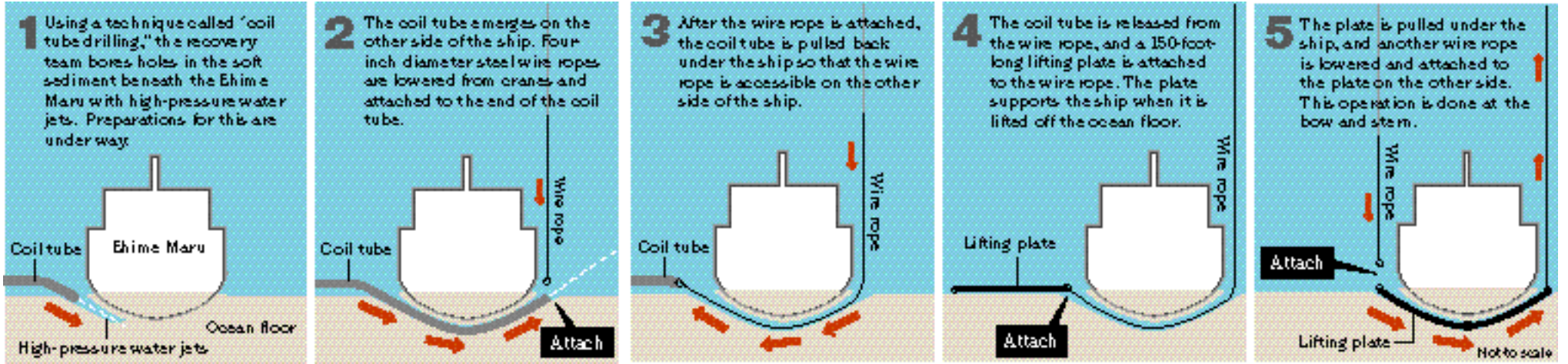


# 'IT'S NEVER BEEN DONE'

## THE RECOVERY OF THE EHIME MARU

When the Ehime Maru sank after being struck by the submarine USS *Greenville* on Feb. 9, the U.S. Navy began developing detailed plans for the recovery of the nine drowned crewmen and students believed trapped aboard. Rear Adm. William Klemm, the Pacific Fleet's deputy chief of staff for maintenance, said the recovery of such a large ship from such deep waters has "never been done."

### Preparing to lift the ship



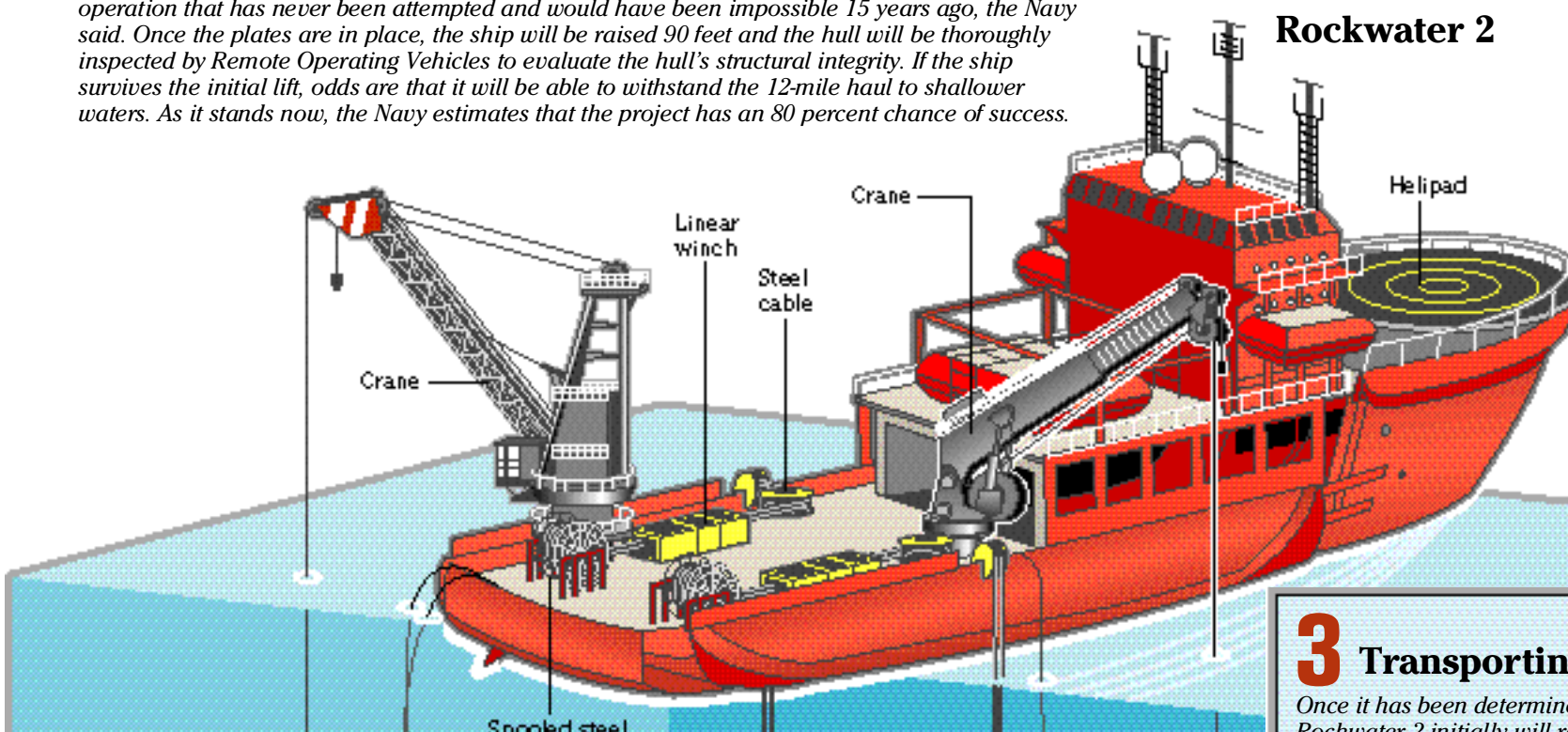
### Lifting, examining and transporting

The project's biggest hurdle will be the initial lifting of the ship off the ocean floor 2,000 feet down, which will begin no earlier than Aug. 20. Before that's done, lifting plates must be put in place in an operation that has never been attempted and would have been impossible 15 years ago, the Navy said. Once the plates are in place, the ship will be raised 90 feet and the hull will be thoroughly inspected by Remote Operating Vehicles to evaluate the hull's structural integrity. If the ship survives the initial lift, odds are that it will be able to withstand the 12-mile haul to shallower waters. As it stands now, the Navy estimates that the project has an 80 percent chance of success.

### 1 Lifting the ship

The *Rockwater 2* will do most of the heavy lifting. While two heavy-compensated cranes manipulate equipment and help stabilize the ship, two powerful linear winches on the ship's deck will actually raise the Ehime Maru. These winches, capable of lifting 500 tons, use wire cables five inches in diameter and have a breaking strain of 800 tons. Four of these cables will be used, creating a total breaking strain of 3,200 tons. The Ehime Maru weighs 830 tons. The *Rockwater 2*, a 5,991-ton Dutch-made salvage recovery vessel, is manned by a crew of 100 from 15 nations, making the project a truly international effort.

### Rockwater 2

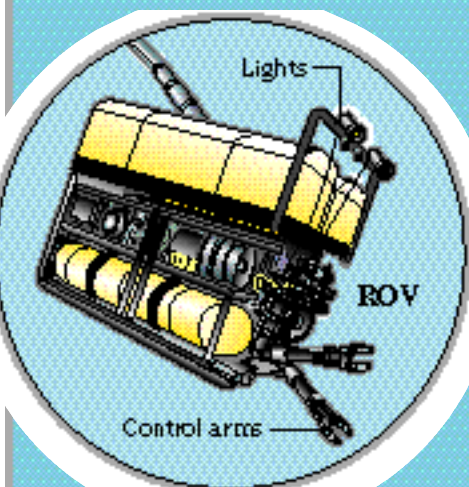


### 2 Examining the hull

The examination of the ship's hull will be critical for the remainder of the operation. Remote Operated Vehicles (ROVs), equipped with video cameras, will be used to inspect damage to the ship. While the bow of the Ehime Maru is crumpled, it is believed that the hull is relatively intact. The *Kairei Maru*, a 4,628-ton Japanese deep sea research ship, will launch its ROV *Kaiko*, which will operate along with the Navy's ROVs.

### Eyes under the sea

The Navy will operate three ROVs — the *Quest*, *Triton* and *Manta*. The *Quest* and *Triton* are work-class ROVs used for rigging operations. The *Manta*, equipped with cameras and lights, will be used to help personnel observe operations.

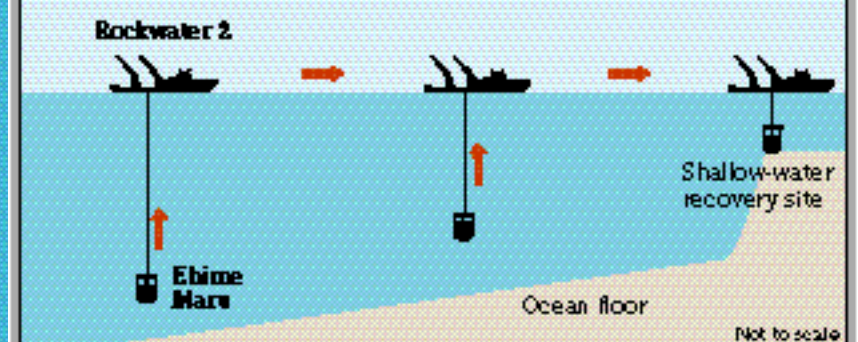


### Accident prevention

The Navy earlier removed both the forward and main masts with explosives. Other materials, such as longlines, ropes and other debris, also were removed to avoid hampering salvage operations.

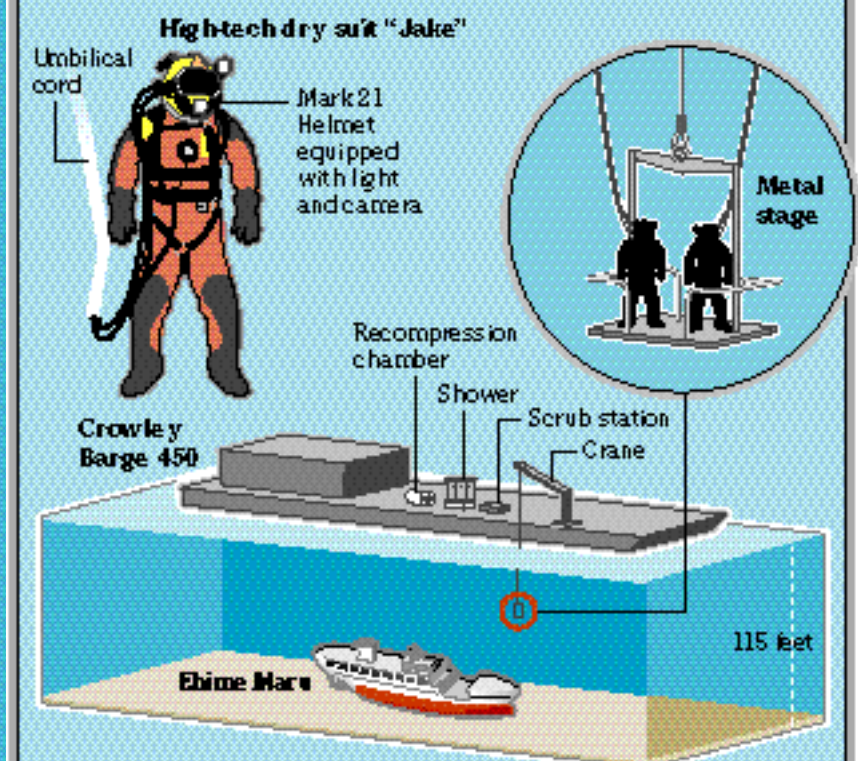
### 3 Transporting it to shallow water

Once it has been determined that the Ehime Maru is safe to move, the *Rockwater 2* initially will raise the ship 100 feet off the ocean floor and carry it to the recovery site 12 miles away in 115 feet of water. Weather conditions, such as trade winds, ocean currents, tides and sea conditions, are all factors that could hamper or endanger the move. Also, to avoid turbulent underwater areas, the *Rockwater 2* will not take a direct, straight route to the recovery site.



### Recovering the remains

The Ehime Maru will be carried to the recovery area one mile off the Honolulu Airport's Reef Runway. The *Crowley Barge 450*, which will be used as a diving platform, is scheduled to depart Honolulu Harbor on Aug. 20 for the recovery site. Divers will use state-of-the-art equipment, including "Jake" high-tech dry suits that insulate them from oil or fuel in the water. Several divers are lowered to the ship in a metal "stage" and can work 90 minutes before returning to the surface. Once back onboard the *Crowley*, they have just 3 minutes to be scrubbed and showered before they must enter a recompression chamber for 56 minutes. Accompanying the *Crowley* will be the *Chihaya*, a Japanese self-defense submarine rescue ship, and Japanese salvage divers.



### Final resting place

After all the remains have been found or accounted for, the Navy plans to move the ship by barge to a site 12 miles south of Barbers Point, where it will be sunk in 6,000 feet of water.



Source: U.S. Navy