# Sabotage of the Nord Stream Pipelines: For Once, the Question *'Cui Bono?'* Is Not Sufficient

by Lt. Col. (ret.) Ralph Bosshard

*To counter loose speculation on the sabotage of the Nord Stream 1 and 2 gas pipelines, Lt. Col. (ret.) Ralph Bosshard of the Swiss Army has written for* EIR *an authoritative analysis of the requirements for such a sabotage. An expert on countering cyber war, Colonel Bosshard during 2014-2017 served in the peacekeeping mission of the Organization for Security and Cooperation in Europe (OSCE) in Ukraine. In 2014, as Senior Planning Officer in the Special Monitoring Mission to Ukraine, he was in Kiev, Mariupol, and Dnipropetrovsk. Until 2017 he served as Special Military Adviser to the Permanent Representative of Switzerland to the OSCE, and to the Swiss Ambassador to Kiev. From 2017 to 2020, Colonel Bosshard was Operations Officer in the OSCE High-Level Planning Group, planning for a military peacekeeping operation in the South Caucasus. Subheads are the author's.*

Sept. 28—Speculation is currently rife as to who was responsible for the sabotage attack on the Nord Stream 1 and 2 natural gas pipelines off the Danish island of Bornholm in the Baltic Sea. While some Western commentators are already asking the question of "*cui bono?*" (who benefits?) and are feverishly looking for hints of a false flag operation by the Russians,[1] others are reminding us of those who, months ago, desperately sought to prevent the Nord Stream 2 from being commissioned. So far, only the time and place of the events, that were unanimously identified as acts of sabotage, are really clear. This lets some press representatives imagine such an act of sabotage to be a little easier than it should be in fact.

On Sept. 26, Nord Stream AG announced on its website in Zug, Switzerland, that a pressure drop had occurred in both legs of the Nord Stream 1 and 2 natural gas pipelines the night before.[2]

A second pressure drop occurred on the evening of Sept. 26. According to Nord Stream AG, these events can only be explained by the physical destruction of the lines. Based on the recordings by measuring devices for detecting earthquakes around the Baltic Sea, Danish and Swedish seismologists were able to clarify without a doubt that the seismic waves came from explosions and not from earthquakes, and they were able to give the exact times.[3] Meanwhile, photos from the Danish Air Force have confirmed large amounts of gas rising to the sea surface at these locations (**Figure 1**).

## Reliability of the Information

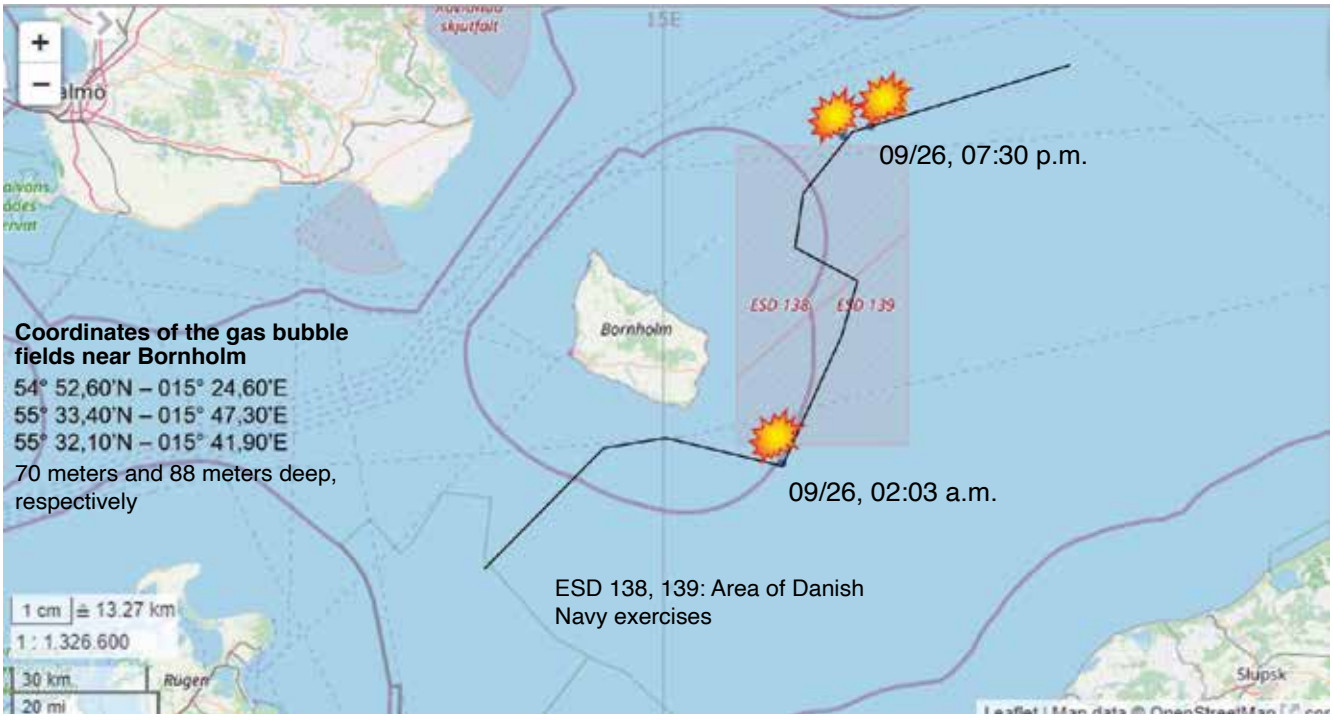
The identified fields of gas bubbles in the Baltic Sea certainly correspond exactly to the location of the explosions on the seabed, because the drift of the rising gas cannot be large at this shallow water depth. In comparison, the seismologists' information about the epicenter of the detected explosions is somewhat imprecise, which is probably due to the precision limits of the measuring devices used.

The sites of the explosions are just outside Danish territorial waters: Apparently, Denmark was to be prevented from interpreting the acts of sabotage as a direct threat. For the same reason, care was probably taken to ensure that the acts of sabotage took place outside of a training area of the Danish Navy. The leak in Nord Stream 2 southeast of Bornholm is almost 30 km from the island, and the one in Nord Stream 1 over 50 km away. Despite the currently mild Autumn weather in the

1. See, for example, *Deutsche Welle*'s contribution with experts, and that of Tucker Carlson on his Sept. 27 Fox News Show, as reported Sept. 28 by LifeSiteNews.

2. See Nord Stream's press release of Sept. 26 and its update from Sept. 27.

3. See map. For the location of the explosions, see this map. Information for seafarers from the Danish maritime authorities is available here. Information from the seismologists is available in an article posted Sept. 26 on the VolcanoDiscovery website.




https://www.koordinaten-umrechner.de, with author's additions

*Figure 1. Locations and Times of the Explosions*

region and the water temperatures of around 15 degrees [Centigrade], access to the two natural gas pipelines is a challenge, because Autumn storms are not uncommon in the Baltic Sea from September onward.[4]

## Professionals at Work

The pipelines are at a depth of 70 and 88 meters at these locations. Diving at this depth requires the use of different mixtures of oxygen with other gases such as nitrogen and helium, the use of special diving equipment if necessary, compliance with decompression stops, and the rapid availability of decompression chambers in the event of an accident.

All this excludes sabotage by recreational divers, because diving under these conditions requires special training and equipment. Professionals were probably at work here. For such professionals, however, diving depths of 70-90 m do not represent a problem, so there is a good chance that meaningful information on the type of demolition can be obtained in the coming weeks. Whoever destroyed the natural gas pipelines can expect incriminating evidence literally to come to light.

Specially modified submarines are able to release and retrieve divers through their torpedo tubes or through special hatches without them having to make time-consuming decompression stops when surfacing. For this purpose, such submarines are equipped with a decompression chamber in which divers make up for the decompression stops, so to speak, until they can move around in the submarine again at normal pressure. Here you can also relax between dives. However, decompression chambers could also be installed on smaller ships disguised as sea rescue ships.

Nord Stream 2 was built according to the specifications of Det Norske Veritas (DNV)[5]: the pipes of the

4. Information on Baltic Sea water temperatures, climate data, and weather are available here from watertemperature.org. Weather data is also available here from Meteoblue.com, for the Baltic Sea off Bornholm.

5. See "Offshore Standard Det Norske Veritas DNV-OS-F101 Submarine Pipeline Systems January 2000," available here, especially page 31. [If that website is blocked, then here —ed.] Det Norske Veritas (DNV) is an autonomous and independent foundation dedicated to protecting life, property and the environment at sea and on land. DNV provides classification, certification and verification services related to the quality of ships, offshore units and facilities, and onshore industries worldwide and conducts research in these areas. [*Translator's note: The independent Norwegian foundation, Det Norske Veritas, or DNV, was established in 1864. At that time, the shipping of goods and passengers was not very reliable. To reduce the uncertainties, a committee was formed to evaluate and regulate the classification of ships. DNV's goal is therefore to establish criteria that guarantee the safety*

Nord Stream 2 are made of special steel L485/X70 with portions of copper, chromium, molybdenum, manganese and other metals; have an inner diameter of 1,153 mm; and are 26.8 to 41 mm thick.[6]

They are designed reliably to withstand an internal pressure of 170-220 PSIG [pounds per square inch, gauge, or relative to atmospheric pressure—ed.] at a depth of up to 220 m for years to come. In addition to their already strong construction, DNV requirements require the steel pipes to be concrete-coated and buried in the seabed, covered with sand or rubble, or covered with a so-called mattress of some other material.

## Large Amount of Materials

In order to completely blow up the Nord Stream's steel pipe alone, a quantity of at least 20 kg of explosives is required, which must fit snugly against the pipe so that its effect does not fizzle out. In addition, there are the explosives that are necessary to destroy the concrete casing: in terms of quantity, this could be even more than that for the steel pipe itself. However, this means that the perpetrators had to first uncover the pipeline and clear the pipeline cover to the side, to ensure that slipping material cannot slip into the leak created [by the explosion —ed.] and close it.

If the perpetrators did not bother to remove the covering in front of the pipeline before detonating, then they would have to use a correspondingly larger explosive charge. That could soon amount to several hundred kilograms of explosives. These figures refer to very high explosives from the military sector. Civilian explosives often deliberately achieve lower explosion speeds and then require a correspondingly larger quantity.

The pressure of the escaping gas may have contributed to the seismic fingerprint that the Danish and Swedish scientists found. If the perpetrators had wanted to cause a secondary explosion of the natural gas still in the Nord Stream 1 pipeline, they would have had to inject even larger amounts of oxygen. At a depth of 80 m, this is a complex project, because a pressure of 8-9 PSIG has to be overcome.

An explosion of 28 tons of conventional explosives in the Negev Desert in Israel in 2004 caused an earthquake measuring 2.9 on the Richter scale.[7] When the Russian submarine *Kursk* sank, scientists recorded a first explosion of 70-100 kg of TNT 4,500 km away, followed by a second of 3-7 tons.[8] One should think of such magnitudes when talking about blowing up the two pipelines in the Baltic Sea.

The robust construction and difficult accessibility of natural gas pipelines in general, even on land, mean that operators and authorities in the countries concerned usually do without a complete monitoring of such pipelines. It would be much easier for a saboteur to hit one of the above-ground gas supply facilities.

Whoever blew up the two gas pipelines had to put in a lot of technical effort and spend a lot of time on the object. The extensive work cannot be done with a few frogmen, and the delivery of explosives, oxygen bottles and tools required efficient means of transport. This cannot be done with inflatable boats.

The high expenditure of materials and time, in connection with the difficulty of access to the natural gas pipelines, suggests that the perpetrators had been working at the crime scene for a long time and were present with ships or boats during this time. It's a wonder they didn't arouse suspicion, so close to Danish territorial waters and a Danish Navy training area. Military personnel usually react with suspicion to the presence of strangers near their training areas.

At the same time, the water depth of 70 and 88 m is a strong argument against the use of submarines to prepare the detonation, because large submarines in particular prefer to operate in deeper waters, especially when we are dealing with presumably well-monitored waters such as the Baltic Sea. However, the deepest waters of the Baltic Sea are found in the Gotland Basin, as well as north and west of the island of Åland, several hundred kilometers from Bornholm. In the search for the perpetrators, it will probably be necessary to look for smaller ships rather than submarines.

## War on the Seabed

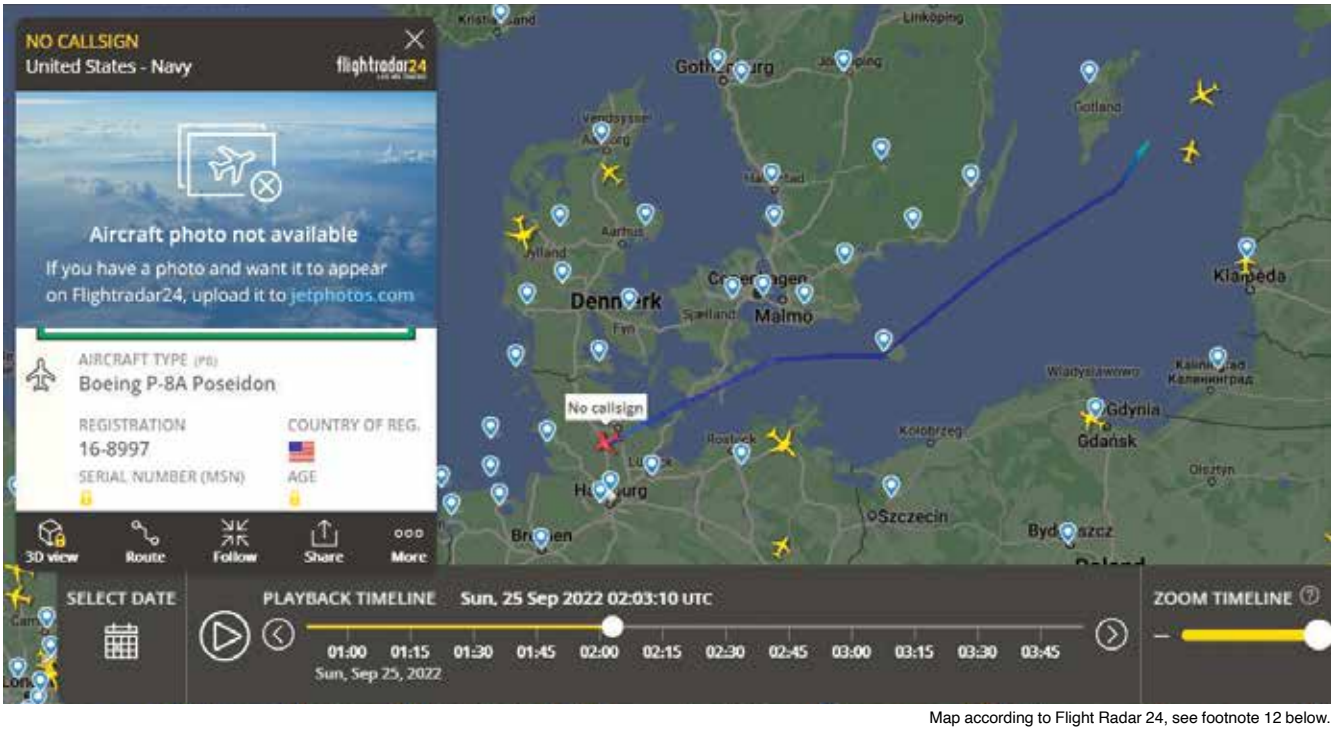
In recent years, the seabed has increasingly become a battlefield of the great powers. It is known that the U.S.A., China, Russia and France are running seabed warfare programs in order to protect their own underwater infrastructure and to attack that of the enemy. Small submarines and unmanned underwater vehicles (drones) play an important role here. These are usually

*of ocean-going vessels.*]

6. See Nord Stream facts and figures here. and here.

7. See the article, "Powerful Explosion Commissioned by Israeli Seismologists," in *Neue Zürcher Zeitung* of June 18, 2004.

8. See the corresponding article, "Seismologists Analyze Explosions on the *Kursk,*" in *Die Welt* of Jan. 16, 2001.




Map according to Flight Radar 24, see footnote 12 below.

*Figure 2. A U.S. maritime patrol aircraft (the aircraft symbol in red) on Sept. 25 over the Baltic Sea, its track indicated by the dark blue line. The light blue symbols are airports.*

brought to their place of use by large submarines. The U.S.A. and Russia converted existing submarines into such mother boats and also deployed some completely new crafts for this purpose. But also surface units such as reconnaissance ships—often referred to as spy ships—can deploy such unmanned devices at the scene of action.[9]

So far, submarine drones in particular have primarily fulfilled tasks of intelligence gathering and counter-intelligence service, for example by deploying sonar buoys[10] and "de-bugging" bug-infested telecommunications cables. Cutting cables underwater is also part of their range of skills.[11] However, the ability to carry out extensive work under water has not been under consideration so far, because the autonomy of unmanned underwater vehicles has so far been limited. This limitation excludes long journeys from the base to the site of operation.

## Well-Monitored Baltic Sea

Even today, the Baltic Sea is well monitored. In addition to hydro-acoustic sensors found on board warships of all kinds, numerous sensors on the coast are likely to be used to monitor shipping traffic. In addition, there are surveillance flights by sea reconnaissance aircraft and anti-submarine warfare aircraft from interested states. The night before the attack on Nord Stream 2, for example, a U.S. P-8A Poseidon maritime reconnaissance aircraft was in the region (**Figure 2**).

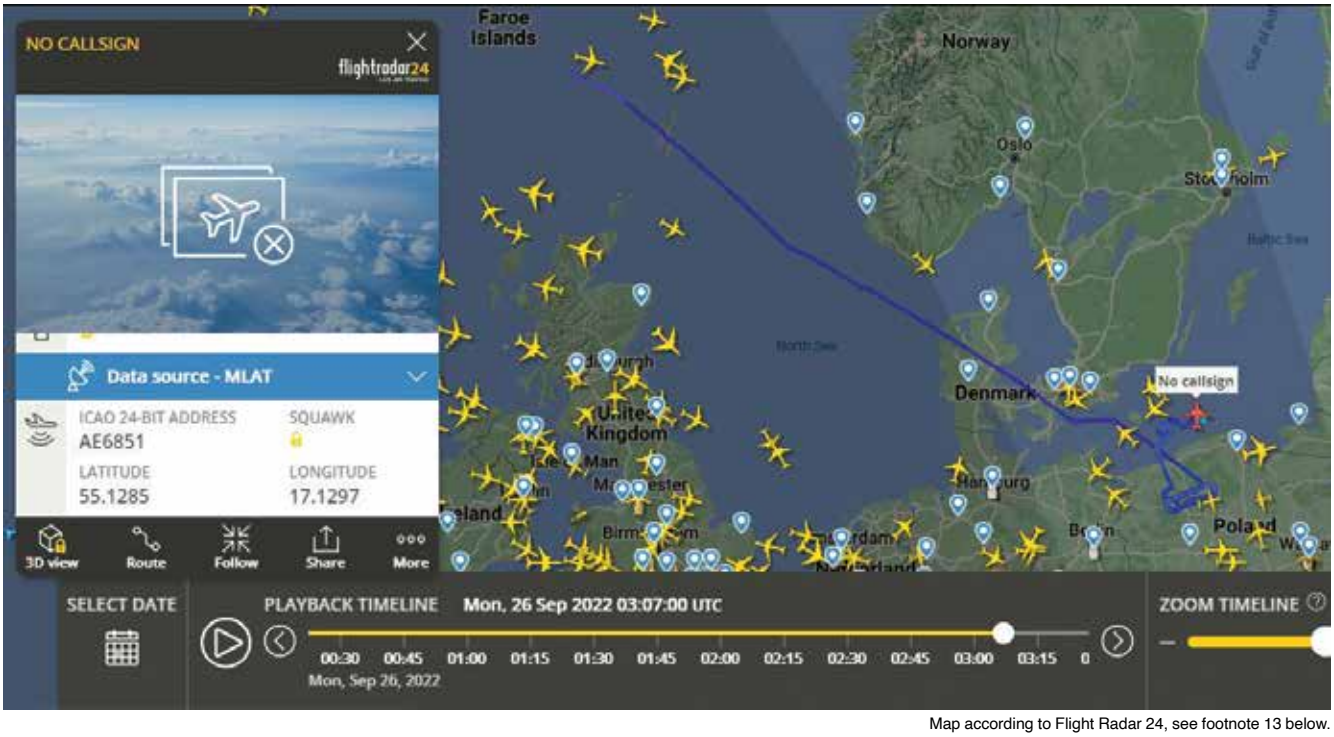
And just as the first explosion occurred, sometime between 01:32 and 02:20 a.m. on Sept. 26, an unidentified aircraft was being refueled by a U.S. KC-135 tanker in northeastern Poland. While the tanker came from Frankfurt, all that is known of the refueled aircraft is that it was first detected that night off the Faroe Islands

9. An overview of Russian submarines for seabed warfare can be found here on H.I. Sutton's blogsite. As a surface unit, the Russian reconnaissance ship *Yantar* should also have the appropriate means. See H.I. Sutton's article from 2017 on the *Yantar,* "Russian Ship Loitering Near Undersea Cables." The U.S. Virginia class Block VI attack submarines will all be equipped with means of seabed warfare, according to an article, "Navy New Virginia Block VI Virginia Attack Boat Will Inform SSN(X), posted Nov. 20, 2020 on *USNI News*.

10. Following the U.S. Sound Surveillance System (SOSUS) system for monitoring the world's oceans during the Cold War, Russia has now also implemented a network of hydro-acoustic sensors in the form of the "Garmoniya system." More on hydro-acoustic systems is available here.

11. These include the *Klavesin-1R*, the *Vityaz-D,* and the *Poseidon* on the Russian side; more information is available in an article, "Russian Autonomous Uninhabited Underwater Vehicles for Military and Civil Purposes: A Brief Overview," posted Sept. 9, 2021 on the Integral website.

12. See the Flight Radar 24 home page.




Map according to Flight Radar 24, see footnote 13 below.

*Figure 3. A U.S. tanker and an unknown aircraft on Sept. 26 over the Baltic Sea. The unknown (red) aircraft's flight is indicated by the blue line.*

and that it "disappeared" off Bornholm at 03:05 a.m., probably because it switched off its transponder. At this time it was flying at an altitude of approx. 7,200 feet (= 2,200 m) at a speed of 825 km/h (446 knots). This is unusual behavior for an aircraft over the open sea (**Figure 3**).[13]

As things stand, it can almost only have been a U.S. long-range reconnaissance aircraft. Remarkably, not even its identity is known; even sea reconnaissance aircraft use transponder signals to identify themselves in dense airspace. However, it is questionable whether the crew of the unknown U.S. plane can do much to clarify the sabotage attacks, because the explosive charges on the gas pipelines may have been lying on the bottom of the Baltic Sea for a long time. But the example shows that surveillance of the Baltic Sea is tight and that ships from far outside the region would find it difficult to operate in the region unnoticed for any length of time.

## 'Stop, Thief'?

This raises a completely different question than the question of who is to benefit: Who finds it easier to carry out such an act of sabotage? If it was the Russian Navy that carried out an extensive sabotage operation in the middle of a sea area surrounded by NATO countries or candidate countries, 300 km from the nearest Russian naval base, then the Russians would have made NATO look ridiculous. That would have been an impressive demonstration of Russian seabed warfare capabilities. The Russians could have accomplished the mere destruction of Nord Stream 1 and 2—without any demonstration effect—much more easily on their doorstep in the Gulf of Finland.

In contrast, it were much easier for NATO: Only in June, the U.S. 6th Fleet, together with its NATO partners, carried out exercises just off Bornholm in which unmanned underwater vehicles were also tested.[14] The "BALTOPS 22" exercise could have been used as a test run or as a camouflage backdrop for installing explosive devices on the natural gas pipelines. Of course, there is currently no evidence of authorship by either side, and a truly independent investigation is unlikely to ever take place. But the unbiased observer has a question: Is a thief shouting "Stop, thief"?

13. Ibid.

14. See the article, "BALTOPS 22: A Perfect Opportunity for Research and Testing New Technology," posted June 12, 2022 on NATO's Naval Striking and Support Forces website.