

U.S. COAST AND GEODETIC SURVEY SHIPS "PEIRCE" AND "WHITING"

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Two new hydrographic survey ships have recently joined the U.S. Coast and Geodetic Survey fleet. The USC & GSS *Peirce*, CSS-28 was commissioned on May 6, 1963 at ceremonies held in Mobile, Alabama and the USC & GSS *Whiting*, CSS-29 on July 8, 1963 at ceremonies held in New Orleans, Louisiana. The *Peirce* and *Whiting* are identical in construction and will be used in both hydrographic and oceanographic work along the Atlantic coast of the United States and in the Gulf of Mexico. The ships were constructed on the inland waters of the United States, the Ohio River, by the Marietta Manufacturing Company, Point Pleasant, West Virginia, under the contract administration and construction supervision of the Maritime Administration, U.S. Department of Commerce. Coast and Geodetic Survey personnel assisted as part of the construction staff at the shipyard. The keel for the *Peirce* was laid on November 6, 1961 and the ship was launched on October 15, 1962. The keel for the *Whiting* was laid on November 29, 1961 and the ship was launched on November 20, 1962.

Specifically designed for combined hydrographic survey operations with oceanographic capabilities the ships are of steel construction. The main propulsion consists of two General Motors Model 8-567 CR diesel engines of 800 SHP each with Ka Me Wa controllable pitch propellers that can be controlled from both a pilot house and engine room control console. The steel hull is ice-strengthened to permit use in Alaska and the ice-covered waters of the Arctic. The ships have an overall length of 162 feet 7 inches, beam of 33 feet and displacement under full load of 760.1 tons. The full load draft of the ships is 9 feet 6 inches. Scantlings are designed for a limiting draft of 12 feet.

The ships are fitted with an anti-roll tank using potable water for the stabilizing liquid. The anti-roll tank is located under the pilot house. The sustained sea speed at design draft is 12.5 knots with a range of 4 500 miles and endurance of 15 days. The latest in habitability has been incorporated in the air conditioned spaces for berthing and messing of the 6 officers and 30 crew members. In addition the chartroom, radio room, oceanographic laboratory and the ship's office are air conditioned to make ideal working areas.

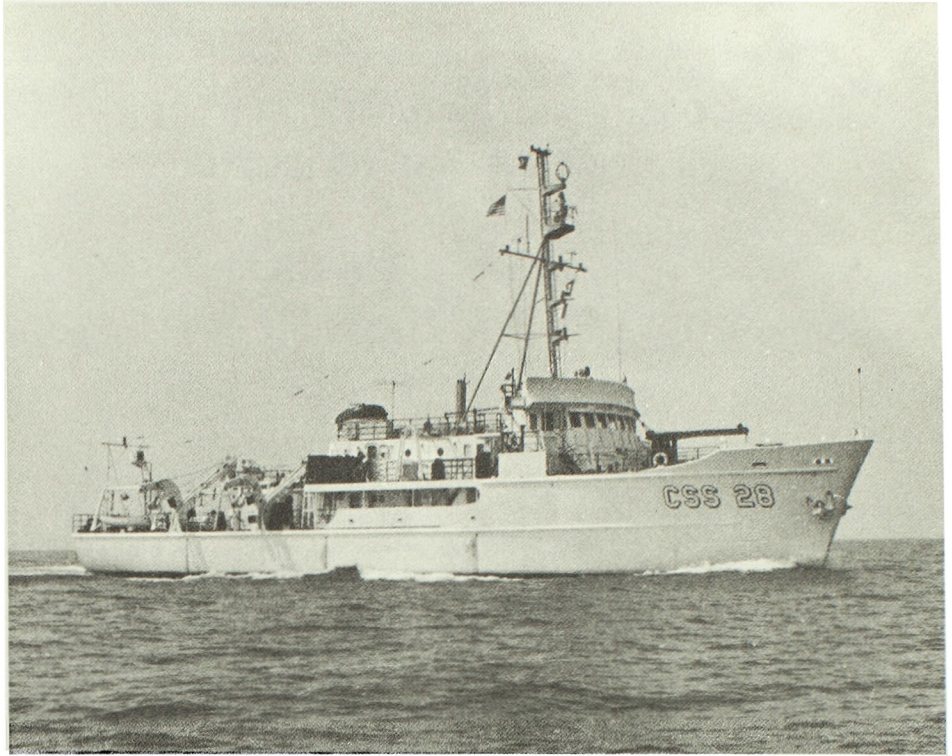


FIG. 1. — USC&GS Ship *Peirce*.

Electrical power is supplied by two 175 kw, 450 volt ac, 60 cycle, 3 phase ships service brushless type generators with an emergency diesel generator unit of 60 kw, 450 volt ac, 60 cycle, 3 phase. Ships service power will be 115 volt ac, 60 cycle, single phase and 115 volt ac, 60 cycle, single-phase controlled frequency power will also be available for certain electronics and scientific equipment.

Special winches have been installed for hydrographic and oceanographic operations. The bathythermograph winch is electro-hydraulic controlled with a drum capacity for 4 000 feet of 3/32 inch diameter 7 × 7 aircraft cord, stainless steel wire rope. The bathythermograph boom is of the swing-out type, with a traverse adjustable trolley and pulley guyed fore and aft with a topping stay. It will be used primarily for bathythermograph observations and shallow-water oceanographic work.

The oceanographic winch is electro-hydraulic controlled with an upper and lower drum. The upper drum having a capacity of 6 000 feet of 0.298 inch diameter electrical double armoured 6 conductor cable. A silver plated twelve conductor slip ring is installed to the upper drum for use with the electric conductor cable. The lower drum has a capacity of 15 000 feet of 3/16 inch diameter 3 × 19 improved plow steel wire rope. The boom for the oceanographic winch is an A-frame which is extended and retracted by a hydraulic ram operating off the winch hydraulic system. The winch and boom are located outboard of the oceanographic laboratory on the starboard "F" deck.

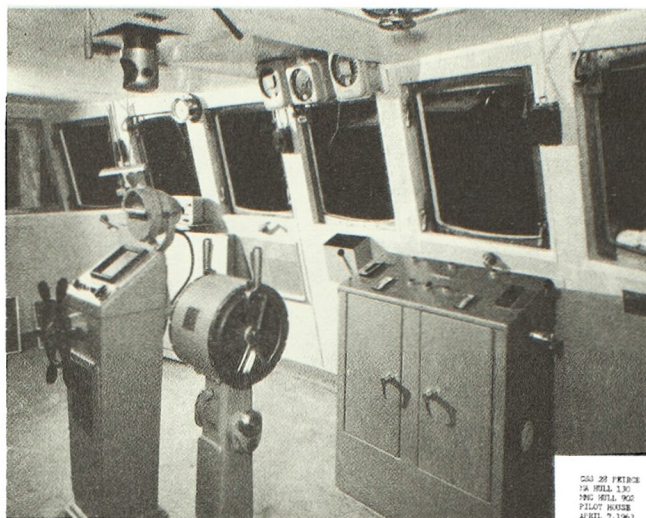


FIG. 2. — Pilot House.

The dredge and trawl winch is electro-hydraulic controlled with a drum capacity for 6 000 feet of 3/8 inch diameter 3×19 improved plow steel wire rope. The boom for the dredge and trawl winch is of the swing-out type, the boom portion extends out from a permanent foundation and is guyed forward. The boom stows forward in a longitudinal position. The winch and boom are located outboard of the oceanographic laboratory on the port "F" deck.

Oceanographic equipment on the *Peirce* and *Whiting* includes devices for measuring currents and water temperatures; for obtaining water samples at various depths and samples of bottom sediments. The current-measuring equipment includes radio current meters and buoys, the latter being equipped with receiver — transmitters and selector — switch for sending coded data relative to velocity and direction at multiple depths upon request from the ship or shore station. The velocity and direction signals for each depth are transmitted on separate frequency — modulation channels and are recorded with reference to time by a three-stylus chronograph. Nansen-bottle equipment with attached reversing protected and unprotected deep-sea thermometers for recording temperatures at various depths. Shallow, medium and deep bathythermographs furnish continuous traces of the vertical temperature gradient to depths of 900 feet. The ships will be able to make magnetic observations using a towed proton precision magnetometer with all recording instruments located in the oceanographic laboratory.

The ships have the latest electronic navigational and communication equipments installed including gyro and auto-pilot, surface search radar, radio direction finder, Loran "A" receiver, shoran positioning system, Hi-Fix positioning system and an electromagnetic underwater log. In addition to the above, standard navigation equipment such as magnetic compass, whistle, rudder angle indicator and gyro repeater are installed.

For hydrography the ships are equipped with one deep water depth recorder UQN-IF, one precision depth recorder and two shoal water depth

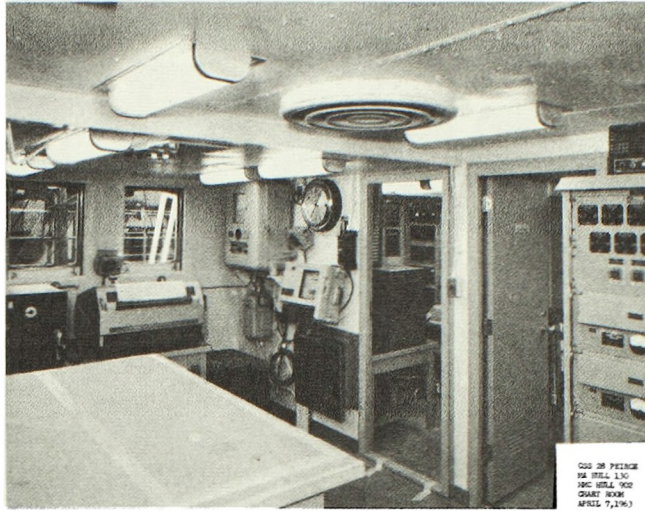


FIG. 3. — Chart Room.

recorders. Two special hydrographic survey launches of plastic construction are carried aboard. The launches are equipped with a portable depth recorder and electronic positioning equipment. Extra heavy generating equipment has been included to power the above launch equipment.

Good communication is necessary for efficient hydrographic operations as well as the ships general needs. For the ships traffic a Collins KWT/6 type 8 transceiver console was installed with one high frequency single sideband transceiver, RCA model SSB-1 Mark IIA as a standby. The single sideband method of communication is best suited for shipboard use because of its reception under noisy conditions and better communications with the two launches and shore stations. An RCA, CRN-P7A/150 is also provided for intership and emergency communications with a remote operating position in the pilothouse. In addition to the above equipment an intermediate powered radio telephone, Raytheon Model Ray-1095 for use when the main transmitters are not in service is installed in the radio room. For short range communications VHF-FM equipment is used.

The *Peirce* is named to commemorate Charles Sanders PEIRCE, the noted 19th Century American scientist and logician, and an employee of the Coast and Geodetic Survey between 1860 and 1890. His research and development in pendulums, map projections and gravity made a lasting contribution to the Bureau's scientific standing. As a logician, he is known especially as the founder of "pragmatism".

The *Whiting* is named to commemorate one of the most illustrious men employed in the long history of the Coast and Geodetic Survey. Henry Laurens WHITING came to work for the Survey in 1838 at age 17. For nearly 60 years, until his death in 1897, he remained in the federal service where he became one of the leading scientists of the Nation, and an expert in his profession of topographic surveying. His professional excellence in topography was internationally respected during his lifetime.

The *Peirce* and *Whiting* are the second and third new ships to join

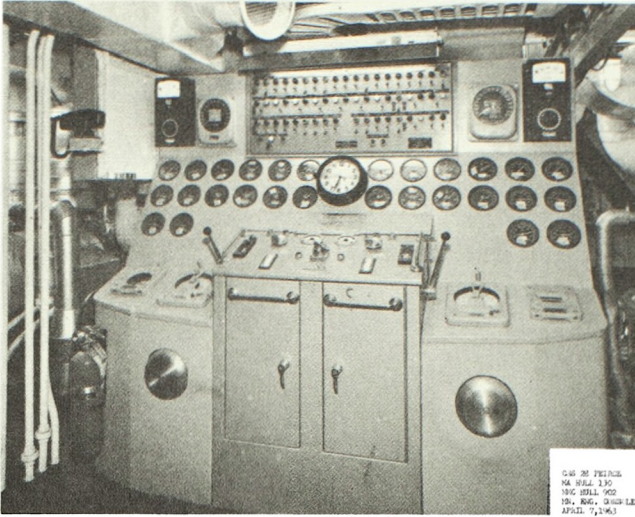


FIG. 4. — Engine Console.

the " white fleet " of 14 Coast and Geodetic Survey ships. The first of a new class they are the forerunners of a modernization and expansion program designed to make the Coast and Geodetic Survey fleet the most modern in the world.

