

BACKGROUND TO VANGUARD – TRIUMPHANT COLLISION

This paper has been drafted to provide background to the collision between HMS Vanguard and Le Triumphant on 3 / 4 February. A series of incidents on British submarines over the past decade calls into question safety practice in the nuclear submarine fleet. Although the reason for the recent incident is not yet known, collisions between submarines are a reasonably foreseeable hazard.

Submarine collisions

January 1973

The Polaris submarines HMS Revenge and HMS Repulse collided while manoeuvring at Faslane. The hydroplanes of HMS Repulse were damaged.

11 February 1992

USS Baton Rouge (Los Angeles Class) collided with the Russian submarine K-276 near Kildin Island in the Barents Sea. The US submarine was taken out of service and formally decommissioned in 1995.

19 March 1998

USS Kentucky (Trident) collided with USS San Juan (Los Angeles Class) off Long Island, New York. USS Kentucky was on the surface and USS San Juan was submerged at the time of the collision.

In 1994 Scottish CND published a report on the Safety of Trident. This included an assessment of the risk of a collision based on recorded incidents since 1950. This concluded that there was a high probability of a Trident submarine being involved in a collision during the life of the system and that there was a significant chance of two submarines colliding.

Recent incidents involving British submarines

12 May 2000

Radiation leak on HMS Tireless in the Mediterranean. The crack in the coolant circuit was made worse when the reactor was restarted at sea on instructions from the MoD. This resulted in a reactor repair in Gibraltar which took 12 months to complete.

19 November 2000

HMS Triumph grounded at the edge of the continental shelf at a speed of 20 knots and depth of 200 m during a submarine commanders training exercise. The submarine was 2.6 nautical miles from its estimated position. The Board of Inquiry found “The grounding was caused by poor navigation”.

29 November 2000

Trident submarine HMS Victorious ran aground on Skelmorlie bank in the Clyde estuary. This is a well known and clearly marked sandbank. The Board of Inquiry found “The primary cause of the grounding was a failure of standard navigational practice”.

6 November 2002

HMS Trafalgar ran aground on Fladda-Chuain, 6 km North of the Isle of Skye during a submarine commander’s training course. Navigation aids had been deliberately concealed from students and no back up navigation system used. The Board of Inquiry found that the safety organisation “failed to operate when it was most needed”.

13 May 2003

HMS Tireless hit an iceberg while 60 m below the surface. The crew had been relying on passive sonar which is not able to reliably detect icebergs. The Board of Inquiry found "The focus of RN submarine effort is in tactical exploitation and there was insufficient focus (HQ and on board) on the hazards to submarine safety presented by icebergs".

20 March 2007

Fatal explosion on HMS Tireless under the Arctic ice pack. Currently the subject of an inquest. A large proportion of the vessel was out of action as a result of smoke. It took 44 minutes before the casualties were reached and the vessel had to travel 2 miles before it could find a gap in the ice to surface. This incident followed the fatal fire on the Canadian submarine HMCS Chicoutimi on route from Faslane 3 years earlier. The Board on Inquiry found that the lessons from the Chicoutimi fire had not been learnt. It also said that, but for the actions of one of the crew, there could have been a major conflagration with very serious consequences. The explosion was caused by a SCOG oxygen generator. MoD risk assessments had assessed that such an explosion was so unlikely that it did not have to be considered as a possibility.

26 May 2008

HMS Superb hit an underwater pinnacle in the Red Sea damaging her sonar. The submarine did not return to its home port, Faslane, but limped back to Devonport via Crete and Gibraltar. In September 2008 the MoD decided to scrap the submarine early rather than repair it.

Hazards of a Trident submarine

A Trident submarine is a floating Chernobyl. It is powered by a nuclear reactor. There is a "Battleshort" switch which can override the automatic safety systems in the reactor. This is inherently dangerous. Civil nuclear reactors are not permitted to have any means of overriding safety systems. The Standard Operating Procedure following a major incident is for the Captain to use the Battleshort. For example this was done in the incident on HMS Tireless on 20 March 2007.

Each Trident submarine has 16 missile tubes and is normally armed with 14 missiles. Each missile contains 70 tonnes of High Explosive. The total amount of High Explosive in the missile fuel on a submarine is 980 tonnes. A total of 48 nuclear warheads are on each vessel. The warheads are placed around the third stage of the missile and there is a risk that a missile accident could result in a nuclear explosion. This hazard was identified in a major review of US nuclear weapons safety by Sidney Drell, published in 1990.

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