

ARCHIVED REPORT

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Project 1241 (Tarantul)

Outlook

- One ex-Russian Navy ship sold to Egypt in 2015; three to Turkmenistan
- Two or three existing ships may be transferred to Nicaragua
- Any projected sales likely to be of Russian ships withdrawn from service
- No prospective orders for new-build 1241s

Orientation

Description. Missile-armed corvette.

Status. In service.

Sponsor

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Russia
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Total Produced. The exact number produced is not known because of deletions, transfers, and non-disclosed numbers of experimental units, etc. An estimated 110 to 120 ships of this type are in use worldwide.

Pennant List

<u>Name</u>	<u>Project Number</u>	<u>Builder</u>	<u>In Service</u>
Bulgaria			
43 <i>Molniya</i>	1241.1M	Volodarski	12/1989
13 <i>Reshitelni</i>	1241.2	Volodarski	9/1989
14 <i>Bodri</i>	1241.2	Volodarski	12/1990
Cuba			
321	1241PE	Yaroslav SY	5/1990
Egypt			
R 32	1242.1	Rybinsk	8/2015
India			
K40 <i>Veer</i>	1241.1	Volodarski	5/1987
K41 <i>Nirbhik</i>	1241.1	Volodarski	2/1988
K42 <i>Nipat</i>	1241.1	Volodarski	1/1989
K43 <i>Nishank</i>	1241.1	Volodarski	9/1989
K44 <i>Nirghat</i>	1241.1	Volodarski	6/1990
K45 <i>Vibhuti</i>	1241(b)	Mazagon-Bombay	6/1991
K46 <i>Vipul</i>	1241(b)	Mazagon-Bombay	3/1992
K47 <i>Vinash</i>	1241(b)	Mazagon-Goa	11/1993
K48 <i>Vidyut</i>	1241(b)	Mazagon-Goa	1/1995

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<u>Name</u>	<u>Project Number</u>	<u>Builder</u>	<u>In Service</u>
K83 <i>Nashak</i>	1241(b)	Mazagon-Bombay	12/1994
K92 <i>Prabal</i>	1241(b)	Mazagon-Bombay	1/2002
K91 <i>Pralaya</i>	1241(b)	Mazagon-Goa	12/2002
P33 <i>Abhay</i>	1241PE	Volodarski	3/1989
P34 <i>Ajay</i>	1241PE	Volodarski	1/1990
P35 <i>Akshay</i>	1241PE	Volodarski	12/1990
P36 <i>Agray</i>	1241PE	Volodarski	2/1991
Nicaragua			
<i>Ex-Kuznetsk</i>	1241.1RZ	N/A	2016
<i>Ex-Groza</i>	1241.1RZ	N/A	2016
<i>Ex-Burya</i>	1241.1RZ	N/A	2016
Romania			
188 <i>Zborul</i>	1241.1	Petrovskiy	12/1990
189 <i>Pescarusul</i>	1241.1	Petrovskiy	2/1992
190 <i>Lastunul</i>	1241.1	Petrovskiy	2/1992
Russia			
714 <i>Stupinets(a)</i>	1241.1RZ	N/A	1991
700 <i>Gomel(a)</i>	1241.1RZ	N/A	1994
819 <i>R-47(a)</i>	1241.1RZ	N/A	1994
825 <i>Dmitrovgrad(a)</i>	1241.1RZ	N/A	1994
855 <i>Zarechny(a)</i>	1241.1RZ	N/A	1994
870 <i>R-2(a)</i>	1241.1RZ	N/A	1994
874 <i>Morshansk(a)</i>	1241.1RZ	N/A	1994
916 <i>R-29(a)</i>	1241.1RZ	N/A	1995
833 <i>R-257(a)</i>	1241.1RZ	N/A	1995
921 <i>R-20(a)</i>	1241.1RZ	N/A	1996
924 <i>R-14(a)</i>	1241.1RZ	N/A	1996
937 <i>R-18(a)</i>	1241.1RZ	N/A	1996
946 <i>R-24(a)</i>	1241.1RZ	N/A	1996
954 <i>R-297(a)</i>	1241.1RZ	N/A	1996
952 <i>R-109(a)</i>	1241.1RZ	N/A	1996
995 <i>R-79(a)</i>	1241.1RZ	N/A	1997
954 <i>Ivanovets(a)</i>	1241.1RZ	N/A	1997
962 <i>R-71(a)</i>	1241.1RZ	Yaroslavl	
991 <i>R-261(a)</i>	1241.1RZ	N/A	1996
940 <i>R-11(a)</i>	1241.1RZ	N/A	1996
152 <i>Berkut</i>	1241.2Z	Yaroslavl	
163 <i>Voron</i>	1241.2Z	Yaroslavl	
024 <i>Kaliningrad</i>	1241.2Z	Yaroslavl	
021 <i>Tolyatti</i>	1241.2Z	Yaroslavl	
161 <i>Korshun</i>	1241.2Z	Yaroslavl	
065 <i>Minsk</i>	1241.2Z	Yaroslavl	
078 <i>Kobchik</i>	1241.2Z	Yaroslavl	
041 <i>Grif</i>	1241.2Z	Yaroslavl	
099 <i>Krechet</i>	1241.2Z	Yaroslavl	
031 <i>Yaroslavl</i>	1241.2Z	Yaroslavl	
040 <i>Sarych</i>	1241.2Z	Yaroslavl	
063 <i>Sokol</i>	1241.2Z	Yaroslavl	
042 <i>Orlan</i>	1241PE	Yaroslavl	
077 <i>Neptun</i>	1241PE	Yaroslavl	
037 <i>Yastreb</i>	1241PE	Yaroslavl	
052 <i>Cheboksary</i>	1241PE	Yaroslavl	
023 <i>Nakhodka</i>	1241PE	Yaroslavl	
043 <i>Novorossiysk</i>	1241.2	Yaroslavl	1983
149 <i>Kuban</i>	1241.2	Yaroslavl	1983
Turkmenistan			
830 <i>Ederman</i>	1241.8	Sredne-Nevskiy	2012
831 <i>Arkadag</i>	1241.8	Sredne-Nevskiy	2012
832 <i>Gayratli</i>	1241.8	Sredne-Nevskiy	2012
Ukraine			
(d)			

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<u>Name</u>	<u>Project Number</u>	<u>Builder</u>	<u>In Service</u>
United States			
185NS9201 <i>Hiddensee</i> (c)	1241.1	Volodarski	10/1984
Vietnam			
HQ 371	1241.1	N/A	1996
HQ 372	1241.1	N/A	1997
HQ-373	1242.1	Ba Son Shipyard	2001
HQ-374	1242.1	Ba Son Shipyard	11/2003
HQ-375	1241.8	Vympel Shipyard	2007
HQ-376	1241.8	Vympel Shipyard	2007
HQ-377	1241.8	Ba Son Shipyard	2014
HQ-378	1241.8	Ba Son Shipyard	2014
HQ-379	1241.8	Ba Son Shipyard	2015
HQ-380	1241.8	Ba Son Shipyard	2015
Yemen			
124	1241.1	Petrovskiy	11/1990

Four additional ex-German vessels, four Polish ships, and a large number of Russian ships were withdrawn from service and have been scrapped.

N/A = Not Available

(a) Russian pennant numbers change frequently; the available list is subject to change.

(b) Seriously modified Indian variant.

(c) Brought to the U.S. for technical trials, then sold as a museum ship.

(d) All four Ukrainian ships were captured by Russia following the invasion and annexation of Crimea. *Kremenchuk* and *Uzhgorod* have been incorporated into the Russian Black Sea Fleet as *Kuban* and *Novorossisk*. Some sources claim that *Khmelnitsky* and *Pridneprovye* have been hulked as floating barracks ships.

Application. The Project 1241.1 corvettes are designed to patrol in coastal waters and conduct anti-surface strike missions. As these corvettes are optimized for launching missile strikes against heavily escorted targets, their main targets include enemy fighting ships, transport ships, and landing craft in convoys and amphibious assault groups, in both littoral and blue water environments. The Project 1241.2 version (NATO code name Pauk) was designed for inshore anti-submarine warfare (ASW) operations.

Price Range. A price between \$25 million and \$60 million has been quoted. The former is believed to refer to a secondhand Project 1241.1M from the Russian Navy; the higher cost would be for a new-construction Project 1241RE model. The 1994 order from Vietnam suggested a unit cost of \$60 million. A later contract with Vietnam for the Project 12418 Molniya missile attack boats valued the vessels at \$45 million apiece without weapons.

Contractors

Prime

Almaz Central Design Bureau	80 Leningradsky Prospect, Moscow, Russian Federation, Tel: + 7 095 158 5671, Fax: + 7 095 158 5671, Prime
Goa Shipyards	http://www.goashipyard.co.in/ , Vasco-da-Gama, Goa, India, Tel: + 91 832 2512152, Fax: + 91 832 2513870, Licensee
Severnaya Werft	http://nordsy.spb.ru/ , Ulitsa Korabelnaya 6, St Petersburg, Russian Federation, Tel: + 7 812 3242959, Fax: + 7 812 7847678, Email: info@nordsy.spb.ru , Co-producer

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Project 1241 (Tarantul)**Technical Data**

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length	56.1 m	184.1 ft
Beam	10.2 m	37.7 ft
Draft	2.2 m	8.2 ft
Hull Height Midships	5.3 m	17.4 ft
Displacement		
Standard		385 tons
Full Load		450 tons
Performance		
Maximum Speed	85 kmph	45 kt
Range	2,950 km at 26 kmph 740 km at 66 kmph	1,600 nm at 14 kt 400 nm at 36 kt
Endurance	10 days	
Crew	5 officers, 29 enlisted	
Armament		
<u>Type</u>		
<u>Quantity</u>		
Missiles		
Anti-Ship	P-270 Moskit	4
Point Defense	9M-313 Igla	16
Guns		
Main Gun	AK-176 76mm L59; 120 rpm	1
Point Defense	AK-630 30mm L65 Gatling; 4,000 rpm	2
Electronics		
Radar		
Search	3-Ts-25E Garpun-Bal-E	1
Fire Control	MR-123 Korale-E	1
Navigation	Kivach-3	1
Electronic Warfare		
ESM/ECM	Half Hat A	2
ESM (OTH-T)	Wine Glass	2
Decoy Launchers	PK-16	2
HF/Direction Finding	Cage Stalk	1
Sonar	MG-519 HF mine avoidance	1
Communications		
Command System	Second Captain	1
Datalinks	Light Bulb	2
IFF Interrogator	Nikhrom-RM	1 or 2
IFF Transponder	High Pole	1
Propulsion		
Boost Motors	PR-76 or DR-077 gas turbines	2x 12,000 shp
Cruising Motors	M-504 diesels or DM-076 gas turbines	2x 4,000 shp
Propellers	4-blade, fixed-pitch, 5-ft diameter	2

Design Features. At first glance, the Project 1241 class appears much the same as other enlarged fast attack craft (FAC) designs, such as the French Combattante IV NG, Swedish Göteborg, and British Vita classes. However, because the class has been designed to operate within Russian tactical doctrines, the ships actually have very different characteristics than the Western designs.

The hull is built of special low-alloy, high-strength steel, and the superstructure is constructed of marine-grade aluminum alloy. In the latest versions, the material of the superstructure is reported as being an alloy of high-strength, anti-corrosive aluminum and magnesium. This may represent nothing more than a change in terminology. Steel members are arranged at

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those positions that are exposed to the highest temperatures during missile launches. The sides of the superstructure are sloped to reduce the ship's radar signature, although the ship's design is not as stealthy as that of many of its more modern counterparts.

The latest versions of the class feature an active anti-corrosion system that should guarantee reliable service for 20 to 25 years. The semi-planing hull has been designed with emphasis on good seagoing capabilities for those water areas that are its primary mission focus. Employment of the weapon system is promised in conditions up to and including Sea State 5, and safe navigation is guaranteed up to and including Sea State 8.

All crew quarters are air-conditioned; 10 self-contained air-conditioning units have been designed to maintain temperatures of at least 10°C lower indoors than outside.

Much attention is paid to damage control, including defense against nuclear, biological, and chemical (NBC) warfare. The hull and superstructure comprise a pressurized entity that can be accessed through airlocks. The ship's showers are designed to act as decontamination units in emergency situations. The hull is divided by watertight bulkheads into nine compartments. The bow bulkhead, forward engine room fore bulkhead, and stern engine room aft bulkhead are made of steel. The other bulkheads are composite-made, reinforced with steel and aluminum, with magnesium alloys. Even if any two adjoining bulkheads were flooded, the boat would remain afloat and keep positive stability and freeboard.

The Project 1241 design uses a combined diesel and gas (CODAG) turbine power configuration in some versions, and a combined gas and gas (COGAG) turbine in others. In CODAG mode, each gas turbine has full power of 12,000 shp and each diesel 4,000 shp, giving the missile craft a full speed of about 43 knots.

The Project 1241 class shares a serious vulnerability to helicopter-launched standoff attacks with all other FAC – neither its AK-630 guns nor the 9M-313 missiles can reach out to the attack ranges preferred by, for example, Royal Navy Lynx/Sea Skua helicopters. To some extent, this deficiency has been corrected by the modification of the design to carry Kashtan missiles, but vulnerability to air attack remains a serious problem.

The anti-ship missile system on board includes two twin container launchers for P-270 Moskit missiles on each side of the boat in the midsection near the superstructure. Missile guidance is provided by active radar with a datalink back to the launch platform. The P-270 has an adaptive radar altimeter that determines

the sea state and can vary the cruise altitude of the missile between 7 and 20 meters accordingly.

The relative values of the hypersonic non-evasive anti-ship missile and its subsonic, low-observable, and highly evasive equivalent are much debated. Because of the large size of the first, the choice has been narrowed down to four of the hypersonic type or up to 16 of the evasive group. The jury is still out on the debate, and the overall outcome is too close to call. The Severnoe Design Bureau played it safe by producing a variant of the Project 1241RE (Project 1241.8) armed with 16 Kh-35 Harpoonski missiles. The Harpoonski is virtually identical to the U.S. Harpoon missile, and both Severnoe and the Raduga Design Bureau, responsible for the Kh-35, claim that the Project 1241.8 can be fitted to carry the U.S. weapon at no extra cost and with no structural or electronic modifications to either platform or missile.

Close-in air defense is provided by two separate systems. A pair of AK-630 30mm L65 Gatling guns are installed at the rear end of the superstructure. Each has a rate of fire of 3,000 revolutions per minute to a maximum range of 2,500 meters. They are normally controlled by the MR-123 radar, but are provided with an optical backup system, designated Kolonka. This is a crude ring sight similar to that used on World War II 20mm Oerlikon guns. These AK-630 guns are supplemented by a SAN-8 quadruple launcher for Iгла-M infrared-guided anti-aircraft missiles. This launcher has a range of approximately 3.6 kilometers. A total of 16 rounds are carried, four on the mount and 12 in a manually operated reload magazine.

Operational Characteristics. Similar to the rest of Russian coastal forces, the Project 1241-class ships are designed to operate under tight central control from shore-based or floating command elements. Russian sources have described these ships and their Project 205-class predecessors as mobile coast defenses. The targets are detected using an extensive shore-based surveillance network (one element of which is the Krug communications surveillance system); then the brigades of FAC are brought in to execute a coordinated attack from numerous points simultaneously.

The electronics suite is comprehensive and features a Garpun-Bal-E (Band Stand) radar as the prime surface search/missile fire control radar. This radar operates in the E/F-band and also acts as the datalink receiver for the P-270 missile. The Garpun-Bal-E is the primary sensor for the 3Ts-80E fire control complex and can track 15 targets while designating six for missile attack. As with SSN-22 Sunburn, Band Stand is a NATO generic name for a group of systems. These include a D-band radar on the Sovremenny-class

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destroyers, the E/F-band system on the Tarantul-class Project 1241.1MP, and a new high F-band system on the newer Project 1241RE. The radar suite also includes a Kivach 3 navigation radar, which is believed to be a clone of the Racal-Decca 1229.

The masthead position normally used by search radars is occupied by a Light Bulb datalink receiver system. This is a very high-speed, high-capacity datalink comparable to the NATO Link 16 system. It is used to transfer tactical information and data from a central command post (either a shore installation or flagship) directly into the Second Captain command system.

Orders and tactical directives are transferred in a similar manner, and the system is capable of firing the ship's offensive weapons without reference to the crew. This is intended to ensure that concentration of effect can be achieved with a coordinated attack from dispersed assets. Note that in contrast to Western datalinks, the information traffic is one-way only. The Second Captain installation is very basic and cannot be compared to a Western-style command system.

The electronic warfare fit reflects the assumption that the Project 1241-class craft will be fighting inshore under friendly air power protection. The major system is Half Hat A, which combines a directional radar

warning system (to set off the RK-16 chaff launchers) with an integrated deception jammer. This is believed to provide some level of protection against Western anti-ship missiles. The EW suite also includes the Wine Glass high-precision electronic support measures (ESM) system, which provides over-the-horizon targeting resources for the P-270 missiles.

Communications intelligence equipment is also rather extensive for a craft of this size. High-frequency direction finding (HF/DF or "Huff-Duff") is provided by a masthead Cage Stalk installation. There is also a medium-frequency, direction-finding (MF/DF or "Muff-Duff") system. The unusually high provision of communications equipment indicates that the Russians believe the Project 1241-class craft could be assigned to attack and disrupt hostile amphibious operations that include substantial numbers of civilian ships taken up from trade. These would have less secure communications facilities than warships and could thus be more easily targeted.

A keel-mounted MG-519 high-frequency sonar is installed. This is purely a mine avoidance set and has no ASW function. The Project 1241.1 has no ASW capability, unlike its Project 1241.2 sibling, whose primary orientation is ASW.



Project 1241.1E Missile Corvette

Source: Polish Navy

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Variants/Upgrades

This class includes an ASW version, which in the West has been designated the Pauk class.

Generally, these boats have had an active development history, with hulls, systems, and assemblies being concurrently updated; living quarters improved; seagoing and powerplant capability enhanced; and protection systems and missiles upgraded and perfected from one model to the next. As a result, there are a large number of variants. Some of the more prominent variants include the following.

Project 1241 Molniya. This was the designation of the original prototype hydrofoil design. This type was later rebuilt as Project 1241.0.

Project 1241.0 Molniya. A one-time variant equipped with the SSN-22 Sunburn (P-80 Zubr) missile normally arming the Sovremenny-class (Project 956) destroyers. The Project 1241.0 can be distinguished from the P-270-armed 1241.1MP ships by its lengthened missile tubes with a modified end-cap. The 1241.0 version was completed in 1981. The ship is used for experimental work and as a testbed for new items of equipment, such as the Kortika close-in weapon system (CIWS).

Project 1241.1 Molniya (Tarantul I). Standard non-hydrofoil variant of the Project 1241 for Russia's domestic use. This version incorporated simplified electronics and substituted the Band Stand main fire control radar with the Garpun (NATO code name Plank Shave) integrated fire control radar/ESM/datalink system.

The main armament of the Project 1241.1 includes both the P-20M radar-guided and P-22 infrared-guided anti-ship missiles (both NATO code-named SSN-2D Styx). Standard load out is one P-22 and three P-20M missiles per ship. The ship has an all-gas turbine powerplant with two 4,000-shp DMR-76 cruise turbines and two 12,000-shp PR-77 boost turbines. These give a maximum speed of 44 knots and an endurance of 2,400 nautical miles at 14 knots (400 nm at 44 kt).

Project 1241.1E. Export designation of the Project 1241.1 Tarantul I design before the introduction of the Project 1241RE and most recent Project 1241.8. These ships carry P-20 and P-22 (Styx) missiles in place of the more modern P-270.

Project 1241.1M Molniya (Tarantul II). A development of the basic Project 1241 family for use by the Russian Navy as an interim replacement for the

unsatisfactory Project 1241.0. The Project 1241.1 has the same electronics fit as the Project 1241.0, but is armed with the SSN-2E Styx radar-guided anti-ship missile (Russian code name P-27). The Styx uses the basic airframe of the older P-20M missile, but has a new L-band seeker and a radar video datalink back to the launch platform. The ship has an all-gas-turbine powerplant with two 4,000-shp DMR-76 cruise turbines and two 12,000-shp PR-77 boost turbines. These give a maximum speed of 44 knots and an endurance of 2,400 nautical miles at 14 knots (400 nm at 44 kt). This version is also used in Bulgaria.

Project 1241.1MP Molniya (Tarantul III). Standard Russian Navy version of the Project 1241. This is the version described in detail in this report. Recently, this class was redesignated Project 1241.1RZ.

Project 1241RE. Newer export version of the Project 1241.1MP retaining the P-270 armament of the Project 1241.1MP, but with the two AK-630 30mm CIWS Gatling guns replaced by a CADS-1 (Russian name Kashtan) combined gun/missile system. This mount is installed at the rear of the superstructure block. The CADS-1 system is armed with a pair of 2A38 30mm L120 multibarreled cannon and racks for eight 9M-311 (SAN-11) missiles. A total of 48 9M-311 missiles are carried. The two 2A38 guns have an aggregate rate of fire of 10,000 rounds per minute and an effective range of up to 3,000 meters.

The 9M-311 missile has command-to-line-of-sight guidance and a maximum range of 8,000 meters. Two radar antennas (Hot Flash) are provided: one tracks the target, the other the stream of shells from the 30mm guns to provide closed-loop tracking. The radar system also provides target tracking at 12,000 meters for the 9M-311 missiles. The system operates in the L-band. There is no on-mount target acquisition radar; this function is provided by the Band Stand radar. The Garpun-Bal radar on this variant operates in the high F-band rather than the E/F-band of the Project 1241.1MP.

Project 1241.8. This is the most recent development of the basic Project 1241.1MP/1241RE, with the weapons and combat systems of those two versions installed in the larger hull of the Project 1241.2 ASW corvette. This version effectively trades 5 knots maximum speed for 50 percent greater tactical radius, improved living accommodations, and more sophisticated electronics. The electronics include improved radars and a separate Pozitiv-E air search radar.

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The 1241.8 is the export version of the Project 1241RE and is equipped with 16 U.S. Harpoon or Russian Kh-35 anti-ship missiles in place of the four P-270 missiles on the 1241RE.

Project 1242.1. This is the latest incarnation of the Tarantul design. It employs the lengthened hull used for the Project 1241.2 and has a maximum displacement of 550 tonnes. Its top speed is reported as being 45 knots, and seakeeping is offered up to Sea State 8. Cruising range is expected to be 2,400 nautical miles, and it will carry a crew of 44. The weaponry includes either four P-270 Moskit surface-to-surface missiles (SSMs) or 16 Kh-35 and 12 portable 3M96 GLA surface-to-air missile (SAM) sets, as well as the ubiquitous 76.2mm AK-176 and two 30mm AK-630 CIWSs. One craft of this type was built for the Russian Navy and ended up being sold to Egypt.

Project 1241.1P and 1241PE. The Project 1241.1P and PE versions of the Molniya class are referred to as the Pauk class by most Western sources, although in the Russian Navy, they are considered to be an ASW variant of the same basic platform as the missile-armed corvettes. The hull is the same except for a 6-foot (1.8-m) extension at the stern for the dipping sonar. The hull material is steel and aluminum-magnesium alloy, whereas the early missile boats had steel hulls. The superstructure is also slightly different from that on the missile boats, providing more room for the electronic equipment. In contrast, the superstructure on the missile boats is narrower amidships to accommodate the missile launcher batteries. The ASW boats have two single 53.3-centimeter torpedo tubes on each beam alongside the superstructure.

Propulsion of the ASW versions differs from the baseline Tarantul, being all-diesel in lieu of the missile boat's combined diesel or gas turbine (CODOG) installation. The twin M521 engines produce a total of 16,184 hp on two shafts. The displacement at full load is 440 to 485 tonnes, versus 550 tonnes for the missile versions. Top speed is rated at 28 knots only, because of the differences in engines and in the mission of the boats. Maximum cruising range at 12 knots is said to be 3,000 nautical miles. These ships are also seen in Russian Border Patrol service.

Veer. These ships are equipped with the Italian mini-SADOC command system built under license in India

by Bharat Electronics and have a Western-designed EW system. Reports on the nature of this equipment differ. Some sources claim the system is the Racal Cutlass / Cygnus integrated ESM/jammer fit, while others say it is the Alenia INS-3 built under license in India. Still another report suggests that the ships may be equipped with the Argo AR-900/APECS II system. All of these are credible, but the Italian fit is strongly supported by two other considerations. First, the INS-3 EW system is already installed on many Indian warships, providing operational commonality. Second, Alenia has recently reported that it is drawing on its experience with the Minerva class corvettes to integrate INS-3 with mini-SADOC and British-designed decoy launchers (almost certainly Super Barricade) for FAC of a Far Eastern navy.

The powerplant of this version includes two 12,100-shp NK-12MV gas turbines and two SEMT-Pielstick diesels. A plan to equip later ships with a three-shaft layout powered by a single LM2500 gas turbine, rated at 27,500 shp, and two SEMT-Pielstick diesels was abandoned in 1990 due to technical difficulties. On the last four ships of this class, a 76mm Oto Melara gun replaces the AK-176 gun, and on the last pair of ships, the four P-20 missiles are replaced with 16 Kh-35 Harpoonski missiles.

Prabal and Pralaya. INS *Prabal* and INS *Pralaya* are quite different in equipment, armament, and appearance from their sister ships. Modified with Russian input, their weapons and sensor fit is similar to that of the Project 25A-class corvette. Radars include an MR 352 Pozitiv-E radar, Garpun-Bal-E radar, and BEL Lynx gunfire control radar. Armament comprises 16 3M-24E AShMs and the BHEL-assembled Oto Melara 76mm Super Rapid Gun Mount (SRGM), along with two AK-630M CIWS gun mounts. Structurally, these vessels also have an additional, deeper deck, extended operations room, and improved habitability. These changes have resulted in an added displacement of approximately 50 tons.

Abhay. Indian class name for the Pauk II version (1241PE) ASW corvettes.

Gornik. Class name in Poland for its Tarantul Is.

Zborul. Romanian class designation for its Tarantul I Project 1241.

Program Review

Background. The Project 1241 program evolved in the 1970s from the Russian Navy's perceived need to replace the aging Project 205- (NATO code name Osa) class missile boats. The Almaz Central Naval Design

Bureau began developing a new small craft design, Project 1241, in 1970. This was originally conceived as a hydrofoil design, but was rebuilt as a conventional displacement hull. The Project 1241 program was a

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direct successor to the Project 205 as a missile-armed fast attack craft (FAC).

After numerous modifications to the original design, the prototype Project 1241.0 started trials with the Russian Navy in 1978, with the prototype export version being completed later. Some problems were related to the size and bulk of the Moskit missile, which placed severe burdens on the hull, but the most serious difficulties were related to electronics. In spite of many efforts, it proved impossible to get the Moskit system aboard the Project 1241.0 to work consistently.

Successful Export Design

In contrast, the 1981 trials of the export-version Project 1241.1 were entirely successful. The tried-and-tested P-20M and P-22 missiles deployed on these ships offered no problems. The complex electronics of the Project 1241.0 (Garpun-Bal radar and Light Bulb high-capacity datalink) were deleted and replaced by a much simpler Garpun (NATO code name Plank Shave) radar, which combined radar functions with electronic support measures (ESM) and a less sophisticated, lower capacity datalink within the same antenna. Deliveries of the Project 1241.1 to export customers began in 1984.

This successful export version was used as a basis for an interim design (Project 1241.1M), which would fill the gap until a new missile became available. The electronics of the Project 1241.1 were upgraded with a number of the systems intended for the Project 1241.0, including Garpun-Bal, Light Bulb, and a more comprehensive ESM suite. A new version of the P-20M missile was designed; it incorporated an L-band seeker for enhanced target discrimination and a talk-back datalink to the launch platform, using Band Stand as the receiver. This missile was designated P-27 (NATO code name SSN-2E Styx). A total of 21 ships of this type were built between 1982 and 1986, with one ship being sold to Romania in 1991 – this being the first export sale of this particular missile type.

Today, India is the largest user of the Project 1241 outside Russia, with 12 boats in service. These fall into three groups. The first five are straightforward Project 1241.1 designs built in Russia. The second group of seven, built locally on license, are a modified version fitted with the Italian Mini-SADOC command system and Western electronic warfare (EW) equipment, and are designated Project 1241.1E. By 2000, four additional boats of this type had been ordered, with additional design modifications. The Indian Navy has, however, continued construction of the Project 25A-class missile corvettes and initiated construction of the 2,500-ton Project 28 class. This suggests that the modifications to the Project 1241 were

not extensive enough to offset the basic limitations of the design, and the Project 1241 has been abandoned.

India also purchased four ASW versions of the same basic ship design, designated the Abhay (or Pauk II) class, between 1989 and 1991 during the final stages of procurement of missile craft from Russia. A fifth boat of that category had to be canceled due to financial constraints. Cuba purchased one boat of this type as well.

Into the U.S. Navy

In April 1993, the Severn Design Bureau launched two new variants of the Project 1241.1 family at the Abu Dhabi Defense Exhibition. One was a simple modification of the Project 1241.1MP design, equipped with a single Kortika integrated gun/missile CIWS in place of the rear AK-630 guns and the SAN-8 missile launcher. This version was designated Project 1241RE. The second variant was a more substantial modification in which the four P-270 missiles were replaced by four quadruple banks of Kh-35 Harpoonski anti-ship missiles. Severn officials claimed that the Kh-35 could be replaced by U.S. Harpoon missiles without any modification to ship or missile if the customer so desired. This version was designated Project 1241.8 and armed with the Kortika CIWS.

The Vietnamese Navy also bought two Project 1241RE corvettes, the agreement being announced in mid-1994 and the contract formally signed in early 1995. These boats were completed early in 1996 and in service by April 1996. Two more ships were ordered in 1996. These were of the Project 1241.8 type and delivered in kit form for local assembly. The first was completed in December 2001.

The original plan called for the acquisition of 10 ships of this class to replace the large number of very old, manpower-intensive, high-maintenance ships making up the Vietnamese Navy. This plan was later refined to eight ships, two to be built in Russia and the rest in Vietnam. Eventually, two ships were delivered in 2007, apparently signifying the end of the program. The Vietnamese Navy ordered two Project 1166.1 Gepard-class frigates (with an option on two more). At 1,560 tons, the Gepard is a much closer match to the sort of ship the Vietnamese Navy really needs. This leads to the conclusion that the Project 1241 proposal has been replaced by this later order. Some reports suggest that a single Vietnamese-built Project 1241.8-class craft entered service in 2009/2010, but they remain unconfirmed.

More Design Variants

Meanwhile, another new variant of the basic design was revealed in 1995. This has been designated

Project 1241 (Tarantul)

Project 1242.1 and fits the electronics equipment of the Project 1241RE into the slightly larger hull of the Project 1242 corvette. The electronics have been upgraded with a 15 to 20 percent increase in radar data-processing capability. The anti-air armament can consist of either two AK-630M mounts or a single Kashtan gun-missile combination. This craft was photographed running trials in September 2000.

In August 2001, the Almaz Central Design Bureau released the first details of a new FAC that was intended as a replacement for the existing Project 1241 force. The new design, designated Project 1230.0 Scorpion, is a 470-ton, 57-meter design armed with an A-190 100mm gun and eight 3M55 Yakhont anti-ship missiles. The hull design shows extensive efforts to reduce radar cross-section. Current plans are to build 12 of the new class, subject to available funding.

In 2009, it was announced that Libya had purchased three Project 1241 craft, although there was some doubt as to whether the contract for the supply of these boats to Libya had actually been signed. The Russian shipbuilding industry is developing a bad habit of making premature announcements of sales, with Requests for Proposals and expressions of interest treated as solid contracts. However, the withdrawal from Russian service of four of the most recent ships in the class just prior to the contract announcement did suggest that the order was substantiated. Nevertheless, it is not clear whether the Libyan craft are actually new-builds, gently used ex-Russian craft, or craft that had been kept partially complete waiting for a customer. The contract valued the vessels at \$45 million apiece without weapons, so the Libyan contract could be worth a minimum of \$150 million and as much as \$200 million with arms and spare parts.

This deal was thrown into disarray by the civil war in Libya that raged throughout most of 2011. One immediate result of this was the imposition of an arms embargo upon the area. Another was that the previous ruler of the country, Col. Muammar al-Qadhafi, was captured and killed in a crossfire between Qadhafi supporters and rebel forces. He has been replaced by a tribal council, and it appears likely that most of his arms procurement agreements have been aborted. Shortly after these events, three Project 1241 fast attack craft were sold to Turkmenistan and it appears probable that these were the craft being built for Libya.

At this point, it appeared as if procurement of the Project 1241 family had ended. However, on July 4, 2013, Alexander Vlasov, deputy director general

of Sredne-Nevisky Shipyard, announced that Nicaragua had ordered two Project 1241.8-class missile-armed FAC and four Project 1431.0 patrol craft. This procurement was reported to have been the result of a recent International Court of Justice ruling on November 19, 2012, that extended Nicaragua's exclusive economic zone by 27,000 square miles at the expense of Colombia. Colombia has refused to recognize the ruling, and consequently, there have been some minor naval incidents.

As a result of these incidents, President Daniel Ortega of Nicaragua stated that the Nicaraguan Navy was to receive new patrol vessels and that offers from both Russia and Spain had been received. A spokesman for the Nicaraguan armed forces, Orlando Palacios, confirmed that a Nicaraguan naval delegation had visited the Sredne-Nevisky Yard, but added that one had visited Spain's Navantia yard as well. As of late 2014, there had been no further developments in this area, and any procurement of naval assets appears to be a medium- or long-term prospect at best.

During the Russian invasion (and subsequent annexation) of Crimea, virtually the entire Ukrainian Navy was trapped inside the port of Sevastopol. This included all four Project 1241-class missile-armed fast attack craft. In addition, more than 12,000 of the 15,500 members of the Ukrainian Navy defected to Russia.

As of October 2016, it appears that that *Kremenchuk* and *Uzhgorod* have been taken into Russian Border Guard service while *Khmelnitsky* and *Pridneprovye* have been hulked and serve only as floating barracks ships.

An interesting development took place in mid-2015 when the Egyptian Navy purchased the ex-Russian Navy Project 1242.1-class corvette R 32. This ship was the prototype for a second-generation member of the Project 1241 class that featured an enlarged hull and improved onboard systems. The R 32 took about eight years to build and served in the Russian Navy for only a brief period before being decommissioned and put up for sale in 2009. The agreement to purchase this vessel was reached very quickly without the usual arrangements to provide a trained crew from the purchasing navy.

In August 2016, the *Havana Times* reported that Russia was donating two (possibly) three Project 1241 FAC-M to the Nicaraguan Navy. These reports were given some substance by the simultaneous disappearance of three Russian Navy Project 1241s from their order of battle.

Project 1241 (Tarantul)**Funding**

The original development of the Tarantul-class designs was funded by the Soviet government for the Navy. Since the collapse of the Soviet Union, developments and modifications for the export market have been funded privately by Rosvoorouzhnie.

Russian-Libyan military cooperation restarted in April 2009 when then-Prime Minister Vladimir Putin visited Tripoli, with relations further strengthened by Qadhafi's subsequent visit to Moscow. During Putin's visit, the two countries signed a deal to write off \$4.6 billion of Libya's debt in exchange for a host of new deals, including \$2 billion in arms agreements. This was used to fund the purchase of three Project 1241 corvettes. The onset of the civil war in Libya torpedoed this deal. The ships in question are believed to have been supplied to Turkmenistan.

INS Vinash

Source: Indian Navy

Project 1241.1PE ASW Corvette

Source: Indian Navy

Contracts/Orders & Options

<u>Contractors</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Vympel	120.0	Jan 1995 – Vietnamese order for two Project 1241RE corvettes.

Project 1241 (Tarantul)

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1973	Design work on Project 1241 begins
	1979	Trials of Project 1241.0 begin
	1981	Trials of Project 1241.1 begin
	1984	First deliveries of Project 1241.1
	1986	Trials of Project 1241.1MP begin
	1987	Project 1241.1MP enters full service
Apr	1993	Project 1241RE and Project 1241.8 announced
Jan	1995	Two Project 1241REs ordered by Vietnam
	1995	Molniya promoted in export markets
Apr	2009	Three craft ordered by Libya
	2011	Three ships delivered to Turkmenistan
Jul	2013	Possible Nicaraguan order
Jul	2015	One ex-Russian ship purchased by Egypt

Worldwide Distribution/Inventories

Bulgaria	One missile boat and two ASW types left in service
Cuba	One ASW version
Egypt	One Project 1242.1
India	12 missile-boat types and four ASW versions
Nicaragua	Two or three reported transferred from Russia
Romania	Three
Russia	20 missile types and 19 ASW versions, all of the latter being border patrol craft
Turkmenistan	Three Project 1241.8
Ukraine	Numbers uncertain due to Russian annexation of Crimea and seizure of Sevastopol
Vietnam	Eight completed
Yemen	One in service

Forecast Rationale

The sales that became public in 2015 all suggest that Russian exports of Project 1241-class corvettes will exploit ships that have been in Russian service but have been decommissioned. The Project 1242.1-class corvette that was sold to Egypt certainly falls into this category; the corvette in question was the lead ship in a proposed class that never proceeded beyond the experimental stage, and her career in Russian service was a long series of attempts to find someone who would buy the ship.

The sale of three ships to Turkmenistan is interesting for a different reason. Looking at the timing of the sales and the ships involved makes a strong case that these were the three ships ordered by Libya. Immediately after the order was received, three suitable corvettes were withdrawn from the Russian fleet and work started on modernizing them for their new owner. Then the Libyan regime collapsed, the sale fell through, and three corvettes were apparently sold at bargain-basement prices to Turkmenistan.

The remaining outlet for the Project 1241 at this time appears to be the reported purchase of ships of this class for the Nicaraguan Navy. In 2016, it was reported that the Russians offered the Nicaraguans two or possibly three ships from their own stocks. This would fit the pattern established by other recent sales. The fact that three ships of this class were withdrawn from Russian service this year supports that. Another possibility is that the Russians, having captured two Project 1241s from Ukraine, have generously donated those captured ships to Nicaragua.

A final factor that needs consideration is that the present conflict with Ukraine has cut off supplies of marine gas turbines to Russia. This is having a major impact on naval construction in Russia and it is probable that any gas turbines that are available have been earmarked for Russian naval construction. This is a further indicator that new construction of the Project 1241 class has ceased. Moreover, it is growing increasingly unlikely it will restart when the gas turbine embargo is lifted.

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