

WORLD NAVIES IN REVIEW

By Eric Wertheim



Throughout the past year the maritime forces of multiple nations operated on, under, and above the world's oceans and coastal zones as instruments of national power. From flexing military muscle to helping with humanitarian crises, from calming nervous allies to gathering sensitive intelligence, today's fleets were often spread thin, but still managed to have a direct and outsized impact on the global scene.

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/Asia

The first of Australia's new 7,000-ton Aegis-equipped air-warfare destroyers, the *Hobart*, was launched on 23 May 2015 and is to join the fleet in mid-2017, followed by younger sister



Brisbane in late 2018 and the *Sydney* in early 2020.

Australia's *Anzac*-class frigate upgrades are to be completed by 2017, and the class will begin retiring in the mid-2020s. A new class of eight antisubmarine warfare

(ASW)-focused replacement frigates is expected to begin construction around 2020. Late in 2015 the *Oliver Hazard Perry*-class frigate *Sydney* was decommissioned. A new class of 1,500-ton off-shore patrol vessels (OPVs) is to begin construction around 2018. Australia has

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is due in service this year. The Royal Australian Navy is due to receive its final batch of MH-60R naval helicopters by the end of 2016, while deliveries of new P-8 Poseidon aircraft are to begin in 2017. One of Australia's most important and most expensive naval projects remains the *Collins*-class submarine replacement program. Cost, lethality, and reliability are the primary drivers for the submarine selection process, and once a design is finalized the boats are to enter service in the mid-2020s.

Bangladesh received the retired 378-foot U.S. Coast Guard *Hamilton*-class cutter *Rush* (WHEC-723) last year, which has been renamed the *Somudra Avijan*. Two new C13B corvettes, based on the Type 056 design, were delivered from China this past December, and two additional units are planned. Two more 210-foot *Durjoy*-class missile combatants are also being built for delivery in 2017. Two 138-foot landing craft are under construction, as is a 262-foot auxiliary tanker. In the future Bangladesh hopes to acquire new mine-countermeasures vessels, tugs, and salvage ships. The navy hopes to establish a submarine force in the next decade by acquiring two secondhand boats, possibly refurbished Ming-class submarines from China.

China's land reclamation in the South China Sea, along with its aggressive behavior in contested waters, continues to fuel international concern. Anti-access/area-denial capabilities remain a paramount priority. In 2015 China revealed that its antiship ballistic-missile inventory now includes the 1,800–2,500-mile-range DF-26 ballistic missile as well as the 1,000-mile-range DF-21D.

By mid-2015 China's ninth Luyang III-class (Project 052D) guided-missile destroyer was under construction, and five are expected in service by the end of 2016. Construction has also reportedly begun on the first new Type 055 destroyer, which is expected to displace more than 10,000 tons. By mid-2015, China's 24th Jiangkai II-class (Project 054A) frigate was being built, and at least 20 of the frigates were delivered.

This past year also saw the 28th Jiangdao-class (Project 056) corvette launched. China's fourth Yuzhao (Type 071) amphibious transport dock was launched in January 2015, and two additional units are planned. Rumors persist that as many as six Project 081 large-deck amphibious-assault ships may be acquired as well, although little reliable data has yet been reported on the program. 2015 also saw construction and delivery of new auxiliaries for the People's Liberation Army Navy, including a new submersible heavy-lift ship that appears similar to the U.S. mobile landing platform. The Chinese coast guard is expanding as well, and 2015 saw several older frigates being stripped of missile armament and repainted white for coast guard operations.

By late 2015 14 Yuan-class (Project 041) diesel submarines were thought to be in service, and by the end of 2016 the fourth Shang-class (Project 093) nuclear attack submarine is expected to join the fleet. In spring 2015 a new variant of the Type 093 SSN, dubbed the Type 093G, was unveiled, featuring a number of enhancements. A new class of midget submarine is said to be planned for special missions as well. China's fourth Jin-class (Type 094) nuclear-powered ballistic-missile submarine was reportedly delivered by 2015, and as many as eight of the new SSBNs could be planned by 2020. Development of a follow-on SSBN design reportedly has already begun.

During 2015 construction appeared to have begun on China's first domestically produced aircraft carrier. A total force of six carriers are planned, at least some of which will be based on the current *Liaoning* design. A new maritime-patrol and ASW aircraft known as the Y-8Q was revealed several years ago and has now begun entering service. Media reports also indicate that work is progressing on a Chinese vertical/short-takeoff-and-landing (V/STOL) fighter to support amphibious landings and operations.

India hopes to increase the number of modern combatants and is striving to reach an optimistic goal of nearly 200 active ships by 2027. During the coming decade naval leaders aim to recruit additional personnel to correct a shortfall of more than 1,000 officers and 11,000 sailors. During the spring of 2015

also begun examining replacements for its underway-replenishment ships the *Sirius* and *Success*. In summer 2015 Australia retired the 5,000-ton landing ship *Tobruk* and launched the *Adelaide*, the second of two 27,000-ton *Canberra*-class large-deck amphibious-assault ships, which

India launched the *Visakhapatnam*, first of a new class of 7,300-ton Project 15B guided-missile destroyers. Four of the Project 15B destroyers are planned for delivery between 2018 and 2024. The Project 15B is an enhanced version of the three-ship *Kolkata* (Project 15A)-class destroyers, the second of which, the *Kochi*, entered service this past fall while a third unit is expected in 2016. Construction of seven new Project 17A frigates is set to begin by 2017. India plans to build four 3,500-ton multipurpose vessels along with eight new mine-countermeasures (MCM) vessels to help address its extensive MCM capabilities gap. The navy hopes to increase its amphibious capabilities and has expressed interest in acquiring a large-deck amphibious-assault ship in the future.

On 23 December 2015 the Indian frigate *Godavari* was retired from naval

service. The 4,000-ton vessel was lead ship of her class and had been the first frigate designed and constructed in India.

The *Kalvari*, India's first Scorpène-class diesel submarine was completed in 2015 and began sea trials this past fall. Five additional Scorpènes are being built domestically with delivery of the final boat expected in the early 2020s, although India may order additional units to maintain its submarine-building expertise.

Six additional submarines of a yet to-be-determined class are also planned for delivery during the late 2020s. India is upgrading its Kilo-class submarines and most of the work is being done in Russia, although at least one boat recently completed refit domestically. Earlier in 2015 new Harpoon antiship missiles were ordered from the United States to equip India's fleet of German Type 209-class submarines. India's single *Akula*-

class nuclear-powered attack submarine remains under lease from Russia, and lease of a second SSN is under consideration for the future. The *Arihant*, India's first domestically designed and built nuclear-powered ballistic-missile submarine, continued sea trials in 2015 and is expected in service by the end of 2016; additional SSBNs are planned and as many as six may eventually enter service by 2030.

India has invested heavily in naval aviation, and the future 40,000-ton aircraft carrier *Vikrant* is being built and outfitted in India for service by 2018. Once the *Vikrant* is delivered, plans are expected to shift toward a 65,000-ton aircraft carrier for delivery in the 2030s. In mid-2015 India announced plans to decommission the aging carrier *Viraat* early in 2016, while the Russian-built carrier *Vikramaditya*, in service since 2013, is due to receive a new Israeli Barak surface-to-air missile system around 2017. Only 10 V/STOL Sea Harriers remain active in Indian service, but a fleet of 45 MiG-29K fighters is planned, and a naval variant of the light combat aircraft is eventually expected to enter service despite delays. Eight P-8I Poseidon maritime patrol aircraft were delivered from the United States by the start of 2016, and India has announced plans to purchase at least four additional P-8s. India also continues coordination with Japan in hopes of purchasing at least a dozen US-2 amphibian aircraft for search-and-rescue duties. India's navy currently faces a serious shortage of rotary-wing aircraft, and this is not expected to be corrected until the mid-2020s, at which time India's latent domestic aircraft production may be able to meet the increased demand for both manned and unmanned aircraft. Sixteen S-70B Seahawk helicopters are also planned to replace the navy's Sea Kings, but contract delays and bureaucratic wrangling have led to continued delays for the program.

Indonesia's three new 197-foot KCR-60 guided-missile patrol boats have been armed with Chinese C-705 antiship cruise missiles, and locally built fast-transport



NAVAL PRESS SERVICE (N/NTZ)

By mid-2015, China's 24th Jiangkai II-class (Project 054A) frigate was being built. The *Yiyang*, pictured here, entered service in 2010.

boats are also entering service, as are new 45-knot fast-assault craft for maritime-security and law-enforcement duties. Indonesia has three new Type 209/1400 submarines on order for delivery in 2018, and additional submarines are planned for the future. Indonesia is also looking to fulfill a requirement for new long-range maritime-patrol aircraft to help monitor its archipelago.

A new class of 8,000-ton destroyers optimized for ballistic-missile defense is also under development with service expected in the early 2020s.

This past March Japan commissioned its sixth *Soryu*-class air independent propulsion (AIP)-capable submarine; a seventh unit is due to enter service in 2016, and an eighth unit was launched in 2015. Japan has ordered its first 5 V-22 Osprey

Malaysia's Maritime Enforcement Agency received two 125-foot Bay-class patrol vessels from Australia this past year; the two vessels, the *Arnhem Bay* and *Dame Roma Mitchell*, have been renamed *Perwira* and *Satria* respectively.

Myanmar is importing some of its new naval vessels from China but is also looking to enhance its own shipbuilding capabilities. A number of port facilities are under construction, and Exclusive Economic Zone (EEZ) patrol and coastal security remain a priority. Several new warships are being built domestically, and the third corvette of the 253-foot *Anawrahta* class is expected to enter service in the future. New *Aung Zeya*-class frigates are also planned, while new 161-foot fast-attack craft are also being built. Several AS-365 helicopters have recently entered service for maritime-patrol and search-and-rescue operations. The country hopes to establish a fledgling submarine force in the 2020 time frame, although this may prove overly optimistic.

New Zealand's two frigates are undergoing a phased modernization that is expected to be complete by 2018. Modifications and enhancements to the multi-role amphibious transport HMNZS *Canterbury* are due to be completed this year, while current plans call for the small replenishment oiler *Endeavour* to be retired and replaced by 2020. A new multipurpose vessel is also planned to support MCM, research, diving, salvage, and logistics operations. New Zealand accepted its tenth and final SH-2G shipboard helicopter in 2015, and the country is now considering upgrade operations for its fleet of P-3 Orions.

North Korea's new missile patrol boats have reportedly been entering service, and the country's naval forces fired what appeared to be a new type of antiship cruise missile from a previously unseen trimaran or surface effect-type ship. In 2015 North Korea announced test firing of what it claimed was a submarine-launched ballistic missile, but it appears that the missile test was actually fired using an underwater barge, not a submarine. In January 2016 North Korea claimed to have detonated a hydrogen bomb, another assertion upon which Western experts have cast doubt. However, U.S. military leaders



The *Kalvari*, India's first *Scorpène*-class diesel submarine, was completed in 2015.

Japan is working to build closer military ties with its friends and neighbors. This past October Japanese maritime forces participated in their first Malabar naval exercises with the United States and India. As Japan establishes a fledgling marine amphibious-assault force, it has been seeking input and assistance from partners such as the United Kingdom. Japan recently established new defense guidelines permitting its forces to protect allies in specific military scenarios. The country is also exploring opportunities to export some of its modern equipment abroad, such as P-1 maritime-patrol aircraft, *Soryu*-class submarines, and US-2 amphibian aircraft.

The 24,000-ton helicopter-carrying destroyer *Izumo* entered service on 25 March 2015, and a second unit of the class was launched this past fall with commissioning planned for 2017. These vessels can transport 14 helicopters and are the largest warships built in Japan since World War II.

tiltrotor aircraft, and up to 17 are planned for operation from land bases and larger warships. Japan's coast guard is looking for ways to expand both its surface fleet and its aviation capabilities. This past year the service selected the Dassault Falcon 2000 maritime-patrol aircraft to help fulfill its future patrol requirements.

Malaysia is working to boost security around its naval bases and increase maritime presence along its contested coastline in the South China Sea. Construction began on the first of six 3,000-ton SGPV-LCSs (Second Generation Patrol Vessel Littoral Combat Ships), which are based on the French Gowind 2500 design and expected to begin entering service around 2019. Malaysia also hopes to upgrade its four *Laksamana*-class guided-missile patrol combatants. Acquisition priorities include new small boats for special-operations missions as well as a naval training ships, maritime-patrol aircraft, and ASW helicopters.



The *Izumo*, the largest warship operated by Japan since World War II, entered service in March 2015.

NAVAL PRESS SERVICE (M. INTZ)

made the assessment in spring 2015 that North Korea now has the ability to put a nuclear weapon onto a road-mobile KN-08 intercontinental ballistic missile and shoot it at the U.S. mainland.

Pakistan has ordered six new patrol boats for operations in the Arabian Sea. Four of them will be made in China while the remaining two are being built domestically. In 2015 Pakistan announced plans to acquire eight new Chinese submarines, most likely a variant based on the Yuan (Project 041) design. Although not yet finalized, the deal reportedly calls for China to build four of the boats while the remaining four submarines will be built at a Pakistani shipyard.

The **Philippines** remains focused on deterring Chinese activities along its coastline and in contested waters of the South China Sea. Naval facilities are being expanded on Palawan Island, and new maritime procurement requirements are focused on patrol aircraft, amphibious assets, assault craft, naval helicopters, and surveillance capabilities. In spring 2015 the United States and the Philippines held one of their largest annual *Balikatan* exercises, involving more than 10,000 military personnel. In late January 2015 Australia announced plans to donate two of its recently retired 500-ton *Balikapapan*-class heavy landing craft to the Philippines and three more are expected to follow in 2016.

The first of two planned 11,500-ton amphibious transport docks is being built for the Philippines in Indonesia, with delivery expected by late 2016. The Philippine Coast Guard has ordered

ten 131-foot patrol boats from Japan for operations in its EEZ, deliveries of which are to complete in 2018. The Philippine fleet is also hoping to modernize and refit some of its older vessels during the coming years.

Singapore conducted sea trials this past year on a new 52-foot unmanned surface vessel known as the *Venus 16*, which could be optimized for coastal patrol operations or MCM missions. The first of Singapore's lightly armed *Independence*-class littoral mission vessels was launched last summer and is due for delivery in 2016; eight of the 262-foot vessels are expected for delivery by 2020. A new class of stealthy 72-foot specialized marine craft (SMC) have begun to enter service for high-speed port-security and surveillance missions, and a total of eight SMCs are planned for service by 2017. This past year construction began on the first of two German-built Type 218G submarines that are due to enter service between 2020 and 2025.

South Korea has been working to expand naval exports and is striving for more self-reliance in its defense industrial base. This past year South Korea confirmed plans to acquire at least a dozen refurbished S-3B Viking ASW and maritime-patrol aircraft that were retired from U.S. inventory.

The country is also planning to replace its P-3 Orions, and the P-8 Poseidon looks to be a strong contender for the maritime-patrol mission. South Korea began accepting new AW159 ASW helicopters in 2015, and a second batch of the aircraft,

for use on board the new *Incheon*-class frigates, is due for delivery later this year. About 20 3,000-ton *Incheon*-class frigates are now planned for service in multiple batches, and the sixth unit was launched last August for delivery in 2016. More than a dozen new *Gumdoksuri*-class guided-missile patrol craft are on order, and more than two dozen are planned. Several new amphibious ships are also sought for the future. A total of nine German-designed Type 214 submarines are being built under license in Korea, with the fifth unit expected in service by 2016 and all nine by 2018. South Korea hopes to maintain a force of 18 submarines in the future.

Taiwan's first *Tuo Jiang*-class 500-ton missile patrol craft was commissioned under the *Hsun Hai* program, and up to 12 of the 198-foot vessels are eventually planned. A new 20,000-ton combat-support auxiliary ship was delivered in the spring of 2015, and two locally built 3,000-ton coast guard cutters also entered service. On 1 May 2015 the Taiwanese navy decommissioned two former U.S. *Knox*-class frigates from service. Late last year the United States agreed to transfer two additional retired U.S. Navy *Oliver Hazard Perry*-class frigates to Taiwan along with 36 AAV-7 amphibious vehicles. By early 2016 all 12 of Taiwan's P-3C Orion maritime-patrol aircraft had arrived from the United States. Taiwan also hopes to acquire new naval helicopters to replace its aging MD-500s. The country has long sought diesel-powered submarines from a foreign ally, but this looks unlikely

to happen, so its leaders have begun examining the potential for building new submarines domestically with some foreign assistance.

Thailand plans to build a second *Krabi*-class patrol ship for delivery by 2019 and is considering acquisition of a second South Korean DW3000 frigate, the first of which is due for delivery in 2018. Four 70-foot locally built patrol boats were ordered in 2015. Thailand remains hopeful that it will acquire up to three submarines by the end of the decade or the early 2020s. They appeared to have settled on acquisition of three Chinese Yuan-class submarines in 2015, but the deal was called off due to domestic criticism.

Turkmenistan is taking steps to strengthen its naval forces in the Caspian Sea and has ordered six new 108-foot fast-attack craft from Turkey. The missile-armed craft will be delivered during the next two years.

Vietnam is modernizing its long-neglected maritime forces. Russia remains the country's primary source for military equipment but Vietnam hopes to widen its supply base to include more Western countries. By early 2016 Russia delivered the fifth of a planned six Kilo-class (Project 636) submarines and new Gepard-class (Project 11661) frigates and Tarantul-class (Project 12418) guided-missile patrol boats are under construction. U.S. warships have been making visits to help boost engagement and cooperation between the two former enemies, who have found common ground deterring Chinese antagonism in the South China Sea. In 2015 the United States agreed to transfer six Defiant-class patrol boats, and Japan also transferred six former patrol and fishing vessels to assist Vietnam with search-and-rescue and patrol duties.

Europe

Finland seeks to acquire a new class of multipurpose offshore-patrol vessels beginning in the mid-2020s. They are expected to displace around 1,500 tons and conduct a wide array of missions including anti-air, anti-surface, and anti-submarine operations as well as minelaying duties. Finland is also increasing cooperation with Sweden and plans to establish



a combined naval task force in the next decade.

France suffered horrific terrorist attacks in 2015, and the navy's nuclear-powered aircraft carrier *Charles de Gaulle* and her battle group sailed to the Middle East in both January and November, targeting the Islamic State terrorist organization.

Current plans call for France to receive its sixth *Aquitaine*-class frigate by 2019 and its eighth and final unit in 2022. A new class of intermediate frigates was recently announced, and the first unit is expected for delivery around 2023. The *La Fayette*-class frigates are being modernized and



The French nuclear-powered aircraft carrier *Charles de Gaulle* sailed to the Middle East in both January and November of 2015, targeting the Islamic State terrorist organization.

will begin receiving sonar systems in the near future. Four new 2,000-ton multi-mission ships are being built for overseas patrol and support operations. The first of the class, the *D'Entrecasteaux*, is expected to join the fleet this year, and three more are to follow by 2018. Six new *Suffren* (Barracuda)-class nuclear-powered attack submarines are also being built with the first unit due to enter service in 2018, while France's last carrier-based Super Étendard aircraft are set to retire in 2016.

Germany's navy is working on a new 8,000-ton frigate design, known as the MKS 180 (Type 126), for high-end combat operations. A class of four to six MKS 180 frigates is currently expected, with deliveries to begin around 2023. The navy's fifth Type 212 submarine entered service in 2015, and its sixth and final submarine of the class is expected in service this year.

Germany's NH90 shipboard helicopters are to begin entering service between 2018 and 2021, and by 2023 upgrades on its 8 P-3C Orion maritime-patrol aircraft are expected to be complete.

Greece plans to upgrade its fleet of four MEKO 200-class frigates to keep the vessels in service for another 20 years. Budget cuts continue to impact the fleet, but the country hopes to begin reactivating and modernizing its six P-3B Orion aircraft, which were deactivated several years ago due to the financial crisis.

Italy's 25,000-ton Italian aircraft carrier *Cavour* helped lead maritime efforts to

counter human smuggling into Europe this past year. In 2015 the navy ordered a 22,000-ton amphibious-assault ship that is due for delivery by 2022 and will be able to transport more than 500 troops. In spring 2015, Italy placed orders for its ninth and tenth guided missile frigates of the 5,000-ton *Carlo Bergamini* class, which are expected for delivery around 2021. Four of the frigates are already in Italian service, and a fifth unit, the *Alpino*, is due for delivery in 2016. Italy is also planning to purchase ten offshore-patrol vessels with the first six planned for delivery between 2021 and 2025, and a new logistics support ship is under contract for delivery in 2019. This past year the navy's fourth and final German-designed Type 212 submarine was launched and is expected in service by 2017.

The **Netherlands** officially commissioned its 28,000-ton auxiliary joint support ship, the *Karel Doorman*, in April

2015 despite the fact that the vessel had already been pressed into service early to help deal with the 2014 West African Ebola crisis. The four Dutch *De Zeven Provinciën*-class frigates are to be modernized by 2017 with enhanced radar warning and air-defense capabilities. A number of Dutch naval vessels will be nearing retirement during the next decade, and the fleet is looking to replace two older frigates and its *Alkmaar*-class minehunters. The four Dutch *Walrus*-class submarines are currently being modernized to ensure they remain active until at least 2025, but the Netherlands has also begun design work to field a replacement submarine and has recently announced a partnership with Sweden to coordinate on next-generation submarine work.

Norway's Ministry of Defence has begun planning for a new submarine design to replace its aging *Ula*-class boats, with deliveries expected to begin from the mid-2020s. The *Ulas* are expected to remain operational through at least 2020. Norway hopes to expand its maritime expeditionary capabilities, and a new 26,000-ton South Korean-built logistics-and-support vessel is currently

on order for delivery by 2017. A new 413-foot intelligence-collection ship, to be named the *Marjata*, is also under contract to replace the current vessel of the same name by the end of this year.

Poland's new 2,000-ton patrol ship, the *Slazak*, formerly designated a frigate, was relaunched last summer following nearly 15 years of construction, and she is expected to enter service later this year.

This past September Poland launched the *Kormoran*, its first of three new 850-ton mine-hunting vessels, which will enter service late in 2016. The Polish navy is looking to acquire three new submarines starting in the mid-2020s and will likely coordinate the effort with other NATO allies. Poland has selected the Eurocopter Caracal as its next-generation transport and antisubmarine helicopter, and the Caracals will begin replacing the aging Mi-14 fleet in 2017.

Portugal's navy has acquired four retired 450-ton *Flyvefisker*-class (Stanflex 300) multifunction patrol craft from Denmark and ordered two additional 1,500-ton *Viana do Castelo*-class patrol ships that had previously been placed on hold due to budget cuts. The two

new 1,500-ton vessels are expected for delivery around 2018. Portugal's navy continues to express interest in acquiring a new or secondhand amphibious landing ship, but costs remains prohibitive.

Last summer Russia unveiled its new maritime doctrine, which contains plans for an increased emphasis on operations in the Atlantic Ocean and the Arctic region, a permanent Russian naval presence in the Mediterranean Sea, and improvements to the Baltic and Black Sea fleets. The document calls for countering Western militaries and NATO expansion, in part through a concerted maritime approach. This doctrine aims to escalate blue-water operations, modernize the existing fleet, and expand the Russian shipbuilding industry. Many skeptics, however, question whether the Russian economy can sustain these expenditures over the long term in the wake of falling oil prices and economic sanctions.

Work on a planned new class of Project 20385 frigates has reportedly been placed on hold due to the inability to import foreign engines. In their stead, Russia is moving ahead with plans to build additional units of the older 2,000-ton *Steregushchiy* (Project 20380)-class frigates.

Russia is said to be working hurriedly on replacement naval-engine technology, but domestically built propulsion plants won't be ready until at least 2018. The first of six planned *Admiral Grigorovich* (Project 11356)-class frigates conducted sea trials this past year, but Russia received the foreign engines for only the first three ships of the class prior to the embargo, so the final three units will remain incomplete pending propulsion replacement, or sale overseas. Work on future *Sergei Gorshkov* (Project 22350)-class guided-missile frigates and overhauls of the *Neustrashimyy*-class frigates have also slowed while the shipyards wait for Russian-developed gas turbines.

Six new 1,500-ton Project 22160 modular patrol ships are planned for service in the Black Sea Fleet, with delivery dates expected to begin in 2017 and



Poland's new 2,000-ton patrol ship *Slazak* was launched last year and is expected to enter service in the near future.



Russia is moving ahead with plans to build additional *Steregushchiy*-class frigates.

be completed in 2022. Russia also hopes to build at least 18 new Project 22800 missile corvettes. The ninth Buyan-M class corvette was laid down in spring 2015, and the fifth and sixth members of the class are expected to be in service this year. Plans are also reportedly in the works to modernize the Soviet-era *Udaloy*-class destroyers with new cruise missiles by 2017. Russia also revealed an early conceptual design for a new 15,000-ton guided-missile destroyer with phased-array radar, although the new design, dubbed *Shkval* (Project 23560E), is unlikely to enter service anytime in the near future.

Military support for the Assad regime in Syria gave Russian President Vladimir Putin's navy a unique opportunity to test new systems and capabilities. Sealift and cargo-transport operations were increased to Tartus, and the world witnessed the first combat launches of Russia's new 900 mile-range land-attack cruise missiles fired from the Caspian Sea.

In August 2015 France announced that it had officially canceled the controversial contract to supply Russia with two 21,000-ton *Mistral*-class helicopter-carrying assault ships. The first of Russia's 5,000-ton *Ivan Gren*-class (Project 1171.1) LSTs is set to begin sea trials in 2016. This past year saw commissioning of the *Yuriy Ivanov*, the first of a new class

of 4,000-ton Project 18280 intelligence-collection ships, and a second unit is due to commission by the end of 2016. This past October construction began on the first of two new 3,500-ton *Mikhail Barskov*-class (Project 03182) Arctic tankers and support ships, which are both due in service by 2020. A new class of *Alexandrit*-class (Project 12700) minesweepers is also planned for service with the first unit due to commission later this year.

Three Borey-class (Project 955) SSBNs are currently in service with one more under construction and due to for delivery in 2017; a total of eight units are eventually planned. In September 2015 a Borey-class SSBN was reportedly transferred from the Atlantic to the Pacific Fleet, and a second unit is to follow in 2016.

This past year the Akula II-class nuclear-powered attack submarine *Gepard*, along with the Sierra II-class SSN *Pskov*, reportedly returned to active service following extensive overhauls. The first of Russia's new *Severodvinsk*-class (Project 885) nuclear-powered attack submarines continued her sea trials while four sister submarines of the class remain in various stages of construction. Two Improved Kilo (Project 636.3)-class submarines entered service in 2015, and two additional units are under construction, while six more were ordered in January 2016. Problems

apparently persist with the *Lada*-class (Project 677) submarines, which had been expected to replace the Kilos in production but have failed to do so. Plans for a new class of AIP-capable submarine, dubbed the *Kalina* class, have also been announced for service in the next decade.

New carrier-capable airborne early-warning helicopters are beginning to enter service, and the first Ka-35s have joined the fleet to replace older Ka-31s. Russia has also announced plans to continue modernization of its Il-38 fleet of May maritime-patrol aircraft, which are receiving new radars and other improvements. Russia hopes to replace the long-serving Il-38s with a new aircraft sometime in the next decade.

Spain has been working to increase maritime-domain awareness, particularly in the Mediterranean Sea to help counter smuggling of all kinds and to prevent terrorism. The navy is now in the design phase of its new F-110 frigate program, which will begin to replace the *Santa Maria/Oliver Hazard Perry* class in the early to mid-2020s. Two additional 308-foot *Meteoro*-class patrol ships are under construction with both vessels due for delivery in 2018. Spain hopes to eventually acquire a new submarine-rescue ship and an oceanographic-research ship in the next 10–15 years. Redesign work has now been completed on Spain's S-80 submarine

program following a number of problems uncovered with the original design. Current plans call for delivery of the first of four 2,200-ton AIP-equipped submarines in 2018. Spain has ordered six refurbished SH-60F helicopters from the United States, the last of which are due for delivery in 2017.

Sweden has begun reversing its emphasis on international operations in favor of a new priority on coastal defense and ASW capabilities. The navy is also increasing maritime cooperation with neighbors and expects to stand up a joint naval task force with Finland during the next decade. This past fall construction began on the first of two new submarines being built under the Swedish A26 program. The 2,000-ton AIP-capable boats, which will have a strong focus on intelligence collection, surveillance operations, and special-forces missions, are expected for delivery between 2022 and 2024. At least two of Sweden's *Gotland*-class submarines will be upgraded while waiting for the A26 to enter service. New NH90 naval helicopters are also entering service and will help boost the navy's ASW capabilities as well.

Turkey has ordered a new 27,000-ton large-deck amphibious-assault ship based on the Spanish *Juan Carlos I* design. The vessel will be built domestically and is expected to enter service in 2020. Turkey is also gearing up to begin submarine production on its six German-designed Type 214 AIP submarines which are due to enter service between 2021 and 2026. New corvettes are planned under the domestic MILGEM (*Heybeliada*)-class corvette program with two in service and two more expected for delivery by 2017; additional larger variants of the class are

also planned. Design work continues on the TF-2000 project guided-missile frigates optimized for future air defense. New missile-armed fast-attack craft are under development and will likely be acquired in the near future, along with new logistics vessels, an auxiliary oiler, two submarine-rescue ships, and a rescue-and-towing ship that was readied for service this past year. Two new 453-foot tank landing ships are also under construction for delivery in 2017, and Turkey hopes to modernize its fleet of MCM vessels in the future as well.

The **United Kingdom** published its new *National Security Strategy* this past November, along with results from its five-year Strategic Defence and Security Review. Current plans call for the Royal Navy to maintain a fleet of 19 destroyers and frigates into the foreseeable future. The Type 23 frigates are currently undergoing modernizations, but beginning in the mid-2020s they are to be replaced by the new Type 26 Global Combat Ships. Only eight of these new GCS frigates are now planned, but they will be supplemented by a new class of at least five lower-end warships from the 2030s. Plans to build two new modified River-class offshore-patrol ships was also announced as part of the review. Four replenishment tankers are planned to begin entering service this year, and new logistics ships are expected for delivery in the mid-2020s. Plans to build the *Vanguard* SSBN replacement submarines continue in earnest despite rising costs, and the first of these new submarines is due in service during the mid-2030s. This past December the Royal Navy received its third *Astute*-class nuclear-powered attack

submarine, and four more are expected by the mid-2020s.

The naval air arm and Royal Air Force will regain a fixed-wing carrier-based fighter-attack capability beginning around 2020 as they acquire a total of 138 F-35B Lightning II short-takeoff/vertical-landing (STOVL) jets for operations from land bases and the two 65,000-ton *Queen Elizabeth*-class aircraft carriers now being built, which are expected for delivery in 2017 and 2020 respectively. Nine P-8 Poseidon maritime-patrol aircraft are also planned to replace the canceled Nimrod MRA4 for service in the early 2020s. New helicopters continue to join the fleet as Lynx AW159 Wildcats are delivered. Beginning around 2019 new "Crowsnest" airborne early-warning radar kits will enter service for use on Merlin helicopters as a replacement for the Sea King ASaC.7 advanced early-warning helicopters.

Ukraine has been forced to pick up the pieces of its battered naval force and maritime industry following Russia's 2014 seizure and annexation of Crimea. During the past year Putin's forces have done much to boost Crimean defenses and have reportedly installed new Bastion coastal-defense cruise-missile systems and established new coastal-defense units at Sevastopol. The situation remains uncertain, and the West remains divided over how best to support Ukraine, which continues struggling to protect as much of its territory as possible.

Middle East/Africa

Algeria's first of two 3,000-ton German-built MEKO A-200 frigates underwent sea trials this past year, and a second is due for delivery in 2016.



Algeria's new MEKO A-200 frigate underwent sea trials this past year.



BERNARD PREZELIN

Egypt announced plans to acquire the two 21,000-ton *Mistral*-class helicopter-carrying assault ships that France had originally been building for Russia.

The first of three new Chinese-built 2,800-ton C-28A corvettes was delivered in late 2015. Some older warships are being refitted in Russia, and this past December an Algerian Koni-class frigate suffered a deadly engine-room fire while being worked on in Saint Petersburg. Two Improved Kilo-class submarines are also on order from Russia.

Bahrain is planning to upgrade several of its vessels and craft, and significant work is also under way to enhance and expand the naval base at Mina Salman, enabling use by a wider array of foreign warships.

Cameroon's Rapid Intervention Battalions remain at the forefront of the country's maritime-security operations and counterterrorism efforts in the Gulf of Guinea, and particularly the areas surrounding the Bakasssi Peninsula and the Cameroon-Nigerian border. Cameroon's maritime forces are procuring new boats and small craft, and two new 210-foot patrol boats transferred from China began operations early in 2015.

Egypt requested a new 466-foot *Aquitaine*-class frigate, and delivery of the unfinished unit was diverted from French inventory for export last year as the Egyptian ship *Tahya Misr*. Egypt subsequently announced acquisition of the two 21,000-ton *Mistral*-class helicopter-carrying assault ships that France had originally been building for Russia. Able to carry 19 helicopters, the 910-

foot amphibious ships are expected for delivery this year; 46 Russian Ka-52K naval-attack helicopters were also ordered for use on the ships, with deliveries to run through 2019.

Four new 335-foot Gowind 2500 missile corvettes are on order, with the first warship being built in France and three remaining units planned for construction in Egypt by 2020. Egypt took delivery of a Tarantul IV-class (Project 12421) missile patrol boat from Russia in 2015, along with its final two 700-ton Ambassador Mk III guided-missile patrol craft from the United States. Late in 2015 the first of four Type 209/1400 submarines was launched in Kiel, Germany, for Egyptian service. Two of the 1,500-ton submarines were ordered in 2011 and two more in 2014, with deliveries to commence by the end of 2016. Egyptian warships also reportedly took part in combat operations and naval-gunfire support off the coast of Yemen last year, as part of the Saudi-led response to the Yemeni civil war.

Iran's naval exercises in early 2015 involved more than 100 small craft assigned to the country's Islamic Revolutionary Guard Corps Navy and included attacks on a mock-up model of a U.S. aircraft carrier. Iranian operations in the Persian Gulf remain aggressive, despite the international deal aimed at preventing Iran's development of nuclear weapons. In April 2015 a convoy of Iranian warships and transports began heading toward Yemeni waters, po-

tentially carrying supplies and armaments for the Houthi rebels, but the force turned around when faced with a powerful contingent of U.S. warships. A shipment of Iranian anti-tank missiles was seized off the coast of Oman that was thought to have been intended for the rebels. Also in April 2015 Iran fired on and seized the Marshall Islands' flagged container ship *Maersk Tigris* and her crew, sailing in international shipping lanes of the Strait of Hormuz. While the crew and vessel were released the following month, it did little to reduce tensions. In the fall, Iran displayed new semisubmersible boats that it claimed were capable of launching high-speed rocket torpedoes based on the Russian Shkval. This past January Iran conducted live-fire rocket exercises within range of the USS *Harry Truman* (CVN-75) as she passed through the Strait of Hormuz, and several weeks later captured and released ten U.S. sailors and two riverine command boats after they ran into mechanical difficulties and drifted into Iranian waters.

Israel took delivery of the new submarine *Rahav* on 15 October 2015, and she entered service early in 2016. The *Rahav* is the fifth Dolphin-class submarine built for Israel and the second unit of the class fitted with an AIP system; one additional submarine is to enter service in 2017. Israel ordered four new 2,000-ton corvettes from Germany this past year for EEZ patrol and protection of gas and drilling platforms in the Mediterranean Sea. Delivery of the

first corvette is expected in 2019 with all units planned for service by 2022. Late in 2015 Israel conducted the first successful ship launch of its 40-mile-range Barak 8 surface-to-air missile, also known as the Barak 2. Israel remains concerned that Hezbollah terrorists possess highly advanced antiship missiles such as the Yakhont, and this has added a new dimension of risk to many Israeli naval operations.

Kuwait's maritime forces are beginning to undergo a series of long-delayed repairs and upkeep. In January of this year the country placed an order with Abu Dhabi Shipbuilding for eight new vessels that include a mix of high-speed patrol boats and landing craft.

The coast guard of **Mauritius** received its first-ever custom-built cutter in March 2015. Named the *Barracuda*, the 241-foot vessel was constructed in India and is intended primarily for surveillance, patrol, counterpiracy operations, disaster relief, and other coast guard missions.

Nigeria received the retired U.S. Coast Guard cutter *Gallatin* (WHEC-721) in January 2015. The second 3,200-ton *Hamilton*-class cutter transferred to Nigeria, she has been renamed the *Okpabana*.

The first of two 1,800-ton Chinese P-18N offshore-patrol vessels was delivered to Nigeria in February 2015, and a second unit of the class, based on China's Jiangdao-class corvettes, is

expected to enter service in 2016. Despite new acquisitions, reports surfaced this past year indicating that less than half of Nigeria's naval vessels remain operational. Charges of corruption continue to plague the country's armed services and hamper the fight against terrorism, piracy, oil theft, and other illegal activities.

The Royal **Oman** Police have ordered 14 Watercat K13 fast-interceptor craft from Finland, and the new vessels are expected in service next year. Two high-speed support vessels are also on order from Australia with deliveries expected later this year, the first of which, the *Al-Mubasher*, was launched in 2015.

Saudi Arabia plans to acquire four new multi-mission surface combatants (MMSCs) that will be based on the U.S. Navy's *Freedom*-class littoral combat ship. The Saudi MMSCs will not include the same degree of modularity inherent in the original *Freedom*-class design, and will instead be more heavily armed than their U.S. counterparts. A contract to build the warships is expected to be signed in 2016. Ten MH-60R naval helicopters are also on order from the United States. This past year Saudi forces launched and led coalition military operations that included a naval blockade and other maritime elements against the Houthi rebels in Yemen.

Senegal recently took delivery of a new Raidco OPV 45-type patrol boat named

the *Kedougou*. Since entering service in the spring of 2015, the 150-foot vessel has been active in EEZ patrol and training missions, and took part in U.S. Africa Partnership Station exercises off the West African coast.

Somalia's coastline has seen a dramatic decrease of piracy in recent years, but experts warn that without lasting solutions, it may return to the region. A mix of private security firms and an international naval coalition has helped, but little has been done to counter the problems found on land or presented by the remaining pirate networks. Progress establishing a Somali coast guard has slowed, often as a result of jurisdictional tensions and ongoing local power struggles that continue to thwart the international community's best attempts to achieve long-term stability.

South Africa's future patrol-vessel program, known as Project Brio, calls for construction of new inshore-patrol boats and offshore-patrol ships that will replace the current Reshev (Warrior) class of guided-missile patrol craft and help monitor the country's coastal regions and EEZ. Future requirements also call for a new joint support ship to be built under the Millennium project. This past year the South African survey ship *Protea* completed unmanned sea trials for the S-100 drone system.

Syria's naval base at Tartus may prove to be the government's most powerful weapon in the country's ongoing and brutal civil war. The Assad regime has become heavily reliant on Russian support, and cargo continues to flow through the base. Little has been heard from Syria's maritime forces during the past few years, although media reports this past summer indicate that Syrian naval helicopters have at least occasionally been tasked to support ground operations.

Tanzania hopes to expand its naval forces and to begin procuring larger ships in the future. Two retired 478-ton Chinese Haiqing-class patrol craft were transferred to Tanzania this past year and commissioned in April 2015.

Tunisia's navy took delivery of two U.S.-built 65-foot patrol boats this past year. The boats serve



Nigeria took delivery of the retired U.S. Coast Guard cutter *Gallatin* (WHEC-721) and renamed her the *Okpabana*.

alongside 20 recently delivered smaller craft including 3 44-foot patrol boats, 5 27-foot variants, and 12 25-foot vessels. Tunisia's maritime forces have recently been working to boost their naval-patrol capabilities, and the country also recently received a dozen larger patrol craft from Italy ranging in size from 89 to 115 feet long.

The **United Arab Emirates** received its fourth 930-ton, 234-foot *Baynunah*-class guided-missile corvette in May 2015. Two additional units of the class are expected for delivery in the near future. New patrol boats are also entering service with the UAE including two 220-foot patrol boats ordered from Damen's Romanian shipyard in December 2013.

Yemen finds itself in the midst of a bloody civil war that began last year. Naval forces from around the world evacuated their citizens out of harm's way, and a naval blockade was put in place by the Saudi-led coalition to prevent arms from reaching the Iranian-backed Houthi rebels. The rebels are thought to be operating C-802 antiship missiles from coastal waters, although to date there have been no confirmed launches against the Arab coalition's warships.

Americas

Argentina is considering an offer for five P-18 corvettes from China, which Argentina would call the "Malvinas class," based on the PLAN Type 056 corvette. At least some of the warships could be built domestically in Argentina, with deliveries possible as early as 2017. Repairs continue on the icebreaker and Antarctic support ship *Almirante Irizar*, which is expected back in service in 2017 following a serious fire that occurred nearly a decade ago. This past December Argentina took delivery of four Antarctic-capable maritime-transport and supply tugs that had previously been owned and operated by a Russian commercial firm. The four 267-foot ships are replacing several older Argentine naval vessels that had previously conducted similar roles.

The Royal **Bahamas** Defence Forces took delivery of their fourth and final 140-foot Stan Patrol 4207-class patrol boat in April 2015. Damen shipbuilders is supplying five more vessels to the

Bahamas by late 2016 including four Sea Axe 3007 patrol vessels and one Stan Lander 5612 roll-on/roll-off landing craft being built in Vietnam. The Bahamas is also working to expand its maritime facilities, including significant enhancements to the Coral Harbor naval base and construction of two new facilities elsewhere on the islands.

Brazil recently announced plans to purchase the 12,000-ton dock landing ship *Sciroco*, which was retired from France in 2015.

This past fall the Brazilian fleet decommissioned the 430-foot former British Type 22 frigate *Bosisio*, leaving two sister ships active. Five 440-ton Vigilante 400 (*Macae*)-class patrol combatants are under construction and expected to enter service in 2016, and 20 or more half-sisters may eventually be purchased. Four French Scorpène-class submarines are on order for Brazil with the first unit being built in France and three sisters in Brazil. Current plans call for the first Scorpène to enter service in 2018 and the remaining units by the early 2020s. Brazil's long-delayed SSN program remains on the books for planned delivery in the mid-2020s, but a recent corruption scandal threatens to set the program back even further. Brazil hopes to modernize and eventually replace its aircraft carrier, the *São Paulo*, but budget challenges continue to delay the effort.

Canada's two new *Queenston*-class joint support ships are planned for underway replenishment, sealift, and logistics support duties. Delivery of the first ship is expected in 2019, with a second unit in 2020; a third sister may be ordered in the future. Canada is converting the 600-foot commercial container ship *Asterix* beginning in 2016 to operate under charter as an interim fleet oiler until the first of the *Queenstons* is ready for service. Six new 6,500-ton *Harry DeWolf*-class Arctic offshore-patrol ships (AOPS) are planned for service, with deliveries expected to run from 2018 to 2023. Construction of a new Arctic naval docking facility is also under way at Baffin Island for the AOPS. A new class of 15 future surface warships is planned to replace the *Iroquois*-class destroyers, two of which were retired in 2015, and the 12 *Halifax*-class frigates,

which are currently undergoing an extensive midlife upgrade due to complete around 2017. New Canadian CH-148 Cyclone maritime helicopters are joining the fleet to replace CH-124 Sea Kings, the last of which is set to retire in 2018.

Three of Canada's *Victoria*-class submarines, HMCS *Windsor*, *Victoria*, and *Chicoutimi*, took part in operations and exercises this past year. Sister *Corner Brook* is currently undergoing an extended docking period that is due to complete in 2018. This past year construction began on the first of three 2,000-ton Offshore Fisheries Science Vessels for the coast guard, which is to be named *Sir John Franklin* and is due for delivery in 2017. A 2,600-ton Offshore Science Vessel is also planned for delivery in 2017, and the coast guard is seeking to build a new polar icebreaker for service in the 2020s.

Chile would like to expand its amphibious fleet in the near future and hopes to replace or upgrade many of its older surface combatants by the end of the decade or the beginning of the 2020s. In January 2015 Chile retired its Swedish-built submarine tender *Almirante José Toribio Merino Castro*. Future acquisition priorities include plans for a new icebreaker as well as a fourth OPV-80-class offshore-patrol vessel.

Colombia is attempting to move its maritime forces beyond counterinsurgency operations and is working to increase international engagement and potentially expand cooperation with NATO. The Colombian marines have also been helping train riverine forces from Honduras, Guatemala, and El Salvador. Marine forces are slated to receive six new LPR-40 riverine boats, four Griffon hovercraft, and a new landing craft. In early 2015 Colombia's first Antarctic expedition got under way on the 1,700-ton offshore-patrol ship *20 De Julio* for hydrographic and climate research. A sister of the *20 De Julio* is currently under construction in Colombia, and acquisition of two helicopter-carrying frigates is planned for the early 2020s. Colombia has also expressed interest in acquiring new patrol boats from Spain and hopes to have a fleet of eight 5,000-ton frigates built domestically by the mid-2030s. In December 2015 Colombia received two refurbished Type 206A submarines, the *Intrépido* (ex-U23) and *In-*



NAVAL PRESS SERVICE (M.NITZ)

Mexico plans to build additional *Oaxaca*-class offshore-patrol vessels.

domable (ex-U24), which were transferred from Germany in 2012 and recently completed extensive modification for warm-water operations.

Ecuador is looking to retire its two *Leander*-class frigates in the near future and hopes to find replacements by the end of the decade. Two modified Damen Stan Patrol 5009 patrol vessels are on order as is a fourth Damen Stan Patrol type 2606 vessel, built domestically for Ecuador's coast guard.

Mexico hopes to expand its blue-water capabilities, modernize its fleet, and enhance its maritime-patrol capabilities. Additional 1,600-ton *Oaxaca*-class offshore-patrol vessels are being built with at least two new units due for delivery by 2018.

Construction of Stan Patrol 4207 coastal-patrol vessels is under way, and a total of 14 are planned for delivery through 2018. New inshore- and offshore-patrol vessels, logistics-and-interceptor craft, and service-raft projects are in the works; in the future Mexico hopes to acquire new oceangoing tugs, replenishment vessels, personnel transports, and research ships. A new class of domestically built frigates is desired for future blue-water operations and could begin construction around 2018. Mexico's marines remain heavily engaged in the fight against drug cartels and recaptured the country's most wanted drug kingpin, Joaquin Guzman, in January of this year.

Peru's naval forces are aging and in need of modernization. Two new 400-foot South Korean-designed amphibious transport docks are being built domestically

in Peru, each of which will be able to transport some 500 troops or more than a dozen tanks. Five new South Korean-designed patrol vessels are also on order, and acquisition of a new 3,500-ton large-sail training ship is planned for the future.

Trinidad and Tobago's coast guard has ordered a dozen new boats including four Damen Stan Patrol 5009 patrol boats, two slightly larger utility boats, and six small fast-interceptor boats. The new vessels will help with counter-drug operations and maritime-patrol duties.

The **United States** currently has two 100,000-ton *Ford*-class aircraft carriers under construction. The namesake of the class, the *Gerald R. Ford* (CVN-78), is due for delivery later this year, and the keel for the second of the class, the *John F. Kennedy* (CVN-79), was laid last August. A third unit, to be named the *Enterprise* (CVN-80), is planned for the future. Refueling and overhaul of the *Nimitz*-class carrier USS *Abraham Lincoln* (CVN-72) reached its halfway point in April 2015, and the *George Washington* (CVN-73) is set to begin her multi-year overhaul and refueling in 2017.

In September the cruisers *Cowpens* (CG-63) and *Gettysburg* (CG-64) were transferred to Naval Sea Systems Command to begin major enhancements under the cruiser-modernization program. Last December the first 15,500-ton *Zumwalt*-class destroyer began her at-sea trials. The *Zumwalt* (DDG-1000) is expected to commission later this year while her sister ships *Michael Monsoor*

(DDG-1001) and *Lyndon B. Johnson* (DDG-1002) continue construction; all three are to be fully operational by 2019. This past year the U.S. Navy requested funding for its 73rd and 74th *Arleigh Burke*-class destroyers, the latter of which will be first of the new Flight III variants. In 2015 the future destroyers *John Finn* (DDG-113) and *Ralph Johnson* (DDG-114) were launched, their sister ship *Rafael Peralta* (DDG-115) was christened, and keel-laying ceremonies were held for the *Thomas Hudner* (DDG-116) and *Paul Ignatius* (DDG-117). On 29 September, the Navy decommissioned its last remaining *Oliver Hazard Perry*-class frigate, the *Simpson* (FFG-56), which was the last active U.S. warship to have sunk an enemy vessel.

In 2015 the third littoral combat ship (LCS) of the *Freedom* class, the USS *Milwaukee* (LCS-5), and the third of the *Independence* class, the *Jackson* (LCS-6), were commissioned. Navy plans called for a total of 32 LCSs to be built, divided equally between the two types. These ships were to be followed by 20 frigates built as modified LCS variants and incorporating heavier armament and increased defensive capabilities. In December these arrangements were called into question, however, when Secretary of Defense Ashton Carter ordered the LCS/frigate program reduced to only 40 warships and down-selected to a single design by 2019.

On 31 March 2015 the USS *Peleliu* (LHA-5), the last active *Tarawa*-class

amphibious-assault ship, was decommissioned. In June the keel was laid for the second unit of the 45,000-ton *America* class, the *Tripoli* (LHA-7), which is due for delivery in 2018. The tenth *San Antonio*-class LPD, the *John P. Murtha* (LPD-26), was christened in March 2015 for delivery in 2016; two additional sisters are also planned for service. Last year the Navy redesignated three types of auxiliaries, including mobile landing platforms (MLPs), which have been reclassified expeditionary transfer docks (ESDs); afloat forward staging bases (AFSBs), which are now called expeditionary mobile bases (ESBs); and joint high-speed vessels (JHSVs), which have been redesignated expeditionary fast transports (EPFs). In April 2015 the Navy received the *Trenton*, its fifth *Spearhead*-class EPF, and a

time they will have replaced the last of the *Ohios*.

The U.S. Marine Corps announced initial operational capability of its F-35B Lightning II STOVL strike fighters in 2015. By late last year 36 F-35Bs were already in service out of 340 planned. The F-35C carrier-based variant of the aircraft is expected to reach IOC in 2018, and the Navy plans to acquire 260 F-35Cs while the Marine Corps will purchase an additional 63 F-35C models.

By late 2015, 545 F/A-18E and F Super Hornets were in Navy service out of a planned purchase of 563. A total of 153 EA-18G Growler electronic attack aircraft are planned, and 114 were in service by late 2015. The Navy also hopes to acquire 75 new E-2D Advanced Hawkeye airborne early-warning aircraft, with 20

but the EA-6B is to remain in the Marine Corps inventory for several more years.

In 2015 the final CH-46E Sea Knights were retired from Marine service for replacement by MV-22s; more than 249 MV-22 Ospreys have been delivered to the Marine Corps out of a planned total requirement for 360 tiltrotors. The Marine Corps will also continue acquiring new AH-1Z attack helicopters through refurbishment of older models and procurement of new aircraft, working toward a total goal of 189 Zulu gunships. On 27 October 2015 the Marines' new CH-53K heavy-lift helicopter had its first flight, and IOC is scheduled for 2019.

The U.S. Coast Guard commissioned the 418-foot National Security Cutter USCGC *James* (WMSL-754) on 8 August 2015, and her sister *Munro* (WMSL-755) was launched on 12 September; two additional units are being built. In December 2015 the Coast Guard accepted delivery of the 154-foot *Winslow Griesser* (WPC-1116), its 16th out of a planned 58 Fast Response Cutters. The Coast Guard has been operating with only one heavy icebreaker and one medium icebreaker in recent years, despite a national requirement for three ships of each type. Several options are now under consideration to help bridge the icebreaker gap beginning in the 2020s.

Uruguay purchased two secondhand C212-300 maritime-patrol aircraft from Portugal this past September. In the future the navy hopes to acquire new frigates, patrol ships, and naval helicopters.

Venezuela faces severe economic challenges that impact every aspect of its defense budget and operations. The country has ordered eight Harbin Z-9C antisubmarine helicopters from China, but modernization plans for its *Lupo*-class frigates have been called off, leaving three of the six ships out of action and awaiting overhaul. ❄

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On 31 July 2015 the U.S. Marine Corps announced that the F-35B Lightning II STOVL strike fighter had reached initial operational capability.

sixth unit, the *Brunswick*, was delivered in January of this year. In June 2015 the Navy received the *Lewis B. Puller*, its first ESB; a second unit is under construction.

In 2015 the Navy commissioned the USS *John Warner* (SSN-785) its 12th *Virginia*-class nuclear-powered attack submarine, and also requested funding to build its 23rd and 24th boats of the class. Design work is under way on the next-generation *Ohio*-class replacement, also called SSBN(X). Construction on the first new SSBN(X) is expected to begin in the early 2020s, while the first deterrent patrols will likely begin in the early 2030s. Twelve of the SSBN(X) submarines are planned for service by 2040, at which

delivered by last fall. By December 2015, 38 P-8A Poseidon maritime-patrol aircraft had been delivered out of a total planned purchase of 117. Last year the Navy also announced that it intends to replace the C-2A Greyhound carrier onboard-delivery aircraft with a modified version of the MV-22 Osprey beginning in the early 2020s. By the fall of 2015, 209 out of the planned 251 MH-60R Seahawk naval helicopters had been delivered to the fleet, and by 2016 the last of 275 MH-60S variants will be in service. The final SH-60Bs were retired last year, and all SH-60F helicopters are due to decommission by late 2016. This past year the Navy retired its final EA-6B Prowler aircraft,