ABOARD THE MIGHTY HARRIER CARRIER

Giuseppe Garibaldi

ABOARD ITALY's MIGHTY GARIBALDI

Named after Italy's legendary hero Giuseppe Garibaldi we know the only aircraft carrier in the Italian Navy (Marina Militare) with his crew equally proud at both ship and name. Being the largest and most prestigious vessel built for the Italian Navy ever this ship changed a long time tradition in not deploying fixed wing aircraft in the navy due to an agreement with the air force. The Garibaldi was designed and built by Fincantieri & Cantieri Navali Italiani shipyards in Monfalcone and laid down on 26 March 1981, launched on the 4th of June 1983 and commissioned to the Italian Navy on 31 July 1985. Ship and crew are designated in Marina Militare as 551 Repartoar and home based at Nuova Stazione Navale Mar Grande in the harbour of Taranto in southern Italy. Normally 580 people are on board but this can be up to a maximum 808 people when crews are flying in. Also females are in the crew and accommodations, for women the maximum is 84. Some five different officers are in command. The executive officer (Captain) is in command of he whole ship. The other four officers are responsible for electricity / engine, munitions and sensors, flight operations and logistics and administration.

Deploying aircraft on the ship

The ship was designed in the class of the British Invincible or US Navy Tarawa class amphibious assault ships and only capable to embark fixed wing aircraft with Vertical Take Off and Landing (VTOL) capacity like the Harrier. The deck of non-skid material is equipped in the front with a so-called ski-jump to give the Harriers a nice angle for jumping in the sky. Besides Harriers the ship can deploy helicopters which are usually SH-3D/H Seakings. Two elevators can transport both fighters or helicopters from deck to the large internal hangar. Like the Tarawa class of the US Navy the flying equipment can change depending the mission. Normally equipped with a combined fighter element (12 aircraft) of Harriers and a few Seaking helicopters for SAR and ASW tasks there could be the choice for the complete helicopter configuration in case of amphibious assault operations. Then a mix of specialised Seakings and AB-212's of the NLA version will embark the vessel. These specialised armed versions with machineguns, kevlar floor, protection seats and chaff/flares are to bring in troops like commando's or navy seals on hostile territory. NLA stands for Nucleo Lotta Anfibia which is the special amphibious unit within Grupelicot 4 (4th helosquadron) based at NAS Grottaglie near Taranto. Seakings and AB-212's from Grupelicot 4 wear a grey colour scheme in case of embarking frigates/destroyers or the Garibaldi but are dark tone blue in case of NLA variants.

The Harrier, a smart weapon itself

The Harriers were bought in the United States with McDonnell Douglas in St. Louis and Italy's first Harrier instructor and now Garibaldi Commander Paolo 'Pitbull' Treu

flew the first aircraft from the factory to Cherry Point in North Carolina where the Garibaldi later on took the first three Harriers from Norfolk to Italy. Being the most experienced on the Harrier in the Italian Navy after having served with US Marine Corps Gun Squadron VMA 542 Commander Paolo Treu was appointed to lead the new Harrier Squadron named GRUPPAER. Totally 16 AV-8B+ Harriers were obtained together with two trainer versions. The trainers are serialled I-1 and I-2 and the other aircraft from I-3 onwards till I-19 with the deception of nr. 7(!) which in Italy is believed to be an unfortunate number. The acquisition of the Harriers was between 1994 and 1998 and however still a modern fighter some upgrades were fitted in the aircraft like for example AMRAAM-software to give the aircraft beyond visual range (BVR) interception capability.

Another top priority on the wish-list is a data link system compatible with NATO's Link 16 but this is not realised yet. The Grumman Litening target pod gives the plane the possibility for precision attack with precision guided munitions (PGM) or rockets and the possibility to act as a Forward Air Controller (FAC) as well. The aircraft has very good flying characteristics and is loved by the pilots because of its unique vertical take off and landing capacity which can even be used to increase its agility in dog fight. In this last matter a Harrier can suddenly decrease his speed by turning the angle of the nozzles in down position and so fool his opponent if not experienced with this kind of manoeuvres. The lack of Mach 2 speed possibility makes the Harrier a kind of vulnerable and so the aircraft must rely more on its armament especially the BVR weapons. Defence or interception actions in international waters are in support of the ship's safety. The Harrier pilots were trained in the US. After basic training the skill of carrier on landings are practiced with the T-45 Goshawk followed by USMC AV-8B's.

Action on the flight deck

To watch the activity on the flight deck is quite exciting and something which could be experienced recently by the author/photographer while Marina Militare was letting their pilots qualify themselves with carrier on board landing qualification (CQ) and night flying carrier on board landing qualification (NCQ). This all in preparation before the NATO exercise Destinate Glory/Loyal Midas. A Seaking is sent in the air to act as a plane guard and soon the Harrier fighters will arrive from their naval base Grottaglie. After an overshoot 2 fighters make a break one after the other. A Harrier is approaching the ship carefully from behind and is hovering alongside the rear of the ship. While the landing is in progress the aircraft finally makes a side move to land on 'spot 5' and drops itself on deck. While moving slowly more to the middle of the deck across the so-called 'tramline' the second Harrier is landing on spot 5.
Teams of deck personnel are checking the aircraft and the launch officer gives clear to start. With full thrust (needing only 450 ft of the 560 ft long flight deck) the first Harrier leaves the ship from the ski-jump with his nozzles at an angle of 50-60 degrees, blowing partial to behind and partial against the deck, giving the airplane lift in the air. During these repeated manoeuvres on the flight deck the engine is not turned off. During the rest of the day and the next day pairs of Harriers come from Grottaglie to the ship to qualify themselves. Four day and two night landings are required for this. At least one landing must be a 'hot raft' which means after landing

immediately taking fuel with engine on and leave the ship again. Precautions are made on the deck and Aluminium coloured men with fire distinguish equipment appearing on the deck in prominent position. Special people wearing violet coloured clothes are aircraft refuellers. It can be dangerous to take fuel with running engines and considering that one should always be prepared to eliminate sudden danger immediately.

The teams

The guy's on deck have different specialities and tasks. To oversee the circumstances at the deck men in yellow suits are appointed to this task. Any movement to disturb a quick and safe arrival or departure should be noticed by them immediately that's why they are called launch officers. They give directions or orders to other workers in the team and are also in charge to establish a safe parking or towing of the aircraft. To check an aircraft on the deck after landing some men wearing clothes of different colour with different tasks will take actions. Two different colours brown indicates engineers checking the engine and the mainframe hydraulics, wing etc. while a green shirt is an electrician checking the sensors/avionics. Blue shirts is for the people who anchorage the aircraft. This will also be done when the engine of the aircraft is still running and the aircraft is scheduled to leave within a few minutes. While the sea is not always collaborating and can be unpredictable it is simply necessary to do this as a procedure while staying on the deck. On the non-skid surface of the deck there are many spots where you can anchor as you like. People wearing red shirts are in charge of the weapons and armament but have secondary function in watching if every procedure is to be done safely especially from point of view of fire danger and fuel leakage. Another task is preparing and control of ejection seat and paraloft (parachute, life vest and pilot gear). People in violet shirts are responsible for the refuelling unit and the deliverance of fuel but working together with the red shirts of the safety team. Finally the white overall is for the supervisor of all procedures. This whole circus is working as a machine on the aircraft and it feels like watching a formula- 1 pits stop if you see thiese teams working with your very own eyes.

In the tower

In the back-tower you can see the Harriers coming in while situated partly on the rear and partly on the side of the tower watching through large windows you have an overview of the complete deck. The Landing Safety Officer (LSO) is situated in a central part of the tower, having radio contact with the pilot, giving a landing spot and directions to land he will help the pilot to put his Harrier down safely. Flight path landings are given visually and corrected when necessary. During the qualifications the landings will be evaluated by the LSO and qualified as average, below average or excellent. The LSO is normally a helicopter pilot, but can be also a Harrier pilot, someone who is much experienced with vertical landings (requirement: > 800 hours and substantial time at sea). At one evening while watching the LSO working in the tower at the landing of a Harrier after given away spot 5 ¼ (between 5 and 4 and the only spot in use with night flying) we learned how the airplanes are to be helped. Some special approaching lights like Line Up Display System (LUDS), Carrier Line

Up Beacon System (CLUBS) and Display Approach Path System (DAPS) help to land. Basically it helps to get more awareness about where you are in the approach. For example LUDS works as a light in front is measured against different colours in the back and so gives an indication for the pilot to provide a nice hovering position. The white light over yellow means 40 feet, over the first red 24 feet and over the second red 8 feet above the deck The ship itself is marked by “extended green” lights at the edge of the flight deck and off course the “tramline” in the middle so a pilot can have a good view of the flight deck from up the air. The pilots are urged to train this classical way of approaching without using night vision goggles. Of course night vision goggles (NVG) is standard equipment of the Harrier. When necessary like for instance in fog conditions it is the possible to land on radar approach (precision approach radar) or TACAN approach. There are 5 day LSO’s and 3 night LSO’s at the ship. When acting in the dark only a few lights in the tower are just softly illuminated and the others off just to have a good visual contact with landing airplanes. Entrance corridors are also softly illuminated to get used to sparse light when entering the tower.

The heart of the ship

Deeper in the tower you find the Combat Information Centre (CIC) where you find air traffic controllers, weapon systems officers, weather officers and radar/sonar experts. This aera was restricted from taking pictures unfortunately, but very impressive to see all these operators and the equipment, Three air search radars (long and medium range) 2 navigational radars and one combined search radar (GEC/Marconi (GEM)/Thrane) provides the radar controllers essential information about who is in the control traffic area (CTR). One radar also acts as a surface radar to track ships surrounding the Garibaldi. At one side of the Centre spots are identified and at the other side tracked. The CIC is nicknamed “Ferrari” resembling the hottest area and the motor of operations on the ship. When there is a lot of action with several threats (night threat, surface threat etc.) it will be busy in Ferrari and more people have to work at the CIC to track aircraft, destroyers etc. Information is fully centralised and is displayed in a command and control system called SADOC TWO employing all standard communications but also satellite connections.

In the connected computer network tactical data are obtained by data link. The Garibaldi is the only element in the Italian Navy equipped with a link 16 data link. Receiving (both NATO compatible) link 11 and link 16 tracks is possible however when employing a link 16 much more information is available and often supplied by AWACS airplanes. Air traffic controllers and a weather officer (radar connected with web sites of actual weather conditions) are busy with a routine job. In strike alert conditions weapon system officers will act in response after “engagement” and a Fighter Interceptor Controller (FIC) leads the ships embarked Harriers to the target after launch. Situated in front of Ferrari is the bridge with front side view and place of the captain (sharing his time with Ferrari as well). He is assisted by two experienced officers who can take over command at any time in the prospect that the ship must be combat ready 24 hours.

Threats of different kind

The ship is in the first place a mobile airfield which the Italian Navy calls “Incrociatore Porta Aeromobili” providing a safe landings place to the navy’s Harriers and helicopters but also must be recognized that it is a ship and therefore it must comply to certain rules as normal ships do. One of these is the subsurface danger of hostile submarines. A special DMSS 2000LF sonar considered by navy personnel as very good one is operated by sonar experts continuously. The Seaking helicopter can be send out for ASW missions after recognition of the submarine but it can also trace the submarine itself with the dipping sonar while hovering low above the sea. Mostly a Seaking is operated in a precursory operation to localize submarines in the neighbourhood of the ship (or task force when operating in convoy) and clear a specific area. While providing a barrier to keep submarines at distance there is the possibility with high level of threat to kill. The mission can be instructed as localisation, tracking or interdiction. The Seaking carries depth charges and 2 torpedoes on attack mission. To clean the surrounding airspace the ship defends itself in the first place with the Harrier acting as an interceptor. In international airspaces is the only possibility to accompany “visiting” aircraft and lead them away from the ship. Commercial airliners who attracts their passengers with a sight at the aircraft carrier is not a seldom situation. When acting in strike conditions self defence is possible against airplanes and incoming missiles by the ALBATROSS point defence missile system based on ASPIDE surface-to-air missiles and ARGO 30 fire control system in front and at the back of the tower. For very nearby missiles a close in weapon system composed by three Breda Twin 40 millimetres gun with rate of fire of over 600 rounds per minute directed by the DARDO Echo Fire Control System create a layer of munitions with auto detection near the target. To confuse the enemy special rocket launchers can launch flares over 2-3 miles distance misleading infrared guided weapons. The ship has the ability to launch light torpedo’s against other ships but is designed to operate only defensive missions. Embarked aircraft may have tasked with offensive actions in the anti-shipping role.

Established missions

In 1994 the Garibaldi was deployed in the Adriatic Sea for the embargo operation “Sharp Guard” during the former Yugoslavia crisis equipped with helicopters only. In 1994 the ship played a central role in the amphibious withdrawal of Italian troops from Somalia in operation “Restore Hope” and in 1995 for UN troops. In 1996 the ship was re-tasked to the Adriatic Sea and joined in 1999 Allied Force employing the embarked AV-8B+ in air interdiction missions. Italian Harriers actually dropped bombs at Kososvo in the end of the actions. Since November 2001 till April 2002 Garibaldi has participated to the operation “Enduring Freedom” supporting the US Air Campaign over Afghanistan. They flew a lot of missions, sometimes up to 750 miles from the ship located in the Arabian Sea integrated in an escort of USN frigates . During this 6-6,5 hours missions the aircraft were in-flight refuelled by USAF KC-135’s and flew in packages with US.Navy F-14 and F-18 aircraft. These were support missions only.

Changes in the future

The Garibaldi will embark the EH-101 Merlin which has been a few times aboard already. Tests still have not been finished with the Merlin but it will not take a long time to complete this. At this time manuals and operating procedures are written but the deck personnel is not experienced enough to accept the Merlin. The Merlin is a big helicopter and must be moved without damage. How to move him with 25 knots wind and rain while the ship is rolling and pitching is a capability to learn first. While the personnel is getting to know the characteristics and still more pilots have to follow transition to the Merlin, the helicopter is expected to be operational on the Garibaldi within 1,5 years from now. The new helicopter will surely in the starting phase act in the ASW and anti-shipping/AEW role while the amphibious versions of the Seaking have all just gone through the general inspection at the Agusta factory and have plenty of hours to go. Eventually all the Seakings will be replaced by the Merlins.
Equally the NH-90 helicopter will replace the AB-212 at the frigates and destroyers.
Some interoperability is achieved by working with cross pools and British, Italian and Spanish Harriers or Seakings can land on each others aircraft carriers. To add the Merlin at the list would be a nice suggestion for the involved pilots. The Garibaldi is a mighty element in the Italian Navy but also in NATO's southern area and the carrier effective and employed by competent personnel is a proud object for Italia. The country is that much satisfied that it is working on another carrier named Cafour with 1,5 the size of the Garibaldi. When a second ship is near release the thought of new airplanes will surely occupy the brains of the naval staff and Italia's politicians !

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