

Salvage ships test Norwegian waters for reactor leak

Russians may try to raise nuclear sub

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THE arrival of a Soviet salvage ship off northern Norway, where a nuclear-powered submarine sank in 4,500 feet of water at the weekend, has fuelled speculation that the Russians may try to recover what is believed to have been a test bed for their latest underwater warfare technology.

The Soviet salvage vessel is being joined by a Norwegian research ship. Both crews have initially been ordered to take deep water samples to establish whether the submarine's unique liquid metal-cooled reactors are leaking radioactivity. The Norwegians hope to have the results of their tests by Thursday.

But the Russians may also be exploring the possibility of raising at least part of their 6,400 ton submarine.

At that depth, though not impossible, it would be an extremely difficult and expensive operation. It would be worth attempting only if it was feared that the Americans could learn something vital by doing the same — bearing in mind that support vessels on the surface are going to be visible to either side.

News of the Soviet salvage ship's arrival, accompanied by a tug and two other vessels, came from the Norwegian Defence Ministry in Oslo.

A spokesman said defence officials were still sceptical about the prospect of salvage. The Soviet ships may simply have been relatively close by, he said.

But he pointed out that wreckage has in the past been recovered from even greater depths, and the Russians are bound to consider the options.

In Oslo, the Soviet embassy's

press attache, Mr Vadim Rozanov, confirmed yesterday that the Russians will be sampling water for seabed traces of radioactivity (none has so far been found near the surface).

"I don't know if there are any plans to salvage the submarine," he added.

In Moscow, the Foreign Ministry's spokesman, Mr Gennady Gerasimov, said the feasibility of raising the submarine had not yet been established. "It's a bit deep there," he said.

But according to the government newspaper, *Izvestia*, the Russians have already been able to plot the sunken submarine's precise position on the seabed, which is the first problem in any salvage attempt.

Norwegian scientists have meanwhile prepared a list of 10 technical questions they would like answered about the Soviet Mike class submarine, including the exact nature of the reactors' cooling system, the amount of radioactivity accumulated as waste products in the nuclear fuel, and the strength of the reactor casing — which can be expected initially to survive the water pressure at a depth at which the submarine's hull casing does not.

The questions have been prepared under the direction of the Norwegian Government's Committee on Radiation Accidents, formed after the 1986 Chernobyl disaster, and will be transmitted to the Soviet authorities through diplomatic channels.

"We are not prying into their secrets," a spokeswoman for the Foreign Ministry said, "but we are concerned about the safety aspects."

According to *Izvestia*, preliminary information from survivors of the sinking in Murmansk indicates that the fire which led to the disaster was probably caused by an electrical short-circuit.

The fire is reported to have begun in the submarine's "seventh section" and spread to the sixth section. The Soviet Defence Minister, Mr Dmitri Yazov, told *Izvestia* that after fighting the fire for two or three hours, "the crew heard several explosions." These could have been caused by "special devices" of which the submarine carried seven, the minister said, and it was possible the submarine's hull was cracked in some places.

The "special devices" referred to by the Soviet Defence Minister could have been torpedoes, two of which carried nuclear warheads, according to *Izvestia*, except that the newspaper reports elsewhere that there was a total of 10 torpedoes on board, not seven.

Four sailors went down with the submarine, and many more died in the icy water before rescue ships reached them.

The submarine's captain was among those killed. Those who survived are still in a serious condition in hospital in Murmansk, where initially only the naval investigating team was allowed to talk to them.

The Norwegian Defence Minister, Mr Johan Joergen Holst, speaking from a small garrison at Vardoe, close to the Soviet Arctic border, said the accident was "a reminder of military realities" in the waters off Norway.

This was a reference to the fact that Soviet submarines based around Murmansk have to pass round the North Cape, and then down through the so-called Iceland-UK gap, if they are to pose a threat to Nato's control of the North Atlantic.

He apologised for the delay in alerting Norwegian scientists and civil air-sea rescue services on Friday, explaining that the military authorities did not want to compromise their sources of information.