Argo (ship) being readied for major North Pacific Ocean expedition

December 24, 1965

With more than 200,000 miles logged since joining the oceanographic research fleet of the University of California, San Diego's Scripps Institution of Oceanography in 1959, the research vessel Argo is being readied for a major North Pacific Ocean expedition scheduled by Scripps Institution for the first eight months of 1966.

Scientific equipment and ship stores are being put aboard the Argo, which departs San Diego January 3 and will return in August.

The vessel will be home base for Scripps scientists who have outlined a wide range of oceanographic research during the 17,000-mile cruise, designated the Zetes (pronounced as in zee tease) Expedition. In Greek mythology, Zetes was one of the twin sons of Boreas, Greek god of the North Wind.

Dr. William A. Nierenberg, dean and director of Scripps, said the expedition's work will include mapping seismic profiles and studies of heat flow along the ocean floor., biochemical activities of bacteria at great depths, structure of the North Pacific water column, formation of water masses at the ocean surface, zooplankton, phytoplankton, and the depth to which cold Arctic water sinks in winter.

Observations also will be made as to the strength and frequency of winter storms in the Northwest Pacific, the greatest wave heights that will be encountered in that area, and the amount of icing that can be expected in the winter on a ship operating in the western Bering Sea and off the Kuril Islands.

The expedition's scientific investigations will be supported by the Office of Naval Research and by grants from the National Science Foundation, Dr. Nierenberg said.

Joseph L. Reid, Jr., associate research oceanographer at Scripps, is coordinating arrangements for the expedition.

On Leg I of the cruise, Argo will sail some 2,200 miles due west of San Diego and then about 2.,000 miles north to Kodiak, Alaska. Chief scientist aboard will be Dr. John A. McGowan, assistant professor of oceanography at Scripps.

Research involved between San Diego and Kodiak (January 3-25) will center on the biological and physical-chemical structure of the boundary area of the sub-Arctic central water masses.

Reid will be chief scientist for the 5,000-mile, Kodiak-Hakodate, Japan, zigzag/Leg II of the cruise, which has been designated Boreas and will provide opportunity to observe winter conditions in the ocean area southeast of the Kuril Islands and Kamchatka, between January 25 and April 1.

Because of the extreme rough and cold weather encountered at that time of year in the Northwest Pacific and the western Bering Sea,, no scientific expedition has been there in the winter and no winter data are available. Boreas thus assumes significance for the work that will be attempted under the expected adverse weather conditions.

During Boreas, research will center on the exchange of heat between ocean and atmosphere, the nature of the vertical mixing in the water column under extreme weather conditions, and the formation of the densest surface and its contributions to the formation of the intermediate-depth waters of the North Pacific.

Among scientists aboard for Boreas will be Dr. Hayato Iida of the Hakodate Marine Observatory, Hokkaido, Japan, and Dr. Allan J. Dodimead of the Fisheries Research Board of Canada., Pacific Oceanic Group, of Nanaimo, British Columbia.

Argo will refuel at Adak, Alaska, en route to Hakodate.

Third leg of Zetes (Hakodate to Tokoyo, April 6-May 23) will include geophysical investigations to be coordinated with the work of Japanese scientists, six of whom will be aboard Argo on this portion of the cruise.

Victor Vacquier, professor of geophysics in UCSD's department of earth sciences, will be chief scientist for Leg III, during which will be mapped the bathymetry, total magnetic intensity, gravity, and heat flow of the area to compare the geophysical properties of the margin of the Western Pacific with those of the Eastern Pacific, on which more information is available.

Considerable amounts of geophysical work have been done in the Western Pacific by Japanese, Russian, and Lamont Geological Observatory scientists. Scripps' main contribution here in geophysics is expected to come from mapping the area's ocean floor heat flow and magnetic field.

Main objective of Zetes' Leg IV, designated Deepac X and for which the chief scientist will be Dr. Claude E. ZoBell, professor of microbiology at Scripps, is to collect and examine deep-sea sediment samples to learn more about the occurrence, characteristics, and biochemical activities of bacteria at great depths in the sea.

Deepac X marks the 10th Pacific deep to be explored by Dr. ZoBell. During Deepac X, to be conducted on the Japanese Trench in Tokyo waters from May 30-June 6, mud cores from water depths exceeding 10,000 meters (about 34,000 feet) will be collected. Among scientists to participate in Deepac X will be Dr. Nobuo Taga, professor of microbiology of the University of Tokyo's fisheries department.

The 4,000-mile Leg V of Zetes, from Tokyo to Honolulu, June 10-21, will be directed by Professor Vacquier and include en route measurements of magnetism and gravity and several deep hydrographic casts.

Dr. George G. Shor, Jr., research geophysicist and chairman of the Scripps' oceanic research division, is to be chief scientist for Zetes' Leg VI in Honolulu waters, June 22-July 18. This work will be primarily geophysical in nature, including seismic reflection, refraction, magnetics, gravity, and heat flow.

Work in the Honolulu area will be done jointly with the Scripps research vessel Horizon and the research vessel Teritu of the University of Hawaii, as part of a more extensive investigation of the Hawaiian Arch in preparation for subsequent Mohole drilling.

Professor Vacquier heads the final 2,500-mile Leg VII of Zetes, Honolulu to San Diego, July 22-August 7, during which work will include measurements of magnetism, gravity, and heat flow, and deep hydrographic casts.