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Swedish submarine stays hidden to Americans

[Expressen \(in Swedish only\)](#) ^ | 03 October 2005

Posted on 10/03/2005 7:51:25 AM PDT by [anguish](#)

Swedish submarine stays hidden to Americans

Despite two months of searching, the American navy still have problems locating the Swedish submarine 'Gotland' in a series of cat-and-mouse games in American waters. Now also the Canadian and Australian navies will practice finding Swedish subs. This was recently given the green light by the Swedish government according to 'Blekinge Läns Tidning' [Swedish newspaper]

The US has since this summer rented 'HMS Gotland' with two crews. The submarine is to stay for a year, but the contract can be extended because of the problems in locating it. This, in turn, pleases Kockums [the shipyard building these subs] in Karlskrona.

- It shows that our stealth technology is well developed, says the shipyard's director of information Kjell Göthe. He hopes that the Swedish technology now gets its international break-through.

'HMS Gotland' is equipped with sterling engines which makes it possible for the submarine to stay submerged for several weeks. To the Swedish navy, the benefit is to practice in a new environment with whales and dolphins.

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[first 1-50](#), [51-62](#) [next](#) [last](#)

Quick translation by yours truly - don't flame me for spelling and grammar, please :P

As a sidenote, this story began when a Swedish sub (same class, maybe the same ship) on its way to the Mediterranean met up to practice with a LA-class sub in the Atlantic a couple of years ago. The American response, at that time, was that the sub "came and disappeared like a ghost". In the Med it also made life miserable for the crew of a French nuclear sub.

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2005-10-14

Gotland makes good start during exercises in the USA

The twelve-month lease of the Swedish Navy submarine HMS Gotland to the US, complete with Swedish crew, signifies considerable success for the Royal Swedish Navy and for Kockums. One of the submarine's roles will be to play aggressor in exercises with the US Navy. She will operate from a number of US Navy bases on both west and east coasts of the United States. In exercises carried out so far, she has proved very difficult to track.

Since the end of June, HMS Gotland's home port has been San Diego, on the west coast of the USA. Several joint exercises have already been carried out with the US Navy, and Gotland has performed well. The Americans have found her hard to detect, demonstrating the excellence of the vessel's advanced stealth technology. In particular, the Stirling AIP (Air Independent Propulsion) system has dramatically improved the submarine's capability.

At the time of writing, Gotland is at sea on a joint exercise with a large US carrier force. This will be followed by a submarine rescue exercise. Exercises are what the US visit is all about. Over a period of twelve months, Gotland will spend 160 days at sea, engaged in joint exercises with all types of US vessels and airborne units.



HMS Gotland is performing well in joint exercises in the USA and is proving an elusive adversary.

"Things have gone very well so far," says Lieutenant-Commander Peter Östbring, station commander of the First Submarine Flotilla, currently in San Diego. "Our input during the exercises in which we have participated has received considerable praise. We have shown how we operate and been congratulated on the submarine's design and the fact that she is very silent-running and difficult to detect."

Gotland can conduct operations in the littoral, which are impossible for the much larger nuclear submarines. The Swedish Navy is also highly specialised in operating in difficult-to-navigate shallow coastal waters.

"This presents us with a golden opportunity to gain experience and detailed knowledge of how best to operate Gotland in waters other than our own littoral," says Peter Östbring.

Following a request from the USA, the Swedish Government has granted permission for HMS Gotland to participate in joint exercises with units from the Canadian and Australian navies.

Peter Larsson, Kockums' Manager of Support & Maintenance, is currently in the USA, involved in planning how he and his colleagues will provide necessary support and service and how they should respond in the event of some unexpected crisis.

BACK



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Swedish Submarine HMS Gotland Arrives in San Diego

Story Number: NNS050630-03

Release Date: 6/30/2005 12:57:00 PM

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By Journalist 2nd Class Paul Cage, Fleet Public Affairs Center Pacific

SAN DIEGO (NNS) -- The Swedish attack submarine HMS Gotland arrived at Naval Air Station North Island, Calif., June 27 to begin a one-year bilateral training effort with the U.S. Navy's anti-submarine warfare (ASW) forces.

Gotland will play a major role in the Navy's ASW training by being an opposing force (OPFOR) during exercises against carrier and expeditionary strike groups, air patrols and other forces.

"We have been waiting for this day," said Lt. Cmdr. Jan Westas, commanding officer of Gotland, which was shipped on a container ship from Sweden while the crew traveled separately. "We have all missed Gotland. Everyone is motivated, ready and eager to go to sea and get back to work."

Gotland was selected to be the OPFOR because of its unique propulsion system. Gotland is the first submarine in the world to operate with an air-independent propulsion (AIP) system.

"The Stirling AIP system allows us to stay submerged at sea for weeks without having to come up to recharge our batteries or snorkel for air," said Lt. Cmdr. Rickard Boberg, Gotland's chief engineer. "No other Navy in the world except for Japan uses this system, and they bought it from us. With our low signatures and smaller sonar cross section, it will be a little more challenging for the [other] ships and submarines."

Gotland's trip from Sweden to San Diego took about a month. During that time, the crew prepared for its arrival by making logistical arrangements with local contractors for services the submarine requires.

"The time was also used to prepare the crew for operations in San Diego," said Westas. "We also spent some time getting acquainted with the area, enjoying attractions like Sea World and Disneyland."

Gotland's crew is proud to be participating in the bilateral training.

"We have done most of our training in the Atlantic and Baltic Oceans with various NATO countries," Westas said. "So for us to be here representing Europe is an honor."

Sweden is not a member of NATO. Instead, it is part of the Alliances Partnership for Peace program, which is aimed at improving defense cooperation. Through various programs, exchanges and exercises, including Gotland's year-long training effort here, the Partnership for Peace program will help partner countries like Sweden prepare to operate jointly with NATO forces.

Before beginning the yearlong training here, Gotland's crew has to complete a lot of work to make the boat ready for sea.


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050627-N-0685S-003 San Diego, Ca. (June 27, 2005) – The Swedish diesel-powered attack submarine HMS Gotland arrives in San Diego on a transport ship from Sweden. Gotland will begin a one-year bilateral training effort with the U.S. Navy's anti-submarine warfare forces in July. U.S. Navy photo by Photographer's Mate 3rd Class Jo A. Wilbourn Sims (RELEASED)

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"This is the first time Gotland has been in the Pacific, which is very different from the Baltic Ocean," Westas said. Gotland was built for operating in the waters around Scandinavia, which has less salt content. "Now that we are in the Pacific, we will have to re-ballast Gotland for the Pacific."

The 30-person male and female crew is comprised of 19 officers and 11 conscripts.

"This is a small crew, and we are very happy to have been selected to participate in these exercises," Westas said.

With Gotland's arrival, ships, aircraft and their crews in the Pacific will now have more realistic and effective training, Fleet ASW officials said.

"We are ready to get to work and challenge your Navy," said Westas. "We are the underdog. However, we are ready to show whoever we are up against what we can do."

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JINSA Online, March 04, 2005

Why is the U.S. Navy Leasing a Swedish Submarine?

Air-Independent-Propulsion and the Resurgence in Anti-Submarine Warfare

It has been more than a decade since the U.S. Navy has needed to prepare for undersea warfare against a capable submarine force. Since the Soviet collapse some 15 years ago, the chief undersea threat shifted to diesel-electric submarines operated by rogue states such as Iran and North Korea. These boats were of limited range and were relatively easy to track due to the need to regularly approach the surface to snorkel for air to run the diesel engines to recharge the propulsion motor batteries. The advent of Air Independent Propulsion (AIP) has changed the equation. AIP allows these submarines to run their diesel engines submerged using stored oxygen in a closed cycle. Another form of AIP permits the submarine to operate its electric motors on energy produced by fuel cells. On October 28, 2004 the Swedish government accepted a U.S. Navy proposal to lease an AIP-equipped submarine and its crew of 25 for anti-submarine warfare training, which will begin the early part of this year.



A Swedish *Gotland*-class AIP-powered submarine similar to the one the U.S. Navy has agreed to lease for intensive ASW training.

The AIP-equipped *Gotland*-class submarine, one of five in Swedish service, will be stationed at the United States Naval Base at Point Loma in San Diego, and will be involved in training exercises in both the Pacific and Atlantic. Officials expect the information gained in the training operations to enhance American sonar technology and to lead to the establishment of a solid bank of operational experience versus AIP-equipped subs. Rear Admiral Donald Bullard, Director of Readiness and Training for Fleet Forces Command, said, "This will vastly improve our capability to conduct realistic, effective antisubmarine warfare (ASW) training [and further]... our efforts in developing coalition ASW tactics, techniques and procedures."

The U.S. Navy is concerned that “rogue” states and terrorist organizations will acquire this capability because it is far less expensive to build and operate diesel-electric submarines with the AIP system than nuclear submarines. Countries that operate AIP-equipped submarines include Sweden, Germany, Greece, Italy, Pakistan, and Russia. The Spanish Navy has funded a three-part process of researching and developing AIP systems for its new S-80 submarines, four of which are scheduled to be commissioned between 2005 and 2014. These submarines are expected to cost some \$650 million each.

Over the past decade, the U.S. Navy has experienced a marked decrease in ASW training missions including those in shallow, crowded waters. It is in these “littoral” waters where the threat was most clearly manifested. The Straits of Hormuz, crowded with supertankers, thousands of smaller craft, shallow waters, reefs and wrecks, is the chokepoint a hostile navy could easily block, cutting the flow of oil dramatically. The tight and the underwater noise generated by the immense traffic severely diminish the effectiveness of advanced sonar systems.



Australia's *Collins*-class conventionally-powered submarines, seen here plying Pacific waters, have twice bested U.S. *Los Angeles*-class boats in training exercises.

Vice Admiral Bernard “Bud” Kauderer, a member of the JINSA Board of Advisors, said, “the decline in ASW coincided with the end of the Cold War. The greatest threat posed to the U.S. in submarine warfare was the USSR, which at its peak reached up to 300 subs, both diesel and nuclear. There was no other force that comprised a significant threat to our Navy. There are other capable forces, but they’re very small. The decline of the USSR paralleled the decline in our focus on ASW. Instead, our naval forces became more involved in strike warfare. ASW is an art that needs to be practiced.” For example, in 2002 during the biennial RIMPAC, exercises involving the navies of the U.S., South Korea, Canada, Japan, Chile, Peru, and Australia, an Australian *Collins*-class diesel-electric submarine was able to score multiple kills against two U.S. *Los Angeles*-class nuclear-powered attack submarines.

With the former Soviet submarine fleet largely left to rust at their moorings, ASW had not been a large concern until recently, when AIP submarines became more operationally effective and relatively easy to obtain. Only Swedish naval personnel will operate the Swedish ship, but there will be a handful of U.S. Navy researchers onboard to study the different features of the submarine. Kauderer said that Swedish submarine’s operations would most likely begin with basic exercises in which the U.S. mission will be to locate the sub and then become more complex to the point where the Swedish sub will be used against an entire carrier strike group, consisting of one carrier, destroyers, cruisers, and one nuclear attack

submarine.



The USS *Virginia* (SSN-774), seen here undergoing sea trials, is leading U.S. submarine warfare into the future.

Admiral Vern Clark, Chief of Naval Operations, has strongly stressed the need for an improvement in ASW. He has overseen the establishment of three new programs to further the training of sailors: Fleet ASW Command, based out of San Diego; Task Force ASW, based out of Washington, D.C., which will study ASW and come up with a plan to better the training of sailors; and the Program Executive Office for Integrated Warfare Systems at Naval Sea Systems Command, which is in charge of researching, developing, and acquiring new technology to assist in ASW. The three are responsible for studying current ASW training exercises, capabilities, and weaknesses, and recommending different options for improving upon them. New operational techniques and new technology, some which had not been tested before, were to be put to use during an exercise called "Undersea Dominance '04." These exercises involved many different types of ships. Admiral Clark, as reported by The Navy League of the United States quoted Clark in their October 2004 issue of *Sea Power* as wanting to "fundamentally change ASW operations away from individual platforms - ship, submarine or aircraft - to a system with the attributes of 'pervasive awareness, persistence and speed, all enabled by technological agility.'"

The newest class of U.S. nuclear-powered attack submarines, the *Virginia*-class, is being equipped with improved stealth capabilities and the most advanced ASW and combat control systems. Another characteristic of the new submarines is the reduced magnetic signature to allow it to operate more closely to mine fields in littoral waters. The lead boat of the class was commissioned on October 23rd, 2004 and there are eight more under construction with additional orders on the way.

by JINSA Editorial Assistant Andrew Dualan.

Source: <http://www.jinsa.org/articles/view.html?documentid=2873>

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SSK GOTLAND CLASS (TYPE A19) ATTACK SUBMARINE, SWEDEN

Kockums were awarded the contract in March 1990 to build three Gotland Class submarines, HMS Gotland, Uppland and Halland. The first of class, HMS Gotland, was commissioned in 1996. The second and third, HMS Uppland and Halland, were commissioned in 1997. Kockums is owned by HDW of Germany.

In November 2004, the Swedish Government approved a proposal for the US Navy to lease HMS Gotland and crew for one year to participate in naval exercises. Gotland arrived at the Naval Air Station North Island, San Diego in June 2005. The submarine will operate in the opposing force (OPFOR) role.

COMBAT MANAGEMENT SYSTEM

The ship's combat management system is the 9SCS Mark 3 from Saabtech Vectronics (formerly CelsiusTech). The system carries the Swedish Royal Navy designation SESUB 940A. The system uses an extended version of the ADA software from Saabtech Vectronics' 9LV Mk 3 surface ship combat management system. The fire control system has the capacity to control several torpedoes in the water simultaneously. The 9SCS Mark 3 Combat Management System has three Type IID multifunction consoles from Terma. The terminals are for command and control, communications, and weapon control. The consoles are connected via a dual-Ethernet, copper-wire, local-area network (LAN).

TORPEDOES

The submarines are fitted with four 533mm torpedo tubes and two 400mm torpedo tubes. The Bofors Underwater Systems Type 613 torpedoes are fired from the 533mm tubes. The Type 613 is a heavy-weight anti-surface ship torpedo. It has wire guidance and passive homing, delivering a warhead of 240kg. The launch of the torpedo is by swim-out discharge: the speed is 40 knots and the range, 20km. The 613 torpedo equips all Sweden's submarines, the A19 Gotland, A17 Vastergotland, A14 Nacken and A12 Sjoormen.

Saab Bofors Underwater Systems has developed a new heavyweight torpedo for the Swedish Navy, the Torpedo 2000 (Swedish Navy designation Torpedo 62). It is a high speed anti-submarine/anti-surface torpedo with a range of more than 40 km and speed of over 40 knots. The Gotland class submarine will be equipped with the Torpedo 2000, which is fired from the 21in tubes. Gotland has the capacity to carry sixteen Torpedo 2000s. The combat system on the Gotland class submarines will be adapted to accommodate a new generation of torpedoes including the new Torpedo 2000, which will become the submarine's principle weapon.

The two 400 mm tubes fire the Saab Bofors Underwater Systems Type 43 lightweight anti-submarine torpedo. The planned modifications to the submarine's combat system will accommodate Saab Bofors new lightweight Type 43x2 anti-submarine /anti-surface ship torpedo. The Type 43x2 is wire-guided and has improved tracking compared to the standard Type 43 torpedo. Each 400mm tube will take two Type 43x2 torpedoes.

The Gotland deploys the Saab Bofors Underwater Systems stand-off self-deployed Mine 42. The Mine 42, derived from a Type 27 torpedo, travels unguided to a predetermined location to lay on the seabed. The submarine also has the capacity to carry 48 mines mounted externally in a girdle arrangement.

SENSORS SUITE

The submarine is equipped with a CSU 90-2 integrated sonar sensor suite from Atlas Elektronik. This includes a passive cylindrical bow array, an intercept array and two passive flank arrays. The sonar system uses ADA software.

The submarine is fitted with a Kollmorgen search and attack periscope and a Terma Scanter navigation radar. The electronic support measures system is the Thales Defence Ltd. Manta radar surveillance and warning system. Manta carries out surveillance, detection, analysis, classification and identification of hostile radar threats from D-band to J-

band.

PROPULSION SYSTEMS

The submarine is equipped with two MTU diesel engines and two Kockums V4-275R Stirling Air Independent Propulsion (AIP) units. The Stirling engines are mounted in elastic, soundproof modules and each provide up to 75kW. The submarine has the capacity for two weeks of air independent propulsion at a speed of 5 knots without snorkeling. The AIP uses liquid oxygen and diesel fuel in a controlled inert (helium) environment. The AIP liquid oxygen tanks are located on the deck below the engines. The propulsion system provides a speed of 11 knots surfaced and 20 knots dived.



HMS Gotland first of class.



The submarine is equipped with a Kollmorgen search-and-attack periscope.



The submarines are fitted with four 21in and two 15.75in torpedo tubes.



The 9SCS Mark 3 Combat Management System has three multifunction consoles.



HMS Uppland.