

ARCHIVED REPORT

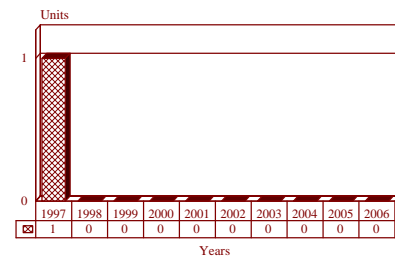
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Giuseppe Garibaldi Class - Archived 1/98

Outlook

- Design studies started on follow-on ship
- New design will be larger and heavier than Garibaldi

10 Year Unit Production Forecast
 1997-2006



Orientation

Description. Helicopter carrier primarily designed for ASW operations but capable of launching V/STOL aircraft.

Sponsor

Navy Chief of Staff
 Piazzale della Marina
 I-00196 Rome
 Italy

Contractors

Italcantieri
 Monfalcone
 Italy

Licensee. There are no licensees.

Status. In commission.

Total Produced. One ship has been produced to date.

Platform

<u>Name</u>	<u>Builder</u>	<u>Ordered</u>	<u>Commissioned</u>
C551 <i>Giuseppe Garibaldi</i>	Fincantieri	11/1977	9/1985

Application. Anti-submarine warfare, command and control of naval task forces.

Price Range. The RIM Giuseppe Garibaldi cost some US\$1 billion, exclusive of air group.

Technical Data

Characteristics

Speed (maximum): 30+ knots
 Speed (cruising): 20 knots
 Range: 7,500 nm at 20 knots
 Crew: 100 Officers, 685 Enlisted (including 258 air group, 43 flag staff).
 Accommodation for 825.

Dimensions	Metric	US
Length (overall):	180.2 m	591 ft
Length (flight deck):	176.0 m	577 ft
Beam (hull):	33.4 m	110 ft
Beam (flight deck):	30.5 m	99 ft
Displacement (standard):		10,000 tons
Displacement (full load):		13,370 tons
Armament	Type	Quantity
Guns:	OtoBreda Dardo 6/40-mm	3
Missiles:	Otomat Mark 2 Teseo SSM	4
	Albatros PDMS	2
	Aspide SAM	48
Torpedo tubes:	Mark 32 ILAS triple	2
Aircraft:	SH-3D Sea King	16
	AV-8B Harrier	8
Electronics		
Radars:		
3-D air search:	SPS-52C	1
Air early warning:	RAN 3L (SPS-768)	1
Air search:	RAN 10S (SPS-774)	1
Surface search:	SPS-702	1
Dardo fire control:	RTN 20X	3
Missile fire control:	RTN 30X	2
Navigation:	MM/SPN-749(V)	1
Sonar:	DE 1160 LF	1
Electronic warfare:		
ESM:	Elettronica Nettuno	4
ECM:	Elettronica Nettuno	4
Decoy launchers:	SCLAR	2
Command & Control:		
Command System:	SADOC-2+	1
Tactical datalink:	Link 11	1
TACAN:	URN-25	1
Propulsion		
Main Propulsion:		
Gas turbines	LM-2500	4x27,500
Auxiliaries:	GMT B230-12M diesels	6
Propellers:	Controllable pitch	2

Design Features. As the Italian navy's flagship, the *RIM Giuseppe Garibaldi* has accommodation for an admiral's staff in addition to the ship's crew and air group.

The main propulsion system consists of four LM 2500 gas turbines, producing 80,000 shp and driving two controllable pitch propellers. Six GMT A230-12M diesel generators produce 9,360 kW for ship's services and auxiliary power. Maximum speed of the ship is 30+ knots, although 20 knots is the normal cruising speed. The hangar deck measures 361 by 49.2 by 19.7 feet (110x15x6 meters). It is connected to the flight deck by two elevators, each measuring 59x33 feet

(18x10 meters) and each weighing 15 tons. The ship has 14 watertight sections.

Operational Characteristics. The ship's primary armament is its SH-3D Sea King helicopters and AV-8B Harrier V/STOL jets. The Sea King has a dipping sonar and carries four ASW torpedoes and sonobuoys. The ship can accommodate 12 in its hangar deck, with room for a maximum of 18 helicopters. The *RIM Giuseppe Garibaldi* also has space for 10 AV-8B Harrier jump jets. A ski jump is provided at the bow, to assist the Harriers in their take-offs.

Four OTOMAT Mark II launchers are carried at the stern. These launchers hold eight OTOMAT surface-to-surface (SSM) cruise missiles. The OTOMAT has a range of 80 nautical miles and uses an active radar seeker. Both guns and missiles are provided for anti-air warfare. Two Albatros eight cell launchers are positioned forward and aft of the superstructure. The Albatros uses the Aspide point defense missile system (PDMS), which has a range of eight nautical miles. The *Garibaldi* carries 48 Aspides. The ship also has three OtoBreda Dardo 40 mm/L-70 CIWS (Close-In Weapons Systems). This twin barreled gun mount can fire 600 rounds/min. The ASW weapons include two triple-barrel ILAS-3 torpedo tubes, which can fire A244, Mark 44 or Mark 46 torpedoes.

There is a large radar suite, with seven radars. The three-dimensional SPS-52C is the primary air search system. This is backed up by the two-dimension D-band RAN-3L (MM/SPS-768) with a range of 150 nautical miles. A RAN-10S (MM/SPS-774) serves as a combined surface and air search radar. This E/F-band radar has a range of 40 nm. An MM/SPS-702 is the

surface search radar, and the MM/SPN-749(V) is the navigation radar. Three RTN 20X Orion radars serve as tracking and fire control radars for the OtoBreda Dardo CIWS. Two Orion RTN 30X radars handle tracking and fire control for the Aspide PDMS. The URN-25 TACAN handles aircraft tracking and control.

The ship has a DE 1160 bow-mounted, low-frequency sonar system. It is a cousin of the US Navy's SQS-56 sonar, with a low-frequency transducer array giving it convergence zone capabilities. The electronic warfare suite includes the Elettronica Nettuno receiver-jammer system and two SCLAR Mark 2 chaff rocket launchers with a variety of computer programmable counter-measures. The command and control system includes Link 11 datalink, enabling the ship to communicate swiftly with other NATO cruisers and aircraft carriers. A SADC 2+ Command System automatically tracks and analyzes all contacts, while displaying and evaluating the tactical situation and coordinating the ship's weapons systems. Each display console has its own NDC 160E minicomputer, while two CP-7010 computers handle major data processing.

Variants/Upgrades

Presently this is the only ship of the class. The Italian Navy plans to construct one more ship which reportedly will be 1,000 tons greater in displacement. There is a growing possibility that the ship will be substantially simpler than the *Giuseppe Garibaldi*, reducing costs by

eliminating most of the on-ship armament. There is some chance that this may emerge as a Franco-Italian project with the French buying two ships configured as LPDs.

Program Review

Background. The *Giuseppe Garibaldi* is officially designated a helicopter carrier. It is designed to conduct anti-submarine warfare with an air wing of ASW helicopters and AV-8B Harrier vertical/short take-off and landing (V/STOL) aircraft. It also serves as a command and control platform and flagship for the Italian navy.

The Italian Naval Law of 1975 proposed an anti-submarine warfare helicopter carrier. During the 1970s, many Western navies were considering helicopter carriers to serve as floating bases for ASW helicopters, and as one of the major naval powers in the Mediterranean, Italy was aware that it needed to expand its ASW capabilities. However, there was a big problem, since Italian law required all fixed-wing aircraft to be operated by the Italian air force, and the air force thought the new ship might carry such aircraft.

In November 1977 the Italian navy awarded the Italcantieri shipyard a contract for initial designs and the

eventual construction of Type 1092, as the helicopter carrier project was then known. Plans for the new ship were publicly announced in May 1978 at the Italian Naval Show, when the ship was described as a "through deck cruiser." The plans had changed considerably by the keel laying in March 1981, when the ship was called a "helicopter carrying cruiser." More changes were evident by early 1983. There was a ramp, "ski jump," at the bow of the new ship. Although the Italian navy initially described it as a new type of sheer line to improve seakeeping, in early 1983 the navy said the "ship could operate at its best, and justify the investments made to build it, only if equipped with V/STOL aircraft."

When the *Giuseppe Garibaldi* was launched in June 1983 it was designated as an "aircraft-carrying escort cruiser." The Italian air force protested this designation, noting that Italian law allowed it to control all fixed wing aircraft. The air force lobbied to prevent any funds from being spent for the purchase of V/STOL

Harrier aircraft. The controversy continued during 1984, while the ship was being built. The *Giuseppe Garibaldi's* sea trials began in December 1984, and it entered service on September 30, 1985, with an all-helicopter air wing.

The *Giuseppe Garibaldi* carried only helicopters during its 1986 operations. In January 1987 the Italian parliament modified the pre-World War II law calling for all aircraft operations to be carried out by the air force. The revised law allows the *Giuseppe Garibaldi* to carry the AV-8B Harrier V/STOL aircraft. The aircraft are controlled and operated by the Italian navy. The aircraft will have both navy and air force pilots. The *Giuseppe Garibaldi* was modified between November 1986 and March 1987 to allow the operation of Sea Harrier V/STOL aircraft. The ship was formally commissioned in August 1987. The Italian navy ordered 12 US-made AV-8B+ aircraft equipped with APG-65 radars in 1990. These aircraft are now operational aboard the *Giuseppe Garibaldi*.

In late 1987, reports began to circulate that the Italian navy was considering ordering a second Garibaldi class carrier as a replacement for the helicopter carrier/guided missile cruiser *RIM Vittorio Veneto* during the mid-1990s. The new ship, then believed to be named *Giuseppe Mazzini*, would have been built to a slightly larger design, in order to carry additional V/STOL aircraft.

The original plan called for two ships of this class to be built. The second ship was to be procured in the mid-1990s, but this plan was suspended in 1990. On June 10, 1991, the top navy commander, Admiral Filippo Ruggiero, told the CASD Military Studies Institute that the main emphasis should be on another carrier and amphibious warfare. The admiral suggested that the money should come from special funds. This call was repeated in August 1994 by the Italian navy chief of staff, Antonio Stagliano, during a visit by the Parliamentary Defense Commission. The Italian navy currently operates two task forces: one centered on the *Vittorio Veneto* and the other on the *Giuseppe Garibaldi*. The former ship will reach the end of its hull life by the late 1990s.

In response to this requirement, the Italian navy commenced design studies for a follow-on to the *Giuseppe Garibaldi* in September 1995. As we surmised in previous editions of this report, the new carrier will be substantially larger than the existing ship (22,000 tons as opposed to 14,000), will have a much more austere weapons and sensors fit and will include facilities for conducting amphibious operations as well as ASW activities. Although a formal timetable has not been announced, the Italian navy is expected to order the second carrier in the near future.

One approach gaining significant favor is a solution similar to that adopted for the British LPH, *HMS Ocean*, where a hull is built to commercial standards and then sailed to a military yard for outfitting with operational equipment. One suggestion is that Spain and Italy may jointly order Ocean class hulls from the Kvaerner-Govan/VSEL consortia, sailing them to Bazan and Fincantieri respectively for final outfitting.

During early and mid-1996, an additional option became known. Italy and Spain both expressed interest in a British proposal that they should buy into the British CVSG(R) program aimed at designing a replacement for the Invincible class light carriers. This would mean that both countries would receive a substantially more capable ship than currently envisaged but that spreading design costs over a larger production run would mean little or no cost penalty would be incurred. There would, however be a cost in terms of the program running later than planned. Given current financial constraints this may be no bad thing.

Also during this period, the Italian government ordered the first group of 16 EH-101 helicopters. These included four airborne early warning derivatives specifically assigned to the *Garibaldi* and eight ASW helicopters which could operate either from land bases or from the carrier. It was also revealed that the proposed make-up of a batch of eight helicopters on option included four AEW and four transport variants. The AEW helicopters are undoubtedly intended to equip the new carrier.

Funding

No funding information has been released. This program was funded by the Italian navy.

Recent Contracts

No recent contracts have been awarded.

Timetable

	1975	Italian Naval Law first proposed helicopter carrier
Nov	1977	Type 1092 ordered from Italcantieri
Mar	1981	Keel laid for Type 1092
Jun	1983	<i>Giuseppe Garibaldi</i> (Type 1092) launched
Jan	1987	Italian Navy allowed to operate fixed-wing aircraft
Aug		<i>Giuseppe Garibaldi</i> commissioned

Worldwide Distribution

Only one ship of this type exists, operating with the Italian Navy.

Forecast Rationale

The market for air-capable ships is growing steadily, and the *Giuseppe Garibaldi* is typical of one approach to the design of these ships. Navies are entering the air-capable sector from two directions, either by expansion and enhancement of LPD designs for amphibious warfare purposes or by a continued process of enlargement of helicopter-carrying frigates and cruisers. The *Giuseppe Garibaldi* is typical of the latter approach, being a further development of the basic concept of the helicopter-carrying cruiser explored in earlier Italian designs. As a result, it is a costly and complex design, running against the trend towards keeping the cost of the platform to a minimum.

Once a navy has accepted the presence of an air-capable ship in its fleet structure, the inherent flexibility of those ships means that their roles quickly become expanded with demands for fixed-wing, usually V/STOL, aircraft. Where the air-capable ship comes from an amphibious background, the rationale is usually to provide air support to the troops on shore; where the ship stems from an ASW background, the role of the aircraft is to pick off target-location snoopers. The metamorphosis of the Royal Thai Navy air capable ship from an LPD is an example of the first route, the *Giuseppe Garibaldi* of the second.

There are also two approaches to the design of these ships: heavily armed ships with comprehensive defensive missile and gun armaments as designed by the UK and Italy, or effectively merchant ships with a flight deck as designed by Spain and for Thailand. The latter

approach appears to offer greater cost-effectiveness and be more attractive to new entrants to the market. Setting up a naval air arm takes time, and navies can always move to more complex and expensive ships later. In an attempt to offset some of the cost of the second air-capable ship to the Italian navy, it is probable that attempts will be made to design a ship more suited to the export market. This implies that the second ship will be much simpler and cheaper than its predecessor.

The *Giuseppe Garibaldi* is not expected to receive any major overhauls within the forecast period. Minor scheduled modifications include provision for replacing some or all of the OTOMAT missiles with the MILAS torpedo delivery missile (this is simply a software change to the command system). This will permit the ASW helicopters to carry enhanced sensors and increased fuel loads by delegating weapons delivery to the MILAS missiles.

Italian government statements clearly indicate that no new air-capable ship will be ordered prior to 1996. We therefore project the order for 1997 but recognize the possibility that construction will be pushed further back. Whatever the actual data, the ship will have little in common with the *Giuseppe Garibaldi*. The possibility of ordering an analogue to the British *HMS Ocean* has much to commend it. If this occurs, then the order will be carried in the report on *HMS Ocean* and future production under the *Giuseppe Garibaldi* title dropped.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Designation	Application	thru 96	<u>High Confidence</u> Level				<u>Good Confidence</u> Level				<u>Speculative</u>		Total 97-06	
			97	98	99	00	01	02	03	04	05	06		
GARIBALDI CLASS	CVH (ITALY)	1	1	0	0	0	0	0	0	0	0	0	0	1