

ers from the South Pole at the base of the Antarctic Peninsula, is at the end of one geomagnetic line of force that passes outward through the magnetosphere and returns to earth in the northern hemisphere at what is called its conjugate point, near the four stations. At Siple Station there also is little electromagnetic disturbance. By correlating magnetometer and riometer data taken at the five stations with data on solar flares from satellites, the scientists were able to locate the new source of ULF waves.

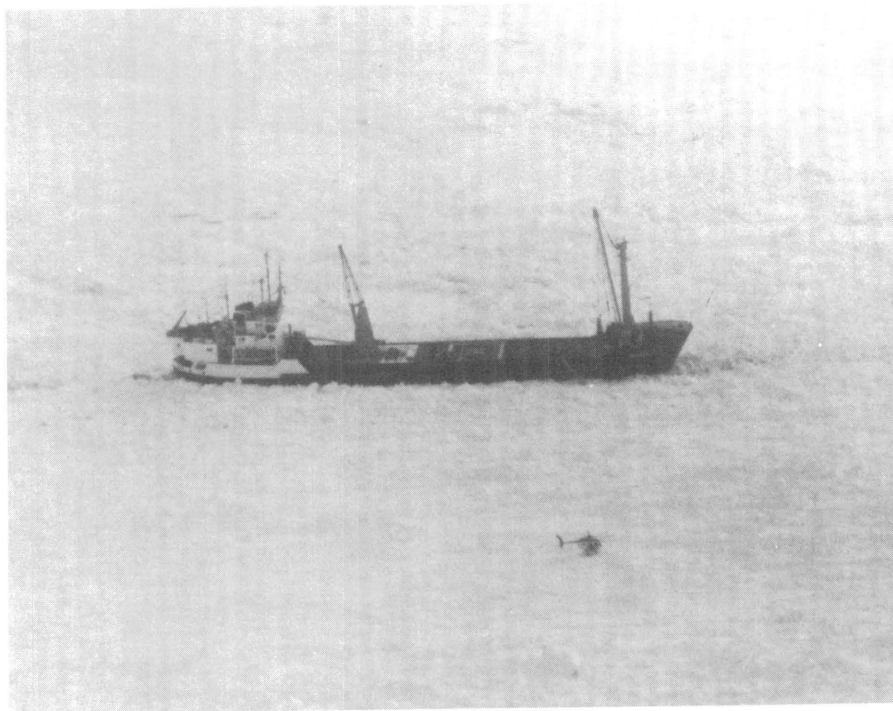
This discovery will help scientists understand both the structure of the magnetosphere and the ionosphere, and the interaction between these two regions that surround the earth. Besides being of fundamental scientific importance, ULF waves can be used to predict the occurrence of magnetic storms that can disrupt electric power systems on a large scale and cause outages in long-distance communications. Because these waves penetrate the earth, they also are useful in studying the earth's crust and upper mantle. Drs. Rosenberg and Lanzerotti and Mr. Morris have published the results of their work in the *Physical Review Letters*, one of the journals of the American Physical Society.

## U.S. aids West German research party

During the afternoon of 18 December 1981, the West German research ship *Gotland II* sank off the coast of northern Victoria Land. The 93-meter, ice-strengthened *Gotland II* was in this region to support West German scientists investigating the geology and geophysics of northern Victoria Land. The program was to be a continuation of research begun during the 1979-1980 austral summer.

On 17 December, McMurdo Station personnel received word, relayed from a U.S. field camp in northern Victoria Land, that the 4,400-ton ship was trapped in the pack ice in Yule Bay (70°44'S 166°40'E). Further communication revealed that the ship's starboard side had been bent by the pressure of the ice, and a leak had developed in the hold. The captain had immediately evacuated 27 of the 41 crew members and passengers, including the West German scientific party, to a coastal camp known as Birthday Ridge Camp, approximately 120 miles from the U.S. field camp in northern Victoria Land.

At first no emergency assistance was requested because the emergency discharge pumps onboard seemed to be controlling the amount of water entering the hold. Several hours later, the captain reported



U. S. Navy photo by Gordon M. Sobe.

The West German ship *Gotland II* beset off Cape Adare. The photograph was taken from a U. S. LC-130 airplane several hours before the ship sank. In the foreground is one of the Hughes 500 helicopters used to transport scientists and crew to safety and later to a U. S. camp in northern Victoria Land.

that the water level in the ship's hold was rising at a rapid rate, the pumps could not keep up with it, and water prevented the crew from reaching the leak to repair it. At this point all but four crew members were evacuated to the camp. Additional pumps, requested from McMurdo Station, were transported and airdropped by U.S. Hercules craft a few hours later, but before the pumps were put into operation the ship's main deck was flooded.

All 41 crew members and scientists were safely evacuated by the expeditious Hughes 500 helicopters along with equipment and supplies and moved to one camp near Lillie Glacier (70°45'S 163°55'E) and two temporary camps nearby. Later the helicopters moved all personnel and some critical equipment to the U.S. field camp near the Canham Glacier (approximately 71°49'S 163°E). From this location they were flown to McMurdo Station by U.S. LC-130 aircraft. The USNS *Southern Cross*, McMurdo's annual resupply ship, took the helicopters on its regular return trip to Port Hueneme, California, where their owner retrieved them.

Although many ships have been trapped, the *Gotland II* was only the third ship known to be crushed and sunk in Antarctic pack ice. In 1903 the Norwegian whaling ship *Antarctic*, which was supporting a Swedish exploration party on

Snow Island near the Antarctic Peninsula, was locked in the ice floes and carried by the wind and ice for over a month before the ship sank off Paulet Island. Twelve years later in October 1915, the *Endurance*, carrying Ernest Shackleton's party, was beset and sank a month later. The stranded men eventually reached Elephant Island from which Shackleton and 4 others began a journey in a make-shift boat across the southern ocean to South Georgia Island to find help for the rest of the party.

