



WORLD NAVIES IN REVIEW

By Eric Wertheim

From counter-piracy patrols off the coast of Somalia to ballistic-missile defense off the waters of North Korea, the past year of naval operations has highlighted the flexibility of global maritime power. As militaries around the globe face conventional threats mixed with asymmetric challenges, the

navies of the world have proven once again that in the age of hybrid warfare, maritime forces are at the helm, leading the way.

This review of the world's navies presents a snapshot of activities and developments during the past year. It is arranged by region, with nations discussed alphabetically under each subheading.

Australia and Asia

No one can accuse **Australia** of under-reaching when it comes to current and future defense planning. During 2009 Australia's government released a new white paper calling for vast naval enhancements during the course of the next 20 years. Included in the plans are efforts to replace their six current *Collins*-class submarines with a force of 12 more advanced subs. Eight new future frigates will replace the current generation of ANZAC frigates, and new amphibious assault ships, air-warfare destroyers and heavy landing craft are all expected to join the fleet. Twenty new offshore patrol vessels with hydrographic-



research and mine-countermeasures capabilities are planned, as are new maritime patrol aircraft, unmanned aerial vehicles, and helicopters.

On the amphibious front, the two *Canberra*-class 27,800-ton large-deck amphibious ships are being built in Spain with eventual completion in Australia. The first unit is planned to enter service in 2013 and the second in 2015. The navy also is looking to gain an enhanced sealift- and logistics-support capability with a new class of auxiliaries.

Last year HMAS *Sydney*, one of Australia's four newly modernized *Oliver Hazard Perry*-class guided-missile frigates,

took part in an around-the-world tour that included a successful anti-piracy patrol off Yemen and Somalia. During the exercises she showcased her impressive modernized weapons including the recent addition of an eight-tube vertical-launch missile system carrying 32 ESSM missiles. The newly modernized warships also retain the capability to carry two helicopters and launch Harpoon antiship missiles and Standard SM-1 (currently being upgraded to SM-2) surface-to-air missiles from their MK 13 missile launchers. The Australian guided-missile frigates also have upgraded electronic countermeasures, radar and sonar suites, and improved electronics systems. The fourth and final modernized *Perry*-class frigate, *Newcastle*, was re-delivered to the Aussie fleet late in

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Bangladesh would like to replace *Umar Farooq* as soon as funding permits. The ex-British *Salisbury*-class frigate was commissioned in 1958 and transferred in 1976.

2009; the class will remain in frontline service through at least the end of the decade, at which point Australia's *Hobart* class of Aegis air-warfare destroyers is expected to join the fleet. Up to four *Hobart*-class destroyers, based on the Spanish F-100 design, are to enter service beginning in 2014.

🇬🇧 **Bangladesh** saw a very modest 2.5-percent increase to its defense budget during 2009 and hopes to use any extra funding to increase the military's training and equipment stockpiles. The navy intends to replace its two ex-British *Leopard*-class

and one ex-British *Salisbury*-class frigates, while also shopping for antiship missiles, patrol helicopters, and maritime patrol aircraft.

Brunei's navy apparently has ordered at least one new patrol boat, which was sighted undergoing sea trials off Germany. Named *Ijhtihad* and carrying pennant number 17, the vessel is reportedly 41 meters long with an 8-meter beam and a draft of 1.9 meters. Carrying a small rigid-hull inflatable boat at her stern, photos of *Ijhtihad* show that the ship is also armed with a forward-mounted gun. Additional details, including the total number of ships to be built, remain unknown.

China celebrated the 60th anniversary of the People's Liberation Army during April 2009 with a fleet review that included dozens of Chinese surface ships and submarines as well as 21 vessels from 14 other nations. The fleet review also provided evidence that China appears to be making an attempt to add more transparency to its defense buildup in response to Western criticism.

With the world's second-largest defense budget, China is also working to trans-

form itself into a player on the international naval scene commensurate with its massive place in the global economy. China's first major international naval deployment, to fight piracy off the coast of Somalia, began in late December 2008 and had been set to wrap up in March 2009 before the Chinese government announced that the missions would be extended. New warships have been cycled in to replace those vessels departing from earlier voyages.

China has requested a halt to U.S. maritime surveillance of the type that sparked a clash between the USNS *Impeccable* (T-AGOS-23) and a number of Chinese ships off Hainan Island. In the meantime, however, China continues its massive defense buildup with a special emphasis on anti-access technologies, to include the development of antiship ballistic missiles, aimed at impeding U.S. military access in the region. Among other areas of emphasis for China are investments in stealth, cruise missiles, and torpedo technology as well as support and logistics equipment to allow for greater power-projection capabilities.

Five *Jin*-class (Project 094) nuclear-powered ballistic-missile submarines are planned for the People's Liberation Army Navy (PLAN) and the first unit of the class entered service in 2007, although the boat has yet to conduct its first deterrence patrol. The navy's newest submarine-launched ballistic missile, the JL-2, is expected in service by the end of 2010. Two *Shang*-class (Type 093) nuclear-powered attack submarines were on display at the PLAN 60th anniversary celebration, and reports show increased activity for the nuclear-powered attack-submarine fleet, which increased its operational patrols to 12 in 2008, up from seven in 2007. During 2009, China continued negotiations with Russia to purchase Su-33 fighters to arm China's future fleet of aircraft carriers. China views aircraft carriers as a sign of power and prestige, and the navy is working diligently to complete and modernize the former Russian carrier *Varyag*, renamed *Shilang*, possibly for use as an aviation training ship. Planning also continues on a locally built mid-sized aircraft carrier that is expected to enter service between 2015 and 2020.

India's military remains focused on regional competitors like Pakistan and

an increasingly powerful China, but the planned acquisition of aircraft carriers and nuclear-powered submarines reflects an earnest Indian desire for power-projection capabilities as well. India faces a problematic relationship with Russia concerning the two nations' defense acquisition ties. Just as India appeared to be leaning increasingly to the West, it chose in late 2009 to renew a 10-year military industrial agreement with Russia, calling into question the nation's quest for an independent and efficient defense acquisition model.

The late-2008 terror attacks in Mumbai highlighted serious gaps in India's ability to prevent and respond to terrorist violence. Coastal defense and border security capabilities have thus taken on a vastly more important role. Defense budgets are expected to increase significantly in the years ahead, but many experts are concerned that the funding may not be wisely allocated or properly spent to meet the nation's defense requirements.

This past summer India inked a deal to build seven Project 17A frigates with work starting in 2011. The new warships are an enhanced version of the *Shivalik*-class frigate program (Project 17), the first of which is expected to commission in 2010. Work continues on the second batch of Russian-built *Talwar*-class frigates with the third and final unit planned for delivery to India in 2013. A new third batch of the *Talwar* class may be purchased in the future. In May 2009 INS *Airavat*, the Indian Navy's newest *Shardul*-class tank-landing ship, entered service. The vessel joined her two sister ships, *Shardul* and *Kesari*, already in the fleet.

India is in dire need of modern submarines. Plans to acquire new units have taken on greater importance amid reports that less than half of the submarine fleet remains operational and 63 percent of the force is expected to retire by 2012. Current goals call for construction of six *Scorpène*-class units built under license in India, with the last three of the program to be fitted with air-independent propulsion (AIP). Six additional submarines may be purchased at a later date. India's long-awaited nuclear-powered attack submarine program took a major step forward in July 2009 when INS *Arihant*, the first of her class, was launched after more than 10 years of work. There have been reports

that India hopes to operate the new SSN in service as a technology demonstrator by 2012. A force of five nuclear-powered ballistic-missile submarines is said to be desired by 2017—although attack submarines fitted with nuclear-armed cruise missiles may be a more likely alternative. In 2010 India also expects to take delivery of the new Russian Akula-class submarine *Nerpa*, which has been undergoing repairs and refit since a fire-suppression system malfunctioned on the boat in November 2008, killing 20 Russians on board.

The Indian Navy hopes to effectively double its naval aviation capabilities by 2022 and increase its use of unmanned aerial vehicles. Eight P-8 Poseidon maritime patrol aircraft were ordered from the United States for delivery by 2015. The navy's supply of carrier-capable aircraft is creating difficulties as the 30 Sea Harrier fighters purchased in the 1980s have dwindled to a force of only 11; non-V/STOL MiG-29s are beginning to enter service in 2010. A minimum of two to three aircraft carriers are planned, and the former *Kiev*-class aircraft carrier *Admiral Gorshkov* (renamed *Vikramaditya*) has been promised by Russia in 2012. Russian work on the *Vikramaditya* has been so slow and expensive that a newly built aircraft carrier or large-deck amphibious ship from the West may well have been a better alternative. India's current carrier, *Viraat*, was expected to retire in 2011, but has been extended in service at least a year. India's first domestically produced 37,000-ton aircraft carrier is not expected to be delivered until 2013.

As a result of the 2008 Mumbai terror attacks, the Indian Coast Guard is expected to double in strength during the next four years and to triple by 2020 to meet 21st-century security requirements. The coast guard is looking to acquire new ships and also new aircraft, including the purchase of coastal patrol helicopters that may be leased from the United States. The

force is also working to increase its physical presence through the construction of more than a dozen modern naval stations, including one at Karwar that began operating in November 2009.

Indonesia commissioned the *Frans Kaisiepo*, its fourth and final corvette of the *Diponegoro* (SIGMA) class, in March 2009. The corvettes were constructed in the Netherlands and are to receive their French Exocet MM40-block II antiship missiles during 2010. Indonesia's third *Makassar*-class amphibious transport dock was handed over late in 2009 and a fourth unit is currently under construction. The ships are modified versions of the *Tanjung*

the near future and aims to operate four submarines. The fleet currently consists of two ill-maintained Type 209/1300s with plans to acquire two additional submarines around 2014.

Japan sent two destroyers to the Gulf of Aden early in 2009 to take part in international anti-piracy efforts. Following the Democratic Party of Japan's election victory in summer 2009, however, the nation's Indian Ocean maritime refueling operations, which had supported coalition forces in Afghanistan, were ended.

Efforts to expand Japan's ballistic-missile defense capabilities, through the use of its Aegis-equipped *Kongo* class of guided missile destroyers, have been progressing well. In fall 2009 the destroyer *Myoko* successfully intercepted a ballistic-missile target off Hawaii. In July 2009 the keel was laid for the first of Japan's as-yet unnamed destroyers, currently dubbed Project DD19. The new four-ship class is due to begin entering service in 2012 and will screen high-value Japan Maritime Self-Defense Force (JMSDF) warships operating in the ballistic-missile defense role.

U.S. NAVY



In 2009 the Japanese destroyer *Myoko* successfully intercepted a ballistic-missile target off Hawaii.

Dalpele class. The first two units were built in South Korea with the remainder built domestically. The Indonesian fleet also saw a number of smaller 40-meter patrol boats join the ranks early in 2009.

Indonesia is working to help prevent piracy and terrorism through the use of maritime coastal radars supplied from the United States early last year. Additional CN-235 maritime patrol aircraft also have been ordered to assist with this task, replacing older GAF N-22 Nomads.

Indonesia is making an effort to re-establish a credible submarine force in

derway to supplement the new *Hyuga* class with a larger 19,500-ton warship capable of carrying 14 helicopters and transporting 4,000 personnel and 50 light vehicles. The new 248-meter vessel is expected in service around 2014, in time to replace the helicopter-carrying destroyer *Shirane*, which entered service in 1980.

Kazakhstan is a nation with big hopes to grow a small fleet. Both the United States and Russia have offered assistance and equipment to help build the force, which is in need of small and large patrol boats in addition to maritime helicopters.

Malaysia's military has had to make due with limited funding in the face of several naval challenges. One of the navy's largest ships, the *Sri Inderapura*, an 8,500-ton (full load) tank-landing ship, suffered a devastating fire on 8 October 2009. Because of her age, the former U.S. Navy

program that will take 28 months per ship to complete. Improvements to the vessels include upgraded radars and a modernized armament fit.

Malaysia has high expectations for its fledgling submarine force and aims to establish a 425-man cadre of personnel to

active repercussions as the program may not have been grounded heavily enough in military requirements. Problems surfaced with the classes' use of rigid-hull inflatable boats and other relatively minor issues that delayed service entry for some of the vessels and are forcing refits in other units that were already operational. Despite the criticism, however, it is apparent that New Zealand has come away with a new set of ships that are likely to serve the fleet well into the future, as demonstrated by *Canterbury's* successful 2009 humanitarian deployment throughout the South Pacific region.

North Korea remains a global pariah and did little in 2009 to improve its international standing. The past year saw the isolated nation conduct its second nuclear weapons test and nullify the 1953 treaty ending the Korean War. In an attempt to deter North Korea from exporting its weapons abroad, the United Nations approved sanctions allowing its member states to search any North Korean ships suspected of carrying weapons for export. In fall 2009 a North Korean patrol boat crossed a contested maritime border with South Korea and ignored warning shots from South Korean patrol boats. The resulting naval skirmish sent the North Korean craft limping home in flames with at least one of its crew members fatally wounded.

Pakistan continues to increase its defense ties with China, and in September 2009 the Pakistani Navy took delivery of its newest and most advanced warship, the Chinese-built F-22P frigate *Zulfiquar*. The ship, based on the Chinese *Jiangwei-II*-class (Project 53H3) frigate, was officially handed over on 30 July. The order for the *Zulfiquar* and three sister ships, also known in Pakistan as the *Sword* class, was finalized in 2005. Two units of the class, the



HMNZS *Rotaiti* is one of four inshore patrol vessels that entered service under New Zealand's Project Protector program.

Newport-class LST will not be repaired, and officials are looking for a replacement vessel to be acquired in the near future.

To assist Malaysia with regional anti-piracy and counterterrorism efforts, the United States has provided the country with coastal and maritime defense radars. Despite piracy problems in its own waters, Malaysia remained a player in anti-piracy operations off the Somali coast as well, operating multi-purpose support ships, including *Sri Indera Sakti*, as part of the international coalition. The navy's MEKO-100 RMN-class patrol ships have been experiencing delays, although first of the class *Kedah*, second unit *Pahang*, and third ship *Perak* have now been accepted into service while a sixth and final ship of the class was launched in 2009. The navy's two *Kasturi*-class frigates are being modernized under a 2009

man and operate its two new *Scorpène*-class submarines. The first unit, *Tunku Abdul Rahman*, arrived from France in September 2009, with sister sub *Tun Razak* expected to become operational in 2010.

New Zealand's four new inshore patrol vessels as well as two offshore patrol vessels and the multi-purpose ship *Canterbury* have been completed by early 2010. The Royal New Zealand Navy acquired a large number of highly capable ships within a very short period of time through the Project Protector program by emphasizing expediency, cost, efficiency, and off-the-shelf commercial technology. These same goals also caused some neg-

Pakistan has taken delivery of its newest and most advanced warship, the Chinese-built F-22P frigate *Zulfiquar*.



Shamsheer and *Saif*, are under construction at China's Hudong Zhonghua shipyard in Shanghai and are expected to join the fleet in 2010. A fourth unit, expected in service in 2013, is being built in Karachi. On the submarine front, Pakistan is looking into purchasing Type 214 submarines from Germany to supplement its French *Agosta* and *Agosta-90B*-class submarines.

As the **Philippines** continued to fight terrorism and insurgents, the nation saw defense spending grow by nearly 10 percent last year. The Philippine Marine Corps has led a number of major attacks against local terrorist groups. Counterterrorism efforts against Abu Sayyaf and Jemaah Islamiyah can be expected to continue, and additional budget increases are foreseen.

Singapore saw its fifth and sixth *Trident* (*Formidable*-class) frigates enter service in 2009, marking the conclusion of a successful acquisition project for the nation. The class offers a vast improvement over the *Sea Wolf* guided-missile patrol boats that were decommissioned in 2008. Singapore is now awaiting delivery of its two modernized *Västergötland*-class submarines purchased from Sweden. The submarines are being upgraded with an AIP capability, and the first of the class, renamed *Archer*, is due to enter service in 2010.

South Korea seeks to build six 5,600-ton "mini-Aegis" guided-missile destroyers beginning around 2019 under what has been dubbed the KDX-IIA program. These new warships will supplement the larger *Sejong-Daewang* (KDX-III)-class destroyers, three of which are to be in service by 2012. In 2009 South Korea deployed its newly commissioned guided-missile patrol boat *Yoon Young-Ha* to police the maritime border with North Korea. The ship was commissioned in December 2008 and four new units were launched during 2009. More than 40 of the class may eventually be built.

South Korea's newest *Sohn Won-II*-class (KSS-II) submarine entered service in December 2009. Named *An Jung-Geun*, the submarine is the third Korean-built, German-designed Type 214 submarine to commission. Six additional Type 214s are planned by 2018. The class will be followed by new KSS-III submarines around 2020.

Sri Lanka's navy played a major role defeating the Liberation Tigers of Tamil Eelam (Tamil Tigers) insurgent force, and

the victory marked an end to the nation's 26-year civil war. Through superior maritime intelligence gathering and the use of fast patrol craft coupled with trained sailors, Sri Lankan naval forces were able to overwhelm the enemy and destroy or thwart insurgent warehouse ships to deny rebel reinforcement from the sea. As the victorious government looks ahead and works to unify the country, defense spending can be expected to drop significantly. Some growth will continue, however, as six new Israeli Super Dvora Mk III fast-attack craft are to enter service by the end of 2010. Other ships that had been pressed into service in last-ditch fighting against rebel forces are now being formally commissioned to officially start their naval careers.

Taiwan seeks to thin its ranks of excess military personnel by cutting troop levels some 16 percent by 2014. With a new submarine program on hold for decades, the Taiwanese fleet must make do with what it can, and its defense industry is working to develop its own domestically built precision-guided munitions. Taiwan is also looking for additional weapons sales from the United States, which agreed to refit 12 P-3 Orion maritime patrol aircraft for Taiwan by 2013.

Thailand's navy has surface ships and aircraft, but no submarines. The rapid proliferation of submarines in Asia, however, has forced Thailand to reconsider its position. German-designed, South Korean-built Type 209 submarines represent the most likely option if Thailand decides to establish a true underwater-warfare capability in the future.

Turkmenistan in Central Asia continues to underfund its military, but recently wrapped up an agreement with Russia worth some \$200 million. Under the deal Turkmenistan is to purchase three guided-missile patrol craft and two smaller patrol boats for service in the Caspian Sea.

During 2009 **Vietnam** agreed to purchase six Kilo-class submarines from Russia, concluding discussions that had been in the works for years. In an interesting twist, the project, announced in April, calls for Russia to complete construction of six submarines that were once planned for service in the Venezuelan Navy, and

to instead turn the vessels over to Vietnam at an undisclosed date. The sale of the subs, along with the purchase from Russia of two *Gepard*-class frigates, will allow the Vietnamese Navy to step into the 21st century while better protecting its regional maritime interests. Largely due to size of the Kilo sale, Vietnam earned the distinction of becoming Russia's top arms importer during 2009.

Europe

Croatia purchased two *Helsinki*-class guided-missile patrol craft from Finland in 2008, and the vessels were renamed *Vukovar* and *Dubrovnik* during a January 2009 ceremony. If funding holds up, the navy would also like to purchase as many as ten locally built 40-meter patrol craft and four corvettes.

➔ **Denmark's** *Absalon*-class flexible-support ships received widespread praise last year for their utility while conducting counter-piracy operations off the coast of Somalia. August saw the retirement of three very capable and well-armed *Niels Juel*-class missile corvettes that had served the fleet well since the early 1980s. The class is expected to be replaced in service by the far larger, 6,000-ton *Iver Huitfeldt*-class frigates, previously known as the Flexible Patrol Ship class. These new vessels will likely enter service between 2012 and 2014, and are to be named *Iver Huitfeldt*, *Peter Willemoes*, and *Niels Juel*. Plans to replace Denmark's current Lynx helicopter fleet are also underway with funding appropriated for new rotary-wing aircraft between 2010 and 2014. Denmark also looks to purchase two 72-meter patrol ships for operations around Greenland.

Finland's navy is making good headway in its efforts to modernize. All four *Hamina*-class guided-missile patrol craft are fully operational. Two *Hämeenmaa*-class minelayers have completed modernization and will be returned to full service during 2010. Three new 680-ton Italian mine-countermeasures craft are also being built for Finland with delivery between 2010 and 2012.

France opened its new base in the United Arab Emirates in 2009. Though





Denmark's three highly capable and well-armed *Niels Juel*-class missile corvettes, including *Olfert Fischer*, were recently decommissioned.

it will largely host ground and air forces, port capabilities are being expanded to accept French naval vessels likely to cycle through the facility.

France's third *Mistral*-class helicopter-carrying landing ship was ordered in 2009 and is expected to enter service sometime in 2012, at which point it is envisioned to replace one of the *Foudre*-class dock landing ships that entered service in the 1990s. Eleven multi-mission *Aquitaine*-class frigates are being built by France under the *Frégates Européennes Multi-Mission* (FREMM) program and will enter service between 2012 and 2022. A land-attack variant of the warship was abandoned last year to keep costs under check.

France will see *Le Terrible*, its fourth and final *Le Triomphant*-class nuclear-powered ballistic-missile submarine, enter service in 2010. The submarine will be the first unit fitted with new M51 submarine-launched ballistic missiles, successors to the older M45 missiles now in service. Six new *Suffren*-class nuclear-powered attack submarines are being built for France under the Barracuda program, with the first unit due to enter service in 2017.

In early 2009 the French aircraft carrier *Charles de Gaulle* had just completed a lengthy overhaul but was returned to the yard when officials discovered excessive



Papanikolis, the German-built first unit of Greece's submarine force, may be sold abroad or possibly accepted into the German fleet following disputes over Greek non-payment.

vibrations indicating a problem with the propulsion system. The problem was corrected by the end of the year, with the carrier returning to service in December. The decision to build a second French aircraft carrier has been postponed for the time being.

Germany's third *Berlin*-class (Type 702) replenishment oiler was ordered in December 2008; the €330-million contract calls for the vessel to be in service by 2012. Four *Baden-Wuerttemberg*-class (F-125) frigates are expected to begin entering service around 2015. Although 15 *Braunschweig*-class (K-130) corvettes had been planned, it appears that only five will be built. Six new 2,500-ton K-131 light frigates/corvettes are also due to come online sometime after 2017. The

first batch of Germany's four Type 212A submarines are now in service; two more subs will join the fleet in 2012 and 2013 respectively.

Greece's navy has begun negotiations for the acquisition of six new FREMM-class frigates. At least five maritime patrol aircraft are also desired to replace its current fleet of P-3 Orions.

Earlier in 2009 the Greeks were reported to be hundreds of millions of dollars behind in payment to ThyssenKrupp Marine Systems and as a result, the Hellenic Navy's Type 214 submarine program was canceled due to non-payment. It now seems, however, that Greece will accept the latter three Type 214 boats that were built domestically under license while *Papanikolis*, the sole German-built submarine

of the class, may be sold elsewhere. The program to upgrade three Greek Type 209 submarines with AIP was also canceled after work was completed on just one boat. The navy instead hopes to build two new AIP-equipped Type 209/1400-class submarines at Hellenic Shipyards. As if to signal its frustration, Germany's ThyssenKrupp Marine Systems has chosen to divest its ownership in Hellenic Shipyards and is now looking for a buyer.

Italy's 27,000-ton aircraft carrier *Cavour* entered operational service in 2009, having been commissioned the previous year. The ship will initially carry AV-8B Harrier aircraft until the F-35B V/STOL variant of the Joint Strike Fighter enters service. Italy's smaller aircraft carrier *Giuseppe Garibaldi* is now free to undergo a long-

awaited refit. Two of Italy's *Andrea Doria*-class guided-missile destroyers, built under the Horizon destroyer program, will also be in service by the end of 2010, with the *Andrea Doria* achieving full operational capability by early 2010 and sister *Ciao Duilio* following later in the year. Up to 10 *Carlo Bergamini*-class frigates are planned for Italy under the Franco-Italian FREMM program, with the first due to enter service in 2012. A new 2,500-ton future corvette program is also in the works with six of the class planned for around 2018.

Construction began late in 2009 on Italy's second batch of German-designed *Salvatore Todaro*-class (Type 212A) submarines. The two new boats were ordered in 2008 and are expected to enter service in 2015 and 2016. More may be purchased in the future.

In 2009 the **Republic of Malta** received four new 21-meter inshore patrol craft from the Australian shipbuilder Austal. The new vessels have a maximum speed of more than 26 knots and can be armed with 7.62- and 12.7-mm machine guns. Built using a planing aluminum hull, the new vessels assist with search-and-rescue operations, counterterrorism/anti-piracy duties, fisheries patrol, and drug-enforcement operations.

In December 2009 the **Netherlands** signed a contract with Damen Schelde Naval Shipbuilding to construct a joint support ship for the Royal Netherlands Navy. The new vessel will provide underway support and strategic sealift to replace the aging *Zuiderkruis*. The ship, to be built at Damen shipyard in Galati, Romania, and outfitted at Vlissingen, Netherlands, will displace 28,000 tons, making her the largest ship ever built for the Dutch Navy. Expected to enter service in 2014, the vessel will have a top speed of 18 knots and measure 205 meters in length with a 30-meter beam. She will have deck-landing spots for two Chinook-sized helicopters and hangar storage capacity for as many as six rotary-wing aircraft. Four *Holland*-class offshore patrol vessels are also being built for the Dutch Navy under a 2007 contract. The second unit of the class was laid down in 2009,

Portugal received the retired *Karel Doorman*-class frigate *Van Ness* from the Netherlands, and the ship has been renamed *Bartolomeu Dias*.

and all four of the frigate-sized warships are expected in service by 2013.

While **Norway** continues to direct many new defense efforts toward its northern borders with the Barents Sea and Russia, it is also working to modernize the fleet and integrate its forces into international maritime operations. The Royal Norwegian Navy received its fourth unit of the five-ship *Fridtjof Nansen*-class guided-missile frigates in late 2009, and all six of the navy's *Skjold*-class air-cushion guided-missile boats are to be in service by 2010. A new fleet of 14 NH90 helicopters is planned with eight currently on order. Three *Oksøy*-class mine-hunting vessels are due to complete modernization by 2011, and the government is debating the purchase of a future logistics-support ship for delivery by 2013. The first of Norway's new 2,100-ton *Barentshav*-class coast guard patrol craft entered service in 2009 with two additional units to follow.

Poland's two former U.S. Navy *Oliver Hazard Perry*-class frigates have proven expensive to maintain. The long-awaited MEKO A-100 corvettes have been delayed for nearly a decade due to budget restrictions, but the first unit, laid down in 2001, was finally launched in 2009. Though six of the corvettes are desired, no more than two are likely to be built, and the first ship is not expected in service until at least 2017. Poland's fleet of *Orkan*-class guided-missile patrol craft had been fitted to carry Sweden's RBS 15 Mk3 antiship missiles, but deliveries of the missiles will likely be delayed due to technical and funding issues. The navy also now hopes to extend the life of its Tarantul-I missile boats until replacements can enter service. Poland will

likely retire its sole Kilo-class submarine by 2015 and mothball its four Type 207 submarines in 2012. A requirement for three AIP-capable submarines is unlikely to be fulfilled anytime soon.

Portugal received from the Netherlands the retired *Karel Doorman*-class frigate *Van Ness* and the ship was renamed *Bartolomeu Dias*. A second frigate of the class has been renamed *Francisco de Almeida*. Sea trials on *Arpão*, the navy's second German Type 209PN submarine, will take place in 2010 and she is expected to enter service in 2011. The first submarine of the class, *Tridente*, is due to join the fleet later this year. All five of Portugal's new C-295 maritime patrol aircraft will be operational by the end of 2010.

During 2009 the **Russian** Navy fought to stay relevant as it deployed forces off the Horn of Africa and worked to keep its dwindling force of operational ships in working order. As politicians spoke of increased naval spending and fleet expansion, military leaders warned that even with an increased defense budget, not enough money is being spent to boost domestic shipbuilding or to keep up with the maintenance of Russia's active warships.

Russia's lease to use the naval base in Sevastopol, Ukraine, is set to expire in 2017, but its new naval base at Novorossiysk is not expected to be ready until 2020. In 2009 Russia began building a new naval base in the breakaway Georgian region of Abkhazia. By the end of 2009 media reports stated that 10 Russian Federal Border Guard ships were operating from the new facility.

A dramatic shift in how the Russian Navy acquires some of its vessels may



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Sweden sent two *Stockholm*-class guided-missile patrol craft to assist with anti-piracy efforts in the Gulf of Aden. The ships were supported by the patrol boat tender *Trossö*, pictured here.

be on the horizon as the Kremlin appears likely to purchase at least one French-built 21,500-ton *Mistral*-class helicopter-carrying landing ship to provide them with enhanced maritime assault capability. This presents a unique domestic shipbuilding dilemma for a navy that has not been known to look outside its own defense industrial base, but must now face the reality of a lethargic domestic shipbuilding capability.

In June 2009 Russia commissioned its second *Neustrashimyy*-class frigate. The warship was literally decades behind schedule, having been launched in 1991. Acquisition of a third ship has been canceled as have plans for Russia's Project 12441 frigates, with the ships instead being offered for sale abroad. A new *Gepard*-class frigate is expected to enter service in 2011, and plans are underway for new nuclear-powered, double-hulled icebreakers to begin entering service in 2015.

Russian surface-ship development and construction continue to take a back seat to submarine work, with the navy's second *Sverodvinsk*-class SSN (Project 885, also known as the *Yasen* program) laid down in July 2009. The first unit of the class is expected to enter service in 2011. Ten *Borey*-class nuclear-powered ballistic-missile submarines are desired, with four units in varying stages of construction. The first submarine of the class was reportedly undergoing sea trials by the end of 2009, but continued failures of the associated Bulava submarine-launched ballistic missile have left the entire *Borey* submarine program in jeopardy.

In August 2009 the *Vorovskiy*, a Krivak-III-class frigate, became the first Russian Border Guard vessel to pay a visit to the

continental United States. The frigate made the visit while participating in Pacific Unity, a three-day multinational training scenario off Port Angeles, Washington.

Spain's budget cuts have prevented the purchase of Tomahawk land-attack cruise missiles. The missiles were planned for carriage in Spain's six *Alvaro de Bazan*-class Aegis frigates, the last of which is expected to arrive in 2012, and four S-80 submarines, the third of which began production in late 2009. Perhaps the most ambitious of Spain's naval projects involves construction of the 28,000-ton amphibious assault ship *Juan Carlos I*, which began builder's trials in fall 2009, as did the 19,000-ton oiler *Cantabria*. *Meteoro*, the first of four Spanish 2,500-ton BAM patrol ships, was also launched during the past year.

Sweden's military forces historically have been designed with a heavy emphasis on homeland defense, but in recent years the nation has begun playing a more active role in international military operations. In 2009 the Swedish Navy was an active player in anti-piracy activities off Somalia as two *Stockholm*-class guided-missile patrol craft arrived in the region. The ships were supported by the patrol boat tender *Trossö*, but the small size and lack of helicopter facilities aboard many Swedish naval assets remain limiting factors for long-range deployments.

Sweden plans for all five of its long-delayed *Visby*-class guided-missile patrol combatants to be fully operational by 2014, with the first unit reaching this milestone early in 2010. Five *Landsort*-class coastal mine-countermeasures vessels are undergoing modernization to include new combat and air-defense system

upgrades. At least four of the five modernized vessels are to re-deliver by late 2010. Sweden's new L-10 logistics support ship is expected to enter service by 2015.

All of Sweden's submarines are AIP-capable, and combat-system upgrades aboard the fleet's submarines are expected to complete by 2013. The next-generation A26 submarine program is still in its infancy, though two of the new submarines are expected to replace the remaining *Västergötland*-class boats by 2018.

Turkey is working to integrate command and control in all of its *Oliver Hazard Perry*-class frigates and to install Mk-41 vertical-launch systems in a majority of the class. Turkey hopes to expand its domestic shipbuilding capacity, and the navy's first domestically developed and produced warship is progressing well under the *Milgem* program. The first unit, *Heybeliada*, was launched in 2008 and will be undergoing sea trials during 2010, with an in-service date of 2011. As many as 12 *Milgem* corvettes may eventually be built. Turkey has ordered 16 400-ton, 55-meter patrol boats that are beginning to enter the fleet in 2010. These new craft are intended to assist with coastal patrol duties. In the longer term, Turkey is planning for a next-generation air-warfare frigate under the TF 2000 project to begin entering service around 2021. A large amphibious dock landing ship is also in the offing for the navy as leaders begin shopping around for a ship that is foreign-designed but domestically built and can transport 800 military personnel and their associated equipment. The Turkish Navy plans to replace older Type 209/1200-class submarines with six new Type 214 units that should begin entering service in 2015. The Turkish Coast Guard also recently ordered four 88-meter offshore patrol vessels based on the Italian *Sirio* (NUPA) design.

Ukraine hopes to establish a modern maritime capability and plans for a force of ten new 2,500-ton corvettes by 2026. The first unit is expected to launch in 2012.

The United Kingdom's Royal Navy escaped a recent budget review with only minor cuts as the war in Afghanistan continues to squeeze British defense coffers. In December 2009 the Ministry of Defence announced that two ships, the *Sandown*-class minehunter HMS *Walney* and the coastal survey ship HMS *Roebuck*, would be withdrawn from service and retired early.

Bahrain hopes to purchase three new frigates in the near future, one of which is intended to replace *Sabha*, pictured here.

Other defense cuts impacting British maritime forces include early-2010 retirement for the Royal Air Force's Nimrod MR.2 patrol aircraft. The service entry date for the follow-on Nimrod MRA.4 has been shifted forward to 2012, and the RAF's V/STOL Harrier force will be reduced by at least one squadron.

In 2009 the Type 42 destroyers HMS *Exeter* and *Southampton* were retired with sister *Nottingham* following soon after. HMS *Dauntless*, the navy's second Type 45 guided-missile destroyer, was delivered in December 2009, and she joins older sister *Daring*, which commissioned in July. Unfortunately, the Sea Viper (PAAMS) air-defense armament system fitted to the warships is unlikely to reach full operational capability before 2014. All six of the *Daring*-class destroyers are due to be in service by 2013. The Military Afloat Reach and Sustainability (MARS) tanker program was canceled early in 2009 but survives amid calls for an assortment of logistics- and fleet-support ships to enter service around 2016. A common hull design is planned for the next generation of mine-countermeasures and hydrographic-research ships beginning around 2020.

The Royal Navy's highest-visibility projects, including the *Queen Elizabeth*-class aircraft carriers, have survived the budget axe for the time being, though additional military reductions can be expected in the future. The carrier program has run into some new cost and time hurdles as service entry for 65,000-ton (full load) HMS *Queen Elizabeth* has been postponed two years until 2016, with HMS *Prince of Wales* expected to follow by 2018. This delay will likely cost the government £1.1 billion and bring the total price tag for the two carriers to roughly £5 billion. Among the current generation of *Invincible*-class carriers, *Ark Royal* completed a seven-month refit in 2009 and has been designated to replace *Illustrious* as the navy's high-readiness strike carrier.

HMS *Astute*, the lead ship of Britain's new nuclear-powered attack submarines, departed the BAE Systems shipyard in Barrow, Cumbria, and arrived at her permanent homeport in Faslane on the Clyde,



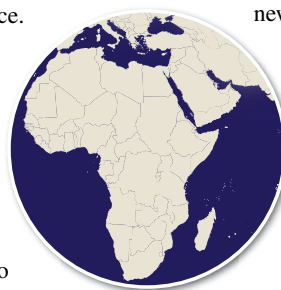
U.S. NAVY

Scotland, in November 2009. Three additional units of the class are under construction, including sisters *Ambush* and *Artful*, expected to enter service in 2011 and 2012, respectively, and HMS *Audacious*, which was laid down in 2009 and is expected in service by 2013. Three additional units are also planned. HMS *Trafalgar*, the first submarine of her class, was also the first to be decommissioned this past December. A number of her sisters will remain in service for years to come, with HMS *Triumph* remaining active until 2022.

During a London speech in March 2009, British Prime Minister Gordon Brown unveiled some details about the United Kingdom's next nuclear-powered ballistic-missile submarine design. He explained that the Royal Navy's new generation of SSBN to replace the current *Vanguard* class would be fitted to carry only 12 missile tubes for submarine-launched ballistic missiles, four fewer than the 16 in today's boats. During the same speech, Brown also stated that there are currently fewer than 160 warheads making up the British nuclear-deterrent force.

Middle East/Africa

Algeria is looking to build new frigates and the navy appears to have settled on the Italian FREMM design. Deliveries of up to six ships can be expected to begin around 2011. Two of Algeria's *Koni*-class frigates will complete overhaul and return to service during 2010, and a third unit of the Nanuchka-II guided-missile patrol craft also is expected back in service by the end of the year, following modernizations in Russia. Two of Algeria's Project 877EM Kilo-class submarines are currently undergoing



upgrades while the navy has purchased more modern Project 636 Kilo variants for delivery by 2012. France is building 21 90-ton patrol boats for Algeria with deliveries to conclude by 2012.

🇧🇭 **Bahrain** hopes to purchase three new frigates in the near future, one of which is intended replace *Sabha* (ex-USS *Jack Williams* [FFG-24]), a U.S. *Oliver Hazard Perry*-class frigate originally commissioned in 1981 and transferred to Bahrain in 1996.

Egypt is to receive the first of four heavily armed guided-missile patrol craft from the United States between 2012 and 2013. The 63-meter fast-attack craft are being built by VT Halter Marine in Pascagoula, Mississippi, and will be armed with Harpoon antiship missiles, Rolling Airframe Missiles for air defense, a 76-mm gun, and a 20-mm Phalanx close-in weapons system. In 2009 Egypt also received four 22-meter tugboats, built in Netherlands to the Stan Tug 2208 design.

Iran has made renewed efforts to flex its maritime might as it works to establish new naval bases while conducting at-sea exercises. In July a number of foreign news outlets reported that Russia and Iran were conducting their first joint naval exercises in the Caspian Sea, involving the cooperation of some 30 ships and two helicopters. The exercises were purportedly designed to improve transportation security and environmental protection in the region. That same month, Iran announced plans to build new naval facilities in the southern portion of the country, bordering the Gulf of Oman. The city of Jask was specifically mentioned as a location that will see increased

base construction, including the creation of a special jetty for speedboats. Two out of three Iranian Kilo-class submarines are said to be operational at any one time, and the *Jamarn*, the newest member of Iran's Mowj corvette program, entered service in early 2010. Iran also sent the *Saam* (Vosper Mk 5)-class frigate *Alborz*, along with other naval ships, to the Gulf of Aden to protect Iranian maritime interests there.

The *Fatah*, flagship of Iraq's growing navy, arrived at her new homeport of Umm Qasr on 21 June 2009. The vessel is the first of four patrol boats manufactured by Fincantieri shipyard in La Spezia, Italy, for the Iraqi maritime force. Built to a modified *Ubaldo Diciotti*-class design, the *Fatah* (meaning "conquer" or "victory") is 53.4 meters long and carries a crew of 34. In January 2009 Iraqi crewmembers arrived in Italy to begin training on board the vessel. Three additional units

is designed to help detect and deter terrorist activity in the Mediterranean Sea. In previous years an Israeli naval liaison officer has been assigned to NATO's Allied Maritime Component Command in Naples, Italy. With the decision to contribute an Israeli warship to the operation, Israel and NATO seem to be signaling their mutual desire to maintain and improve future cooperation in the Mediterranean. In mid-2009 an Israeli submarine passed through the Suez Canal for the first time, largely as a show of strength in the face of Iranian saber-rattling. Israel has ordered two new Dolphin Type 800 submarines, currently under construction and due for delivery by 2012. The new boats will join three older submarines of the class already in service.

Libya recently established a coast guard and has received six 31-meter PV30-LS patrol boats from Croatia. The

donesian *Diponegoro* class and are being built in the Netherlands. At least one new frigate built to the Franco-Italian FREMM design has been ordered by Morocco, with delivery planned by 2013.

Nigeria continues to face challenges as it works to protect its vulnerable oil-production process. Oil theft is said to account for losses of around \$1.2 billion to the nation's income, and battles with militia in the delta region have reportedly caused a 25-percent loss of petroleum production during the past three years. In an effort to improve stability and defend the region, Nigeria recently commissioned two 38.5-meter patrol craft and acquired two new Agusta helicopters for service in the Gulf of Guinea. Acquisition of additional patrol boats and helicopters is likely in the near future.

Oman has purchased three 98.5-meter 2,500-ton *Khareef*-class corvettes; the ships are being built in Portsmouth, UK. The first unit of the class was launched in July 2009 and deliveries are set to begin by the end of 2010. Oman has also expressed interest in purchasing 62-meter troop transports from the United Arab Emirates.

Saudi Arabia remains interested in purchasing Franco-Italian FREMM-class frigates and hopes to replace its fleet of fast-attack craft with new locally built coastal security vessels, budgets permitting.

The **Republic of Seychelles** began to play an ever-increasing role in anti-piracy operations in 2009, and the nation's coast guard has been particularly active. The U.S. Navy began basing MQ-9 Reaper unmanned aerial vehicles on the island chain last year, and Seychelles has agreed to host occasional P-3C Orion maritime patrol aircraft deployments.

Somalia has turned into the international hub of maritime piracy in recent years; the attempted hijacking of the merchant ship *Maersk Alabama* and the U.S. Navy's dramatic at-sea rescue of Captain Richard Phillips illuminated the problem to a worldwide audience. As an unprecedented international naval armada sails together in the Gulf of Aden to stem the tide of piracy, Somalia's unstable government urges help in its battle against insurgents. The European Union has begun training some 2,000 Somali security forces and the Somali government is working to establish a 500-person coast guard. Unfortunately,



In mid-2009 an Israeli Dolphin-class submarine passed through the Suez Canal for the first time, largely as a show of strength in the face of Iranian saber-rattling.

of the class will have arrived in Iraq by the end of 2010. The Iraqi Navy is also due to receive two new offshore support vessels built in the United States.

Israel has decided against purchasing a modified variant of the littoral combat ship and is instead looking elsewhere for a similar-sized corvette, with Germany's MEKO A-100 design remaining a strong contender. In a move that may signal a more active role for Israeli military forces in future NATO maritime operations, Israel's government in August 2009 approved the participation of an Israeli warship in NATO's Operation Active Endeavor. The operation, which evolved from NATO's immediate response to the 9/11 attacks,

service is now looking to purchase either larger offshore patrol craft with helicopter facilities or modified PV30-LS units. In spring 2009 the U.S. Coast Guard cutter *Boutwell* (WHEC-719) paid a visit to Libya, becoming the first U.S. military ship to visit the country in four decades. Croatia has upgraded a number of Libyan warships, including the tank-landing ships *Ibn Oaf* and *Ibn Harissa* as well as the *Combattante II*-class guided-missile patrol ship *Laheeb*. Early in 2009 Libya ordered three Molniya (Type 12418) guided-missile patrol craft from Russia.

Morocco plans to have three new SIGMA-class corvettes in service by 2012. The ships are similar to the In-

navies cannot solve this problem alone. Somali piracy is unlikely to be eradicated without order and stability being first brought to the lawless nation.

South Africa's navy has placed an emphasis on naval support and engineering upgrades in recent years as the government debates increasing the defense budget to help meet new requirements—including an offshore-patrol vessel program and support-vessel procurement. The South African government has been highly reluctant to get involved in anti-piracy activities off the coast of Somalia despite international requests for assistance. The South African Navy, however, remains ready to assist if tasked to do so. The first-ever naval exercises between one of South Africa's Type 209/1400 submarines and a U.S. Navy attack submarine took place during 2009.

Syria plans to expand its coastal defense capabilities by purchasing the SSC-5 antiship missile, a land-launched version of the SS-N-26 antiship missile. Syria also is working to upgrade its three *Tir* (IPS 18)-class patrol boats that were acquired in 2006 and hopes to fit the vessels with Iranian copies of the Chinese C-802 antiship missile. Plans are underway to refit two Ka-28 helicopters and to modernize the Syrian naval base at Tartus with cooperation from Russia.

The **United Arab Emirates** has a number of naval projects in the works at Abu Dhabi Ship Building. The company is building five of the UAE's six new

Baynunah-class corvettes with the first unit being built in France for 2010 delivery. The UAE has also ordered a 1,500-ton 88-meter patrol ship from Italy. The vessel is being built to a modified NUMC Program/*Comandante Cigala Fulgosi* design for delivery in 2011. Abu Dhabi Ship Building is under contract to supply nine of 12 modified *Ghannatha* (*Trossbåt*)-class landing craft that have been ordered with a lengthened hull and the capability to launch Marte Mk-2 antiship missiles. Those units already in service will be upgraded with additional armament. The UAE's Critical National Infrastructure Authority also has placed a large order for 34 16-meter patrol boats. The first 12 boats are being built in Turkey and the remaining units constructed domestically.

Yemen has ordered two 87-foot *Protector*-class coastal patrol boats for its coast guard. The ships are being built at Bollinger Shipyards in Lockport, Louisiana, and are due for delivery in 2011.

Americas

Argentina has been forced to halt work at least temporarily on its offshore-patrol vessel project due to budget cuts. The Argentine Navy received its second batch of retired U.S. Navy Sea King helicopters in mid-2009. Some of the

helicopters will serve as replacements for those lost during a 2007 fire aboard the Antarctic support ship *Almirante Irizar*. Ten of Argentina's Super Étendard fighter-bombers will be upgraded and modernized in France during the near future. Argentina's retired Type 209/1200-class submarine *San Luis*, long used as a source for spare parts, is also being considered for modernization and future reactivation.

Brazil is to acquire four new *Scorpène*-class submarines under a 2008 deal, and its first nuclear-powered attack submarine is being built with French assistance (except for the vessel's domestically produced nuclear reactor). The new SSN is expected to enter service in 2021. In the meantime, Brazil is working to build a new submarine base at Sepetiba Bay in Itaguaí. With requirements to protect large offshore oil and gas reserves, the Brazilian Navy plans to acquire five 1,800-ton offshore patrol vessels and as many as 27 500-ton NAPA 500-type patrol boats that are beginning to enter service in 2010.

As **Canada** looks to the north it is working to expand its Arctic capabilities and a force of six to eight Arctic-capable offshore patrol vessels are required for the future. During much of 2009 the fleet awaited government shipbuilding guid-



Ten of Argentina's Super Étendard fighter-bombers are to be upgraded and modernized in France during the near future.

ance prior to moving forward on the next stage of the effort. Hopes remain high to keep the Joint Support Ship program alive and affordable following previous financial setbacks. During 2009 officials examined new ship designs to ensure a workable compromise between both the Ministry of Defence and Canadian shipyards. The navy's *Victoria*-class submarine program appears to have turned a corner and current plans call for HMCS *Corner Brook* to enter its extended docking period in 2011 while sisters *Victoria* and *Windsor* are to complete their docking periods and return to the fleet by late 2010 and early 2011 respectively. *Chicoutimi*, which suffered a deadly 2004 onboard fire, is scheduled to re-enter service in 2012.

Chile's offshore-patrol vessel program appears successful as the second of two 80-meter *Piloto Pardo*-class vessels entered service in 2009 with a second pair scheduled for service in 2013. A retired U.S. Navy *Henry J. Kaiser*-class replenishment oiler is transferring to Chile in early 2010. New C-295 maritime patrol aircraft have been ordered to replace Chile's aging P-3 Orion and EMB-111 fleet of aircraft. At least some of the new aircraft will be fitted with Harpoon antiship missiles, torpedoes, and advanced electronics.

Two of **Colombia's** new domestically produced helicopter-carrying 370-ton river patrol boats were delivered in 2009, and



The Canadian submarine HMCS *Corner Brook* will begin an extended docking period in 2011. Sisters *Victoria* and *Windsor* are to return to the fleet by late 2010 and early 2011 respectively, while *Chicoutimi* is scheduled to re-enter service in 2012.

two modified units are currently under construction for delivery later this year. Meanwhile, there has been much debate concerning agreements made with the United States permitting wider use of Colombian military facilities, including naval bases at Cartagena and Bahia Malaga, to combat drug trafficking and guerrilla forces.

Mexico's navy launched its fourth *Oaxaca*-class patrol ship in 2009 and plans call for two additional units to enter service by 2013. Two new *Stridsbåt 90H*-class patrol boats, built domestically under license from Sweden, also joined the fleet in 2009. Mexico's coast guard continues to expand as it works to establish a net of 17 new helicopter and lifeboat stations along the nation's coastline.

Peru plans to acquire two retired U.S. Navy *Newport*-class tank landing ships, ex-*Fresno* (LST-1182) and ex-*Racine* (LST-1191), to boost its amphibious capabilities. The ships will be refurbished to replace at least some

of the ex-*Terrebonne Parish*-class LSTs transferred in the mid-1980s.

Trinidad and Tobago's three new offshore patrol boats are being built in the United Kingdom. The first unit is named *Port of Spain* and is due to enter coast guard service in 2010.

In April 2009 the **United States** decided to limit its purchase of *Zumwalt*-class (DDG-1000) guided-missile destroyers to just three units, with the 14,500-ton warships entering service between 2013 and 2015. Production of *Arleigh Burke*-class guided-missile destroyers was subsequently extended, and additional units are planned. The extension comes as the Obama administration moves ahead with ballistic-missile defense plans that place a heavy emphasis on the sea-based BMD capability fitted to an increasing number of Aegis warships.

The U.S. Navy remains committed to a goal of building 55 littoral combat ships. Amid major cost overruns, the first LCS, the USS *Freedom* (LCS-1), was commissioned in November 2008, and the second ship, the USS *Independence* (LCS-2), entered service in January 2010. The ships are based on two separate and competing models with the Navy set to down-select and move forward on a single design some time in the future. The third and fourth LCS units, to be named the USS



The Mexican Navy launched its fourth *Oaxaca*-class patrol ship in 2009. Current plans call for two additional units to enter service by 2013.

Fort Worth and *USS Coronado*, are due to enter service in 2012.

Construction continues on the Navy's *Virginia*-class submarines with the sixth unit of the class, the *USS New Mexico* (SSN-779), due to commission into service in March 2010. A total of 30 *Virginia* submarines are planned, and production speed has increased significantly as shipbuilders transition from the original Block I boats, built in ten modules, to Block II and III units containing fewer modules. In mid-2009 the Advanced Seal Delivery

plan to purchase at least 10 commercially based joint high-speed transport vessels with deliveries beginning to the Army in 2011 and to the Navy in 2012.

There have been many changes to the U.S. naval aviation roster in 2009: The Navy's newest aircraft carrier, the *USS George H. W. Bush* (CVN-77), was commissioned in January, and the Navy's last remaining fossil-fueled carrier, the *USS Kitty Hawk* (CV-63), was formally decommissioned in May. Work continues on the *USS Gerald R. Ford* (CVN-78),

ment to Afghanistan, and there has been discussion of producing an AEW version of the V-22, which, when coupled with the F-35B, could add a significant capability boost to the air wings on large-deck amphibious assault ships. Three hundred MH-60R helicopters are planned for service, with 50 units having been delivered by early 2010.

Looking ahead, the U.S. Navy recently established its new Fleet Cyber Command, also known as the 10th Fleet. Current plans call for the Navy to increase its investment in unmanned systems; \$4 billion will be spent on unmanned aerial vehicles and \$1 billion spent on unmanned surface and underwater vehicles through 2015.

The first units of the U.S. Coast Guard's aging 40-year-old *Hamilton*-class (WMEC-715) cutters are to begin retiring in the near future. The service received its second Legend-class National Security Cutter, the *USCGC Waesche* (WMSL-751), in November 2009. A third unit is planned for 2011 and up to five more National Security Cutters are to be built. Thirty-four *Sentinel*-class Fast Response Cutters are to replace the 110-foot *Island*-class patrol boats.

The *Sentinel* class is based on the Dutch Stan-patrol 4708 design, and deliveries are set to begin in 2011.

The first of **Venezuela's** 99-meter 2,300-ton offshore patrol vessels are due for delivery in mid-2010 with three additional units to follow by 2011. Four smaller 80-meter 1,500-ton coastal patrol boats are all expected to be in service by 2010 or 2011. The *Sabalo*, the first of Venezuela's Type 209/1300-class submarines, completed its five-year upgrade in Germany in 2009. The submarine's modernization, which included new engineering, mast, snorkel, and computer systems, has reportedly led to a reduction in the vessel's acoustic signature. Venezuela's planned acquisition of six Kilo-class submarines has been called off, with the class instead being completed for Vietnam. ❄



The U.S. Navy commissioned the *USS New York* (LPD-21) in November 2009. Forged into her bow are 7.5 tons of steel salvaged from the World Trade Center towers.

System program came to an inglorious end as leadership made the decision to cut its losses and not repair the boat, following a 2008 fire aboard the vessel.

The Navy commissioned its fifth *San Antonio*-class dock landing ship, the *USS New York* (LPD-21), in November 2009, and the keel was laid on the class's ninth unit, the *USS Somerset* (LPD-25), on 11 December 2009. Also in 2009, the Navy received its eighth and final *Wasp*-class amphibious assault ship, the *USS Makin Island* (LHD-8). The ship is unique among its sisters and includes significant engineering and technological improvements, not the least of which is the addition of a gas-turbine propulsion system in place of geared steam turbines. The next generation of amphibious assault ships will be the *America* class, and the first of the 45,000-ton amphibious ships is planned for delivery in 2012. The *USS America* (LHA-6) will not have a floodable well deck, but will instead have expanded aviation facilities. The Army and Navy also

first of the Navy's next-generation aircraft carriers, with an expected commissioning date of 2015. The service's final S-3 Viking aircraft were retired from operational fleet service early in 2009, and the EA-18G Growler electronic countermeasures aircraft was approved for carrier operations and entered operational service.

Summer 2009 saw the rollout of the P-8A Poseidon maritime patrol aircraft and the F-35C Lightning II, a carrier-based version of the Joint Strike Fighter. The P-8A will replace the long-serving P-3C Orion beginning around 2013, and the F-35C (along with the F-35B short-takeoff and vertical-landing variant) will become the Navy's first stealth fighter when it reaches the Fleet in 2015. The last E-2C Hawkeye 2000 airborne early-warning (AEW) and control aircraft was delivered to the U.S. Navy in September 2009, and the next-generation E-2D begins entering service in 2012. The past year saw the first V-22 Osprey deploy-

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