



Floating Crane *Titan* Delivered To Panama

The 1941 German-built floating crane *Titan* (also known as *Herman the German*), a landmark in Long Beach, Calif., since 1948, has been sold to the Panama Canal in preparation for the closing down of the Long Beach Naval Shipyard. The crane will be used for maintenance work on the canal and its lock doors. Before the crane was moved to Panama, it was completely refurbished, which took close to one year to complete. Due to the limited crane capacity available in Panama, it was necessary to deliver the crane while fully erect, as reassembly upon arrival was not an option. A wet tow of the fully erect crane was considered too risky (a sister crane capsized

and sank during a wet tow across the English Channel) and the dry transport option, using a self-propelled heavy-lift ship was pursued.

In order to confirm transport feasibility, a detailed structural analysis of the crane structure was performed by Argonautics Marine Engineering of Sausalito, Calif. A complete survey was done to measure the dimensions of all beams of the crane structure. A model containing more than 1,500 beam elements was built to analyze the behavior of the structure when subjected to dynamic loading during the transport. The analysis showed that internal seafastings, some strengthening and a boom sup-

port were required to ensure acceptable stress levels in all relevant members of the crane structure. All calculations and procedures were reviewed by Matthews-Daniel Company of Houston, who also acted as marine surveyor on behalf of the underwriters. The transportation contract was awarded to SeaTeam Heavy Lift of Oslo, Norway, and on May 19, *Titan* was loaded on *Sea Swan* by means of the float-on method. Upon completion of the seafastening operation and receipt of the surveyor's certificate of approval, the heavy-lift ship departed Long Beach on May 22. The ship arrived in Panama on May 31, where *Titan* was safely offloaded and delivered.

AmClyde Announces Two Crane Orders For Japanese Market

AmClyde Engineered Products, Inc. completed its contract to build a 700-metric-ton marine crane and celebrated the completion with a commissioning ceremony in Tokyo Bay, Japan. The order, valued at more than \$13 million, includes the barge-mounted crane, pile-driving equipment and barge anchor winches.

This project represents the first time a Japanese construction company has purchased large, custom-engineered crane equipment from an American manufac-



Pictured is the AmClyde 700-ton marine crane which was recently delivered to Japanese contractor Murazumi in Tokyo, Japan.