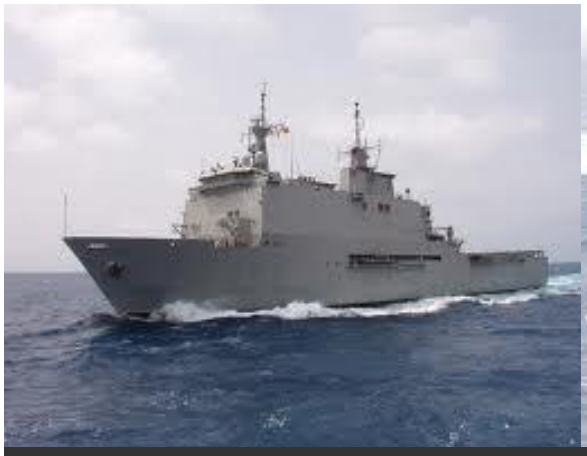
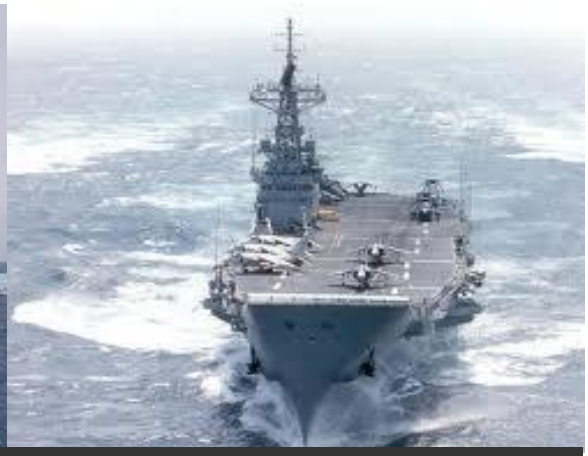
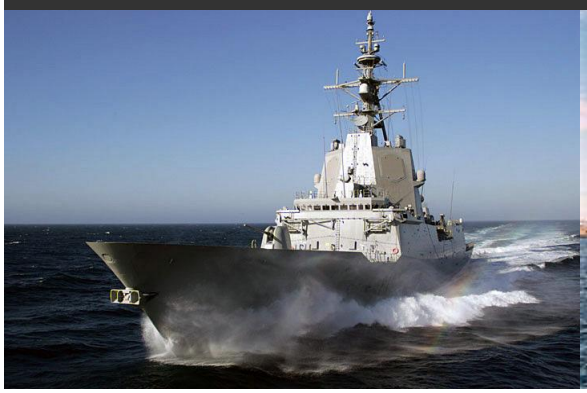
28 February - 10 March 2011

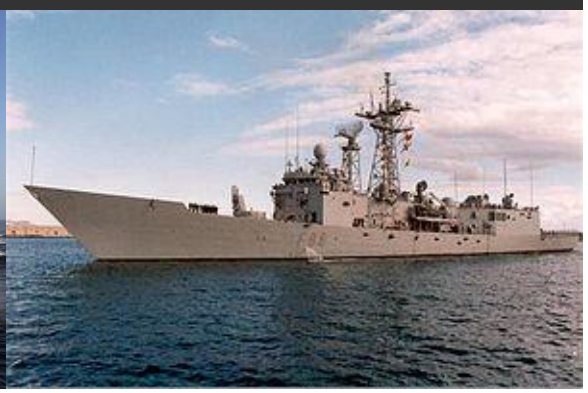




NOBLE MARINER 2011

Train maritime and expeditionary forces of the NATO Response Force (NRF 17) and certify their level of preparation





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Background Information

Aim of the exercise: To train maritime and expeditionary forces of the NATO Response Force (NRF 17) and certify their level of preparation.

Date of exercise: 28 February - 10 March 2011

Personnel and assets: 11 nations compose the NRF 17: Belgium, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, Spain, United Kingdom, United States of America.

- 3,500 personnel
- 21 ships
- 4 submarines
- 4 MPAs and Spanish Aircrafts 9th Squadron

Scenario of the exercise: The security situation in East Cérasia has deteriorated dramatically in recent months, with the growing political tensions between Stellaria and Tytan continuing to threaten international peace and security.

The humanitarian situation also continues to deteriorate, with recent increases in attacks on aid convoys and acts of piracy. There is also increasing evidence of illegal weapons flowing into the region.

On 13 December 2010 the UN issued UNSCR 5189, condemning Stellarian violations against Tytan and asked NATO to send reinforcements to enable a return to peace and stability in the area. The NRF Commander has been entrusted with the deployment of an air and sea military force in order to restore stability in the area of crisis, contain the situation, seek stabilization and prevent any further escalation

Objective of the force : Restore peace, security and stability in the area.

Under COMSPMARFOR's command, the air and sea component will deploy to control the maritime space; secure maritime communication channels (SLOCs) to permit freedom of navigation and movement; help to promote stability in the region; deter any aggressors to Tytan by show of force; limit the illegal interference with international trade and the supply of Humanitarian Aid (HA); reduce the impact of piracy along SLOCS and, finally, set conditions for effective handover of responsibilities to Follow-On Forces.

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NOBLE MARINER 11

Organization of the maritime force

Spain (ESPS)
Belgium (BNS)
Italy (ITS)
United States (USS)
Portugal (NRP)
Netherlands (HNLMS)
France (FS)
Norway (HMNOS)
United Kingdom (HMS)
Poland (ORP)
Germany (FGS)

Commander of the Maritime Force

Admiral commanding the Spanish Air-and-Sea Rapid Reaction Force

- ESPS CASTILLA

AMPHIBIOUS FORCE

- **ESPS CASTILLA**
- ESPS PIZARRO

MARITIME

- **ITS ETNA (Flag SNMG1)**
- **FGS LUBECK**
- **ESPS NAVARRA**
- **ESPS VICTORIA**
- **ESPS ALVARO DE BAZAN**
- **FNS TOUVILLE**
- **FGS BRANDENBURG**
- **FGS RHEINLAND PHALZ**
- **NRP CORTE REAL**
- **NRP D.FRANCISCO DE ALMEIDA**
- **ESPS MARQUES DE LA ENSENADA**

MINE WAFARE

- **ORP ADM CZERNICKI (Flag SNMCMG1)**
- **FNS NARCIS**
- **FGS DATTELN**
- **HMS BROCKELSBY**
- **HNLMS HAARLEM**

CARRIER

- ESPS PRINCIPE DE ASTURIAS.
-AIRWING 9th Squadron

SUBMARINES GROUP

- FNS SAPHIR
- ITS LONGOBARDO
- NRP TRIDENTE
- SP SSK TRAMONTANA

MARITIME PATROL AIRCRAFT

- 1 US P3C
- 1 FR MPA
- 1 NO MPA
- 1 SP MPA

UNDERWAY REPLEN GROUP

- **FGS BERLIN**
- USS KANOWA

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PARTICIPATING FORCES BY COUNTRY

Country	Ships	Submarines	Aircraft	
Belgium	**BNS Narcis** - Mine hunter			
France	**FNS Tourville**	**FNS Shafire**	**MPA**	
Germany	FGS **Brandenburg** - Frigate FGS **Lubeck** – Frigate FGS **Rheinland PFalz** - Frigate FGS **Berlin** – Auxilary FGS **Datteln** - MCM			
Italy	ITS **Etna** – AOR	**SSK Longobardo**		
Netherlands	HNLMS **Haarlem** – MCM			
Norway			**MPA**	
Poland	ORP **Admiral Czernicki** – MCM			
Portugal	NRP **Corte Real** - Frigate NRP **D.Francisco de Almeida** - Frigate	**SSK Tridente**		
Spain	SPS **Principe de Asturias** - Carrier SPS **Castilla** – Command Ship SPS **Pizarro** – Amphibious unit SPS **Navarra -** Frigate SPS **Victoria** - Frigate SPS **Alvaro de Bazan** - Frigate SPS **MD Ensenada –** Replenishment	**SP Tramontana**	**MPA+ 9th Squadron**	
United Kingdom	HMS **Brockelsby** - MCM			
United States of America	USS **Kanowa** – AOR		**MPA**	NCAGS **Staff** METOC **Staff**
Total	**21**	**4**	**4**	

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NATO Response Force (NRF)

CHRONOLOGY

The launching of Nato Response Force (NRF) was decided at the Prague Summit in November 2002. The NRF Concept was endorsed in April 2003.

In July 2009, the structures and size of the NRF underwent major changes.

In operations pertaining to article 5 (collective defense) or in non-article 5 crisis response operations (such as evacuation operations and disaster consequence management support, including chemical, biological, radiological and nuclear events), the objective of the NRF is to provide:

- A deployable joint support element (DJSE) manned with about 210 highly trained, specific personnel, ready to intervene within 48 hours.
- An Immediate Response Force (IRF) that can number up to 13,000 personnel.
- Supplementary teams - Response Force Pools (RFP), when required.

The HRF (M) HQ will be able to operate as an Allied Joint Force Maritime Component Commander (AJFMCC) throughout the entire mission spectrum, including high intensity combat operations in any physical environment, in accordance with NATO procedures; that is commanding maritime operations at the NATO Task Force level.

Following HRF (M) HQ capabilities must be performed when its Full Operational capability is achieved:

- Deployable throughout Alliance and beyond within the agreed time frame.
- Assure availability for Article 5 operations. For non-Article 5 operations, HRF (M) HQ will be available upon NAC agreement. It will also be available for training, operational planning and evaluation.
- Sufficient integrated, effective and interoperable C2 and CIS capabilities to conduct operations involving a wide variety of forces including Partner and non-NATO nations.
- Employable Alliance-wide and beyond as an AJFMCC HQ, regardless of its peacetime location.
- Able to deploy, operate and re-deploy in autonomy from Host Nation Support.
- It will have the necessary support to both protect and sustain itself.
- Open to the participation of Allies, if they so choose.
- Fully interoperable and NATO agreed doctrine and training procedures and standards are to be applied.
- It will have an adequate liaison organization and/or guaranteed access to an adequate C2 interface with other AJFCC.

The peacetime location of HRF (M) HQ will support efficient and cost-effective preparation and training.

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The Spanish Maritime High Readiness Force (HRF-(M)

The Spanish Maritime High Readiness Force was launched in 2003, within the framework of Spain's participation in the NRF. Commanded by COMSPMARFOR, it is identified as SPMARFOR by analogy with its allied equivalents, namely UKMARFOR (UK), ITMARFOR (Italy), FRMARFOR (France) and also STRIKEFORNATO, NATO's US-led HQs in Naples.

Within the NATO Force Structure Review process, December 2000, the Military Committee selected the Spanish Maritime proposal. This means that in accordance with the documents and presentation Spain provided the Alliance with, the Spanish offer met with a long list of military criteria. Our compromise with the Alliance was to have all the requirements achieved within two years, by 2003.

NATO requirements for HRF (Maritime) HQ in the Force Structure Review asked for two different things:

One unit to be a Command Ship, and maritime staff to be provided for a Maritime Component Command (MCC), up to directing any kind of Maritime Operations, including Amphibious Operations.

ESPS Castilla has been made available to NATO as a flagship for the SP MCC, and a Maritime Staff has been specifically created to this end.

NATO is clearly the first priority for any envisaged employment of the offered HQ:

No restrictions are to be posed for any Art. 5 Operations, whatsoever: Fully available for non-Art. 5 Crisis Response Operations, upon Nac Agreement.

As a matter of principle, the Spanish Navy assures the availability of the Headquarters and its Platform to the NATO Strategic Commands (SC) for the full spectrum of missions that could be carried out by the Alliance. Furthermore, HQ OPCON is granted for training and exercise purposes.

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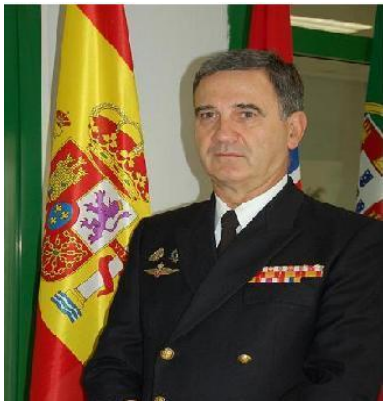
Biography of COMSPMARFOR Vice Admiral Cuadrillero



Vice Admiral Cuadrillero joined the Spanish Navy in 1969 and was commissioned as Lt. Junior Grade in July 1974. After two and a half-year tour of duty onboard "Lepanto" and "Guadalmedina" and on completion of a flight training course, he became a naval aviator in November 1977.

In the following six years he flew SH-3D helicopters in the ASW role, deployed onboard the carrier "Dedalo". In 1984 he returned to ship duties, serving as Chief of Operations and XO onboard "Infanta Elena". He also commanded PB "Grosa" (1986) and auxiliary ships "Cartagena" (1992) and "El Camino Español" (1998).

Ashore VA Cuadrillero provided naval aviation expertise to the Spanish Navy General Staff. In July 1995 he graduated from the Naval War College and was assigned to the Naval Operational Command as Operations Officer, followed by two years as Military Assistant to the Admiral Chief of Naval Operations.

In December 2000 he was promoted to Captain and assigned to the Naval Operational Command as Assistant Chief of Staff ACOS (Operations), followed by the command of the Naval Aircraft Flotilla.

In May 2006 he was promoted to Rear Admiral and appointed to the Spanish Navy General Staff as ACOS Logistics. In September 2008 he obtained his second star and began his tour of duty as Commander Spanish Navy High Readiness Force (SPMARFOR) HQ.

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Presentation of the main ships of the force

FLAGSHIP

CASTILLA L-52

Displacement, tons: 13,815 full load
Dimensions, feet (metres):
524.9 oa; 465.9 pp × 82 × 19.3
(160; 142 × 25 × 5.9)
Flight deck, feet (metres): 196.9 × 82 *(60 × 25)*
Main machinery:
2 Bazán/Caterpillar 3612 diesels; 12,512 hp(m) *(9.2 MW)*; 2 shafts; acbLIPS cp props;
bow thruster 680 hp(m) *(500 kW)*
Speed, knots: 20. **Range, miles:**
6,000 at 12 kts
Complement: 115 plus 12 spare; 179 (L 52)
Military lift: 543 or 404 (L 52) fully equipped troops and 72 (staff and aircrew) 6 LCVP or 4 LCM or 1 LCU and 1 LCVP. 130 APCs or 33 MBTs.
Guns: 1 Bazán 20 mm/120 12-barrelled Meroka [Ref 1];3,600 rds/min combined to 2 km.4 Oerlikon 20 mm.
Countermeasures: Decoys: 4 SRBOC chaff launchers.
ESM: Intercept.
Combat data systems: SICOA (L 52); SATCOM; Link 11.
Radars: Surface search: TRS 3D/16 (L 52) [Ref 2]; E/F-band. Surface search: Kelvin Hughes ARPA [Ref 3]; I-band. Navigation and helo control: I-band.
Helicopters: 6 AB 212 or 4 SH-3D Sea King [Ref 4].
Programmes: Originally started as a national project by the Netherlands. In 1990 the ATS was seen as a possible solution to fulfil the requirements for a new LPD. Joint project definition study announced in July 1991 and completed in December 1993 and the first ship was authorised on 29 July 1994. The second of class ordered 9 May 1997.
Structure: Able to transport a fully equipped battalion of marines providing a built-in dock for landing craft and a helicopter flight deck for debarkation in offshore conditions. Docking well is 885 m^2; vehicle area 1,010 m^2. Access hatch on the port side. Hospital facilities. Built to commercial standards with military command and control and NBCD facilities. Second of class has improved command and control facilities with two operations centres, one for amphibious

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and one for a combat group.
Operational: Alternatively can also be used for a general logistic support for both military and civil operations, including environmental and disaster relief tasks. Based at Rota.

SURFACE

ETNA A-5326 (SNMG1 Flagship)

ETNA CLASS
(REPLENISHMENT TANKER) (AOR)

Displacement, tons: 13,400 full load
Dimensions, feet (metres): 480.6 × 68.9 × 24.3 *(146.5 × 21 × 7.4)*
Flight deck, feet (metres): 91.9 × 68.9 *(28 × 21)*
Main machinery: 2 Sulzer 12 ZAV 40S
diesels; 22,400 hp(m) *(16.46 MW)* sustained; 2 shafts; bow thruster
Speed, knots: 21. **Range, miles:** 7,600 at 18 kt
Complement: 160 plus 83 spare
Cargo capacity: 6,350 tons gas oil; 1,200 tons JP5; 2,100 m3 ammunition and stores
Guns: 1 OTO Melara 76 mm/62. 2 Breda Oerlikon 25 mm/93.
Radars: Surface search: SMA SPS-702(V)3; I-band.
Navigation: GEM SPN-753; I-band.

LÜBECK F-214 (SNMG1)

BREMEN CLASS (TYPE 122) (FFG)
Displacement, tons: 3,680 full load
Dimensions, feet (metres): 426.4 × 47.6 × 21.3 *(130 × 14.5 × 6.5)*
Main machinery: CODOG; 2 GE LM 2500 gas turbines; 51,000 hp *(38 MW)* sustained; 2 MTU 20V 956 TB92 diesels; 11,070 hp(m) *(8.14 MW)* sustained; 2 shafts; cp props
Speed, knots: 30; 20 on diesels.**Range, miles:** 4,000 at 18 kt
Complement: 219 (26 officers)

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Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km *(70 n miles)* at 0.9 Mach; warhead 227 kg.
SAM: 16 Raytheon NATO Sea Sparrow RIM-7M; Mk 29 octuple launcher; semi-active radar homing to 14.6 km *(8 n miles)* at 2.5 Mach; warhead 39 kg.
2 GDC RAM 21 cell; passive IR/anti-radiation homing to 9.6 km *(5.2 n miles)* at 2 Mach; warhead 9.1 kg.
Guns: 1 OTO Melara 3 in *(76 mm)*/62 Mk 75; 85 rds/min to 16 km *(8.6 n miles)* anti-surface; 12 km *(6.5 n miles)* anti-aircraft; weight of shell 6 kg.2 Rheinmetall 20 mm Rh 202, to be replaced by Mauser 27 mm.
Torpedoes: 4-324 mm Mk 32 (2 twin) tubes. 8 Honeywell Mk 46 Mod 2; anti-submarine; active/passive homing to 11 km *(5.9 n miles)* at 40 kt; warhead 44 kg. To be replaced by Eurotorp Mu 90.
Combat data systems: SATIR action data automation; Link 11; Matra Marconi SCOT 1A SATCOM (3 sets for the class).
Weapons control: Signaal WM25/STIR.STN Atlas Elektronic WBA optronic sensor.
Radars: Air/surface search: DASA TRS-3D/32; C-band.
Fire control: Signaal WM25 [Ref 10]; I/J-band. Signaal STIR [Ref 11]; I/J/K-band; range 140 km *(76 n miles)* for 1 m2 target.
Sonars: Atlas Elektronik DSQS-21BZ (BO); hull-mounted; active search and attack; medium frequency.

VICTORIA F-82

SANTA MARÍA CLASS (FFG)
Displacement, tons: 3,610 standard; 3,969 full load
Dimensions, feet (metres): 451.2 × 46.9 × 24.6 *(137.7 × 14.3 × 7.5)*
Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp *(30.59 MW)* sustained; 1 shaft; cp prop
auxiliary retractable props; 650 hp *(484 kW)*

2
Speed, knots: 29. Range, miles: 4,500 at 20 kt
Complement: 223 (13 officers)
Guns: 1 OTO Melara 3 in *(76 mm)*/62; 85 rds/min to 16 km *(8.7 n miles)*; weight of shell 6 kg.
1 Bazán 20 mm/120 12-barrelled Meroka Mod 2A or 2B; 3,600 rds/min combined to 2 km. 2-12.7 mm MGs.
Combat data systems: IPN 10 action data automation; Link 11. SQQ 28 LAMPS III helo datalink. Saturn and SCOT 3 Secomsat fitted.
Weapons control: Loral Mk 92 Mod 2 (Mod 6 with CORT in F 85 and 86). Enosa optronic tracker for Meroka 2B.
Radars: Air search: Raytheon SPS-49(V)5; C/D-band; range 457 km *(250 n miles).*
Surface search: Raytheon SPS-55; I-band.
Navigation: Raytheon 1650/9 or SPS-67; I/J-band.
Fire control: RCA Mk 92 Mod 2/6; I/J-band.

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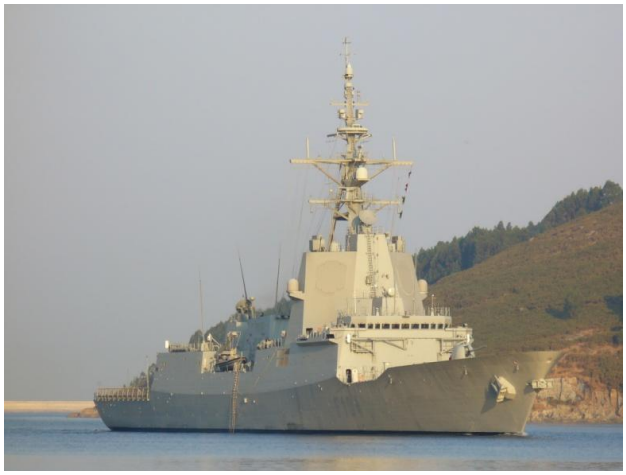
Signaal STING; I/J-band.
Selenia RAN 30L/X (RAN 12L + RAN 30X); I-band (for Meroka). Sperry/Lockheed VPS 2; I-band (for Meroka).
Tacan: URN 25.
Sonars: Raytheon SQS-56 (DE 1160); hull-mounted; active search and attack; medium frequency.
Gould SQR-19(V)2; tactical towed array (TACTASS); passive; very low frequency.

ALVARO DE BAZAN F-102



FRAGATA CLASE "ALVARO DE BAZAN"
Displacement, tons: 5,853 full load
Dimensions, feet (metres): 481.3 oa; 437 pp × 61 × 16.1 *(146.7; 133.2 × 18.6 × 4.9)*
Flight deck, feet (metres): 86.6 × 56 *(26.4 × 17)*
Main machinery: CODOG; 2 GE LM 2500 gas turbines; 47,328 hp(m) *(34.8 MW)* sustained; 2 Bazán/Caterpillar
diesels; 12,240 hp(m) *(9 MW)* sustained; 2 shafts; acbLIPS cp props
Speed, knots: 28. **Range, miles:** 4,500 at 18 kt
Missiles: SSM: 8 Harpoon Block II.
SAM: Mk 41 VLS 32 GDC Standard SM-2MR (Block IIIA); command/inertial guidance; semi-active radar homing to 167 km *(90 n miles)* at 2 Mach. 64 Evolved Sea Sparrow (ESSM) (in quadpacks) in 16 remaining Mk 41 cells.
Guns: 1 FMC 5 in *(127 mm)*/54 Mk 45 Mod 2 (ex-US).
1 Bazán 20 mm/120 Meroka 2B. 2 Oerlikon 20 mm.
Torpedoes: 4-323 mm (2 twin) Mk 32 Mod 5 fixed launchers. 24 torpedoes. Mk 46 Mod 5.
A/S mortars: 2 ABCAS/SSTDS launchers.
Countermeasures: Decoys: 4 SRBOC Mk 36 Mod 2 chaff launchers. SLQ-25A Nixie torpedo decoy.
ESM: Ceselsa Elnath; intercept.
ECM: Ceselsa Aldebaran; jammer.
Radars: Air/surface search: Aegis SPY-1D.
Surface search: DRS SPS-67 (RAN 12S).
Fire control: 2 Raytheon SPG-62 Mk 99 (for SAM).
Sonars: Raytheon DE 1160 LF; hull-mounted; active search and attack; medium frequency.
Possible ATAS active towed sonar.

NAVARRA F-85

SANTA MARÍA CLASS (FFG)
Displacement, tons: 3,610 standard; 3,969 full load
Dimensions, feet (metres): 451.2 × 46.9 × 24.6 *(137.7 × 14.3 × 7.5)*
Main machinery: 2 GE LM 2500 gas turbines; 41,000 hp *(30.59 MW)*

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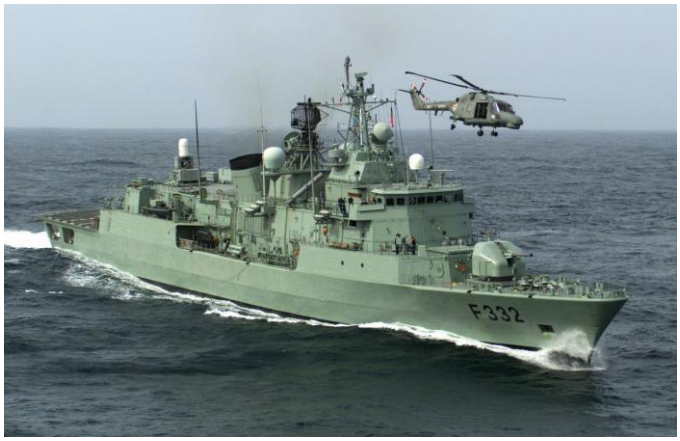
sustained; 1 shaft; cp prop
2 auxiliary retractable props; 650 hp *(484 kW)*
Speed, knots: 29. **Range, miles:** 4,500 at 20 kt
Complement: 223 (13 officers)
Guns: 1 OTO Melara 3 in *(76 mm)*/62; 85 rds/min to 16 km *(8.7 n miles)*; weight of shell 6 kg.
1 Bazán 20 mm/120 12-barrelled Meroka Mod 2A or 2B; 3,600 rds/min combined to 2 km. 2-12.7 mm MGs.
Combat data systems: IPN 10 action data automation; Link 11. SQQ 28 LAMPS III helo datalink. Saturn and SCOT 3 Secomsat fitted.
Weapons control: Loral Mk 92 Mod 2 (Mod 6 with CORT in F 85 and 86). Enosa optronic tracker for Meroka 2B.
Radars: Air search: Raytheon SPS-49(V)5; C/D-band; range 457 km *(250 n miles).*
Surface search: Raytheon SPS-55; I-band.
Navigation: Raytheon 1650/9 or SPS-67; I/J-band.
Fire control: RCA Mk 92 Mod 2/6; I/J-band.
Signaal STING; I/J-band.
Selenia RAN 30L/X (RAN 12L + RAN 30X); I-band (for Meroka). Sperry/Lockheed VPS 2; I-band (for Meroka).
Tacan: URN 25.
Sonars: Raytheon SQS-56 (DE 1160); hull-mounted; active search and attack; medium frequency.
Gould SQR-19(V)2; tactical towed array (TACTASS); passive; very low frequency.

CORTE REAL F-332



Type: Frigate
Displacement: 2,920 tons standard
3,200 tons full load
Length: 115.9 metres (380 ft)
Beam: 14.8 metres (49 ft)
Draught: 6.2 metres (20 ft)
Propulsion: 2 shaft CODOG,
controllable pitch propellers
2 MTU 20V 956 TB92 diesel-engines, 8.14MW
Speed: 32 knots (59 km/h) (gas turbines)
20 knots (37 km/h; 23 mph) (Diesel only)
Range: 4,000 nautical miles (7,400 km; 4,600 mi) at 18 knots (33 km/h; 21 mph)
Complement: 180
19 officers
40 petty-officers
102 enlisted
13 air crew
6 boarding team

Sensors and processing systems:

1 Thales DA08 air search D band radar, 1 Thales MW08 air/surface search F band radar

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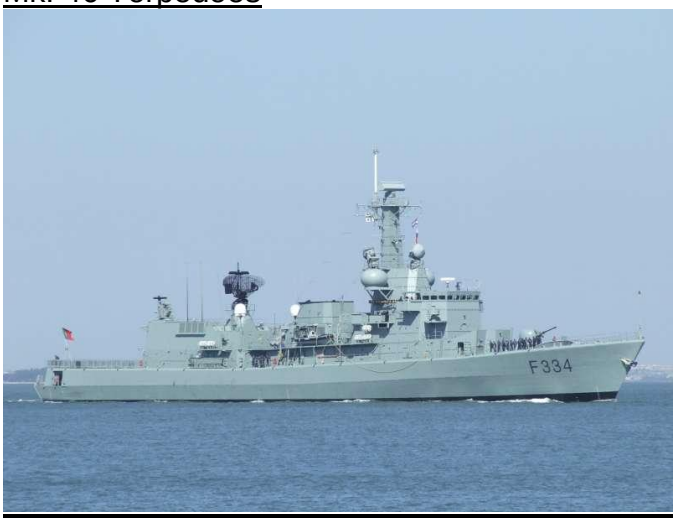
2 Thales STIR 180 fire-control radar, 1 SQS510 hull mounted sonar

Electronic warfare and decoys: 1 APECS II/700 ESM
Countermeasures: SRBOC launcher
Armament: 1 100 mm Mod68 CADAM polyvalent artillery piece1 Phalanx CIWS 20 mm Vulcan anti-ship missile defence system2x3 12.75-inch Mk32 torpedo tubes in triple mountings 2 Mk 141 quad-pack Launcher for a maximum of 8 RGM-84 Harpoon1 MK 21 Guided Missile Launching System for 8 RIM-7 Sea Sparrow
Aviation facilities: Hangar for 2 Super Lynx Mk.95 helicopters

D. FRANCISCO DE ALMEIDA (NRP)

Displacement: 2,800 tonnes **Length:** (feet) 401, Beam 47, Draught 20
Propulsion: 2 Rolls Royce (Spey 1A) 16700 hp (12.45 MW) gas turbines
2 Stork-Werkspoor 4895 hp (3.650 MW) diesel engines.
Speed: Knots 29
Complement : 154
Armament: 1 Oto Melara 76 mm anti-air/anti-surface gun
1 Oerlikon 20 mm light cannon
1 Sea Sparrow Missile Vertical Launch System (VLS)
8 Harpoon Missiles
1 Goalkeeper (point defence guns)
Mk. 46 Torpedoes



BRANDENBURG F-215

BRANDENBURG CLASS (TYPE 123) (FFGHM)
Dimensions, feet (metres): 455.7 oa; 416.3 wl × 54.8 × 22.3 *(138.9; 126.9 × 16.7 × 6.8)*
Main machinery: CODOG; 2 GE 7LM2500SA-ML gas turbines; 51,000 hp *(38 MW)* sustained; 2 MTU 20V 956 TB92 diesels; 11,070 hp(m) *(8.14 MW)* sustained; 2 shafts;

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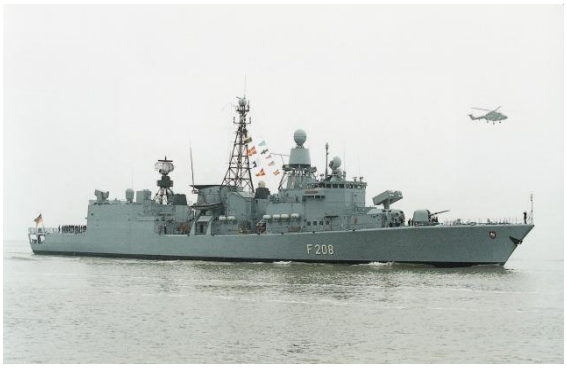
Escher Weiss; cp props
Speed, knots: 29; 18 on diesels. **Range, miles:** 4,000 at 18 kt
Missiles: SSM: 4 Aerospatiale MM 38 Exocet (2 twin) [Ref 1] (from Type 101A); inertial cruise; active radar homing to 42 km *(23 n miles)* at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM: Martin Marietta VLS Mk 41 Mod 3 for 16 NATO Sea Sparrow; semi-active radar homing to 14.6 km *(8 n miles)* at 2.5 Mach; warhead 39 kg.
2 RAM 21 cell Mk 49 launchers; passive IR/anti-radiation homing to 9.6 km *(5.2 n miles)* at 2 Mach; warhead 9.1 kg; 32 missiles.
Guns: 1 OTO Melara 3 in *(76 mm)*/62 Mk 75; 85 rds/min to 16 km *(8.6 n miles)* anti-surface; 12 km *(6.5 n miles)* anti-aircraft; weight of shell 6 kg.
2 Rheinmetall 20 mm Rh 202 to be replaced by Mauser 27 mm.
Torpedoes: 4-324 mm Mk 32 Mod 9 (2 twin) tubes; anti-submarine. Honeywell Mk 46 Mod 2; anti-submarine; active/passive homing to 11 km *(5.9 n miles)* at 40 kt; warhead 44 kg. To be replaced by Eurotorp Mu 90 Impact in due course.
ESM/ECM: TST FL 1800S Stage II; intercept and jammers.
Combat data systems: Atlas Elektronik/Paramax SATIR action data automation with Unisys UYK 43 computer; Link 11.
Radars: Air search: Signaal LW08; D-band.
Air/Surface search: Signaal SMART; 3D; F-band.
Navigation: 2 Raytheon Raypath; I-band.
Sonars: Atlas Elektronik DSQS-23BZ; hull-mounted; active search and attack; medium frequency.

RHEINLAND-PFALZ F-209



BREMEN CLASS (TYPE 122) (FFG)
Displacement, tons: 3,680 full load
Dimensions, feet (metres): 426.4 × 47.6 × 21.3 *(130 × 14.5 × 6.5)*
Main machinery: CODOG; 2 GE LM 2500 gas turbines; 51,000 hp *(38 MW)* sustained; 2 MTU 20V 956 TB92 diesels; 11,070 hp(m) *(8.14 MW)* sustained; 2 shafts; cp props
Speed, knots: 30; 20 on diesels.Range, miles: 4,000 at 18 kt
Complement: 219 (26 officers)
Missiles: SSM: 8 McDonnell Douglas Harpoon (2 quad) launchers; active radar homing to 130 km *(70 n miles)* at 0.9 Mach; warhead 227 kg.
SAM: 16 Raytheon NATO Sea Sparrow RIM-7M; Mk 29 octuple launcher; semi-active radar homing to 14.6 km *(8 n miles)* at 2.5 Mach; warhead 39 kg.
2 GDC RAM 21 cell; passive IR/anti-radiation homing to 9.6 km *(5.2 n miles)* at 2 Mach; warhead 9.1 kg.
Guns: 1 OTO Melara 3 in *(76 mm)*/62 Mk 75; 85 rds/min to 16 km *(8.6 n miles)* anti-surface; 12 km *(6.5 n miles)* anti-aircraft; weight of shell 6 kg.2 Rheinmetall 20 mm Rh 202, to be replaced by Mauser 27 mm.
Torpedoes: 4-324 mm Mk 32 (2 twin) tubes. 8 Honeywell Mk 46 Mod 2; anti-submarine; active/passive homing to 11 km *(5.9 n miles)* at 40 kt; warhead 44 kg. To be replaced by

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Eurotorp Mu 90.
Combat data systems: SATIR action data automation; Link 11; Matra Marconi SCOT 1A SATCOM (3 sets for the class).
Weapons control: Signaal WM25/STIR.STN Atlas Elektronic WBA optronic sensor.
Radars: Air/surface search: DASA TRS-3D/32; C-band.
Fire control: Signaal WM25 [Ref 10]; I/J-band. Signaal STIR [Ref 11]; I/J/K-band; range 140 km *(76 n miles)* for 1 m2 target.
Sonars: Atlas Elektronik DSQS-21BZ (BO); hull-mounted; active search and attack; medium frequency.

TOURVILLE D-610

TOURVILLE CLASS (TYPE F 67) (DDGHM)
Displacement, tons: 4,580 standard; 6,100 full load
Dimensions, feet (metres): 501.6 × 52.4 × 18.7 *(152.8 × 16 × 5.7)*
Speed, knots: 32. Range, miles: 5,000 at 18 kt
Missiles: SSM: 6 Aerospatiale MM 38 Exocet; inertial cruise; active radar homing to 42 km *(23 n miles)* at 0.9 Mach; warhead 165 kg; sea-skimmer.
SAM: Thomson-CSF Crotale Naval EDIR octuple launcher; command line of sight guidance; radar/IR homing to 13 km *(7 n miles)* at 2.4 Mach; warhead 14 kg.
Guns: 2 DCN/Creusot-Loire 3.9 in *(100 mm)*/55 Mod 68 CADAM automatic; dual purpose; 80 rds/min to 17 km *(9 n miles)* anti-surface; 8 km *(4.4 n miles)* anti-aircraft; weight of shell 13.5 kg. 2 Giat 20 mm.
Torpedoes: 2 launchers . 10 ECAN L5; anti-submarine; active/passive homing to 9.5 km *(5.1 n miles)* at 35 kt; warhead 150 kg; depth to 550 m *(1,800 ft)*. Honeywell Mk 46 or Eurotorp Mu 90 Impact torpedoes for helicopters.
Combat data systems: SENIT 3 action data automation; Links 11 and 14. Syracuse 2 SATCOM [Ref 7]. OPSMER command support system. Inmarsat.
Radars: Air search: DRBV 26; D-band; range 182 km *(100 n miles)* for 2 m2 target.
Air/surface search: Thomson-CSF DRBV 51B; G-band; range 29 km *(16 n miles)*.
Navigation: 2 Racal Decca Type 1226; I-band (1 for helicopter control).
Fire control: Thomson-CSF DRBC 32D; I-band.
Crotale; J-band (for SAM).
Sonars: Thomson Sintra DUBV 23; bow-mounted; active search and attack; medium frequency.

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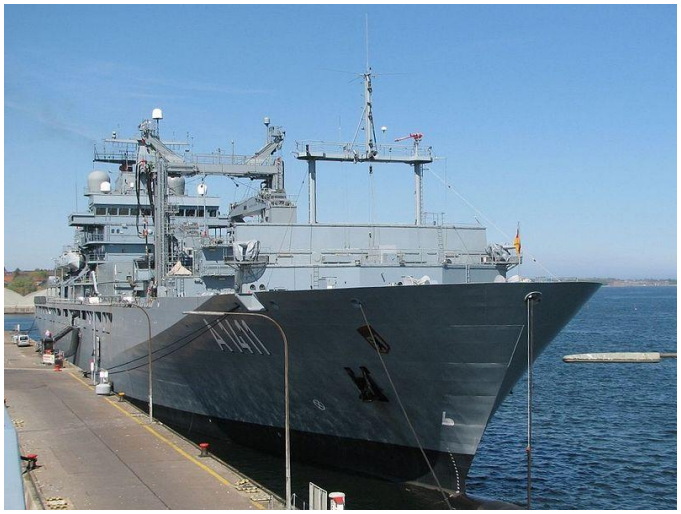
A O R

MARQUES DE LA ENSENADA A-11

Displacement, tons: 13,592 full load
Dimensions, feet (metres): 403.9 oa; 377.3 wl × 64 × 25.9 *(123.1; 115 × 19.5 × 7.9)*
Main machinery: 1 MAN-Bazán 18V40/50A; 11,247 hp(m) *(8.27 MW)* sustained; 1 shaft
Speed, knots: 16.
Range, miles: 10,000 at 15 kt
Complement: 80 (11 officers)
Cargo capacity: 7,498 tons dieso; 1,746 tons JP-5; 120 tons deck cargo
Guns: 2-12.7 mm MGs.
Radars: Surface search: Racal Decca 2459; I/F-band.
Navigation: Racal Decca ARPA 2690/9; I-band.



FGS BERLIN AOR

Displacement: 20,240 tonnes
Dimensions: (feet) length 173, Beam 78, Height 57, draft 24
Main Machinery: 2 Man Diesel 12V 32/40 diesel-engines, 5,340 kW each 2 × reduction gears,
2 × controllable pitch four-bladed propellers
1 × bow thruster 4 x 1200 kW diesel generators
Speed: knots 20

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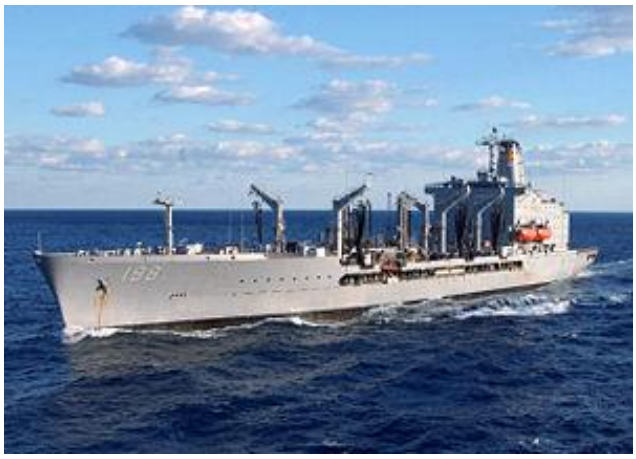
Complement: 139
Armament: 4 × MLG 27 mm autocannons
Stinger surface to air missile (MANPADS



KANAWHA T-AO 196

Displacament tons: 40.700,42.000 (T-A0 201, 203-204) full load
Dimensions. Feet (metres), 677.5 x 97.5 x *36 (206* .5 x 29.7 x*10.9)*
Main Machinery: 2 Colt-Pielstick 10 PC4 2 V 570 diesels. 34422 hp(m) (24 3 MW) sustained.
2 shafts: cp props.
Speed knots 20 **Rango miles** 6000 at 18 kt
Complement 81 civilian (18 officers). 23 naval (1 officer) plus 22 spare
Cargo Capacity: 180.000: 159.500 (T-AO 201 203-204) barrels of fuel oil or avition fuel
Countermeasures Decoys SLQ-25 Nixie: lowed torpedo decoy
Radars: Navigation. 2 Raytheon I band
Helicopters Platform only

CVA

PRÍNCIPE DE ASTURIAS R11

Displacement, tons: 17,188 full load
Dimensions, feet (metres): 642.7 oa; 615.2 pp × 79.7 × 30.8 *(195.9; 187.5 × 24.3 × 9.4)*
Flight deck, feet (metres): 575.1 × 95.1 *(175.3 × 29)*
Main machinery: 2 GE LM 2500 gas turbines; 46,400 hp *(34.61 MW)* sustained; 1 shaft; acbLIPS cp prop; 2 motors; 1,600 hp(m) *(1.18 MW)*; retractable prop
Speed, knots: 25 (4.5 on motors). **Range, miles:** 6,500 at 20 kt
Guns: 4 Bazán Meroka Mod 2A/2B 12-barrelled 20 mm/120 [Ref 1]; 3,600 rds/min combined to 2 km.
2 Rheinmetall 37 mm saluting guns.
Countermeasures: Decoys: 4 Loral Hycor SRBOC 6-barrelled fixed Mk 36; IR flares and chaff to 4 km *(2.2 n miles).*
SLQ-25 Nixie; towed torpedo decoy.

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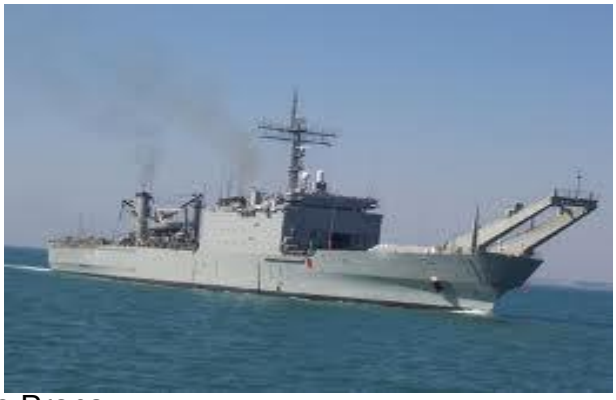
US Prairie/Masker; hull noise/blade rate suppression.
ESM/ECM: Elettronica Nettunel; intercept and jammers.
Combat data systems: Tritan Digital Command and Control System NTDS; Links 11 and 14. Marconi Matra SCOT 3 Secomsat [Ref 2]. SSR-1, WSC-3 (UHF).
Radars: Air search: Hughes SPS-52C/D [Ref 3]; 3D; E/F-band; range 439 km *(240 n miles)*.
Surface search: ISC Cardion SPS-55 [Ref 4]; I/J-band.
Aircraft control: ITT SPN-35A [Ref 5]; J-band.
Fire control: 4 Sperry/Lockheed VPS 2 [Ref 6]; I-band (for Meroka).
RTN 11L/X; I/J-band; missile warning.
Selenia RAN 12L (target designation); I/J-band.
Tacan: URN 25.
Fixed-wing aircraft: 6-12 AV-8B Harrier II/Harrier Plus.

AMPHIBIOUS FORCE

PIZARRO L-42

NEWPORT CLASS



Type: Tank Landing Ship

Displacement: approx. 4,793 tons light loaded, 8,500 tons fully loaded
Length: 522 ft (159 m)
Beam: 70 ft (21 m)
Draft: 17.4 ft (5.3 m)
Propulsion: 6 ALCO diesels (3 per shaft)
16,000 shaft horsepower;
800 hp GE bow thruster.
2 Hydraulically Controlled Variable Pitch Reversible Props and 1 Variable Pitch Bow Thruster
3 ALCO/GE Generators (750 kW, 1201 A each)
Speed: 20+ knots (37+ km/h)
27 knots (50 km/h) confirmed in 1991.
Troops: Marines - approximately 400 including officers and enlisted, when embarked
Complement: Navy - 14 officers, 210 enlisted

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M C M

ADMIRAL CZERNICKI

PROJECT 890 CLASS (LOGISTICS SUPPORT VESSEL)
Displacement, tons: 2,250 full load
Dimensions, feet (metres): 239.3 × 45.3 × 13.4 *(72.9 ×13.8 × 4.1)*
Main machinery: 2 Cegielski-Sulzer AL25D diesels; 2,934 hp(m) *(2.16 MW)* sustained; 2 shafts
Speed, knots: 14.1.
Range, miles: 7,000 at 12 kt
Complement: 38
Military lift: 140 troops with full individual armament or ten 20 ft containers or four 20 ft containers and six STAR 266 army trucks
Missiles: SAM/Guns: 1 ZU 23-2MR Wrobel I/II mounts: combination of 2 Strela 2M (Grail) missiles and 2-23 mm guns.
Countermeasures: Decoys: 4 WNP81/9 9 barrelled 81 mm Jastrzab chaff launchers.
ESM: PIT intercept.
Radars: Surface search: SRN; E/F-band.
Navigation: SRN; I-band.
Helicopters: Platform for 1 helicopter (up to ten ton).

NARCIS M-923

FLOWER CLASS (TRIPARTITE) (MHC)
Displacement, tons: 562 standard; 595 full load
Dimensions, feet (metres): 168.9 × 29.2 × 8.2 *(51.5 × 8.9 × 2.5)*
Main machinery: 1 Stork Wärtsilä A-RUB 215W-12 diesel; 1,860 hp(m) *(1.37 MW)* sustained; 1 shaft; acbLIPS cp prop; 2 motors; 240 hp(m) *(176 kW)*; 2 active rudders; 2 bow thrusters
Speed, knots: 15. **Range, miles:** 3,000 at 12 kts
Complement: 46 (5 officers)
Guns: 1 DCN 20 mm/20; 720 rds/min to 10 km *(5.5 n miles)*. 2-12.7 mm MGs.
Countermeasures: MCM: 2 PAP 104 remote-controlled mine locators; 39 charges.
Mechanical sweep gear (medium depth).
Radars: Navigation: Racal Decca 1229; I-band.
Sonars: Thomson Sintra DUBM 21B; hull-mounted; active minehunting; 100 kHz ± 10 kHz.

HAARLEM M-853

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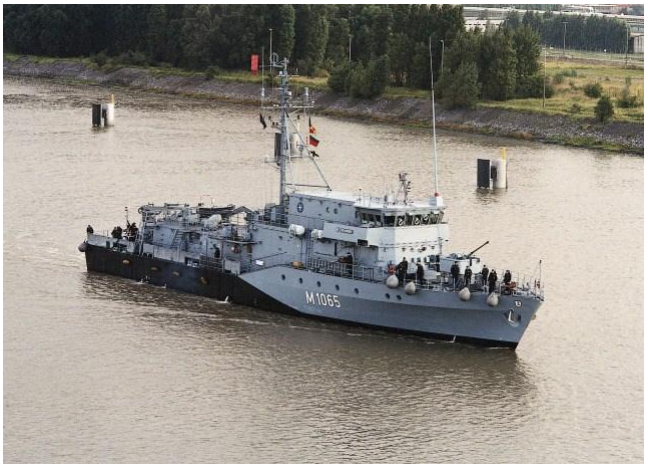
ALKMAAR (TRIPARTITE) CLASS (MHC)

Displacement, tons: 562 standard; 595 full load
Dimensions, feet (metres): 168.9 × 29.2 × 8.5 *(51.5 × 8.9 × 2.6)*
Main machinery: 1 Stork Wärtsilä A-RUB 215X-12 diesel; 1,860 hp(m) *(1.35 MW)* sustained; 1 shaft; acbLIPS cp prop; 2 active rudders; 2 motors; 240 hp(m) *(179 kW)*; 2 bow thrusters
Speed, knots: 15 diesel; 7 electric. **Range, miles:** 3,000 at 12 kt
Complement: 29-42 depending on task
Guns: 1 Giat 20 mm (an additional short-range missile system may be added for patrol duties).
Countermeasures: MCM: 2 PAP 104 remote-controlled submersibles. OD 3 mechanical minesweeping gear.
Combat data systems: Signaal Sewaco IX. SATCOM.
Radars: Navigation: Racal Decca TM 1229C or Consilium Selesmar MM 950; I-band.
Sonars: Thomson Sintra DUBM 21A; hull-mounted; minehunting; 100 kHz (± 10 kHz).

DATTELN M-1068

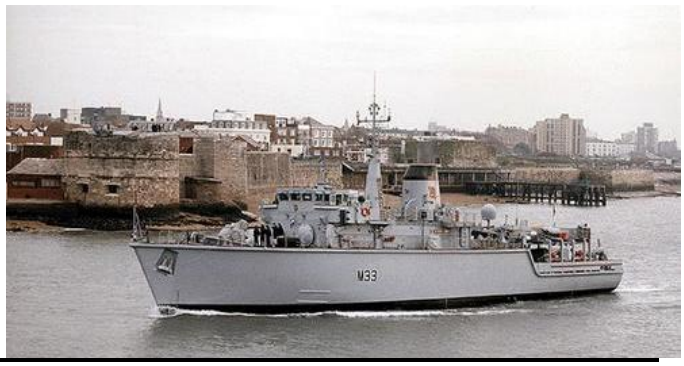
FRANKENTHAL CLASS (TYPE 332)(MHC)



Displacement, tons: 650 full load
Dimensions, feet (metres): 178.8 × 30.2 × 8.5 *(54.5 × 9.2 × 2.6)*
Main machinery: 2 MTU 16V 396 TB84 diesels; 5,550 hp(m) *(4.08 MW)* sustained; 2 shafts; cp props; 1 motor (minehunting)
Speed, knots: 18
Complement: 37 (5 officers)
Missiles: SAM: 2 Stinger quad launchers.
Guns: 1 Bofors 40 mm/70; being replaced by Mauser 27 mm.
Combat data systems: STN MWS 80-4.
Radars: Navigation: Raytheon SPS-64; I-band.
Sonars: Atlas Elektronik DSQS-11M; hull-mounted; high frequency.

BROCKLESBY M-33

CAZAMINAS CLASE "HUNT"



Displacement, tons: 615 light; 750 full load
Dimensions, feet (metres): 187 wl; 197 oa × 32.8 × 9.5 (keel); 11.2 (screws)
Main machinery: 2 Ruston-Paxman 9-59K Deltic diesels; 1,900 hp *(1.42 MW)*; 1 Deltic Type 9-55B diesel for pulse generator and auxiliary drive; 780 hp *(582 kW)*; 2 shafts; bow thruster
Speed, knots: 15 diesels; 8 hydraulic drive.

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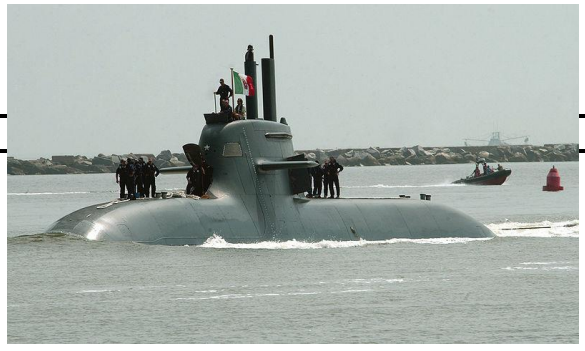
Range, miles: 1,500 at 12 kt
Guns: 1 DES/MSI DS 30B 30 mm/75; 650 rds/min to 10 km *(5.4 n miles)* anti-surface; 3 km *(1.6 n miles)* anti-aircraft; weight of shell 0.36 kg.
2 Oerlikon/BMARC 20 mm GAM-CO1 (enhancement); 900 rds/min to 2 km.
2-7.62 mm MGs.
Countermeasures: MCM: 2 PAP 104 Mk 3/105 (RCMDS 1) remotely controlled submersibles, MS 14 magnetic loop, Sperry MSSA Mk 1 Towed Acoustic Generator and conventional Mk 8 Oropesa sweeps.
Decoys: DLK; 2 Bde Mk III; 6 sets of triple barrels per mtg. 2 RF; passive decoys.
ESM: MEL Matilda UAR 1; Marconi Mentor A (in some).
Combat data systems: CAAIS DBA 4 action data automation.
Radars: Navigation: Kelvin Hughes Type 1006 or Type 1007; I-band.
Sonars: Plessey 193M Mod 1; hull-mounted; minehunting; 100/300 kHz.
Mil Cross mine avoidance sonar; hull-mounted; active; high frequency.
Type 2059 to track PAP 104/105.

S U B

SAPHIR S-602
RUBIS AMÉTHYSTE CLASS (SSN/SNA)

Displacement, tons: 2,410 surfaced; 2,670 dived
Dimensions, feet (metres): 241.5 × 24.9 × 21 *(73.6 × 7.6 × 6.4)*
Main machinery: Nuclear; turbo-electric; 1 PWR CAS 48; 48 MW; 2 turbo-alternators; 1 motor; 9,500 hp(m) *(7 MW)*; SEMT-Pielstick/Jeumont Schneider 8 PA4 V 185 SM diesel-electric aux propulsion; 450 kW; 1 emergency motor; 1 shaft
Speed, knots: 25
Complement: 66 (8 officers) (2 crews)
Missiles: SSM: Aerospatiale SM 39 Exocet; launched from 21 in *(533 mm)* torpedo tubes; inertial cruise; active radar homing to 50 km *(27 n miles)* at 0.9 Mach; warhead 165 kg.
Torpedoes: 4-21 in *(533 mm)* tubes. ECAN F17 Mod 2; wire-guided; active/passive homing to 20 km *(10.8 n miles)* at 40 kt; warhead 250 kg; depth 600 m *(1,970 ft)*. Total of 14 torpedoes and missiles carried in a mixed load.
Mines: Up to 32 FG 29 in lieu of torpedoes.
Combat data systems: TIT; OPSMER command support system; Syracuse 2 SATCOM
Weapons control: LAT (Lancement des Armes Tactiques) system.
Radars: Navigation: Kelvin Hughes 1007; I-band.
Sonars: Thomson Sintra DMUX 20 multifunction; passive search; low frequency.
DSUV 62C; towed passive array; very low frequency. DSUV 22; listening suite.

LONGOBARDO S-524
TYPE 212A (SSK)



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Displacement, tons: 1,450 surfaced; 1,830 dived
Dimensions, feet (metres): 183.4 × 23 × 19.7 **Main machinery:** Diesel-electric; 1 MTU 16V 396 diesel; 4,243 hp(m) *(3.12 MW)*; 1 alternator; 1 Siemens PEM motor; 3,875 hp(m) *(2.85 MW)*; 1 shaft; Siemens/HDW PEM 9 fuel cell (AIP) modules; 306 kW
Speed, knots: 20 dived; 12 surfaced
Range, miles: 8,000 at 8 kt surfaced
Complement: 27 (8 officers)
Torpedoes: 6-21 in *(533 mm)* bow tubes; water ram discharge; Whitehead A184 Mod 3 and Black Shark. Total 12 weapons.
Mines: In lieu of torpedoes.
Countermeasures: Decoys: CIRCE Torpedo countermeasures.
ESM: DASA FL 1800U; intercept.
Weapons control: Kongsberg MSI-90U TFCS.
Radars: Navigation: KH 1007; I-band.
Sonars: STN Atlas Elektronik DBQS-40; passive ranging and intercept; FAS-3 Flank and TAS-3 clip on passive towed array.
STN Atlas Moa 3070, mine detection, active, high frequency.

TRAMONTANA S-74
GALERNA (AGOSTA) CLASS (SSK)

Displacement, tons: 1,490 surfaced; 1,740 dived
Dimensions, feet: 221.7 × 22.3 × 17.7
Main machinery: Diesel-electric; 2 SEMT-Pielstick 16 PA4 V 185 VG diesels; 3,600 hp(m) *(2.7 MW)*; 2 Jeumont Schneider alternators; 1.7 MW; 1 motor; 4,600 hp(m) *(3.4 MW)*; 1 cruising motor; 32 hp(m) *(23 kW)*; 1 shaft
Speed, knots: 12 surfaced; 20 dived; 17.5 sustained
Range, miles: 8,500 snorting at 9 kt; 350 dived on cruising motor at 3.5 kt
Complement: 54 (6 officers)
Torpedoes: 4-21 in *(533 mm)* tubes. 20 combination of (a) ECAN L5 Mod 3/4; dual purpose; active/passive homing to 9.5 km *(5.1 n miles)* at 35 kt; warhead 150 kg; depth to 550 m
(b) ECAN F17 Mod 2; wire-guided; active/passive homing to 20 km *(10.8 n miles)* at 40 kt; warhead 250 kg; depth 600 m *(1,970 ft)*.
Mines: 19 can be carried if torpedo load is reduced to 9.
Countermeasures: ESM: THORN EMI/Inisel Manta E; radar warning.
Weapons control: DLA-2A TFCS.
Radars: Surface search: Thomson-CSF DRUA 33C; I-band.
Sonars: Thomson Sintra DSUV 22; passive search and attack; medium frequency.
Thomson Sintra DUUA 2A/2B; active search and attack; 8 or 8.4 kHz active.
DUUX 2A/5; passive; rangefinding. Eledone; intercept.
SAES Solarsub towed passive array; low frequency.

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TRIDENTE U-209
Type: Attack submarine (SSK)
Displacement: 1,700 tons (surfaced) 2,020 tons (sub)
Length: 67.7 metres (222 ft)
Beam: 6.35 metres (21 ft)
Draught: 6.6 metres (22 ft)
Propulsion: Diesel-electric, fuel cell AIP, low noise skew back propeller
Speed: 20 knots (37 km/h) submerged
10 knots (19 km/h) surfaced 6 knots (11 km/h) AIP system
Range: 12,000 nautical miles (22,000 km) at 8 knots (15 km/h)
Endurance: 60 days
Test depth: superior to 300 metres (984 ft)
Capacity: 14 Marines
Complement: 7 Officers, 10 Sergeants, 16 Sailors
Sensors and Processing systems: Kelvin Hughes KH-1007 (F) navigation radar
Atlas Elektronik GmbH ISUS 90 combat management system
Armament: (8) 533 mm torpedo tubes, (4) subharpoon-capable
12 x Alenia Marconi Systems IF-21 Blackshark torpedo reloads

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