted by HMS *York* (D98)



Sea Dart launcher and Mark 4.5 in. gun aboard HMS *Gloucester* (D96)



D HMS Gloucester (D96)



HMS Gloucester (D96)

1



HMS Gloucester (D96)

2



F HMS Hurworth (M39)



Westland Lynx HAS.Mk3 (GM) of No 829 Sqn

1



Westland Lynx HAS.Mk3 (GM) of No 815 Sqn

2



H Westland Lynx HAS.Mk3 (GM) of No 829 Sqn



Westland Sea King HAS.Mk.5 of No 826 Sqn

1



RFA *Olna* (A123) and HMS *Cumberland* (F85)

2



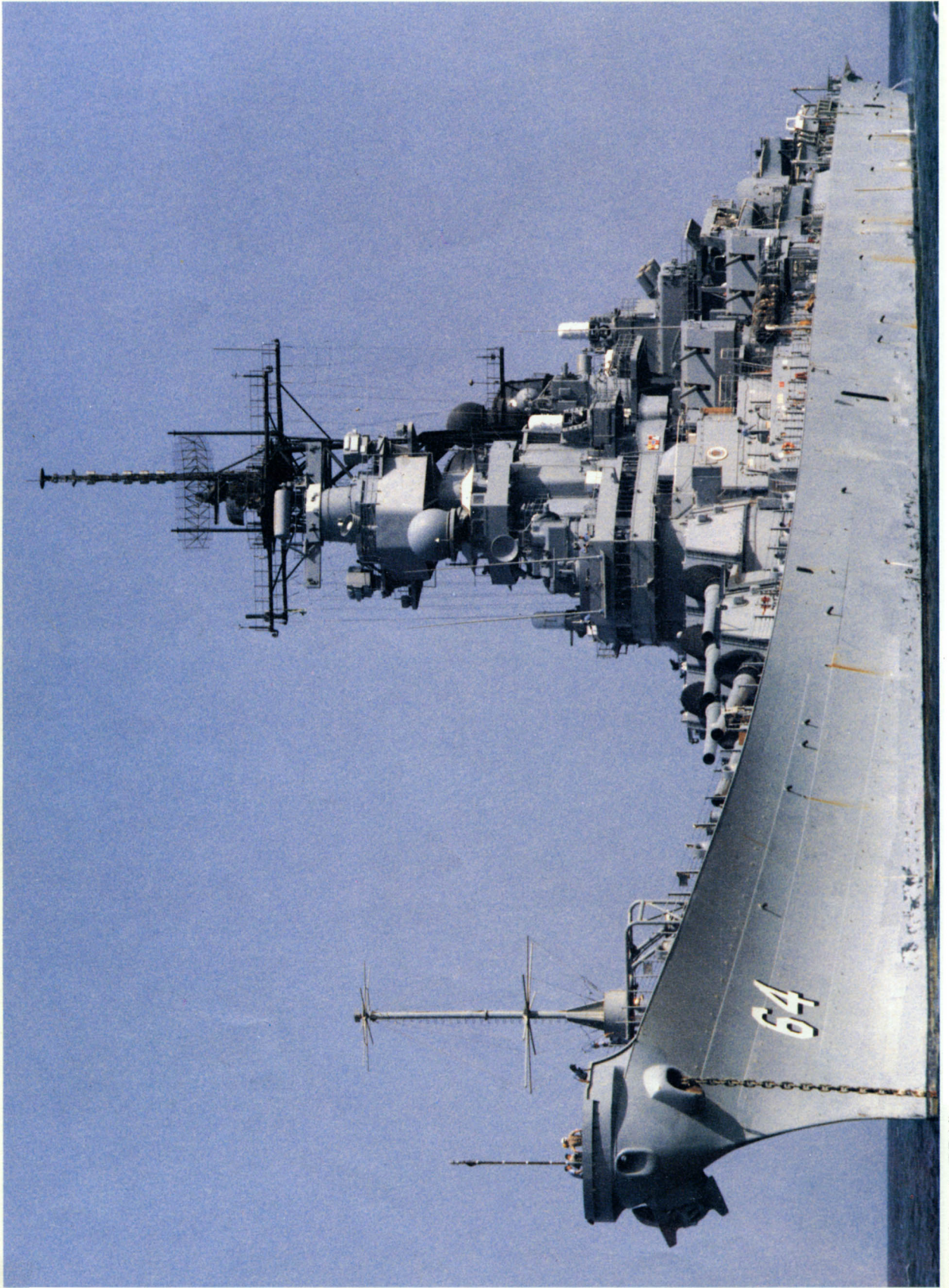
J RFA *Olna* (A123) and USS *Reid* (FFG-30)



USS *Vandegrift* (FFG48)



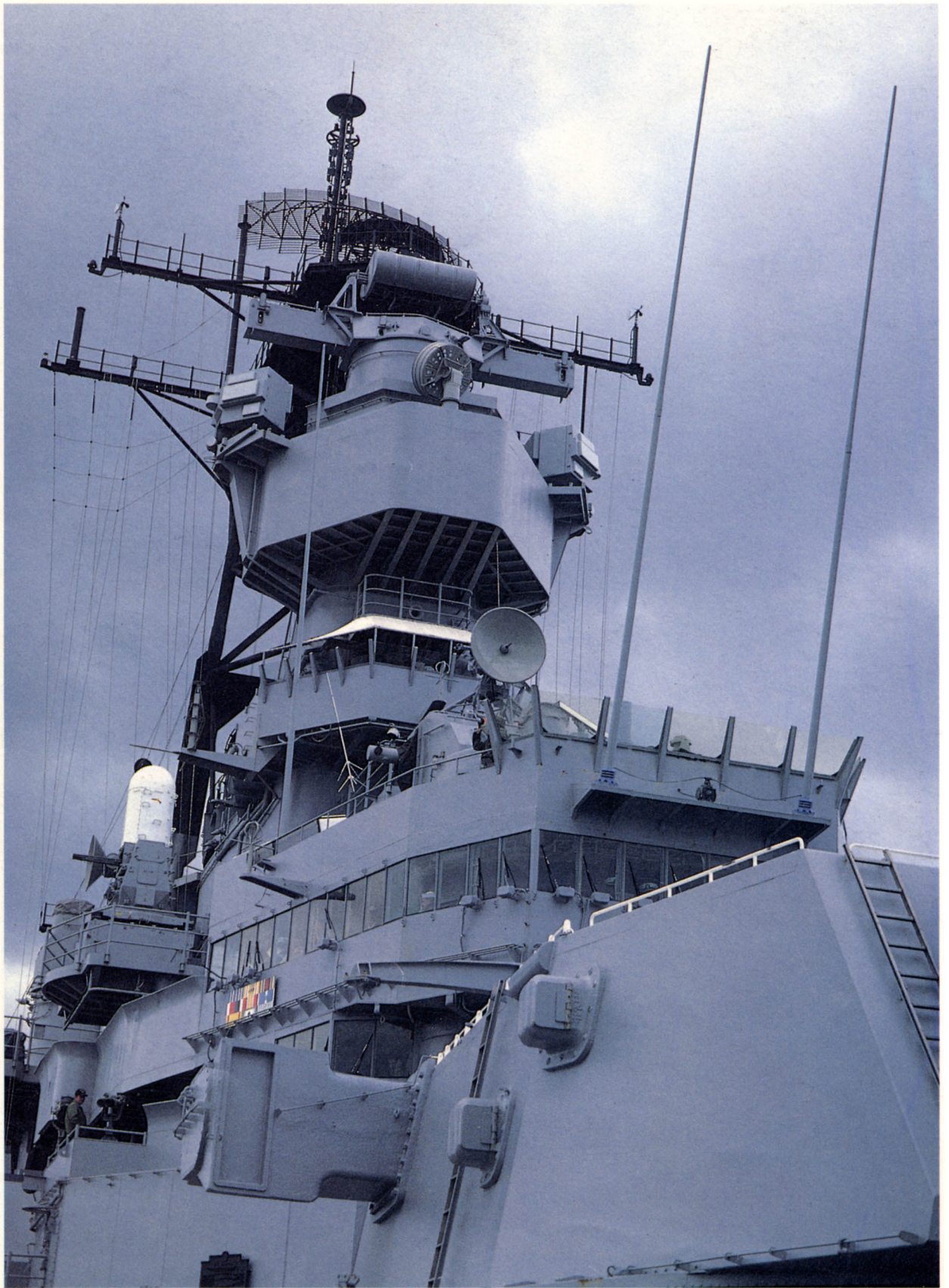
RFA *Orangeleaf* (A110) USS *Vandegrift* (FFG48)



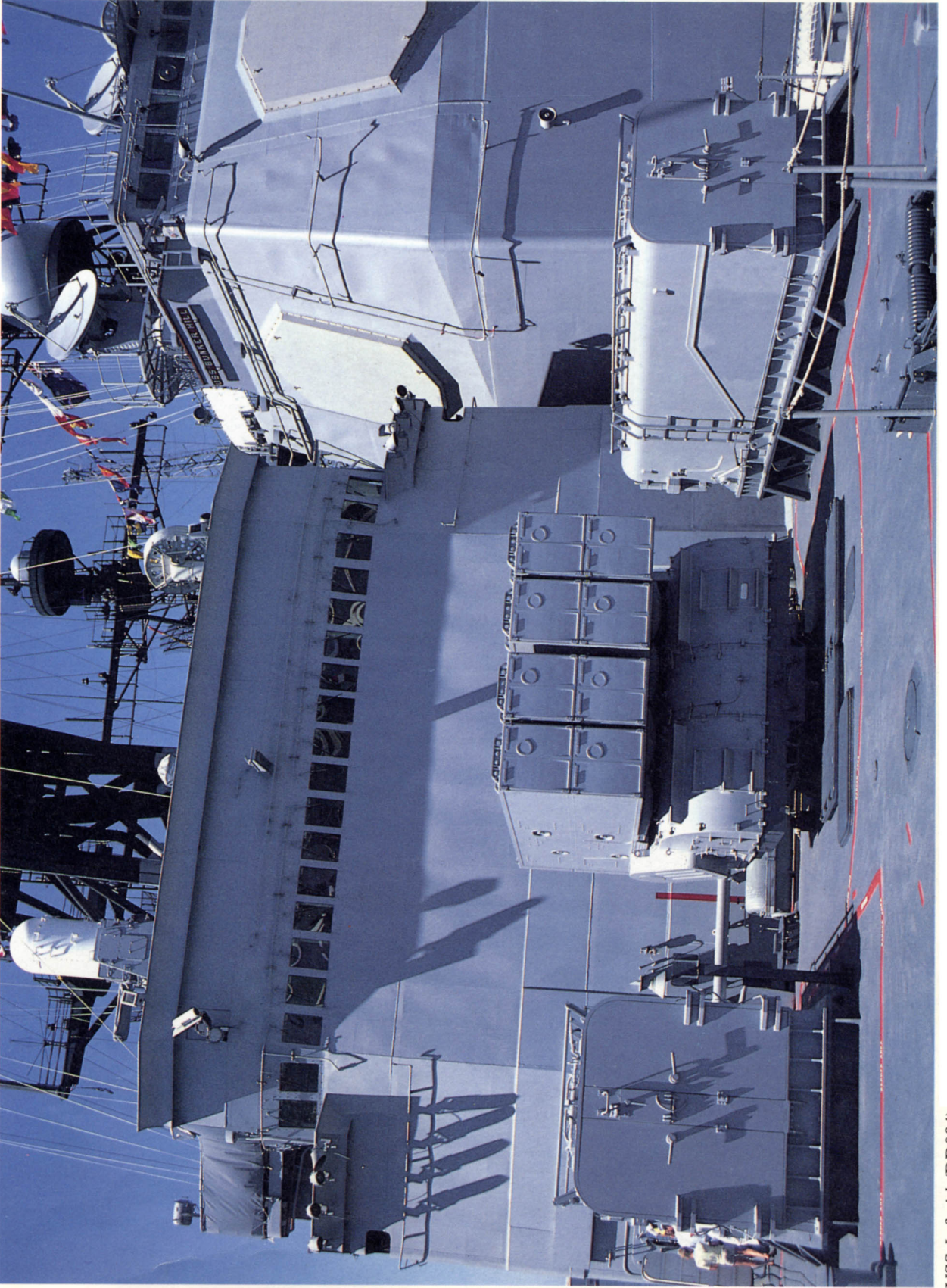
USS Wisconsin (BB64)



USS Missouri (BB63)



N USS *Missouri* (BB63)



USS Leftwich (DD984)

1



USS *Tripoli* (LPH10)

2



P HMAS *Darwin* (F04)

Many of the Sixth and Seventh Fleet's FFGs are true Gulf veterans, having literally spent months on end performing tanker escort duties throughout the late 1980s.

(DPR Navy)

K2: The *Vandergrift* closes in on *Orangeleaf* (A110) to allow the oiler's RAS team to shoot a line across. Accentuated by the photographer's wide-angle lens, the frigate's raked bow appears to slice through the calm waters of the southern Gulf with ease. Exhibiting a decidedly modular appearance, the FFGs were so designed to allow for production line techniques to be instigated at the shipyard. This simplicity in design resulted in vessels being commissioned, on average, only two years after they had been initially laid down. (DPR Navy)

L: An awesome weapon whose physical presence in the northern Gulf did as much for allied morale as General Norman Schwarzkopf, the *Iowa* class battleships *Missouri* (BB63) and *Wisconsin* (BB64) were used throughout the conflict, both as conventional gun platforms and Tomahawk missile launchers. Seen here swinging at anchor off Bahrain, *Wisconsin* launched literally dozens of BGM-109 Tomahawks on the opening night of *Desert Storm*. Two launcher silos can be clearly seen immediately above the 5-in twin mountings amidships, a total of eight four-shot silos having been scabbed on to the upper decks of the BBs around the rear funnel. (DPR Navy)

M: Same class, different ship. USS *Missouri* (BB63) rides at anchor under a typically blue Gulf sky. From this angle five of the eight Tomahawk batteries can be clearly seen, as well as the aft 16-in gun turret. The elder statesmen of the US Navy, the four *Iowa* class battleships were progressively 'de-mothballed' through the early eighties and thoroughly modernized in a programme that cost close to \$1500 million. Starting with USS *New Jersey* (BB62), the vessels received new fire control and multi-functional radar systems; Tomahawk and Harpoon cruise missiles; upgraded communications gear (including WSC-3 SATCOMM equipment); seven new 125-ton per hour air-conditioning plants; provision for a Link-11 data transfer link; and the conversion of the boilers to burn distillate fuel, this modification cutting the ships' endurance by about 10 per cent. BB62 was recommissioned in April 1982 and BB64 rejoined the Sixth Fleet in 1989. (Tony Holmes)

N: Built like the proverbial 'brick outhouse', *Missouri's* superstructure exhibits design and engineering techniques long since forgotten by American shipbuilders. The bridge structure is built around a reinforced steel citadel which houses all the steering equipment, compasses and engine gauges. Strong enough to withstand a direct hit from an 18-in shell, the citadel boasts walls that are close to three

feet thick. Above the bridge is the World War 2-vintage Mk 37 fire-control system which guides the six 5-inch turrets. Mounted on either side of the fire-control tower are Raytheon SLQ-32(V)3 Sidekick ECM detector jammers. Vital for tracking enemy missiles, the '32 is fitted to virtually all major US Navy vessels. One system that is definitely not in widespread use throughout the fleet is the large 'T'-shaped Mk 38 16-in gunfire control system which crowns the fire-control tower. A complex and archaic device only found on the *Iowa* class battleships, the Mk 38 has a crew of 12 men above and 20 men below decks (in two plotting rooms) to operate it, and its associated systems. (Tony Holmes)

O: Aside from *Missouri* and *Wisconsin*, smaller surface vessels like the *Ticonderoga* and *Spruance* class cruisers and destroyers could also fire Tomahawk missiles from either vertical launch systems (VLS) or scabbed on silos. Firmly bolted on to the deck on either side of the Mk 15 ASROC missile launcher, the eight-shot Tomahawk silos aboard USS *Leftwich* (DD984) have greatly uprated the ship's offensive capability, especially in terms of its stand-off capability. An expensive upgrade for a class as large as the *Spruance*-series of destroyers (31 ships), only a handful of late-build vessels have been modified with either VLS or silos. (Tony Holmes)

P1: Over a dozen US Navy aircraft carriers of various shapes and sizes played their part in the successful outcome of *Desert Storm*. However, only one had the misfortune of actually receiving damage from 'enemy action' in the course of the conflict. The *Iwo Jima* class amphibious assault helicopter carrier USS *Tripoli* (LPH10) hit an Iraqi mine in mid-February which ripped a large 15-foot gash in the ship's side. Fortunately nobody was killed in the blast, or the ensuing flooding, and control teams soon shored up the damage. By flooding compartments on the opposing side of the vessel, the *Tripoli* continued to operate effectively as a helicopter carrier during the vital days leading up to the ground war. (Tony Holmes)

P2: One of the first countries to respond to the Kuwaiti pleas for help was Australia, the RAN sending two *Perry* class frigates and a *Durance* class oiler to the Gulf in late August. One of the frigates sent was HMAS *Darwin* (F04), originally the only 'stretched' FFG delivered to the Australians in July 1984. Capable of operating an SH-60B Seahawk from its helicopter deck (which *Darwin* did for the very first time during its Gulf cruise), the frigate is seen here in stormy seas with a Sea King Mk 50 from HS-817 running up on the stern. (Tony Holmes)

UNITED STATES

The deployment of US Navy ships to the Gulf area probably represents the most concentrated force projection exercise ever undertaken by a maritime power. At the beginning of August the American presence in the immediate area consisted of the US Middle East Task Force, centred around the 15,000-ton (full load) converted *Raleigh* class command ship USS *La Salle* (AGF3). In support of *La Salle* were the *Leahy* class guided-missile (GM) cruiser USS *England* (CG22), the *Spruance* class destroyer USS *David R Ray* (DD971), the *Knox* class frigate USS *Barbey* (FF1078) and four *Oliver Hazard Perry* class GM frigates, US Ships *Reid* (FFG30), *Vandegrift*

Aside from the frigate and destroyer-based Lynx, the only other Fleet Air Arm asset to feature in operations in the Gulf was the Sea King helicopter. Seen here about to depart with an underslung load,

this HC.4 was one of four suitably resprayed Sea Kings from No 846 Sqn embarked on RFA Argus. (DPR Navy)

(FFG48), *Robert G Bradley* (FFG49) and *Taylor* (FFG50). Joining them at high speed from the nearby USS *Independence* (CV62) Carrier Battle Group, was the *Ticonderoga* class GM cruiser USS *Antietam* (CG54), which is equipped with the remarkable Aegis radar surveillance system.

The USS *Independence* (CV62) Carrier Battle Group was exercising in the Indian Ocean, having sailed from the USA on 23 June. Carrier Air Wing 14 (CVW-14) was embarked with two squadrons of F-14A Tomcats (VF-21 and VF-154), two of F/A-18C Hornets (VFA-25 and VFA-113), one squadron of A-6E/KA-6D Intruders (VA-196), one of E-2C Hawkeyes (VAW-113), one of EA-6B Prowlers (VAQ-139), one of S-3A Vikings (VS-37) and one of SH-3H Sea King helicopters (HS-8). The ship was also carrying a single C-2A Greyhound of VRC-50. The surface combat group accompanying the carrier included the *Belknap* class GM cruiser USS *Jouett* (CG29), the *Charles F Adams* class GM destroyer USS *Goldsborough* (DDG20) and two



At times the flightdeck abroad Argus was as busy as downtown Dhahran airbase. Showing off its boat hull undersides to onlooking deck crew, this Sea King is gently eased away from Argus as it begins yet another replenishment sortie. Bolted on to the helicopter just forward of the undercarriage legs are a pair of infrared countermeasures devices which help mask the helicopter's exhaust emissions. Containing electrically heated bricks, the system releases flashes of radiation through its various panes in a sequence it thinks will best confuse the seeker head of the SAM. (DPR Navy)



Left With a pair of Sea Skuas firmly bolted to its starboard missile rack, HMS Cardiff's Lynx prepares to be unlashd before departing on an anti-patrol boat sortie. Crewed by Lts Guy Heywood and Philip Needham, the Lynx is a No 815 Sqn machine based at Portland. This unit is responsible for providing helicopters and crews for all Type 42 destroyers, fellow Lynx operators No 829 Sqn embarking aircraft and personnel aboard Type 22 and ASW frigates. As with most embarked Lynxs, this machine has been 'personalized' by its maintainers to better reflect its 'floating home', hence the red dragon on the nose. (DPR Navy)

Knox class frigates, USS *Reasoner* (FF1063) and USS *Brewton* (FF1086). The combatants were supported by the Mars class combat support ship USS *White Plains* (AFS4), the Kilauea class ammunition ship USS *Flint* (AE32) and the oiler USS *Cimarron* (AO177). As soon as the invasion of Kuwait occurred, *Independence* was ordered into the Gulf of Oman.

Several hundred miles to the north, the *Nimitz*

class nuclear-powered aircraft carrier USS *Dwight D Eisenhower* (CVN69) was just coming to the end of a six-month cruise in the Atlantic and Mediterranean when it was ordered into the area. The whole battle group passed through the Suez Canal on 8 August and began air operations in the Red Sea, amid much speculation that the carrier would have to remain on station for at least four weeks. The combatant

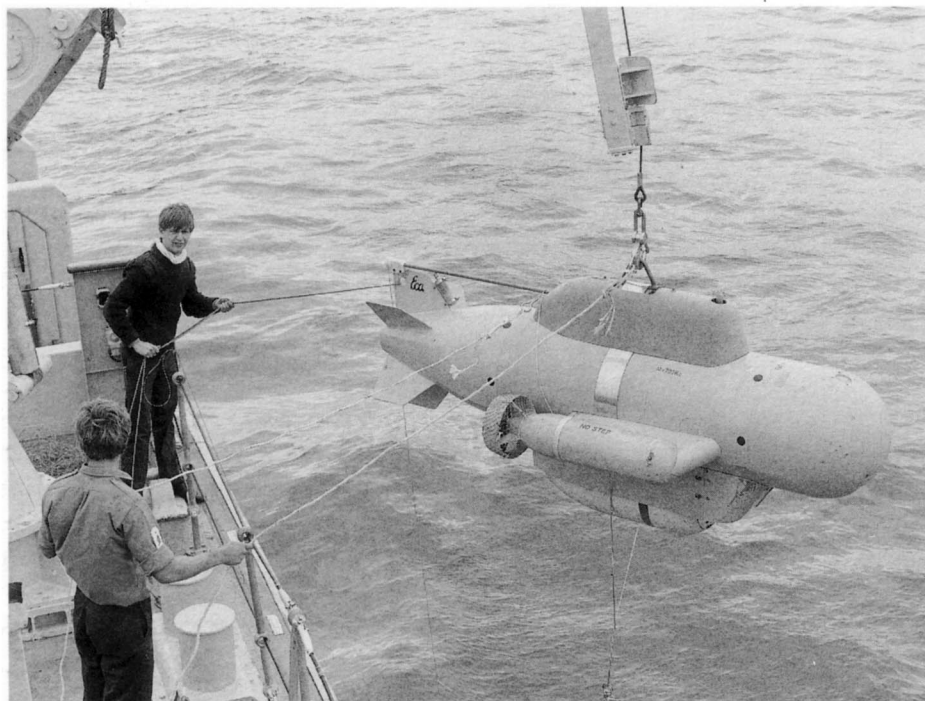


Built entirely of glass reinforced plastic, the Hunt class minehunters of the 2nd and 4th MCM Squadrons saw

considerable service both during and after Desert Storm. Sweeping channels close into enemy held waters, the 725-ton vessels

destroyed well over 50 mines during the conflict. One of three ships initially despatched to the Gulf in late August, HMS

Atherstone (M38) first entered service with the Royal Navy in 1987, having been built by Vosper Thornycroft. (Walter Sartori)



Atherstone's main offensive weapon is this innocuous looking device – the French-built PAP 104 Mk 3 unmanned mine hunter/killer submersible. Capable of operating in water depths between 10 and 100 metres, the 'fish' can cruise on station for up to 20 minutes, traversing distances of up to 500 m away from the mother-ship. Constructed almost entirely of non-magnetic material, the PAP 104 replaces the traditional mine-clearance diving teams usually embarked on minehunters. It carries an underwater television and spotlight for visual mine identification, attaching a 100 kg charge to the target's casing once positive recognition has been achieved. (DPR Navy)



elements of the group included the GM cruiser USS *Ticonderoga* (CG47), the *Kidd* class GM destroyer USS *Scott* (DDG995) and the *Oliver Hazard Perry* class GM frigate USS *John Hall* (FFG32). Support was provided by the ammunition ship USS *Suribachi* (AE21) and the oiler USS *Neosho* (T-AO143). The air group embarked on *Ike* was CVW-7.

Remaining in the eastern Mediterranean (part of the US 6th Fleet) were the *Charles F Adams* class GM destroyer USS *Tattnell* (DDG19), the two *Spruance* class destroyers USS *John D Rogers* (DD983) and USS *Peterson* (DD969) and the *Knox* class frigate USS *Paul* (FF1080). These were supported by the *Dixie* class destroyer tender USS *Sierra* (AD18) and the *Wichita* class replenishment oiler USS *Savannah* (AOR4). There were also reports of 'about six' submarines in the Mediterranean, but these have not been confirmed.

The third Carrier Battle Group to arrive in the area was centred on the *Forrestal* class conventionally-powered ship USS *Saratoga* (CV60). This group left Norfolk, Virginia, over 6 and 7 August, with its air component (CVW-17) deployed 'attack heavy' – which means rather more A-6E/KA-6D Intruders

Although not directly involved in the Gulf conflict, the Invincible class carrier Ark Royal (R07) nevertheless performed the vital task of patrolling the extreme eastern waters of the Mediterranean. By undertaking this cruise, the 'Ark freed the Kitty Hawk class carrier USS

America (CV66) from its Med 'beat' and allowed the vessel to station itself off the coast of Israel. A move of vital strategic importance, the carrier's positioning in the Middle East allowed CVW-1 to protect Israel's eastern border throughout the conflict. (Tony Holmes)

than normal. The *Saratoga* group included the *Ticonderoga* class GM cruiser USS *Philippine Sea* (CG58), the *Belknap* class GM cruiser USS *Biddle* (CG34), the *Spruance* class destroyer USS *Spruance* (DD963), the *Charles F Adams* class GM destroyer USS *Sampson* (DDG10) and the two *Knox* class frigates, USS *Elmer Montgomery* (FF1082) and USS *Thomas C Hart* (FF1092). Also in company with *Saratoga*, though not part of her battle group, was the *Iowa* class battleship USS *Wisconsin* (BB64). The combat elements were supported by the destroyer tender USS *Yellowstone* (AD41) and the *Sacramento* class fast combat support ship USS *Detroit* (AOE4). The group passed through the Suez Canal on 23 August and took up station in the Red Sea.

Closely shadowing the *Saratoga* group was the first of a number of big US Marine formations, each transporting a complete, self-contained fighting unit. All 2200 men of the 26th Marine Expeditionary Unit, plus their heavy equipment, were deployed during August aboard five large amphibious landing vessels. These ships were the *Iwo Jima* class amphibious assault ship USS *Inchon* (LPH12), the *Austin* class amphibious transport dock USS *Nashville* (LPD13), the dock landing ship USS *Whidbey Island* (LSD41) and two *Newport* class tank landing ships, USS *Fairfax County* (LST1193) and USS *Newport* (LST1179).

On 15 August the Carrier Battle Group headed by

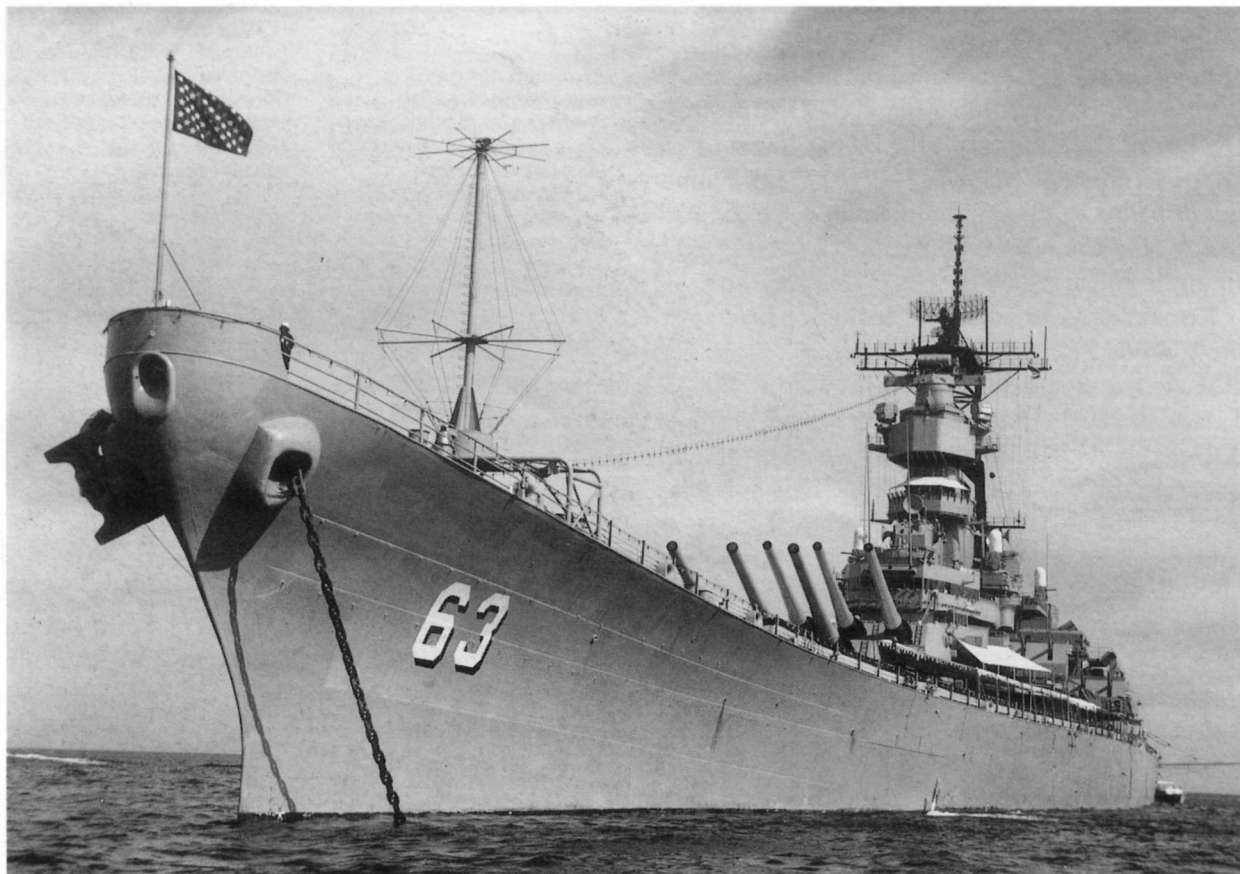
A true veteran of the waves, Missouri's participation in the Gulf war saw the battleship involved in its third conflict since being commissioned way back in June 1944. Weighing in at 57,353 tons when fully loaded, Missouri is a formidable weapon of war,

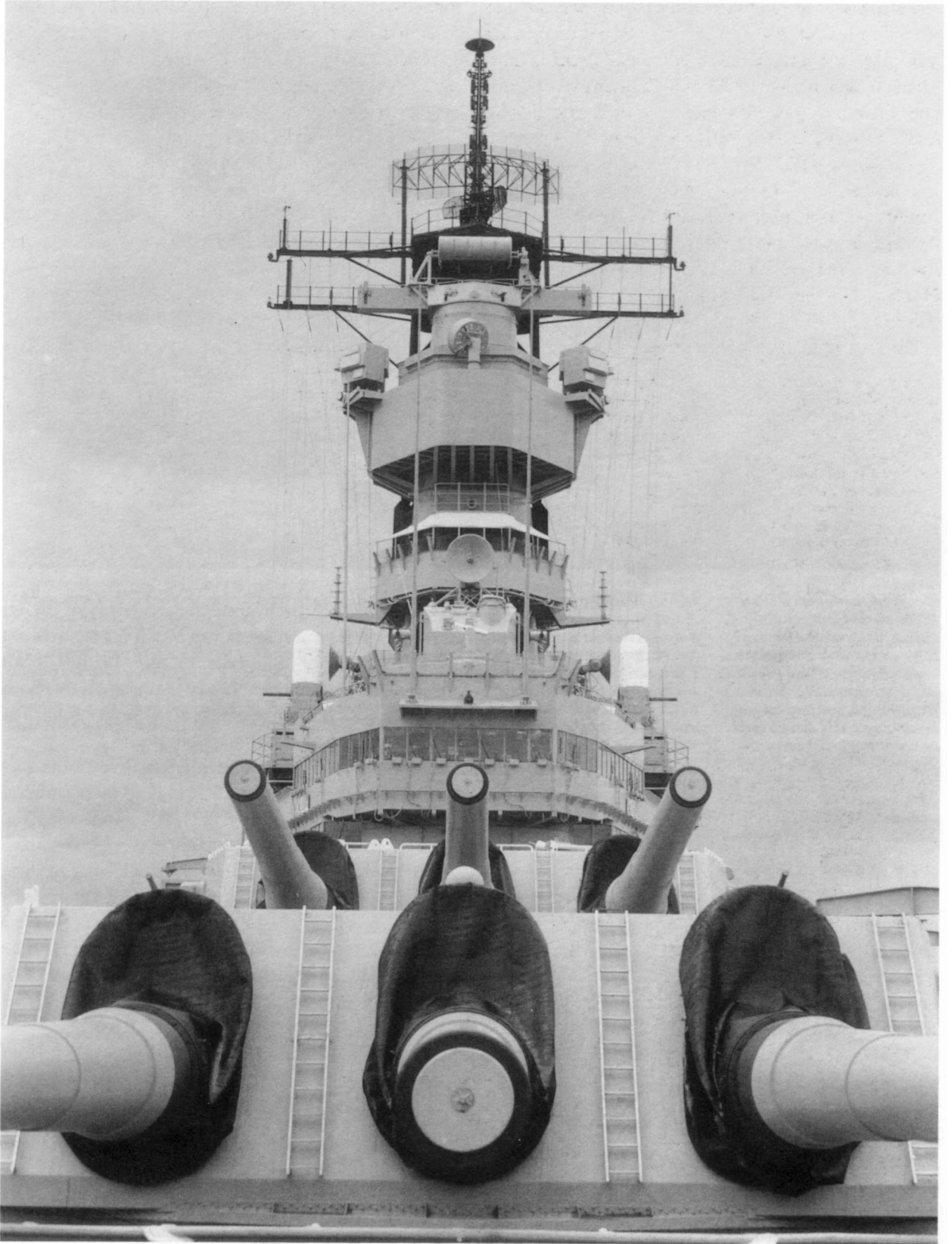
its three 16-in batteries capable of firing a shell at targets over 24 miles away. However, it was the more modern Tomahawk missile system which proved to be Missouri's most effective contribution to the winning of Desert Storm. (Tony Holmes)

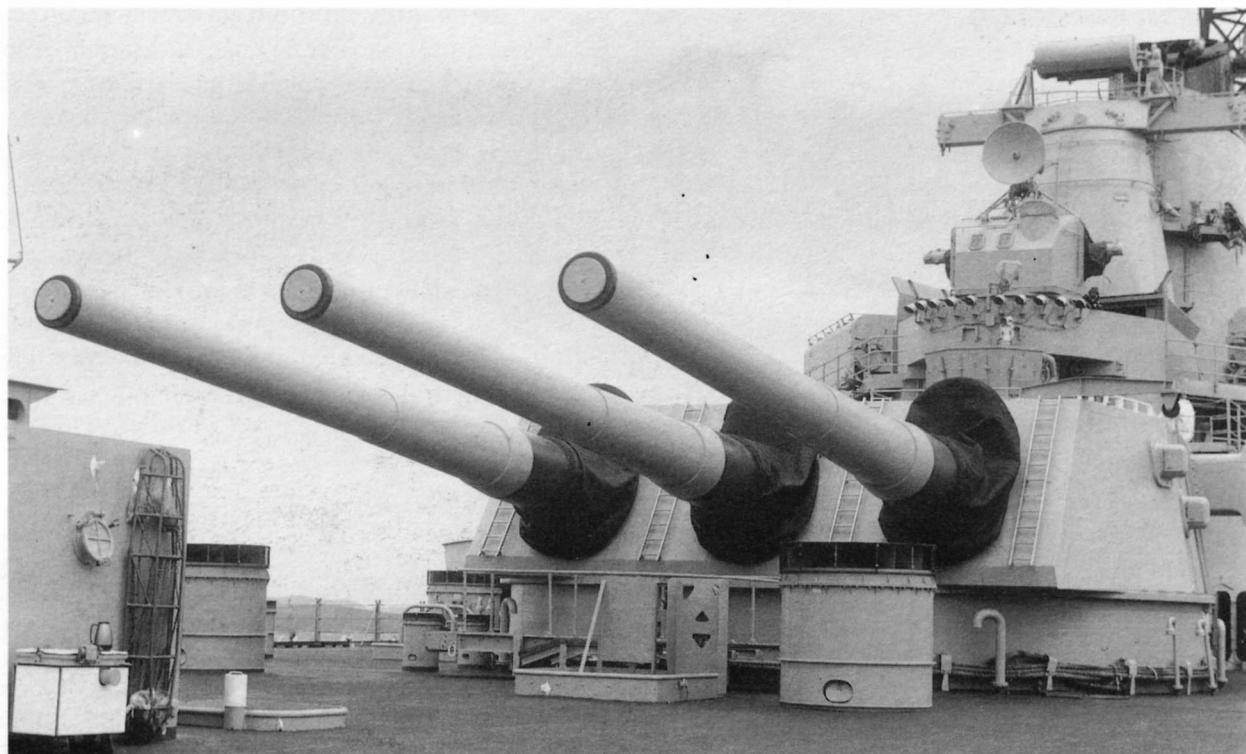
the USS *John F Kennedy* (CV67) deployed after receiving only seven days' notice, a remarkable achievement for such a complex operation. The embarked air group (CVW-3) included two squadrons of A-7E Corsairs instead of the more familiar F/A-18 Hornets, but otherwise it was fairly standard. The accompanying combatants included two *Ticonderoga* class GM cruisers, USS *Thomas S Gates* (CG51) and USS *San Jacinto* (CG56), the *Virginia* class GM cruiser USS *Mississippi* (CGN40), the *Spruance* class destroyer USS *Moosbrugger* (DD980) and the *Oliver Hazard Perry* class GM frigate USS *Samuel B Roberts* (FFG58). The support ships included the *Sacramento* class fast combat vessel

Right From head-on Missouri's superstructure resembles a small skyscraper, every level of its heavily protected 'tower' bristling with ordnance and electronic warfare apparatus. On either side of the bridge wings are Phalanx mountings, whilst further

above them near the Mk 38 gun control system are a pair of SLQ-32 ECM arrays. Strategically mounted well above the ship's cluttered superstructure, the Raytheon system gives Missouri total 360° detecting and jamming cover. (Tony Holmes)







Up until the Gulf conflict, the major offensive capabilities of the New Jersey class battleships centred around their trio of 16-in mountings, this impressive weapon having been originally developed to combat the behemoth Japanese battleships Yamato and Musashi. Now somewhat overshadowed by the Tomahawk missile system

installed in the early 80s, the 16-in guns are nonetheless an impressive 'secondary' weapon. Crewed by no less than 77 sailors, the guns are most definitely labour intensive, another 30 to 36 ratings working in the six magazines feeding the mountings with primed shells. (Tony Holmes)

USS *Seattle* (AOE3) and the *Mars* class combat stores ship USS *Sylvannia* (AFS2). The whole group passed through the Straits of Gibraltar on 22 August and finally entered the Red Sea in early September. The arrival of *Kennedy* released the *Eisenhower* group, allowing it to leave the area on 12 September for some much needed home leave.

The most spectacular migration of troops throughout the whole Desert Shield period occurred during mid-August when a large chunk of the 40,000-man 1st Marine Expeditionary Force (MEF) moved into Saudi Arabia. The MEF drew its men and equipment from the 1st, 4th and 7th Marine Expeditionary Brigades, based on Kaneohe Bay in Hawaii, Camp Lejeune in North Carolina, and Twentynine Palms

in California. The men and light weaponry of the 1st and 7th MEBs were flown into Saudi territory to act as an immediate deterrent to any further Iraqi movement, but all the heavy equipment of both brigades, plus the entire man and material strength of the 4th MEB, had to be moved by sea.

About 20 ships were immediately involved in this transfer, plus many others bringing in peripheral supplies. Notable among the big ships were the *Tarawa* class amphibious assault vessel USS *Nassau* (LHA4), the *Whidbey Island* class dock landing ship, USS *Gunston Hall* (LSD44) and the transport dock USS *Raleigh* (LPD1). In addition there were two *Iwo Jima* class amphibious assault ships, USS *Iwo Jima* (LPH2) and USS *Guam* (LPH9), two *Austin* class amphibious transport docks, USS *Shreveport* (LPD12) and USS *Trenton* (LPD14), two *Anchorage* class dock landing ships, USS *Portland* (LSD37) and USS *Pensacola* (LSD38), and four Newport class tank landing ships, USS *Saginaw* (LST1188), USS *Spartanburg County* (LST1192), USS *Manitowoc* (LST1180) and USS *La Moure County* (LST1194). Two ships also carried the maintenance crew and equipment to support the USMC aircraft. These were the aviation support ships USNS *Wright*

Easily the most bizarre looking vessels in the US Navy's powerful amphibious assault force, the 8450-ton Newport class tank landing ships were also heavily in evidence in the massive invasion flotilla. Easily distinguishable with their ramp bearing gantries mounted over the bow, these highly specialized vessels would be literally driven up the beach during a seaborne invasion and their cargo of M60 battle tanks, HMMWV's and trucks driven directly on to land through the hinged bow doors. Capable of embarking up to 431 troops, the Navy currently has 20 of these vessels either in frontline or reserve fleets. This particular ship, USS Fresno (LDT 1182), was commissioned on 22 November 1969. (Tony Holmes)

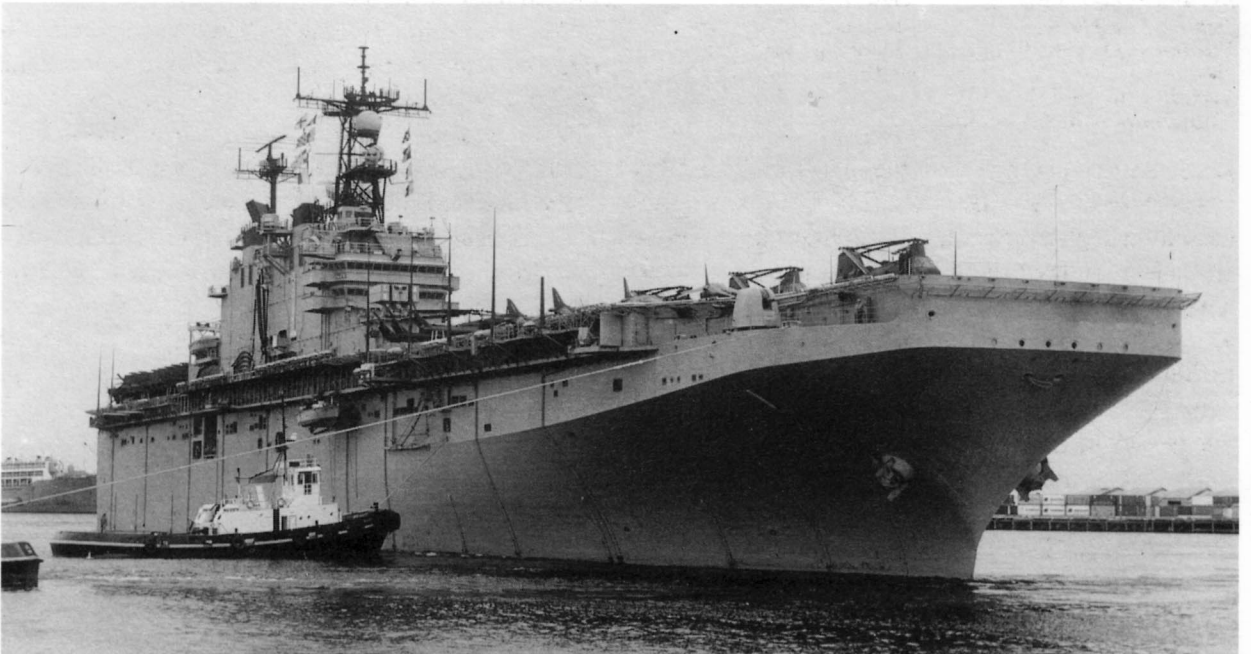


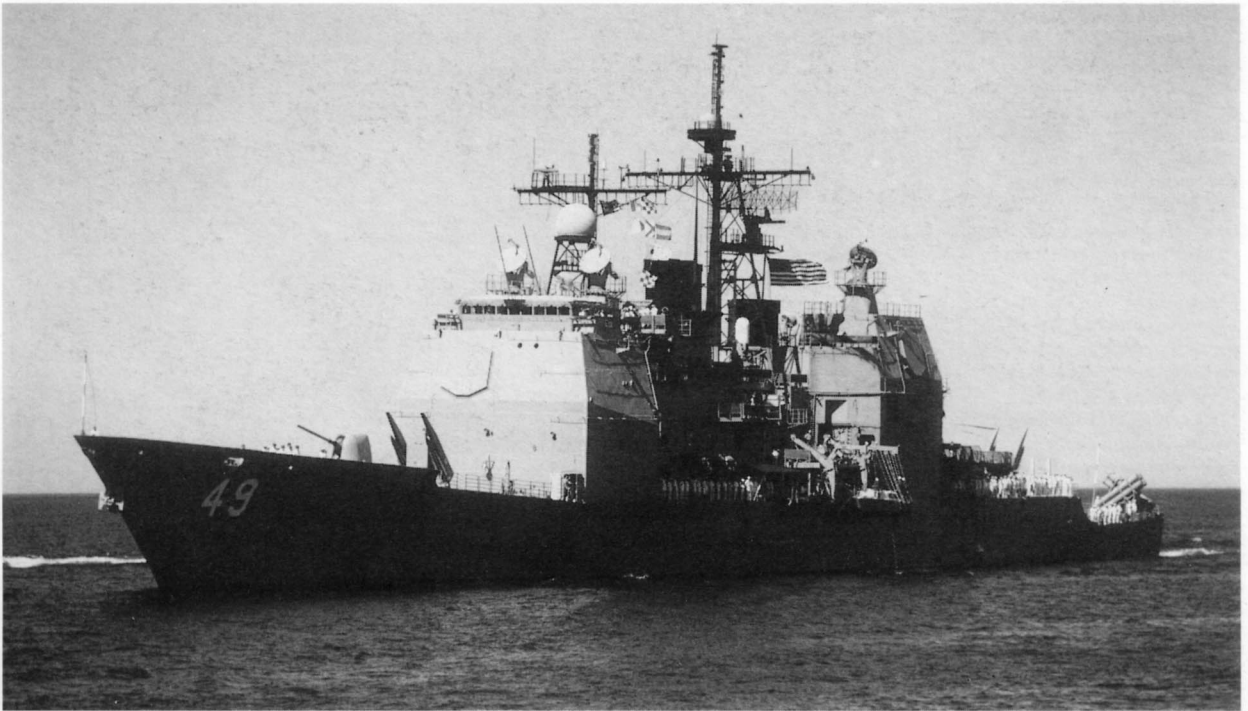
The massive Marine Corps presence aboard a large flotilla of amphibious assault ships strategically placed off the coast of Kuwait led many observers to believe that the allies would use this

force to establish a second front north of Kuwait City once the military liberation of the beleaguered country commenced. In the event, the Marines stayed aboard ship and the ground forces were left to

tackle the Iraqis. Of all the amphibious support ships present in the Gulf, the most impressive units on station were the Tarawa class helicopter carriers, here illustrated by USS Tarawa (LHA1) itself.

Capable of operating both helicopters and Harrier IIs, these vessels usually embark a mixed force of 28 rotary- and six fixed-wing aircraft. (Tony Holmes)





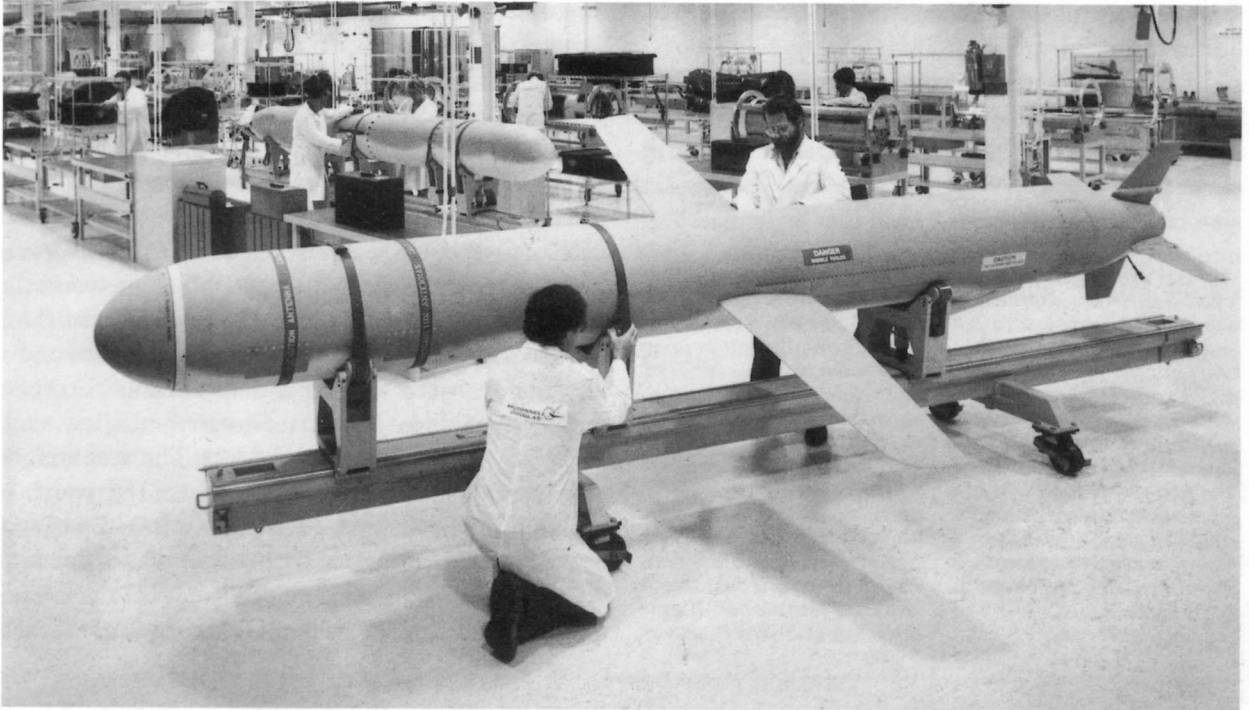
Amongst the most sophisticated warships in the world, the Ticonderoga class cruisers deployed to the Gulf earned their keep tracking aircraft in the skies over Kuwait. Built around the hugely impressive SPY-1 radar

system, the cruiser can track up to 128 separate targets in their combat information centre. Combined with the standard SM-2 SAM (68 of which can be carried in the vessel's two magazines), the total Aegis package has

greatly enhanced the anti-aircraft cover available to the battlegroup. This particular vessel is USS Vincennes (CG49), the third Ticonderoga class vessel commissioned into the Navy. In service since July 1985, the Vincennes is

attached to the 7th Fleet, and homeported in San Diego, California. (Tony Holmes)





(T-AVB3) and USNS *Curtiss* (T-AVB4). The two hospital ships, USNS *Mercy* (T-AH19) and USNS *Comfort* (T-AH20), arrived at roughly the same time, with *Mercy* taking up station in the Gulf itself and *Comfort* acting as reserve in the North Arabian Sea.

All eight of the *Algol* class of vehicle cargo ships were involved in the logistic effort, mainly bringing US Army equipment over. These were the USN Ships *Algol* (T-AKR287), *Bellatrix* (T-AKR288), *Denebola* (T-AKR289), *Pollux* (T-AKR290), *Altair* (T-AKR291), *Regulus* (T-AKR292), *Capella* (T-AKR293) and *Antares* (T-AKR294). Many of the ships from Maritime Prepositioning Squadrons 2 and 3 from Diego Garcia and Guam/Tinian were activated, as were vessels from the Afloat Prepositioning Force and the Ready Reserve Force. Over 100 different military or commercial transport ships were seen in the area during the big build-up to the kind of

Left *Representing technology from two decades previous to Vincennes, the cruisers USS Worden (CG 18) and USS Fox (CG33) sit side by side in Fremantle harbour, Western Australia, during an R and R stop over. State of the art when commissioned into the*

fleet in the mid sixties, these vessels nevertheless worked tirelessly throughout the Gulf conflict. Although fitted with an older generation of air-search radar, these vessels utilize the same Standard SM-2 main armament as the Aegis cruisers. (Tony Holmes)

Along with the Patriot system, the General Dynamics BGM-109 Tomahawk proved to the world that the billions of dollars spent on missile technology by the Carter and Reagan administrations in the late 1970s and throughout the 1980s was money well spent. A fully automated weapon which has a combat radius of over 1300 nautical miles, the Tomahawk can be fitted with a wide range of

warheads to suit specific mission requirements. Guided by a built-in radar, the missile relies on terrain-matching and inertial navigation, thus limiting the weapon to suitably mapped territory. However, by the time the first rounds were launched from their silos on 17 January, the Tomahawks had been fully programmed with virtually all of Iraq's topographical features. (McDonnell Douglas)

force needed to eject Saddam Hussein from Kuwait.

Although the European and Saudi Arabian navies had already provided a fairly powerful minehunting force, the US Navy deployed four additional vessels at the end of August. They were the USS *Avenger* (MCM1), the lead ship of its class, the *Acme* class minesweeper, USS *Adroit* (MSO509), and two *Aggressive* class ocean minesweepers, USS *Impervious* (MSO449) and USS *Leader* (MSO490). These are all light and slow vessels, not really designed for long ocean crossings, so they arrived strapped across the deck of the chartered Dutch transport dock *Super Servant III*. These vessels spent a lot of their time in the Gulf working with the Saudi minehunters, and

between them they managed to destroy over 50 floating and submerged mines.

The next major batch of US deployments involved the aircraft carrier USS *Midway* (CV41) and her reinforced escort, the Cruiser-Destroyer Group 15. *Midway* is home-ported in Yokosuka, Japan, and before its departure for the Gulf the carrier had been

At least nine Spruance class destroyers supported various battlegroups operating in and around the Gulf during Desert Shield and Desert Storm. An integral part of any US naval force since their introduction to service in the late 1970s, the Spruances have matured over the ensuing decade into powerful warships, capable of dealing with both surface and subsurface threats.

Originally criticized for their relatively light armament when compared to their displacement (over 7000 tons), various refits to the vessels throughout the 1980s have seen the destroyers 'upgunned' with Harpoon, Phalanx and, in some cases, Tomahawk systems. Taken from the ship's own embarked SH-2F Seasprite, this impressive view features the 6th Fleet's USS Elliot (DD967). (US Navy)

reported carrying out extended exercises with its air group (CVW-5) and the *Ticonderoga* class GM cruiser USS *Mobile Bay* (CG53). Apart from *Mobile Bay*, *Midway's* augmented escort group included the *Belknap* class GM cruiser USS *Sterett* (CG31), a second *Ticonderoga* cruiser USS *Bunker Hill* (CG52) and two *Spruance* class destroyers, USS *Hewitt* (DD966) and USS *Fife* (DD991). *Hewitt* had just returned from an extensive refit, which included the installation of a Mk41 Vertical Launch System. This system allows common launching procedures and a 61-round shared magazine for Tomahawk cruise missiles, Standard surface-to-air missiles, and ASROC (anti-submarine rockets). The amphibious command ship USS *Blue Ridge* (LCC19), which is flagship of the US 7th Fleet, also left Yokosuka in early September, but its destination was unknown.

The *Austin* class amphibious transport dock USS *Dubuque* (LPD8) left its Sasebo home port in Kyshu



during the first week of September in company with the 8450-ton (full Load) *Newport* class tank landing ship *San Bernardino* (LST1189) and two *Edenton* class salvage and rescue ships, USS *Beaufort* (ATS2) and *Brunswick* (ATS3). The *Edenton* vessels are capable of ocean towing and ship-to-ship firefighting, as well as supporting diving operations and lifting heavy objects from the sea bed. It is thought that *Brunswick* may have deployed to the Red Sea, because *Beaufort* was later reported towing the *Ticonderoga* cruiser *Princeton* after it was damaged in the Gulf by an Iraqi mine. On its way to the Middle East, the *San Bernardino* called at Okinawa to pick up troops from the 3rd Marine Division.

In early October a five-day amphibious training exercise was conducted by US Marine and Navy personnel along the Arabian Sea coastline of Oman. Nearly 15,000 troops were involved in *Camel Sand*, including elements of the 2nd Marine Division, 2nd

Marine Air Wing and 2nd Forces Service Support Group, all part of 4th MEB. Altogether 18 amphibious landing vessels of Amphibious Task Force 2 were used, together with about 90 fixed-wing aircraft and helicopters. At the conclusion of the exercise senior US officers reported that the planned amphibious forces deployment was basically complete. There were four assault helicopter carriers in the area, plus 14 other vessels either in the Gulf itself or in the Northern Arabian Sea. A total of 33,000 Marines was already ashore, and another 10,600 (together with all

Often referred to as the 'baby' of the battlegroup, the diminutive Knox class ASW frigates nevertheless tip the scales at a very mature 3960 tons when fully stored up. Six the mid-1960s. supported various carrier and battleship groups,

searching the sea bottom for mines with their powerful bow-mounted sonar. This shot features the name-ship itself, USS Knox (FF1052), the first of its class to enter service in the mid-1960s. (US Navy)





Left *Besides Missouri and Wisconsin*, the oldest vessel to play an active part in Desert Storm was the venerable carrier *USS Midway (CV-41)* – 46 years ‘young’ in 1991. Based at Yokosuka, near Tokyo, *Midway* headed for the Gulf in early October with various cruisers, destroyers and frigates to act as its escorts. Embarking its familiar Air Wing Five from NAF Atsugi, the vessel took up station near the mouth of the Gulf in November and commenced exercising in preparation for war. *Midway’s* air wing is unique because it operates three squadrons of *F/A-18As (VFA-151, VFA-192 and VFA-195)* and two squadrons of *A-6Es (VA-115 and VA-185)*, plus *Prowlers, Hawkeyes and Sea Kings*. (WA Newspapers)



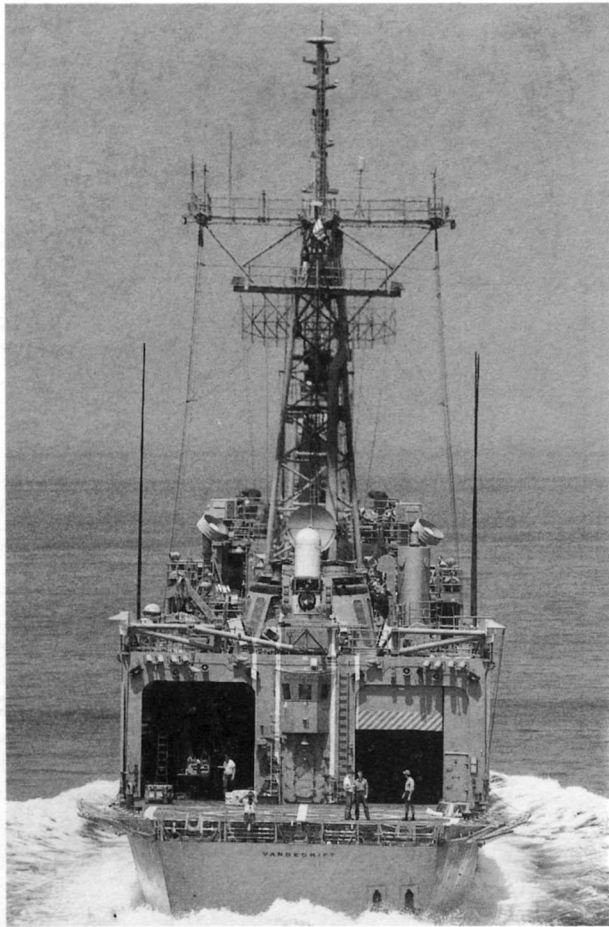
Above *Is the Shell beach umbrella* a free give away to ships if they take a certain amount of oil aboard? Refuelling in these mill-pond conditions is an easy enough task when compared to the sea states usually encountered by *Orangeleaf* in the North Sea and the Atlantic. (DPR Navy)

Time to top up the tanks as *USS Vandegrift (FFG48)* and the oiler *RFA Orangeleaf* meet for an avgas transaction deep into the northern Gulf. Part of the Middle East Tank Force on station when Kuwait was annexed in August, *Vandegrift*, and sister-ship *USS Reid (FFG30)*, maintained station off the Saudi Coast until finally relieved in late October. (DPR Navy)

their equipment) were ready to land at a moment's notice.

After watching with dismay the continued build up of Iraqi forces in Kuwait, US President George Bush announced in November that American forces in the area would be massively increased to give the theatre commanders an offensive capability. The first

manifestation of this more aggressive policy was the deployment of three new battlegroups centre on *USS Ranger (CV61)*, *USS America (CV66)* and *USS Theodore Roosevelt (CVN71)*. The Navy planners also began to study the possibility of sending the *Nimitz (CVN68)*, *Forrestal (CV59)*, *Abraham Lincoln (CV72)* and *Independence (CV62)*.



Tanks topped up, Vandegrift accelerates away leaving the oiler in its frothy wake. A compact design, the Perry class FFGs have had their offensive capabilities greatly enhanced by the successful entry into service of the SH-60B Seahawk. Capable of

embarking two helicopters, the frigate's hangarage facilities are quite generous, although most vessels go on cruise with only a single Seahawk embarked. Immediately above the hanger is the ship's sole Phalanx mounting. (DPR Navy)

The three confirmed groups all sailed for the Middle East during December. The escorts for the *Roosevelt* included the *Ticonderoga* class GM cruiser USS *Leyte Gulf* (CG55), the *Leahy* class GM cruiser USS *Richmond K Turner* (CG20), the *Spruance* class destroyer USS *Baron* (DD970), the *Oliver Hazard Perry* class GM frigate USS *Hawes* (FFG55), the *Knox* class frigate USS *Vreeland* (FF1068), the *Kilauea* class ammunition ship USS *Santa Barbara* (AE28) and the *Cimarron* class oiler USS *Platte* (AO186). The air group embarked was CVW-8.

The *America* sailed with CVW-1 on board in company with the nuclear-powered GM cruiser USS *Virginia* (CGN38), the *Ticonderoga* class cruiser USS *Normandy* (CG60), two *Coontz* class GM destroyers, USS *William V Pratt* (DDG44) and USS *Preble* (DDG46), and the *Oliver Hazard Perry* class GM frigate USS *Halyburton* (FFG40). The support vessels included the ammunition ship USS *Nitro* (AE23) and the *Wichita* class replenishment oiler USS *Kalamazoo* (AOR6). With the air group CVW-2 embarked, USS *Ranger* (CV61) sailed with a battle group that included the *Ticonderoga* cruisers USS *Valley Forge* (CG50) and USS *Princeton*, (CG59) and two *Spruance* class destroyers, USS *Paul F Foster* (DD964) and USS *Harry W Hill* (DD986).

By the time Operation Desert Storm began, the *Midway* and *Ranger* battle groups were on station in the Persian Gulf with the battleships *Wisconsin* and *Missouri*, whilst *America*, *Kennedy* and *Saratoga* were in the Red Sea. The *Roosevelt* group did not take part in any of the early raids into Iraq, which would suggest that they were stationed in the extreme southern end of the Red Sea, or perhaps in the Arabian Sea.

PETER GILCHRIST writes with an expert's insight about the navies deployed in the Gulf during Operation Desert Storm. The war at sea was one of the most critical aspects of the conflict.

The United States sent six carrier battle groups, battleships USS *Missouri* and USS *Wisconsin*, plus numerous other vessels to the theatre. Britain's Royal Navy, although with smaller resources, was spectacularly successful against Iraqi ships. France, Australia and many other nations made vital contributions. The ships, their weapons systems, and capabilities are described in detail by Peter Gilchrist. Amphibious forces, hovercraft, frigates, destroyers, minehunters, hospital evacuation vessels and the role of naval helicopters are also discussed in depth.

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