



## Programmes Analysis

# **Current Romanian Navy's requirement for a modern force**

## OVERVIEW

The Romanian Navy (RN) is seeking to upgrade its naval forces, as it feels the need to protect more of its coastlines and territorial waters with versatile corvettes, in order to maintain its influence in the region such as its exclusive economic zone (EEZ), its missions for the North Atlantic Treaty Organization (NATO), and in international peacekeeping and humanitarian operations as outlined in Romanian White paper of Defence 2006.

Romania is pursuing a dual track of upgrading the two Broadsword (Type 22) class frigates (acquired from the UK in 2004) and acquiring four new multi-role corvettes to replace its FF Tetal and FF Tetal Improved.

In addition, Romania's Defence Minister announced recently plans for three submarines to be built locally. This modernisation programme intends to take effect in 2020, and appears to be quite ambitious due to financial restrictions and limited competencies. For example, the Romanian Navy owns only a single SS Kilo Type-887 which has been inactive since 1997, and its SS Delfinul has been used for training courses at the Romanian Naval Academy, Mircea Cel Batran.

## COASTAL BATTERIES

### Coastal batteries to be signed in 2018

The Romanian Ministry of Defense has declared it was time to receive a government decision about the Coastal Batteries Programme.

This project aims to provide the Romanian armed forces with three new coastal Anti-Ship Missile Systems to replace the old Soviet P-15 Termit. The acquisition contract for the Mobile Missile Launchers Systems (SIML) has an estimated value of €137 million (VAT excluded), and should be budgeted between 2018 and 2023. The Defence Minister Mihai Fifor wishes the contract to be signed by the end of this year. The system is to be deployed in the Black Sea under the Romanian Navy's control.

Once the government has given the green light, the MoD shall start the bidding process and direct negotiations, with preference for NATO or EU manufacturers, whose system has been delivered at least once in the past five years.

In addition, the Romanian State has declared selective criteria concerning the manufacturing, maintenance, components integration, and future modernisation. These activities must be located in Romania, and to be manufactured by a majority Romanian State share-owned local operator. Finally, the Romanian State is also seeking for a minimum level of technology transfer.

Regarding these specifications, four candidates are up to the job. The following table underneath displays the potential missile manufacturers, systems, and utility for the future Corvettes.

**Table 1: List of potential SIML system suppliers**

Potential Suppliers	Country	Missile System	Office in Romania	Compatibility with shipbuilder's design	Compatibility with CMS
<b>MBDA</b>	Europe	Exocet MM40 Block 3	No	Fincantieri	Leonardo (CMS IPN-3)
				Naval Group	Naval Group (CMS Setis)
				Damen	Thales (CMS Tacticos)
<b>Boeing</b>	USA	Harpoon Block II+ ER	No	Damen	Thales (CMS Tacticos)
				TKMS	Atlas Elektronik (CMS ANCS)
					Thales (CMS Tacticos)
<b>Saab / Diehl</b>	Sweden, Germany	RBS15 Mk-3	Yes	TKMS	Thales (CMS Tacticos)
				Damen	
<b>Kongsberg / Raytheon</b>	Norway, USA	Naval Strike Missile (NSM)	No	Naval Group	Naval Group (CMS Setis)

**Source: OIDA Strategic Intelligence**

This contract will have a huge impact on the Romanian armed forces, as the MoD has planned to take advantage of this programme by arming not only the country's future multi-role Corvettes, but also the Broadsword Type-22 Class Frigates with the same anti-ship missile system as the SIML for logistical and cost savings reasons.

The Romanian coastal anti-ship missile systems are currently based upon the old Soviet P-15 Termit missiles, and as a result, its integration capabilities with other navy assets will be a determining criterion, notably for the four new Corvettes.

Regarding the high value contracts (€137 million for the SIML, and €1.6 billion for the ships acquisition & modernization), the stakes for competition are great. Subsequently, the Swedish company Saab has opened an office in Romania earlier this year in order to improve its odds of being awarded the Naval contract, and for other future prospects in the civil sector.

<b>Table 2: Missile Technical Specifications</b>				
<b>Program Characteristics</b>	<b>MBDA MM-40 Exocet Block-3</b>	<b>Boeing Harpoon Block-2</b>	<b>Kongsberg NSM</b>	<b>SAAB - Diehl BGT RBS-15 Mk-3</b>
<b>Target – Anti-ships</b>	Medium Large	Medium Large	Medium Large	Medium Large
<b>Status</b>	In service (2010)	In service (2002)	In service (2010)	In service (2008)
<b>System cost</b>	€1.5 million	\$1.2 million	-	€2.166 million
<b>Physical Characteristics</b>				
<b>Length</b>	5.95 m	4.63 m (booster incl.) 3.84 m (without booster)	3.96 m (booster included)	4.35 m
<b>Diameter</b>	350 mm (1.13 m wings spread)	340 mm (830 mm wings spread)	690 mm	500 mm (1.4 m wings spread)
<b>Total weight</b>	780 kg (booster included) 540 kg (without booster)	690 kg	407 kg (booster included) 344 kg (without booster)	800 kg (booster included) 630 kg (without booster)
<b>Kinematic Characteristics</b>				
<b>Maximum range</b>	200 km	124 km (67 nm)	200 km	> 200 km (even 250 km)
<b>Maximum speed</b>	Mach 0.9	Mach 0.85	Mach 0.95	Mach 0.9
<b>Cruise altitude</b>	30 m 2 to 5 m at final stage	-	10 to 15 m (14,000 m in mode HI-LO) 5m at final stage	< 30 m 1m at final stage
<b>Attack trajectory</b>	Sea skimming + Waypoints	Sea skimming	Sea skimming	Sea skimming, Multiple 3D waypoints (25 points)
<b>Navigation</b>				
<b>Seeker type</b>	Active Electromagnetic (Super ADAC J Band)	Active Electromagnetic	Passive IR	Active Electromagnetic
<b>Guiding type</b>	Inertial guidance, GPS, electromagnetic at final stage	Fire and forget, Inertial guidance, GPS, electromagnetic at final stage	Inertial guidance, IR	Inertial guidance, GPS, mid-course update, active at final stage
<b>Data link</b>	<input checked="" type="checkbox"/> Ascending <input type="checkbox"/> Descending	<input checked="" type="checkbox"/> Ascending <input type="checkbox"/> Descending	<input checked="" type="checkbox"/> Ascending <input checked="" type="checkbox"/> Descending	<input checked="" type="checkbox"/> Ascending <input type="checkbox"/> Descending
<b>Military load</b>				
<b>Type</b>	Pre-fragmentation HE RDX	Impact or proximity, penetration and blast effect	Semi-piercing	Semi penetrating HE with fragmentation
<b>Weight</b>	165 kg	227 kg	120 kg	200 kg
<b>Propulsion</b>				
<b>Core</b>	Turboreactor (Microturbo TR-40/263)	Turboreactor	Turboreactor (Microturbo TRI 40)	Turboreactor (Microturbo TRI 60-2 Model 077)
<b>Booster</b>	Solid Propulsion (Roxel France)	Solid Propulsion	Solid Propulsion (2x33kg) with JP8 or JP10 fuel	Solid Propulsion (x2) (Atlantic Research Corporation)

Source: OIDA Strategic Intelligence

## MULTIFUNCTIONAL CORVETTES

### The multifunctional Corvette programme enters its final stage, and the competition is looking fierce

The initial programme was originally awarded in 2016 to Damen (including four Sigma Class Corvettes) by the former PM Dacian Cioloş' government, but was however revoked by the new Romanian government and the Constitutional Court due to its non-compliance with the legislative law.

The Corvette acquisition programme was relaunched by the new Grindeanu government for four « Multifunctional Corvettes », and the upgrade of its two Broadword Type-22 Class Frigates acquired from the United Kingdom in 2004. This programme is under strict conditions and terms to tender:

- The ships must be manufactured in Romania - either in a shipyard located in the Black Sea and/or on the Danube river,
- The manufacturers must be of NATO or EU membership,
- First vessel must be delivered in the first three years - the four Corvettes must all be commissioned within a seven-year timeframe,
- Deliveries are scheduled between 2018 and 2024,
- Participant companies must present the amount of 1,000 ton ships which have been produced and delivered over the last 15 years,
- Turnover and solvency indicators must be provided,

Initially, four European companies and a Turkish company competed for this commission. However, only the four European companies, Damen, Fincantieri, Naval Group, and TKMS remain in the race.

Company	Country	Presence in Romania	Corvette type
<b>Damen</b>	Netherland	Owens a shipyard in Galati and bought recently 49% of Mangalia shipyards.	Sigma 10514
<b>Fincantieri</b>	Italy	Owens Vard Braila and Vard Tulcea shipyards	Abu Dhabi Enhanced
<b>Naval Group</b>	France	Partners with Constanta Shipyard (SNC).	Gowind 2500
<b>TKMS</b>	Germany	Local partner inknown	K130 Braunschweig
<b>Source: Annual Reports, Company Website, Primary and Secondary Research</b>			<b>OIDA Strategic Intelligence</b>

The procurement has been divided into three stages: qualification, dialog and evaluation of the submitted offers. The qualification stage took place over a period of 56 calendar days following the publication date of the call for participation, according to the documentation, which was dated Feb. 26, 2018. The stage of evaluation of final offers will end in October 2018. We should remind the parliament already validated the program in February 2018.

The total cost of the program is estimated at €1.6 billion, and includes the acquisition of ammunition (not the helicopter), initial logistic support, crew training, site collaboration (training center), offset agreements.

According to the Defence Minister Mihai Fifor, the offset agreement which will accompany the acquisition programme, will be used to upgrade the Broadword Type-22 class Frigates (estimated at €220 million), and Corvette maintenance. The upgrade program will also take place in Romania.

As the Romanian Navy is seeking to integrate its new ships into their existing fleet, the RN will very likely choose the same type of anti-ship missiles for the Corvette and the Anti Coastal Batteries.

The battle between ship makers is harsh as the French, the Italians, and the Dutch, are massively lobbying through their respective embassies.

**Damen** recently bought 49% of Daewoo Mangalia Heavy Industries from Daewoo Shipbuilding & Marine Engineering (DSME) which has increased Damen's chances of success. In fact, Damen bought 51% of the capital but had to divest 2% to the Romanian State which exercised its preemptive rights. The shipyard was in trouble as its former shareholder Daewoo was having financial difficulties. Since the government acquired a part of Mangalia Heavy Industries, strong ambitions for the company have been heard, and intends it to become one of the most important shipyards in the Black Sea. Currently, it employs directly and indirectly over 6,800 people.

**Fincantieri** joined the competition with a large advantage: Romanians make up more than 25% of Fincantieri's total workforce. The company's Vard subsidiary manufactures cruise and luxury ships, but has the capacities to accommodate military shipbuilding (in Brăila and Tulcea), especially as it would imply a long-term commitment. Fincantieri has already invested €150 million in these shipyards - they can be considered today as some of the most modern shipyards in Europe.

Fincantieri has unveiled an updated version of its Abu Dhabi Corvette in order to align with the Romanian's criteria: 100 metres in length, and over 2,000 tons in weight with a non-retractable hangar, allowing more autonomy and UAV operations. Regarding weaponry, Fincantieri, stated that it is open to work with other manufacturers, not only MBDA. The new Corvette must be equipped with a hull mounted sonar as well as a towed array sonar.

The anti-ship missile launcher will most likely be moved behind the mast, and also equipped with a vertical launch system (different from the originally installed anti-ship launcher).

If Fincantieri is awarded the contract, the company will divide the workload between the two sites with only Romanian companies. Finally, Fincantieri's commitment to Romania can be perceived through its actions, such as it recently announced it was awarded an international contract, which would necessitate the work of Romanians.

**Naval Group** recently partnered with the Romanian Constanta Shipyard to deliver the four corvettes. If Naval Group is awarded the contract, the Corvettes will be manufactured in Romania under a Transfer Of Technology agreement. The future Corvettes will be like the Egyptian Navy's Corvettes as they meet the Romanian's technical expectations. The French company reported it is ready to perform a full transfer of technology in order for the Romanian shipyard to ensure the maintenance of all its ships. The Romanian Constanta Shipyard is apparently ready to manufacture military vessels. The corvette made by Naval Group can be equipped with VL Mica missiles (from MBDA), even though the company is ready also to work with other companies to meet Romanian Navy requirements.

**TKMS** has probably offered an adjustable solution as its hangar is too small for standard helicopters (10-tonne-class rotorcraft).

Damen appears to be leading the acquisition process:

- From a strategic point of view, it already owns a shipyard in Romania and has recently acquired Daewoo Mangalia Heavy Industries,
- From a technical point of view, Damen's Sigma Class Corvettes have the highest autonomy and the top speed among the four competitors, and is among one of the heaviest Corvettes with the Gowind 2500 in the industry. This is a major criterion for the Romanian Navy as it is looking for a large Corvette to ensure the safety in an increasingly coveted Russian Black Sea,

The K130 Corvette offered by the German company TKMS will most likely fail as it currently lacks a proper aircraft hangar (currently too small for the 10-tonne-class rotorcraft) and cannot be actually manufactured in Romania as no agreement has been signed with any local shipyards.

**Table 4: The Corvette's Technical Specifications (Part 1)**

Type	FSG	FSG
Class	<b>Gowind 2500</b> 	<b>Sigma 10514 PKR</b> 
Cost/unit	€248 million	\$220 million
Contractor	Naval Group	Damen Schelde Naval Shipbuilding
Shipyard in Romania	Romania Constanta Shipyard	Galati Shipyard
<b>Global Features:</b>		
- Displacement, tons:	2,600 tpc	2,365 tpc
- Dimensions, metres:	102 x 16 x 5.4	105 x 14
- Crew	65 (+15)	120
- Helicopters spots	1	1
- Hangar aircrafts	1	1
- Speed, knots:	25+	28
- Autonomy:	3,700nm @ 15 kn	5,000 nm @ 14 kn
<b>Main Machinery:</b>		
- Scheme	CODAD	CODOE
- Diesel engines	2 MTU 20V x 10,000 kW	2 x 10,000 kW MCR + 2 x 1300 kW CPP
- Diesel engines generator	-	6 x 735 kW (CAT C-32A)
- Electric engines	-	2 x 1,300 kW MCRO
<b>Military Lift</b>		
- Helicopters	IAR 330	IAR 330
- UAV / VTOL	Yes	Yes
<b>Sensors and Processing Systems</b>		
Combat Data Systems		
Combat Management Systems (CMS)	Setis (Naval Group) / TACTICOS (Thales)	TACTICOS (Thales)
Integrated Platform Management System (IPMS)	-	Yes (Damen)
Radars		
Long-range air search	SMART-S Mk2 (Thales)	SMART-S Mk2 (Thales)
Navigation	Sharpeye (Kelvin Hughes)	-
Fire control	STIR 1.2 Mk2 EO (Thales)	STIR 1.2 Mk2 EO (Thales)
Others		
Hull-mounted Sonar	UMS 4132 Kingklip (Thales)	UMS 4132 Kingklip (Thales)
Towed-array Sonar	CAPTAS UMS – 4229 (Thales)	CAPTAS UMS – 4229 (Thales)
Armament and Countermeasures		
Missiles	8 MM40 Exocet Block 3 (MBDA) / NSM (Kongsberg)	2 x 4 MM40 Exocet Block 3 (MBDA) / Harpoon Block II+ ER (Boeing) / RBS-15 MK3 (Saab)
Missiles	16 x VL-Mica (MBDA)	12 x VL-Mica (MBDA)
Guns	1x 76mm cannon (Leonardo)	1x 76mm (Leonardo)
Guns	2x Narwhal 20mm cannon (Nexter)	1x Millenium 35 mm CIWS (Rheinmetall)
Torpedoes	2 x triple Launcher for MU-90 Impact (Eurotorp)	2 x triple Launcher B515 for MU-90 Impact (Eurotorp)
Decoys	Sylena Mk-2 Launcher (Etienne Lacroix)	2x ESM; 2x ECM

**Source: OIDA Strategic Intelligence**

**Table 5: The Corvette's Technical Specifications (Part 2)**

Type	FSG	FSG
Class	<i>Abu Dhabi Enhanced</i>	<i>K130 Braunschweig</i>
		
Cost/unit	€120 million	€242 million
Contractor	Fincantieri	TKMS
Shipyard in Romania	Vard Braila and Vard Tulcea shipyards	-
<b>Global Features:</b>		
- Displacement, tons:	> 2000 tpc	1,914 tpc (need to be increased)
- Dimensions, metres:	Probably between 100-105	88.8 x 13.2 (need to be increased)
- Crew	70	66
- Helicopters spots	1	1
- Hangar aircrafts	Fixed	Envisaged
- Speed, knots:	25+	26
- Autonomy:	3,000nm @ 14 kn	4,000nm @ 15 kn
<b>Main Machinery:</b>		
- Scheme	-	-
- Diesel engines	2 x 7,000 kW	2 x 7400 kW MTU 20V 1163 TB 93
- Diesel engines generator	-	-
- Electric engines	-	-
<b>Military Lift</b>		
- Helicopters	IAR 330	IAR 330
- UAV / VTOL	Yes	Yes
<b>Sensors and Processing Systems</b>		
Combat Data Systems		
Combat Management Systems (CMS)	IPN-3 (Leonardo)	ANCS (Atlas Elektronik) / TACTICOS (Thales)
Integrated Platform Management System (IPMS)	-	-
Radars		
Long-range air search	Kronos (Leonardo Selex)	TRS-3D/16 (Hensoldt)
Navigation	-	Pathfinder ST Mk2 (Raytheon)
Fire control	RTN-30X (NA-30S Dardo-E FCS) (Leonardo Selex)	TRS-3D/16 (Hensoldt)
Others		
Hull-mounted Sonar	WASS SNA 2000 (Leonardo)	ASO 713 (Atlas Elektronik)
Towed-array Sonar	CAPTAS UMS - 4320 (Thales)	ACTAS (Atlas Elektronik)
Armament and Countermeasures		
Missiles	4 x MM40 Exocet Block 3 (MBDA)	4 x RBS-15 MK3 SSM (Saab) / Harpoon Block II+ ER (Boeing)
Missiles	-	2 x RIM 116 RAM 21 cell Mk 49 (Raytheon)
Guns	1 x 76/62 mm (Leonardo)	1 x 76mm (Leonardo)
Guns	2 x Marlin 30mm (Leonardo)	2 x 27mm (Mauser)
Guns	2 x 12.7 machine guns	-
Torpedoes	4 x 324mm tubes for MU-90 Impact (Eurotorp)	MU-90 Impact (Eurotorp)
Decoys	-	-

**Source: OIDA Strategic Intelligence**



# SUBMARINES

## Romania paves the way for new submarines

Romania has a strong geo-strategic maritime position as more than 38% of the Danube flows through its borders, and 245km of coastal zone along the Black Sea. Unsurprisingly, the Romanian Naval Force is the most advanced sector among the three Romanian armed forces. The Romanian Defense Minister recently suggested the country could acquire three new submarines.

The Defense Minister Mihai Fifor presented his plans to accord the Romanian Navy with three new submarines. The medium-long term programme, which could start as soon as 2020, is currently being assessed by the Navy, and remains in the first stages. Indeed, the technical analysis has not been concluded, neither has it been approved by Parliament officials. Romanian officials and military officers are still discussing the needed type of submarine. French, Germans and Swedish manufacturers are among the potential suppliers for the materials.

The Defense Minister Mihai Fifor stated the program will be executed in a competitive way and everything will be done to serve Romanian interests. Consequently, Romania will install offsets as well as supervising the manufacturing of these submarines in the country. For the moment, the value of the planned purchase has not been disclosed.

Shipbuilder	Submarine class
Naval Group	Scorpène compact
Naval Group	Scorpène basic
Saab Kockums	A26
TKMS	U209
TKMS	U214

Source: Annual Reports, Company Website, Primary and Secondary Research OIDA Strategic Intelligence

These submarines are aimed to replace Romania’s only submarine, the SS Delfinul (Kilo project 877E). The submarine was put on hold in 1997 due to battery maintenance, and has been inactive since. It is currently based at the Romanian Naval Academy for training purposes.

This change has to be put into context, and must be perceived as Romania’s willingness to dedicate this year’s Naval acquisitions. However, financing could only be allocated between 2018 and 2026. The Minister Mihai Fifor outlined the need to modernize the Navy in order to turn Romania into a major player in the Black Sea, where challenges are increasing, notably due to a wider Russian presence. In addition, Russia has already increased its presence within the Ukrainian Exclusive Economic Zone (EEZ). The new submarines would in fact serve this purpose by reinforcing its operational capabilities.

Romania has already decided to buy four new multifunctional Corvettes for €1.6 billion which will cut further funding for material acquisition.

Country	Submarine Class	Number	Status
<b>Bulgaria</b>	SSS Romeo (project 633)	0	Decommissioned in 2008
<b>Romania</b>	SS Kilo (project 877E)	1	Out of Service – Used for Training purposes
<b>Russia</b>	SSK Kilo (projet 877)	1	Active
	SSK Kilo (project 636.3)	6	Active
<b>Turkey</b>	SSK Atılay (Type 209/1200)	4	Active
	SS Preveze (Type 209/1400)	4	Active
	SS Gur (Type 209/1400 mod)	4	Active
<b>Ukraine</b>	SS Foxtrot (project 641)	1	Seized by Russia

Source: OIDA Strategic Intelligence

Behind this increasing worrying presence in the Black Sea, lurks the ambition of various States to seize and exploit natural resources, especially gas and oil. Exxon and OMV Petrom recently estimated a specific region of the Black Sea to contain 100 billion cubic metres of gas. Furthermore, the Russian company Lukoil confirmed another 30 billion cubic metres in another nearby region. According to official data, Romania seems to be the most active player in terms of exploration. This situation seemingly justifies Romania's actions to secure its EEZ by upgrading its naval capabilities.

Country	Exploration zone	Entitled company
<b>Bulgaria</b>	Han Asparuh 1-21	Total, Repsol, OMV
<b>Romania</b>	XIII Pelican + XV Midia	Black Sea Oil & Gas
	XIX Neptune	OMV Petrom, EXXON
	XVIII Histria	OMV Petrom
	25 Luceafărul	Black Sea Oil & Gas, Petro Ventures Europe
	27 Muridava	Petromar Resources BV
	28 Cobalcescu	Petromar Resources BV
<b>Russia</b>	30 Trident	Lukoil Overseas
	Maria-1	Eni, Rosneft
<b>Ukraine</b>	Kiliya-Zmiiny, Krylovsky	Iskatel (Vessel)

Source: Annual Reports, Company Website, Primary and Secondary Research OIDA Strategic Intelligence

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