

**ON A MISSION**
The submarine *Scirè* leaves the Gulf of Taranto, with two sailors scanning the horizon from the fin.


**SUMMARY**

- In August, a *Focus* journalist sailed aboard **submarine *Scirè*,** one of the eight belonging to the Italian Navy.
- Built in partnership with Germany, it is one of the most modern of its kind, with a **long range** and the ability to operate in **silence**.
- The sub patrols the Mediterranean, on the look-out for **arms**, **drugs** and **human traffickers**.


# A day on board a submarine

On board an Italian Navy vessel: an amalgam of technology, spartan living and intelligence.

A voice comes over the tannoy: "Last man aboard. Upper and lower hatch sealed. Vessel ready to dive". I am in a room full of monitors, push-buttons and piping. A dozen men in uniform are aligned before a bank of flickering consoles. In the centre, a man is looking into the eyepiece of a large metal cylinder and turning around it...

No, this is not a film set. The cylinder is a real periscope, and I am in the control room of a real submarine: the Scirè, one of the technological jewels of the Italian Navy. *Focus* wanted to see close up how a modern submarine operates, and how the submariners live on board. So this summer, with a photographer, we set sail from the Gulf of Taranto, HQ of the national submarine fleet, and participated, for a day, in a real underwater mission.

**60 METRES BELOW.** After sailing a few miles on the surface to reach the open sea, we slow down for a while: the time it takes to fill the ballast tanks with more than 100 tonnes of water, the weight that will take us down into the depths. And finally the long-awaited moment arrives: the commander, Raffaele Martino, has the periscope lowered into the floor-well and gives the order: "Helmsman, dive to 60 metres". In a few minutes we shall be 60 metres below the surface. My heart is racing. I watch the helmsman manoeuvring the submarine using two small black joysticks. But were it not for the slight pitching of the bow, I would have thought we were standing still.

Not the first of my illusions punctured, nor the only fascinating discovery on this voyage. Starting with the portholes through which I expected to admire some breath-taking underwater seascapes: "Submarines don't have portholes", points out 35-year-old Martino. "They would weaken the structure of the hull. To navigate under water, we have no eyes, only ears". The submarine's "eyes" are in fact functional only to a depth of 14 metres, below which it is not possible to use the periscope. Peering through it, you can see all vessels as far as the horizon, miles away, and at night too, thanks to infrared cameras. At greater depths, you have to rely on other instruments. Not radar, which works only on the surface, nor the GPS navigator, which cannot capture signals under water. Submarines therefore have to estimate their position: via GPS they log the point at which they submerge, then, using a computer connected to gyroscopic compasses and accelerometers, they estimate subsequent positions with a margin of error of a few miles (depending on underwater currents). Maybe this is why there is a red lucky charm dangling from the instruments in question...

**INVISIBLE.** They navigate by dead reckoning, steering in response to sounds. To measure distance from the sea bed, they use an echo-sounder, which bounces an electro-acoustic signal off the bottom. To monitor the presence of other vessels at depth, they use passive sonar: a sort of underwater microphone that can capture sounds under water, even at a distance of several miles. "By listening to its acous- ▸

CONTROL ROOM. The Scirè's war room. Centre: the captain looking through the periscope. Right: the helmsman controlling the vessel using joysticks (photograph 1); the torpedo tubes (2).

Cosimo Laera (3)

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## THE SUBMARINE *SCIRÈ*

**Built by Fincantieri, the vessel is the result of twenty years' technical cooperation between Italy and Germany. The Germans supplied the electric motor (Siemens) and the optical components of the periscope (Zeiss). Italian suppliers contributed the stainless steel hull (AST), the torpedoes (Leonardo), and the automated steering system (Avio).**

**Surface displacement:** 1,450 tonnes
**Length:** 56 m
**Beam:** 7 m
**Height :** 14 m (fin included, but excluding periscopes)
**Speed:** 12 knots (22 km/h) on the surface, 20 knots (37 km/h) under water
**Range on the surface:** 8,000 miles (14.816 km)
**Range under water:** 420 miles (778 km)
**Crew:** 27 sailors (including 6 officers)
**Engines:** 1 permanent magnet motor, 1 diesel generator
**Armament:** six 533 mm torpedo tubes

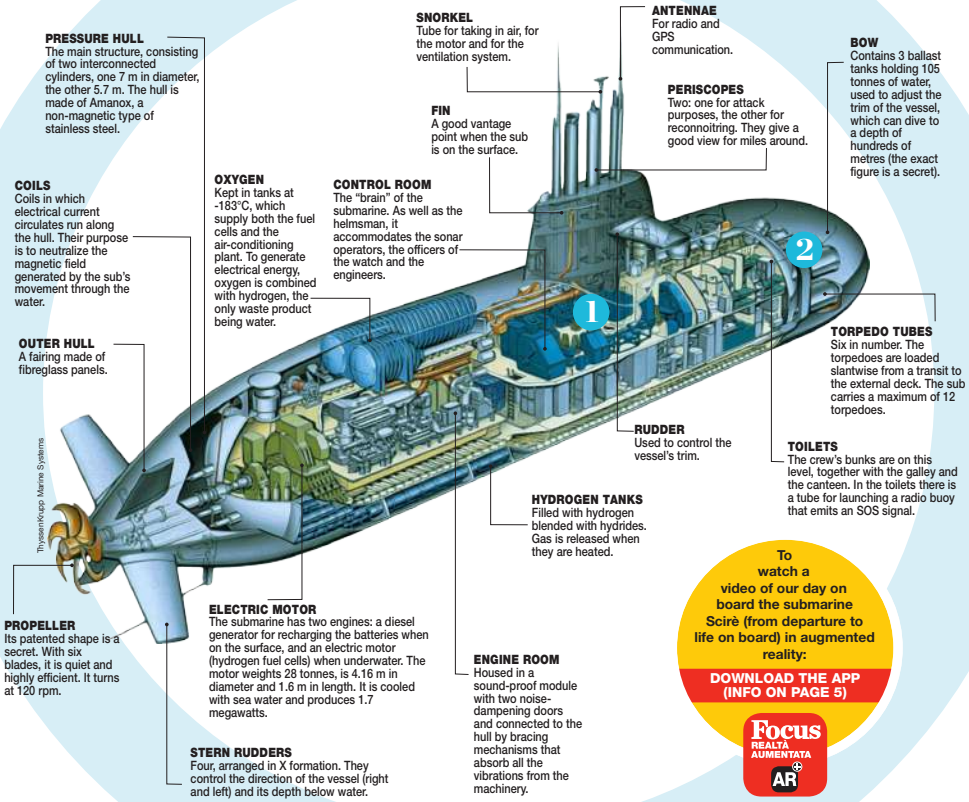
tic signature we can calculate the number of propeller shafts and blades of another craft and work out whether it is a fishing boat, a rubber dinghy or a merchant ship. Or another submarine", says Martino.
Only rarely do they use active sonar, which detects obstacles by measuring the time it takes for a signal emitted from the submarine to bounce back: "Emitting sounds would reveal our presence. Which we definitely don't want", explains the commander. The Scirè, two railway carriages in length, is powered by hydrogen (see drawing). And it must remain invisible. "A military aircraft could find us even at a depth of 40 metres, using a sensor to detect magnetic anomalies under water", explains lieutenant Carlo Faggiana. "That's why the hull is made of a special non- magnetic stainless steel".

**12 TORPEDOES.** There is the same obsessive control of sound emissions. Not for nothing, the British refer to their submarines as "the silent service". The propeller, for instance, has been designed to minimize noise (the patent is top secret), and the engine room with its electric motors is installed in a soundproof box suspended on springs. When the commander closes the door of the engine room, the deafening 80 decibels of noise within becomes almost imperceptible: "See how quiet it is!", Martino remarks proudly.
Thanks to this advanced technology, during a NATO exercise in the Atlantic in 2008, the Todaro, the Scirè's sister submarine, was able to escape the attentions of a whole naval squadron and come up a

> The vessel is designed to be silent. And invisible

few miles from an American aircraft carrier, the Theodore Roosevelt, taking photographs of it through its periscope. From that position, it could have hit the carrier with one of its torpedoes: all you need do is press the "Fire" icon on one of the monitors. "We have 12 torpedoes here on board", says Martino. "It would take two to send a 300-metre-long carrier to the bottom. The technique is to explode the torpedo under the enemy's keel, creating a shock wave violent enough to break a ship in two." A theoretical scenario, of course! As we shall see, the submarine's mission is something very different.
But all this "invisibility" comes at a price, above all the total isolation of the 27-man crew. "Radio waves do not penetrate under water", Faggiana points out. "Or rather, they penetrate to a depth of just a few metres and only very very slowly, using the lowest frequencies on the radio spectrum." How this system works, we were not to find out . The only area off bounds to us during our visit was in fact the radio room, the door of which bears the inscription 'Top secret SS/NATO'. "At night we come up to periscope depth, raise the antenna and communicate via satellite with our command centre", says Martino. "As well as transmitting service communications, we send messages to the crew members' families: twice a week, my colleagues give me a file of texts for their families and, before sending it, I have to check that it contains no sensitive information. In addition, we receive a compendium of news flashes from Italy and the world at large." A way of not feeling totally isolated. And for checking whether or not someone has won the football pools... Such modest activities, together with films, books and fitness training (there are exercise bikes and weights in the most unexpected corners of the sub), of passing the time between one 6-hour shift and another in this steel cylinder secretly prowling the ocean depths.
Shifts are interspersed with meals prepared in the sub's galley. Today's menu is fresh pasta with a tomato, ricotta and a spicy salami sauce, and roast chicken with savoy cabbage. "And at one o'clock in the morning, we traditionally have pizza baked in the ship's oven", adds Faggiana.

**BUNK BEDS AND LOOS.** There are minor comforts in this spartan way of life, despite the many myths concerning submarines: "I joined the Navy because I was fascinated by the film *The Hunt for Red October*", the commander tells us. "But then I discovered that there was nothing very realistic about it." For example, sailors smoking in shirt-sleeves, but all the crew of the Scirè wear heavy flame-proof suits, even at the height of summer. And smoking is forbidden. "The greatest ▸




To watch a video of our day on board the submarine Scirè (from departure to life on board) in augmented reality:
DOWNLOAD THE APP (INFO ON PAGE 5)
Focus REALTÀ AUMENTATA AR

Courtesy Marina Militare

## Family contact: two short text messages each week

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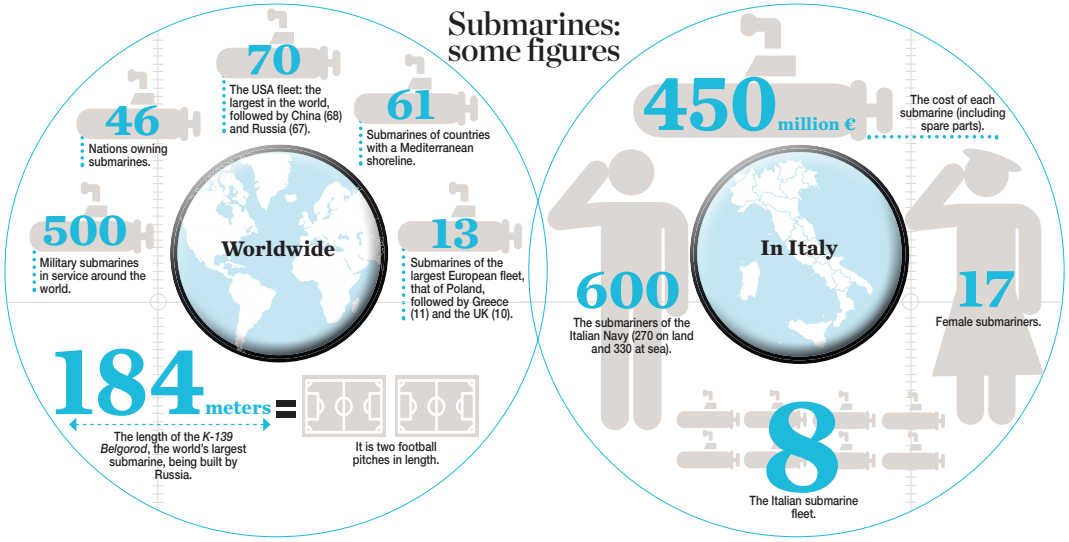
**LIKE SARDINES.** Above: maintenance being carried out inside a torpedo tube. Below: the emergency steering stand. Right: the crew's couchettes, with lockers for personal items in the centre.




danger on board is not a crack in the hull, but fire", explains Faggiana.

All along the submarine (the terms "submersible" is incorrect: it refers to craft that go underwater only occasionally) runs a tube fitted with valves at half-metre intervals: "This is the Built-In Breath System (BIBS)", explains lieutenant Faggiana. "It supplies air when you plug into it with a rebreather, in the event of a fire or emergency, for instance if the sub becomes stranded on the sea bed and we have to evacuate."

In the last 19 years there have been 34 recorded accidents affecting submarines: the most recent in 2017 when the Argentinean ARA San Juan went down with 44 men on board. But these are rare occurrences in a job that is nevertheless very demanding. Nowadays, fortunately, the tradition of hot racking (two sailors sharing a bunk and changing places at the end of each shift) has died a death. Every crew member now has his own berth, but they are just cramped couchettes separated by curtains, each equipped with a 30-cm-square locker. Only the commander has his own private space, the size of a lift cabin. And there are just two toilets. One houses an ejector tube designed to launch an emergency buoy that transmits an SOS signal, the other a tube used to dispose of organic wastes (but not excrement, which is treated chemically on the submarine).

**POTATOES AND ONIONS.** "On board, we are careful about managing and sorting wastes. We avoid using glass, while plastics and cardboard are stored in bins and offloaded when we are in port. And to save space, we have a compactor", Martino tells us. Every square inch is precious: in the torpedo room, stowed in odd corners, are sacks of potatoes, courgettes, onions and apples. Everywhere there are stacks of mineral water bottles.

A mission lasts an average of three weeks, followed by one week of shore leave, then another three weeks on the submarine. Now I understand why their wives were hugging the submariners so ardently on the quay in Taranto before we sailed.

In three weeks' time, the crew are due to land on a Greek island, where they will find a change of clothing and other personal effects, transported there by container. Every mission requires complex logistics involving a hundred or so people. But what is the point of all these sacrifices? What are they doing in the ocean depths?

**STRANGE GOINGS-ON.** In recent years, the international strategic websites inform us that the Russian presence has intensified, both above and beneath the Mediterranean... But this is something commander Martino prefers not to discuss.

"Ours is an intelligence function", he tells us. "We monitor mercantile shipping and the risk of smuggling. We are on the lookout for trafficking in drugs, weapons and human beings. Also polluters and possible terrorists. If we observe suspicious movements, vessels sailing unusual routes or failing to transmit their data to the automatic identification system (a sort of automated register of maritime traffic), we keep tabs on them. Through the periscope we can film things that are happening miles away. A few years ago, one of our submarines filmed a fishing boat that was towing two craft carrying migrants, then it cut them adrift. Thanks to our video, the police were able to arrest the traffickers. A satisfying outcome, even though, in the best traditions of the service, our contribution remained secret: no one knew anything about it." F

**Vito Tartamella**

*(translated by Simon Knight)*