

# Worldwide Equipment Guide

## *Chapter 1: Littoral Systems*



TRADOC G-2 ACE Threats Integration  
Ft. Leavenworth, KS

**Distribution Statement:** Approved for public release; distribution is unlimited.



## Chapter 1: Littoral

This chapter focuses on vessels for use in littoral ("near the shore") operations. Littoral activities include the following:

- "brown water" naval operations in coastal waters (out to as far as 200+ km from shore),
- amphibious landing operations or port entry (opposed and unopposed),
- coastal defense actions (including patrols, engaging enemy, and denying entry)
- operations in inland waterways (rivers, lakes, etc), and
- actions in large marshy or swampy areas.

There is no set distance for "brown water." Littoral range is highly dependent on specific geography at any point along a coast. Littoral operations can be highly risky. Forces moving in water are often challenged by nature and must move at a slow pace while exposed to enemy observation and fires. Thus littoral forces will employ equipment best suited for well-planned operations with speed, coordination, and combined arms support. Littoral forces will employ a mix of conventional forces, specialized (naval, air, and ground) forces and equipment, and civilian equipment which can be acquired or recruited for the effort. Each type of action may require a different mix of equipment to deal with challenges of terrain, vulnerability, and enemy capabilities.

Coastal water operations can utilize naval vessels that can operate in blue water. Naval battle groups for deep water also operate in littoral waters. Submarines and anti-submarine warfare (ASW) systems conduct missions in littoral waters. But challenges of shallow waters and shoreline threats also require use of smaller fast-attack boats, patrol craft, cutters, etc. Other craft include tug and maintenance boats, amphibious aircraft, and submarines. Many of the surface vessels in Chapter 1 are designed for littoral operations. Newer technologies are contributing to vessel designs for littoral waters. Along coastal areas, naval craft support ground forces by transporting troops and supplies as needed. For patrols in search of enemy and smuggler activities, stealthy high-speed craft are valuable assets. Paramilitary, police, security force, and other authorized agency craft will also operate in these waters. Most vessels in these waters are civilian commercial watercraft (for shoreline maintenance, fishing, and transport) and private pleasure craft. Insurgent forces and smugglers use these craft and may even "hide in plain sight."

Amphibious landing operations need additional vessels, including landing craft, and shallow water close-in fire support craft to suppress ground targets and provide air defense. Air cushion landing craft (aka landing craft air cushion – LCAC) offer speed and agility to insert assets early in an operation. Other equipment includes unmanned underwater vessels (UUVs) for vessel inspection, reconnaissance, etc. Assets include special purpose forces (SPF), with specialized equipment, such as coastal infiltration submarines (see Sang-O at pg 2-7), midget submarines, scuba gear, semi-submersible infiltration landing craft (pg 3-10 below), and mother ships for surreptitious launch. Aircraft support missions include anti-ship and anti-landing fires, surveillance, and transport. Inflatable boats (modular, rigid, and rigid-hulled) are widely used.

Most vehicles classified as amphibious are not really designed to operate in sea state 3 or greater. Thus they must be used in fairly calm waters or launched close to shore from landing craft.



Many countries, however, have a fairly wide variety of vehicles for use in coastal amphibious operations. Some of the largest amphibious forces are in conventional army units that must operate in littoral zones. Thus they must have many vessels, special vehicles, and support assets. Combat vehicles for amphibious operations include selected IFVs and APCs (Vol 1 pg 3-41), light tanks and other heavy armored combat vehicles (HACVs, Vol 1 pgs 6-42 through 58). Chinese forces have added several fighting vehicles with buoyant front compartments for use in high sea states. These include the Type 90 APC, ZBD2000 IFV, and Type 63AM (aka Type 99) light amphibious tank. Highly amphibious combat support vehicles (CSVs) include the U.S. DUKW and the Russian PTS-M. Support equipment includes bladders to attach to vehicles and equipment, and amphibious trailers, such as the Russian PKP (for use on land and water).

Coastal defense forces include conventional units and weapons. Many ATGMs can destroy naval vessels (including NLOS systems, Vol 1 pg 6-75). Specialized weapons include anti-ship missile systems, e.g., Harpy, HY-2/SILKWORM, and supersonic missile BrahMos (Vol 2, pg 5-14). Other specialized systems include aircraft and anti-ship artillery systems (like the Russian Bereg SP cannon system). Torpedoes (such as the high-speed Shkval-E) can be launched from ships or underwater launchers to destroy vessels. Air defense missile systems, e.g., Russian SA-11 and Buk-M1-2 (Vol 2, pg 6-78), can be used as anti-ship missiles. Naval aircraft (e.g., the Russian Ka-27/HELIX) and UAVs can be used for coastal defense forces. Engineers and other support units will emplace obstacle systems underwater and ashore at likely landing areas. Surface and subsurface minefields will target surface vessels and submarines, and slow and channelize movement. Anti-landing mines are laid close to shore and at landing sites. Remote mine and rocket launchers deliver fires and strikes at landing craft and vehicles attempting to breach gaps in obstacle systems. Missile, gun, and rocket weapons will deliver precision strikes. Unmanned surface vessels with remote operated weapons can patrol and attack enemy targets.

Most large military forces conducting large military offensive operations will use ports to bring in forces or support the forces. The OPFOR will focus great effort to deny waterborne early entry and prevent sustained embarkation operations. They will use all available air, land, and naval forces. They will attack the force at critical nodes such as restricted waterways, including straits, channels, canals, harbors, and in port areas, to destroy the force and deny facilities. Mines, torpedoes, submarines, fast-attack craft, SPF, insurgents, and other means will be used.

Crossings in inland waterways are described in Army Field Manual 7-100.2 (Chapter 12). Factors such as gap width, depth, water speed, and threat (whether the crossing is opposed, etc.) affect the choice of equipment used. Coastal patrol, fast-attack, and landing craft can be used in inland waterways. Shallow-draft military riverine craft and commercial boats are widely used.

Airboats can move quickly, even in the shallowest waters. Barges can mount weapons and supplement carrying capacity of vessels. Amphibious vehicles are widely used. Improvised swim assists such as bladders and barrels enable equipment and vehicles to cross water gaps. Hydro-propulsion water-craft and craft with snag protection are widely used. Jet skis (aka wave runners) can be adapted for military use, even mounting weapons and operating rapidly in shallow waters. Seaplanes and aircraft fitted with pontoons can access areas difficult to reach by land.

Engineer assets are used in gap crossings. Reconnaissance assets, e.g., Russian IRM armored reconnaissance vehicles, frogmen with Scuba gear, re-breathers, mini-sub, and underwater propulsion units, shoreline recon units, and underwater maps help prepare a crossing.

# Worldwide Equipment Guide

---



Atmospheric diving suits (ADS) are used in all waters for longer-duration underwater work (deep sea diving, ship and harbor repair, surveillance, and engineer work). Civilian divers will also be used. Bridge vehicles can be used for narrow crossings. Pontoons, amphibious transporters and ferries can be used for wider gaps. Boats and amphibious trailers are used.

Pioneer units and others use improvised assets to aid in crossings. Inflatable rafts and improvised aids, such as wooden rafts constructed from nearby timber and structures, will be used to supplement military assets. Boats can be lashed together to substitute for pontoons as improvised bridges. They may even be planked with boards to support vehicles and equipment.

Mechanized amphibious units will include companies and battalions organized and equipped for use in opposed crossings. These units are carefully coordinated with supporting units to use deception, surprise, supporting fires (direct and indirect), and rapid maneuver to cross and to seize the other shore. Assets will include armored amphibious vehicles, fire support vehicles, and other support systems with amphibious capabilities. Aircraft and airborne/air assault assets will be used if available. Water-borne assets will attempt to expand the crossing area and bridge the gap (if needed for support assets to cross). Engineer ferries and transporters can be used once the site is secured. Non-swimming vehicles with high-ford designs and snorkels can be used in many crossings. Some tanks with snorkels can ford in waters to 5 m in depth. Winches on fording vehicles aid in navigating narrow water crossings.

Defense of inland waterways is primarily executed with conventional units. Additional equipment can include crossing assets (above, such as commercial watercraft, and anti-landing mines). The Russian KPDM-4 cassette anti-landing mine system offers 50-m ground launch range, for concealed or defilade launch. The VSM-1 helicopter minelayer can also be used.

Marshy and swampy areas require a mix of boats and vehicles that can move in very shallow waters. Airboats and tracked vehicles designed for very low ground pressures can be useful for rapid movement in these areas. The Ukrainian/Russian MT-LB armored transporter, and the Swedish Bv-206 are far-better suited for these terrains. Wheeled vehicles are poorly suited for this terrain. Even many amphibious tracked vehicles cannot be used in these areas, due to excessive ground pressure. In areas with 1 to 3 feet of water with muddy bottoms and banks, and some obstruction (stumps, brush, etc.), vehicles may find the going very slow. Winches, hoists, and saws are critical assets for pulling out vehicles and clearing obstructions. Engineer road clearing and reconnaissance vehicles (Vol 1, pgs 8-37 thru 41) can help. A wide array of other support and combat support assets can be used in littoral missions, including water crossings and actions in nearby land areas (including ports, coasts, and marshy or sandy areas).

Improvised assets are used by civilians in marshy areas, and will be exploited by military forces. Large numbers of flat-bottom boats, amphibious ATVs (such as Supacat, Vol 1, pg 3-73), and dismounted infantry are needed. So-called "swamp buggies" can be fashioned from trucks and tractors with large wide wheels for low ground pressure and high ground clearance. They can transport assets, free mired vehicles, and be fashioned into "technicals" for fire support.



## Modern Technologies in Littoral Craft Design

There are several modern technologies for vessel design which offer more rapid movement for executing military operations. Some of these are quite costly, or are more suitable for calmer littoral waters, higher mission rates over shorter operating range, or for use in specialized missions.

**Hydrofoils** are increasingly used in commercial ferries, which can be exploited for military use. Some military patrol craft forces, including U.S. and Russian examples, feature hydrofoils. Discussion of this technology can be found below.

Another modern technology for modern craft is the **air cavity** hull design. With a scalloped cross-section, catamaran and trimaran designs mean that much of the hull is above the waterline, for reduced drag and shallower draft. These designs are increasingly being used in the commercial sector for sail craft and for racing boats. They also offer wider hulls for better stability over the waves, and more space to carry wide loads. They are popular for ferries and other roles carrying wide loads, such as vehicles. Capabilities for higher speed, dependable operation (with no need for mechanisms which can fail, e.g., hydrofoils), a stable platform, and shallow draft mean that coastal patrol and attack craft can use this design. A further development of the air cavity design technology is the addition of wave-piercing sponsons with hydra-jet propulsion. Despite higher cost, air cavity vessels are likely for use in littoral and some blue water roles.

Air cushion vessels can operate in coastal areas with irregular shore line and shallows. They are noted below for amphibious landing use, but can also be used as patrol craft, and to provide high speed transport in coastal zones.

Another littoral military technology is **wing-in-ground effect (WIG) craft**, which use lifting thrust for flight 1-2 meters above the waves, and propelling thrust for missions at speeds of up to 700 km/hr. A few Russian WIG craft were equipped with missiles to attack ships, and with large compartments to deliver troops and equipment. Due to military fielding and operational cost issues, most of the large Russian military "Ekranoplans" are no longer in use. However, successful peacetime conversions include the Orlyonok (with 140 ton displacement, speed 220 knots, range 830 nm). It is now used for passenger and cargo transportation, but could be employed for military roles. Commercial developers in various countries offer smaller WIG craft for passenger and cargo transport, and for personal use.

Inland waterways permit use of new technologies designed for commercial and recreational uses. Military requirements for riverine craft include high speed, rapid maneuver, shallow water capability, space for weapon mounts, and more. Airboats can operate in rivers and creeks and in marshy areas with a few inches of water. Ski boats, "cigar boats," and other high-speed designs offer potential for military applications.

## Hydrofoil Craft for Littoral Operations



This technology is increasingly being used for boats and ships in both commercial and military sectors. It is an expensive propulsion upgrade because of the mechanisms required, but the benefits are in open water speed. For ferries and medium range transport, shorter passage time can mean more passages and missions completed. For military applications, speed also decreases exposure time and permits quicker response time to engage targets. When in harbor areas or shallow water, foils are folded for conventional hull down





propulsion. Wave action in high sea state open water will affect craft designed for coastal waters, as is true with any conventional designs.

Military craft using foils are currently limited to craft for littoral operations. However, new hydrofoil designs are being considered for larger blue-water vessels. Military craft have been used by the U.S., Russia, Italy, Philippines, Israel, and others. A Canadian test of the Italian FHE-400 Bras'Dor 200-ton hydrofoil boat for anti-submarine warfare found it to be impressive in coastal waters, but unsuitable for long-term deep-water use under severe weather conditions.



One of the early commercial hydrofoil craft was the Italian Supramar design licensed to the Rodriguez shipyard as the PT-20. This craft is highly successful and used around the world. The 72-passenger ferry displaces 32 tons, for a speed of 35 knots. Military conversions such as the Philippine patrol craft noted at right continue to operate.

includes seven fast-attack craft, first tons of displacement, speed is 50 Range is 2,225 km. The boat has a 76 two Otomat anti-ship missile



The Italian SPARVIERO Class delivered in 1974. With 62.5 knots foil-borne, 8 foils folded. mm OTO-Melara cannon and launchers.



Russian ANTARES-Class patrol boats from the 1970s and 80s are among several designs currently in operation. They displace 220 tons, with a max speed of 65 knots, and can operate in 3-meter waves. Hull-borne, it can operate in sea state 7. Range is 410 nm. Weapons include a 76-mm gun, a 30-mm 6-barrel Gatling-type gun, and two torpedo tubes. Other Russian hydrofoil vessels include SOKOL-Class ships of

465 tons.

## Very Lightweight Craft for Use in Littoral Operations

Inflatable craft can fit in small spaces, with reduced weight for crew carry and transport. They fit stealthy operations with low profile (less visual signature), little metal for minimal radar and thermal signature, and low acoustic signature (low weight for smaller engines, and minimal sound of waves against a hull). They are also very cost effective. Inflation/re-inflation/ preparation times are reduced with compressed gas, pneumatic pumps, and cans of quick sealer.

These craft are popular in the sport industry, and are widely used in commercial roles. Thus there are many new technologies and hundreds of producers, most for non-military markets. Although rubber is still used; its use is far outnumbered by the variety of polyethylene watercraft available. Any of these products could have uses for military forces; however, military applications have some requirements that affect choices. Commercial boats often use bright colors for easy detection, versus military craft that are patterned to be concealable. Military craft are usually more rugged, to withstand wear and handle all

# Worldwide Equipment Guide



men and gear needed on a mission. Military craft may need to support weapons mounts and more powerful engines.

Improved boat technologies have led to confusion in the terms used for the boats. The acronym RIB can mean **rubber inflatable boat**, **rigid inflatable boat**, and **rigid-hulled inflatable boat**. Zodiac and other commercial firms offer boats which can be deflated, easily shipped, then quickly re-inflated and placed into service. Non-rigid boats are well-suited for small teams and for portage off-road between uses. Improvised means for added rigidity include inserted rods, boards, plywood to add decking, and loose seats or packs. Oars are often used for clandestine and short crossings.

Rigid inflatable boats, often favored by military forces, can have rigid seats and decking, for less chance of puncture, better stability in heavier waves, and more carrying capacity. There are dozens of designs for sporting, commercial, and military use. Facilities on or near the water will more likely use these craft than the earlier types. Styrofoam fills add rigidity and prevent sinking.



Rigid-hulled inflatable boat

Many military units now use rigid-hulled inflatable boats (RHIB), which can be stacked and quickly placed into service, and can handle bigger engines, more troops and supplies, and heavier seas. Inflatable sections extend freeboard, reduce spray and wave effects, and assure flotation in case of capsizing. A fiberglass hull also permits weapon mounts. Some of the boats use armor plate to protect against 7.62-mm rounds. To avoid confusion of terms, the Zodiac Company now refers to its basic rubber inflatable boats

as modular inflatable boats (MIB); but it also offers rigid designs.

Rafts and boats can be towed or rowed, and improvised from random wood, cut from trees, or rigged with drums or bladders. Inflatable rafts assist missions and can be life rafts in emergencies. Craft like canoes, kayaks, johnboats and bateaus can be expropriated for military use. Another option is folding commercial or assault boats with polypropylene or plywood panels, also used as pontoons.



Questions and comments on data listed in this chapter should be addressed to:

Mr. Mike Spight

DSN: 552-7974 Commercial (913) 684-7974

E-mail address: [michael.g.spight.ctr@mail.mil](mailto:michael.g.spight.ctr@mail.mil)

Mrs. Laura Deatrick

DSN: 552-7925 Commercial (913) 684-7925

E-mail address: [laura.m.deatrick.ctr@mail.mil](mailto:laura.m.deatrick.ctr@mail.mil)



## FRENCH **MISTRAL** CLASS LHD



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	BPC; NTCD; ex-VLADIVOSTOK; GAMAL ABDEL NASSER	Name:	Mistral SAM
Date of introduction:	2006	Quantity:	12
Proliferation:	Egypt	Range (km):	6
Length overall (m):	199		
Beam (m):	32	Name:	Breda-Mauser 30-mm CIWS
Draft (m):	6.2–6.3	Quantity:	2
Displacement, full load (mt):	21,500	Range (km):	INA
Crew (total):	160		
Troop capacity:	450 long; 900 short	Name:	12.7-mm MG
Max speed (knots):	19	Quantity:	4
Endurance (days):	45	Range (km):	INA
Range (nm/knots):	11,000/15; 6,000/18		
Generator/motor:	3 Wärtsilä 16v32 diesel sets, 1 18V200 Wärtsilä diesel	AIRCRAFT	SPECIFICATIONS
Propulsion:	2 Mermaid podded azimuthal thruster props; 1–2 bow thrusters	Name:	NH-90 / AS-532 Cougar / AS-665 Tigre / SA-330 Puma
Ship horsepower, total:	19,040	Quantity:	16
Radar:	Thales MRR NG 3D; BridgeMaster 250E; navigation		
Sonar:	INA	Name:	Light helos (in lieu of above)
Electronic warfare:	Thales ARBR-21; jammers; decoy launchers	Quantity:	35
Combat:	SENIT 9; Thales SIC 21; satcom		



# Worldwide Equipment Guide



VEHICLES	SPECIFICATIONS	LANDING CRAFT	SPECIFICATIONS
Name:	Leclerc MBT	Name:	EDA-R
Quantity:	40	Quantity:	1
Name:	Armored vehicles (in lieu of MBT)	Name:	LCAC (in lieu of EDA-R)
Quantity:	60	Quantity:	2
VARIANTS	SPECIFICATIONS	Name:	LCM (in lieu of EDA-R)
GAMAL ABDEL NASSER; Ex-VLADIVOSTOK	Export version; higher helicopter hanger; some Russian electronics	Quantity:	4

## NOTES

CAN HANDLE CH-53E SUPER STALLION AND MV-22B OSPREY. CONTAINS AN ONBOARD HOSPITAL. RUSSIAN PURCHASE OF TWO VLADIVOSTOK-CLASS VESSELS CANCELLED BY FRANCE DUE TO EVENTS IN THE UKRAINE; VESSELS SOLD TO EGYPT INSTEAD (GAMAL ABDEL NASSER CLASS). EGYPTIAN VERSION CARRIES SOME RUSSIAN ELECTRONICS SYSTEMS AND RUSSIAN KA-52K HELICOPTERS.



## RUSSIAN **IVAN GREN** CLASS LST



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Project 11711 / 1171.1 / 1171.1E	Name:	122-mm or WM-18 140-mm MRLS
Date of introduction:	2016 expected	Quantity:	2
Proliferation:		Range (km):	INA
Length overall (m):	120		
Beam (m):	16.5	Name:	AK-176M 76-mm gun
Draft (m):	3.6–3.8	Quantity:	1
Displacement, full load (mt):	6,000	Range (km):	15.7
Crew (total):	100		
Troop capacity:	300–380	Name:	AK-630 30-mm CIWS
Max speed (knots):	18	Quantity:	2
Endurance (days):	30	Range (km):	5
Range (nm/knots):	3,500/16		
Generator/motor:	2 diesel sets	VEHICLES	SPECIFICATIONS
Propulsion:	2 propellers	Name:	MBT
Ship horsepower, total:	10,000	Quantity:	13
Radar:	Cross Dome; Bass Tilt; Laska; navigation		
Sonar:	INA	Name:	APC (in lieu of MBTs)
Electronic warfare:	decoy launchers	Quantity:	60
Combat:	INA		
		AIRCRAFT	SPECIFICATIONS
VARIANTS	SPECIFICATIONS	Name:	Ka-29 Helix
		Quantity:	1–2

### NOTES

CAN MAKE LANDING VIA A PONTOON BRIDGE. HAS AN EXPANDABLE HANGAR TO ACCOMMODATE A SECOND HELICOPTER. CAN HOLD 20' ISO SHIPPING CONTAINERS AND 1500 TONS OF CARGO IN LIEU OF TROOPS.



## RUSSIAN **OKEAN** CLASS PS



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Project 22100	Name:	AK-176MA 76-mm gun
Date of introduction:	launched 2014	Quantity:	1
Proliferation:		Range (km):	INA
Length overall (m):	91.8		
Beam (m):	14.8	Name:	14.5-mm gun
Draft (m):	INA	Quantity:	2
Displacement, full load (mt):	2,700	Range (km):	INA
Crew (total):	41–44		
Troop capacity:	INA		
Max speed (knots):	20		
Endurance (days):	60		
Range (nm/knots):	12,000		
Generator/motor:	German diesels	AIRCRAFT	SPECIFICATIONS
Propulsion:	2 propellers	Name:	Ka-27PS
Ship horsepower, total:	INA	Quantity:	1
Radar:	surface search; navigation		
Sonar:	INA	VARIANTS	SPECIFICATIONS
Electronic warfare:	INA		
Combat:	Buran-6M communications		

### NOTES

NEW CLASS OF OFFSHORE BORDER GUARD SHIP. HAS ICE-BREAKING CAPABILITY.



## PAKISTANI **AZMAT** CLASS PTG



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:		Name:	CSS-N-8 Saccade ASCM
Date of introduction:	2012	Quantity:	8
Proliferation:		Range (km):	120
Length overall (m):	63		
Beam (m):	8.8	Name:	AK-630 30-mm CIWS
Draft (m):	2.4	Quantity:	1
Displacement, full load (mt):	560	Range (km):	5
Crew (total):	14–38		
Troop capacity:	INA	Name:	14.5-mm MG
Max speed (knots):	30	Quantity:	2 7
Endurance (days):	INA	Range (km):	INA
Range (nm/knots):	1,000/18		
Generator/motor:	4 diesel sets	LANDING CRAFT	SPECIFICATIONS
Propulsion:	4 propellers	Name:	RIB
Ship horsepower, total:	INA	Quantity:	1+
Radar:	Type 360; fire control; navigation		
Sonar:	hull-mounted	VARIANTS	SPECIFICATIONS
Electronic warfare:	intercept; jammer; decoy launcher		
Combat:	INA		

### NOTES

BASED ON CHINESE HOUJIAN CLASS. FIRST UNIT WAS CONSTRUCTED IN CHINA AND SECOND IN PAKISTAN.



## IRANIAN **KAMAN** CLASS PTG



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	COMBATTANTE IIB	Name:	CSS-N-8 Saccade / Ghader / Noor ASCM
Date of introduction:	1977	Quantity:	4 (2 twin)
Proliferation:		Range (km):	120–200
Length overall (m):	47		
Beam (m):	7.1	Name:	76-mm Oto Melara gun
Draft (m):	1.9	Quantity:	1
Displacement, full load (mt):	275	Range (km):	19
Crew (total):	31		
Troop capacity:		Name:	Bofors 40-mm gun
Max speed (knots):	36	Quantity:	1
Endurance (days):	INA	Range (km):	12
Range (nm/knots):	2,000/15; 700/33.7		
Generator/motor:	4 MTU 16V538 TB 91 diesels	Name:	Oerlikon GAM-B01 20-mm gun (in lieu of 40-mm gun)
Propulsion:	4 propellers	Quantity:	1
Ship horsepower, total:	14,400	Range (km):	2
Radar:	WM-28 fire control; Decca 1226 navigation		
Sonar:	INA	Name:	12.7-mm MG
Electronic warfare:	TMV-433 suite with DR-2000 receiver, Dalia analyzer, and Alligator jammer	Quantity:	2
Combat:	INA	Range (km):	INA
VARIANTS	SPECIFICATIONS		
SINA	Locally-produced variant; greater displacement; slightly slower; modified radome; introduced in 2009		

## Worldwide Equipment Guide

---



### NOTES

KAMAN CLASS WAS IMPORTED FROM FRANCE, WHILE SINA CLASS IS LOCALLY PRODUCED. ADDITIONAL SINA UNITS CURRENTLY UNDER PRODUCTION





## Chinese/Iranian C-14 Class Catamaran Missile Boat



SYSTEM	SPECIFICATIONS	ARMAMENT	SPECIFICATIONS
Alternative Designation:	China Cat	Missile:	C-701/YJ-7/TL-10A and B, Kosar in Iran
Date of Introduction:	2002	Type:	Multi-role cruise missile
Proliferation:	2 countries. Iran, China	Launchers:	4
Description:		Weight (kg):	100
Crew:	10	Length (m):	2.5
Displacement (tons):	20	Diameter (m):	.18
Length Overall (m):	23	Warhead:	29 kg semi-armor-piercing
Height of hull (m):	3.6	Speed:	Mach 0.8
Beam (m):	4	Range (km):	20
Draft (m):	1	Guidance:	TV guided initial version, as C-701T, TL-10A in Iran
PERFORMANCE	SPECIFICATIONS	Prob-hit (%):	90
Speed (knots):	50	Missile:	C-704/JJ/FL-9/TL-6B in China, Nasr in Iran
Range (nautical miles):	300	Type:	Anti-ship cruise
Propulsion:	2 x props (diesel engines)	Launchers:	2
FIRE CONTROL	SPECIFICATIONS	Weight (kg):	350-360
Electro-Optics:	Photoelectric camera in mast	Length (m):	3.5
Sonar:	INA	Diameter (m):	.28
Radar:	1 x POT HEAD surface search	Warhead:	30 kg SAP
		Speed:	Mach 0.8-.9
		Range (km):	35
		Guidance:	Radar-homing
		Prob-hit (%):	
		AMMUNITION	SPECIFICATIONS
		C-701 Cruise missile	4-8 combat load
		TL-10 Anti-ship missile	4-8 combat load
		C-704 Anti-ship missile	2-4 combat load
		12.7x108 mm linked MG	INA

# Worldwide Equipment Guide

---



## NOTES

WEAPONS, SENSORS, AND COUNTERMEASURES VARY AMONG VESSELS IN THE CLASS.



## Russian/Ukrainian ZUBR-Class Air Cushion Landing Craft



SYSTEM	SPECIFICATIONS	ARMAMENT (ROCKET)	SPECIFICATIONS
Alternative Designation:	Project 1232.2, POMORNIK-Class; DONETS'K Class	Name:	A-22/Ogon
Date of Introduction:	1988	Launcher:	MS-227
Proliferation:	3 countries	Type:	22 x 140 mm launch tubes
Description:		Fire Control:	DVU-3-BS rangefinder
Crew:	31	Rate of fire: (rd/min)	
Displacement (tons):	550		
Length Overall (m):	56.2	Name:	SA-N-8
Height of hull (m):	21.9	Launcher:	4-missiles
Beam (m):	25.6	Warhead:	1.0 kg Frag-HE
Draft (m):	1.5	Speed:	Mach 0.56
PERFORMANCE	SPECIFICATIONS	Range (km):	6
Speed (knots):	55	Guidance:	IR-homing
Range (nautical miles):	400	Prob-hit (%):	50
Propulsion:	3x variable-pitch air prop, 50,000 bhp from gas turbine		
Lift Engines:	4 x NO-10 engines		
Ship Power	2x 100kW gas turbine		
ARMAMENT (GUNS)	SPECIFICATIONS		
Name:	AK-630M AD gun mount		
Gun:	GSSh-6-30K (AO-18)		
Type:	6-barrel 30 mm Gatling gun		
Fire Control:	EO camera, MR-123 radar		
Rate of fire: (rd/min)	5,000		
Range (m):	5,000		

# Worldwide Equipment Guide

---



## NOTES


WEAPONS, SENSORS, AND COUNTERMEASURES VARY AMONG VESSELS IN THE CLASS.

LIFT CAPACITY: 3 X TANKS, 8 X BMP-2 IFVS, OR 10 X BTR-80 APCS OR UP TO 140 TROOPS AND 130 TONS OF CARGO

BOW AND STERN RAMPS ASSIST LOADING.



## Swedish **CB90H Fast Assault Craft**

			
SYSTEM	SPECIFICATIONS	ARMAMENT	SPECIFICATIONS
Alternative Designation:	Combat Boat 90 H (Stridsbat 90, aka Strb 90)	Caliber, Type, Name:	Twin .50 cal (12.7x99 mm) MG , M2HB
Date of Introduction:	1991	Mount:	Fixed forward
Proliferation:	At least 8 countries	Rate of Fire (rd/min):	900-1100 cyclic
Description:		Loader Type:	Belt feed
Crew:	4	Ready/Stowed Rounds:	750
Displacement (tons):	20 full load	Elevation:	-20/+60
Length Overall (m):	14.9	Fire on Move:	Yes
Height of hull (m):	4.5		
Beam (m):	3.8		
Draft (m):	0.9		
PERFORMANCE	SPECIFICATIONS		
Speed (knots):	50		
Range (nautical miles):	440		
Propulsion:	2x water jets, 2x Scania DS114 diesel		
FIRE CONTROL	SPECIFICATIONS		
Electro-Optics:	EO sight for remote FCS on main gun		
Radar:	Naval patrol version		

### NOTES

WEAPONS, SENSORS, AND COUNTERMEASURES VARY AMONG VESSELS IN THE CLASS. AN OPTION FOR FUTURE DEVELOPMENT IS AMOS 120 MM MORTAR WITH TWIN AUTO-LOAD DIRECT FIRE. ANOTHER CONSIDERATION IS THE RBS 17 MANPADS LAUNCHER.

### VARIANTS

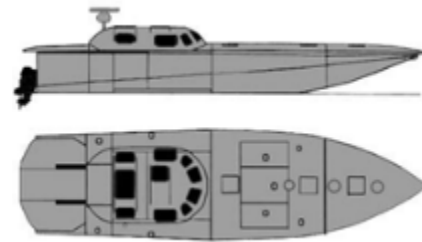
VARIANTS INCLUDE NAVAL VERSIONS, RIVERINE PATROL CRAFT, AN AMBULANCE VERSION, AND OTHERS. CB90HS: ARMORED VERSION WITH NBC PROTECTION, MORE ENGINE HP, AND PROTECTED AGAINST 7.62 MM ROUNDS.

CB90HCG: GREEK COAST GUARD VERSION WITH A RAISED STRUCTURE, DIFFERENT ENGINES, ADDITIONAL NAVIGATION, RADARS, AND SONAR.

CB90N: NAVAL PATROL CRAFT WITH SUPERSTRUCTURES AND OTHER CREW ACCOMMODATIONS.



## NORTH KOREAN SEMISUBMERSIBLE INFILTRATION LANDING CLASS (SILC)



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Cluster-Osprey; Type B; Raccoon; Type C; SP-10	Name:	Small arms
Date of introduction:		Quantity:	INA
Proliferation:	Iran	Range (km):	INA
Length overall (m):	9.3		
Beam (m):	2.5		
Mean draft (m):	1		
Displacement (mt):	5		
Crew (total):	2		
Troop capacity:	3–4	VARIANTS	SPECIFICATIONS
Max speed, surfaced (knots):	30–50	Improved SILC (I-SILC)	Larger; faster (surfaced); fully submersible to 3m; some may have torpedo tubes
Max speed, semisub (knots):	12		
Endurance (days):	INA	Taedong B; Kajami	Export version to Iran
Range (nm/knots):	250–300		
Generator/motor:	3 inboard-outboard		
Propulsion:	3 propellers		
Ship horsepower, total:	INA		

PRIMARY USE FOR THE CRAFT IS TO INSERT SPF TEAMS FOR INFILTRATION MISSIONS. THE CRAFT RACES AT HIGH SPEED ACROSS OPEN AREAS WITH ONLY THE CAB SHOWING, AND REDUCES SPEED TO APPROACH SHORE, AND THE NEW I-SILC CAN SUBMERGE TO A DEPTH OF APPROXIMATELY 7 METERS AS IT APPROACHES THE SHORE. SIMILAR CRAFT ARE MARKETING BY A FIRM LOCATED IN SINGAPORE, AND ACCORDING TO NEWS REPORTS, CRAFT SIMILAR TO THE NK SILC WERE DELIVERED TO IRAN. SOUTH AMERICAN DRUG TRAFFICKERS HAVE ATTEMPTED TO OBTAIN SILCS FOR USE IN TRANSPORTING DRUGS INTO THE U.S.. USUALLY LAUNCHED FROM "MOTHER SHIPS" THAT ARE DISGUISED AS FISHING VESSELS OR FREIGHTERS. SEVERAL VERSIONS EXIST, INCLUDING AT LEAST ONE THAT IS FULLY SUBMERSIBLE.

ALTHOUGH THE CRAFT CAN OPERATE FROM FAR BASES IN SHALLOW COASTAL WATERS, MOST ARE CARRIED ON "MOTHER SHIPS". THESE 50-100 TON SHIPS ARE OPERATED BY NAVAL SPF FORCES AND ARE DISGUISED AS LARGE, COMMERCIAL FISHING VESSELS, NOT UNLIKE LARGE FISHING VESSEL "MOTHER SHIPS" OR FREIGHTERS WHICH HAVE ONE OR TWO UNDERWATER DOORS CONCEALED ON THE STERN, TO LAUNCH SEMISUBMERSIBLE CRAFT.

SOME MOTHER SHIPS ARE ACTUALLY INTELLIGENCE SHIPS, AGAIN DISGUISED AS LARGE FISHING VESSELS OR FREIGHTERS, WITH AN ARRAY OF INTERCEPT, RECONNAISSANCE, AND RADIO SYSTEMS, AS WELL AS



## Worldwide Equipment Guide

---



SEMISUBMERSIBLE CRAFT. A 100-TON TRAWLER WAS FOUND WITH SA-16/IGLA-1 MANPADS, AND RPG-7V ATGLS.

HOVERCRAFT CAN ALSO BE USED TO LAUNCH SILCS AND I-SILCS.

# Worldwide Equipment Guide

## *Chapter 2: Surface Systems*



TRADOC G-2 ACE Threats Integration  
Ft. Leavenworth, KS

**Distribution Statement:** Approved for public release; distribution is unlimited.



## Chapter 2: Surface

Naval surface vessels vary widely, from aircraft carriers displacing tens of thousands of metric tons to meters-long rubber inflatable boats for littoral use. This chapter covers aircraft carriers and surface combatants. These vessels are designed to conduct overt attacks against naval, air, and/or ground targets or to perform patrol functions. The different types are listed below in order of decreasing tonnage. Of note, distinctions between the types have become blurred in recent years.

- Aircraft carrier: Displacing 18,00-102,000 metric tons, aircraft carriers serve as waterborne military air bases. Lightly-armed, their importance comes from the ability to move large numbers of fighter/attack aircraft around the globe and serve as self-contained bases for the same.
- Battleship: Once the greatest weapon on the seas, battleships could displace as much as 63,000 metric tons – more than some modern-day aircraft carriers. They were armed with heavy guns and used for ship-to-ship and ship-to-shore battles. The last active battleships were decommissioned in 1991.
- Cruiser: Usually displacing 5,000-11,000 metric tons, cruisers were originally fleet scout ships. They have since evolved into anti-air and anti-ship vessels, though some classes can also do shore bombardment. Larger platforms can displace as much as 27,000 metric tons and may be referred to as battle cruisers. These vessels are usually armed with heavy guns and a combination of missiles and/or torpedoes.
- Destroyer: Commonly displacing 4,000-10,000 metric tons, these ships were originally designed for anti-submarine (undersea) warfare. The role of modern destroyers has expanded to include anti-ship and anti-air functions. These vessels are usually armed with missiles, torpedoes, and heavy guns.
- Frigate: Originally used for scout and escort duties, modern frigates commonly displace around 3,000 metric tons and mainly perform anti-air and anti-submarine duties. These vessels are usually armed with a combination of missiles, torpedoes, depth charges, and guns.
- Corvette: Smaller than frigates, corvettes nonetheless perform similar duties. They displace approximately 1,000-1,500 metric tons and are usually armed with a combination of missiles, torpedoes, depth charges, and guns.

This chapter focuses on surface vessels that are capable of blue-water operations. Large patrol craft and smaller littoral vessels are covered in Chapter 1. Questions and comments on data listed in this chapter should be addressed to:

Mrs. Laura Deatrick

DSN: 552-7925 Commercial (913) 684-7925

E-mail address: [laura.m.deatrick.ctr@mail.mil](mailto:laura.m.deatrick.ctr@mail.mil)

# Worldwide Equipment Guide



## Chinese **LIAONING** Class CV



SYSTEM	SPECIFICATIONS	AIRCRAFT	SPECIFICATIONS
Alternative designations:	Project 11435/1143.5/1143.6; ex-KUZNETSOV Class; ex-VARYAG	Name:	J-15 or Su-33 Flanker
Date of introduction:	2012	Quantity:	24–26
Proliferation:			
Length overall (m):	304–306	Name:	Ka-31 Helix / Ka-27 / Z-8 / Z-9 / Z-18
Beam (m):	70–73	Quantity:	12–24
Draft (m):	10–11		
Displacement, full load (mt):	59,400	WEAPONS	SPECIFICATIONS
Crew (total):	1,960–2,000	Name:	18-cell FL-3000N SAM launcher
Air wing (total):	626	Quantity:	3–4
Troop capacity:	INA	Range (km):	9
Max speed (knots):	30		
Endurance (days):	45	Name:	30-mm CIWS
Range (nm/knots):	3,850/29; 8,500/18	Quantity:	2–3
Generator/motor:	8 boilers; 4 steam turbines	Range (km):	3
Propulsion:	4 propellers		
Ship horsepower, total:	200,000	Name:	12-round RBU-6000 anti-sub RL
Radar:	Top Plate; Dragon Eye; Sea Eagle; Band Stand; navigation	Quantity:	2
Sonar:	INA	Range (km):	6
Electronic warfare:	4 decoy/chaff launchers		

## Worldwide Equipment Guide



VARIANTS	SPECIFICATIONS		
INA	Domestically produced		

### NOTES

FORMER RUSSIAN KUZNETSOV-CLASS SHIP VARYAG MODIFIED BY THE CHINESE. WAS REPORTEDLY BOUGHT FOR A FLOATING CASINO/AMUSEMENT PARK, WITH PURCHASE CONTRACT PROHIBITING SHIP'S USE FOR MILITARY PURPOSES. RADARS INCLUDE CHINESE AEGIS-LIKE PHASED ARRAY RADAR (DRAGON EYE) . DISPLACEMENT ESTIMATES VARY WIDELY.

# Worldwide Equipment Guide



## Chinese **LUYANG III** Class DDG



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Type 052D; KUNMING	Name:	YJ-62 or YJ-18 ASCM
Date of introduction:	2014	Quantity:	8
Proliferation:		Range (km):	280 or 220
Length overall (m):	154–160		
Beam (m):	17–18	Name:	DH-10 LACM (possible)
Draft (m):	6–6.5	Quantity:	INA
Displacement, full load (mt):	7,500	Range (km):	2000
Crew (total):	280		
Troop capacity:	INA	Name:	HQ-9 / 9A / 9B SAM
Max speed (knots):	30	Quantity:	64
Endurance (days):	INA	Range (km):	200
Range (nm/knots):	4,500/15		
Generator/motor:	CODOG with 2 QC-280 gas turbines and 2 diesel engines	Name:	FL-3000N SAM
Propulsion:	2 propellers	Quantity:	24
Ship horsepower, total:	INA	Range (km):	9
Radar:	Knife Rest; Dragon Eye; Band Stand; Seagull-C; Type 344 fire control; Type 760 navigation		
Sonar:	bow-mounted; towed array	Name:	324-mm Yu-7 torpedoes
Electronic warfare:	2 jammers; 4 decoy launchers	Quantity:	6
Combat:	SITN240 satcom; JSIDLS	Range (km):	14
AIRCRAFT	SPECIFICATIONS	Name:	PJ-38 130-mm gun
Name:	Z-9 / Ka-27 / Ka-28 Helix	Quantity:	1
Quantity:	1–2	Range (km):	29
VARIANTS	SPECIFICATIONS	Name:	Type 730 30-mm CIWS
LUYANG II	Immediate predecessor	Quantity:	1–2
		Range (km):	3



# Worldwide Equipment Guide

---



## NOTES

VESSEL BOASTS TWO 32-CELL MULTI-PURPOSE VLS THAT MAY BE CAPABLE OF LAUNCHING ASCM, LACM, SAM, AND ASROC. RADARS INCLUDE CHINESE AEGIS-LIKE PHASED ARRAY RADAR (DRAGON EYE).



## Russian **ADMIRAL SERGEI GORSHKOV** Class FFG



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Project 22350	Name:	SS-N-26 Oniks and/or SS-N-27 Club and/or SS-N-30A Kalibr ASCM
Date of introduction:	2016	Quantity:	2x8
Proliferation:		Range (km):	220–1500
Length overall (m):	135		
Beam (m):	16.4	Name:	SA-N-7 Gadfly or Redut VLS w/ 9M96-series SAM
Draft (m):	4.5	Quantity:	24 / 32
Displacement, full load (mt):	4,550	Range (km):	40 or 120
Crew (total):	210		
Troop capacity:	INA	Name:	Kashtan or Palash CIWS SAM
Max speed (knots):	30	Quantity:	8 or 16
Endurance (days):	30	Range (km):	10 / INA
Range (nm/knots):	4,000/14		
Generator/motor:	4 diesel-gas turbines/engines (see notes)	Name:	Kashtan or Palash CIWS - 30-mm gun
Propulsion:	2 propellers	Quantity:	2
Ship horsepower, total:	65,000	Range (km):	4 / INA
Radar:	Furke-series; Puma; Monolit 34K1; Poliment; navigation/surface search		
Sonar:	Zarye bow-mounted; Vinyetka towed array	Name:	A-192/192M 130-mm gun
Electronic warfare:	TK-25 ECM system; decoy launchers	Quantity:	1
		Range (km):	29.5
AIRCRAFT	SPECIFICATIONS	Name:	Medvedka-2 or PAKET ASW system torpedoes
Name:	Ka-26 / 27 / 28 / 31 / 32	Quantity:	2x4
Quantity:	1	Range (km):	INA

## Worldwide Equipment Guide



VARIANTS	SPECIFICATIONS		
Project 22356	Export version		

### NOTES

TWO GAS TURBINES WITH EITHER AN ADDITIONAL 2 GAS OR 2 DIESELS IN A CODOG, CODAG, OR COGAG CONFIGURATION. BASED ON INDIAN TALWAR CLASS, THIS VESSEL IS LARGE ENOUGH TO BE CONSIDERED A DESTROYER. RUSSIA EXPERIENCING PRODUCTION DELAYS FROM UKRAINIAN REFUSAL TO SUPPLY TURBINES FOR VESSELS IN PRODUCTION DUE TO 2014 INVASION OF CRIMEA.

# Worldwide Equipment Guide



## Russian **ADMIRAL GRIGOROVICH** Class FFG



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Project 1135.6/11356/11356M; KRIVAK IV; modified TALWAR	Name:	SS-N-27 Club-N and/or SS-N-30A Kalibr ASCM
Date of introduction:	2016	Quantity:	8
Proliferation:		Range (km):	220–1500
Length overall (m):	124.8		
Beam (m):	15.2	Name:	Shtil-1 system w/SA-N-7C SAM
Draft (m):	4.2–4.6	Quantity:	3x12
Displacement, full load (mt):	4,035	Range (km):	32
Crew (total):	180–200		
Troop capacity:	INA	Name:	Kashtan CIWS - SA-N-11 Grison SAM
Max speed (knots):	30	Quantity:	64
Endurance (days):	30	Range (km):	10
Range (nm/knots):	4,850/14		
Generator/motor:	COGAG with 4 M90FR Zorye gas turbines and 4 diesel sets	Name:	Kashtan CIWS - 30-mm AK-630 gun
Propulsion:	2 propellers	Quantity:	2
Ship horsepower, total:	56,000–60,900	Range (km):	4
Radar:	Top Plate; Cross Dome; Front Dome; Plank Shave; Puma; navigation		
Sonar:	MGK-335EM-03 Platina; active towed array	Name:	A-190 100-mm gun
Electronic warfare:	ECM; PK-10 decoy launchers	Quantity:	1
		Range (km):	21.5
		Name:	12-round RBU-6000 ASW RL w/90R and/or RGB-60 rockets
		Quantity:	1
		Range (km):	6

## Worldwide Equipment Guide



AIRCRAFT	SPECIFICATIONS	Name:	533-mm torpedoes
Name:	Ka-27 / 28 / 31	Quantity:	4
Quantity:	1	Range (km):	INA
VARIANTS	SPECIFICATIONS	Name:	Igla MANPADS w/8 SAMs
TALWAR	Older export version	Quantity:	1
		Range (km):	6

### NOTES

IMPROVED INDIAN TALWAR-CLASS VESSEL. DATA BASED ON TALWAR SPECIFICATIONS. RUSSIA EXPERIENCING PRODUCTION DELAYS FROM UKRAINIAN REFUSAL TO SUPPLY TURBINES FOR VESSELS IN PRODUCTION DUE TO 2014 INVASION OF CRIMEA. INDIA REPORTEDLY TO BUY THREE VESSELS CURRENTLY UNDER CONSTRUCTION DUE TO TURBINE ISSUE.



## Russian **BUYAN-M** Class FFLG



SYSTEM	SPECIFICATIONS	AIRCRAFT	SPECIFICATIONS
Alternative designations:	Project 21631; GRAD SVIYAZHSK	Name:	SS-N-27 Club and/or SS-N-30A Kalibr ASCM
Date of introduction:	2014	Quantity:	8
Proliferation:		Range (km):	220–1,500
Length overall (m):	74.1		
Beam (m):	11	Name:	Igla-1M SAM
Draft (m):	2.6	Quantity:	8
Displacement, full load (mt):	949	Range (km):	5
Crew (total):	52		
Troop capacity:	INA	Name:	A-190 100-mm gun
Max speed (knots):	25	Quantity:	1
Endurance (days):	10	Range (km):	21.5
Range (nm/knots):	1,500		
Generator/motor:	4 diesel sets	Name:	AK-630 30-mm gun
Propulsion:	2 pump jets	Quantity:	2
Ship horsepower, total:	INA	Range (km):	5
Radar:	Cross Dome; Bass Tilt; Laska; MR-321		
Sonar:	INA	Name:	14.5-mm mg
Electronic warfare:	PK-10 decoy launchers	Quantity:	2
		Range (km):	7
<b>VARIANTS</b>	<b>SPECIFICATIONS</b>	Name:	7.62-mm mg
Project 21630 BUYAN	Smaller predecessor	Quantity:	3
Project 21632 TORNADO	Export version; based on Project 21630	Range (km):	2

### NOTES

ENLARGED BUYAN CLASS FOR COASTAL OPERATIONS. USED TO FIRE SS-N-30A MISSILES AT SYRIA FROM CASPIAN SEA IN FALL 2015. KAZAKHSTAN PLANNING TO BUY SIX OF SMALLER EXPORT VERSION. CREW ESTIMATES VARY WIDELY.



## Worldwide Equipment Guide

---



# Worldwide Equipment Guide

## *Chapter 3: Undersea Systems*



TRADOC G-2 ACE Threats Integration  
Ft. Leavenworth, KS

**Distribution Statement:** Approved for public release; distribution is unlimited.



## Chapter 3: Undersea

---

Naval undersea vessels vary widely, from ballistic missile submarines displacing several thousand tons to meters-long semi-submersible craft for littoral use. There are several broad categories of undersea vessels, the most commonly known being the traditional submarine. Additional categories include midget submarines, submersibles, semi-submersibles, and unmanned underwater vessels (UUVs).

Most undersea vessels are designed to conduct overt attacks against naval and/or ground targets. Other roles played include coastal infiltration; intelligence, surveillance, and reconnaissance (ISR); mine warfare; research; salvage; search and rescue (SAR); and special purpose forces support functions such as swimmer delivery.

The primary types of “blue-water” submarines are attack submarines and strategic submarines. Attack submarines are designed to target naval vessels – surface, undersea, or both – and are armed with torpedoes and/or anti-ship missiles. These boats are increasingly being armed with ship-to-shore missiles as well. Strategic submarines fall into two main categories based on armament. Ballistic missile submarines, commonly known as “boomers,” are armed with intercontinental ballistic missiles, while guided missile submarines carry cruise missiles.

This chapter focuses primarily on undersea vessels capable of blue-water operations, and is currently limited to submarines. Littoral vessels, such as North Korea’s Semisubmersible Infiltration Landing Craft (SILC), are covered in Chapter 1 of this volume. Questions and comments on data listed in this chapter should be addressed to:

Mrs. Laura Deatrick

DSN: 552-7925 Commercial (913) 684-7925

E-mail address: [laura.m.deatrick.ctr@mail.mil](mailto:laura.m.deatrick.ctr@mail.mil)



## Russian **BOREY** Class SSBN



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	BOREI; Project 955; YURI DOLGORUKY	Name:	SS-NX-32 Bulava SLBM
Date of introduction:	2013	Quantity:	16
Proliferation:		Range (km):	8,300
Length overall (m):	170		
Beam (m):	13.5	Name:	SS-N-16 Stallion ASW
Mean draft (m):	9–10	Quantity:	12
Displacement, surfaced (mt):	14,956	Range (km):	100
Displacement submerged (mt):	19,711		
Crew (total):	107	Name:	SA-N-10 Grouse SAM
Troop capacity:	INA	Quantity:	8
Max diving depth (m):	450	Range (km):	-6+
Max speed, surfaced (knots):	15		
Max speed, submerged (knots):	29	Name:	533-mm torpedoes
Endurance (days):	100	Quantity:	Up to 12
Range (nm/knots):	unlimited	Range (km):	INA
Reactor:	2 nuclear PWR		
Power generation (MW):	380		
Propulsion:	1 pump jet		
Ship horsepower, total:	60,000	VARIANTS	SPECIFICATIONS
Radar:	Navigation; surface search	BOREY-A/Project 955A	Expanded hull; Improved electronics systems
Sonar:	MGK-540 Skat-3M		
Countermeasures:	Rim Hat		

### NOTES

FOURTH-GENERATION NUCLEAR BALLISTIC MISSILE SUBMARINE. BOREY-A VARIANT ORIGINALLY REPORTED TO HAVE 20 MISSILES INSTEAD OF 16. REPORTED DISPLACEMENT VARIES; FIGURES GIVEN HERE ARE FROM IHS JANE'S.



## Russian **YASEN** Class SSN/SSGN



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Project 885; SEVERODVINSK; GRANEY	Name:	SS-N-26 Sapless SLCM
Date of introduction:	2014	Quantity:	Up to 24
Proliferation:		Range (km):	120-300
Length overall (m):	120		
Beam (m):	12–13.5	Name:	SS-N-27/30 (3M54/3M14) SLCM
Mean draft (m):	8.4-9.4	Quantity:	up to 24
Displacement, surfaced (mt):	9,500	Range (km):	220
Displacement submerged (mt):	11,800		
Crew (total):	80–90	Name:	SS-N-21 Sampson SLCM
Troop capacity:	INA	Quantity:	up to 24
Max diving depth (m):	600	Range (km):	2,500
Max speed, surfaced (knots):	17		
Max speed, submerged (knots):	31–35	Name:	SS-N-16 Stallion ASW
Endurance (days):	100	Quantity:	up to 24
Range (nm/knots):	unlimited	Range (km):	100
Reactor:	1 KPM OK-650V nuclear PWR		
Power generation (MW):	200	Name:	SS-N-15 Starfish ASW
Propulsion:	1 pump jet	Quantity:	up to 24
Ship horsepower, total:	43,000	Range (km):	40
Radar:	Snoop Pair		
Sonar:	Irtys Amfora	Name:	650-mm and 533-mm torpedoes
Countermeasures:	Rim Hat ESM	Quantity:	up to 24
		Range (km):	INA
VARIANTS	SPECIFICATIONS	Name:	mines (in lieu of torpedoes)
YASEN-M	Improved electronics systems; improved sound dampening	Quantity:	INA
		Range (km):	INA



### NOTES

FOURTH-GENERATION NUCLEAR ATTACK SUBMARINE. SOME REPORTS STATE IT IS THE QUIETEST RUSSIAN NUCLEAR SUBMARINE TO DATE. EXPECTED CORE LIFE OF 25–30 YEARS. INDIA CURRENTLY IN NEGOTIATIONS TO LEASE ONE YASEN SUBMARINE FROM RUSSIA.



## Russian LADA Class SSK



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	Project 677; SANKT PETERSBURG	Name:	SS-N-26 Sapless SLCM
Date of introduction:	2010	Quantity:	up to 10
Proliferation:		Range (km):	120-300
Length overall (m):	67		
Beam (m):	7.1–7.2	Name:	SS-N-27/30 (3M54/3M14) SLCM
Mean draft (m):	4.4	Quantity:	up to 10
Displacement, surfaced (mt):	1,793	Range (km):	220
Displacement submerged (mt):	2,693		
Crew (total):	34–38	Name:	SS-N-16 Stallion ASW
Troop capacity:	INA	Quantity:	up to 18
Max diving depth (m):	250	Range (km):	100
Max speed, surfaced (knots):	10		
Max speed, submerged (knots):	21	Name:	SS-N-15 Starfish ASW
Endurance (days):	45	Quantity:	up to 18
Range (nm/knots):	6,000/7 snorkeling; 650/3 submerged	Range (km):	40
Generator:	2 diesel		
Motor:	1 PG-102M electric	Name:	533-mm torpedoes
Propulsion:	1 7-bladed propeller	Quantity:	up to 18
Ship horsepower, total:	2,700	Range (km):	INA
Radar:	I-band		
Sonar:	Lira suite	Name:	DM-1 mines
Countermeasures:	Intercept ESM	Quantity:	up to 18
		Range (km):	INA
VARIANTS	SPECIFICATIONS		
AMUR 1650	Export variant		





## NOTES

FOURTH-GENERATION DIESEL-ELECTRIC ATTACK SUBMARINE. EXPORT VERSION AVAILABLE IN SIX DIFFERENT SIZES. REPORTED DISPLACEMENT VARIES; FIGURES GIVEN HERE ARE FROM IHS JANE'S.



## North Korean **SANG-O** Class SSC



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	SHARK	Name:	533-mm torpedo; likely 53-56
Date of introduction:	1990s	Quantity:	2-4
Proliferation:	Vietnam	Range (km):	8
Length overall (m):	35.5		
Beam (m):	3.8	Name:	mines
Mean draft (m):	3.2-3.7	Quantity:	16
Displacement, surfaced (mt):	260	Range (km):	INA
Displacement submerged (mt):	281		
Crew (total):	11 or 19		
Troop capacity:	15		
Max diving depth (m):	180		
Max speed, surfaced (knots):	7.6		
Max speed, submerged (knots):	8.9		
Endurance (days):			
Range (nm/knots):	2,700/7 snorkeling		
Generator:	1 diesel		
Motor:	1		
Propulsion:	1 shrouded propeller		
Ship horsepower, total:	200		
Radar:	Furuno		
Sonar:	Active/passive array	<b>VARIANTS</b>	<b>SPECIFICATIONS</b>
Countermeasures:	INA	SANG-O II (K-300)	39m long; 13 knots submerged

### NOTES

THIS BOAT HAS TWO VERSIONS: ONE WITH TORPEDO TUBES AND MINIMAL TROOP CAPACITY, THE OTHER WITH EXTERNAL MINES, TROOP CAPACITY, AND NO TORPEDOES. REPORTED DISPLACEMENT VARIES; FIGURES GIVEN HERE ARE FROM IHS JANE'S.



## Iranian **GHADIR** Class SSM



SYSTEM	SPECIFICATIONS	WEAPONS	SPECIFICATIONS
Alternative designations:	IS 120	Name:	533-mm torpedoes
Date of introduction:	2007	Quantity:	2 tubes
Proliferation:		Range (km):	INA
Length overall (m):	29		
Beam (m):	2.75		
Mean draft (m):	2.5		
Displacement, surfaced (mt):	117		
Displacement submerged (mt):	125		
Crew (total):	7		
Troop capacity:	INA		
Max diving depth (m):	INA		
Max speed, surfaced (knots):	7–11		
Max speed, submerged (knots):	7–9		
Endurance (days):	INA		
Range (nm/knots):	INA		
Generator:	Diesel		
Motor:	Electric		
Propulsion:	INA		
Ship horsepower, total:	INA		
Radar:	INA		
Sonar:	INA	VARIANTS	SPECIFICATIONS
Countermeasures:	INA		

### NOTES

LIKELY BASED ON NORTH KOREAN YONO SSM. BOAT HAS A RETRACTABLE SECONDARY PROPELLER. IN JANUARY 2016 IRAN CLAIMED TO HAVE FILMED A US AIRCRAFT CARRIER IN THE STRAIT OF HORMUZ FROM THIS PLATFORM. REPORTED DISPLACEMENT VARIES; FIGURES GIVEN HERE ARE FROM IHS JANE'S.

# Worldwide Equipment Guide

---



AIP	air-independent propulsion
APC	armored personnel carrier
ASCM	anti-ship cruise missile
ASROC	anti-submarine rocket
ASW	anti-submarine warfare
CIWS	close-in weapon system
CODAG	combined diesel and gas
CODOG	combined diesel or gas
COGAG	combined gas and gas
COGOG	combined gas or gas
CV	aircraft carrier
DDG	guided-missile destroyer
ECM	electronic countermeasures
ESM	electronic support measures
FFG	guided-missile frigate
FFLG	guided-missile corvette
INA	information not available
JSIDLS	Joint service integrated data link system
LACM	land-attack cruise missile
LCAC	air-cushion landing craft
LCM	medium landing craft
LHD	multi-purpose amphibious assault ship
LST	tank landing ship
MANPADS	man-portable air-defense system
MBT	main battle tank
MG	machine gun
MRLS	multiple rocket launcher system
MW	mega-watt
PS	patrol ship
PTG	guided-missile patrol boat
PWR	pressurized-water [nuclear] reactor
RIB	rigid inflatable boat
RL	rocket launcher
SAM	surface-to-air missile
satcom	satellite communications
SDV	swimmer delivery vehicle
SLBM	sub-launched ballistic missile
SLCM	sub-launched cruise missile
SSBN	ballistic missile submarine, nuclear
SSC	coastal submarine
SSGN	guided missile submarine, nuclear
SSK	attack submarine, diesel-electric
SSM	miniature submarine

SSN	attack submarine, nuclear
VLS	vertical launch system