

TARSUIT CAISSON RETAINED ISLAND - CANADIAN ARCTIC



Landed caisson and beginning of dredge infill



Completed island with exploration drilling in operation under full ice loading

Tarsuit Island was among the first generation of offshore drilling platforms used for oil exploration in the Canadian Beaufort Sea in the 1980's. Tarsuit Island was designed as an all season (365 days/year) exploration island for shallow water operations. The bottom founded fixed island concept was selected because the floating systems available at the time did not allow all-season operations in the Beaufort Sea.

SERVICES PERFORMED

- ◆ Design of Caisson Installation Plan
- ◆ Development of Caisson Transportation Plan from Vancouver, B.C. to Beaufort Sea
- ◆ Design and Testing of Gravel-Bed Screed System for Caisson Foundation
- ◆ Design of Mooring System for Caisson Positioning in the Arctic
- ◆ Design of Caisson Ballasting System
- ◆ Design of Piping System for Infill of Caissons and Island Interior with Dredge Sand

As Chief Engineer for Riedel International, Robert Bittner was responsible for developing the installation plan for the four concrete caissons to form the perimeter of the island. The scope of the work included the detailed design of the gravel screeding system for leveling the gravel

that formed the foundation for the four perimeter caissons, the detailed design of the caisson mooring system for positioning the caisson over the top of the underwater berm, and the detailed design of both the water ballasting system for the caissons and the piping for the infill of the caissons and island interior with additional dredge fill.

The first stage in building the island was to create a leveled underwater gravelberm for landing the four concrete caissons. Once the four concrete caissons, or box structures, were landed, they were infilled with dredge sand to stabilize the four sides of the island. Steel gates were then used to seal each of the four corners of the island the interior. The island was then filled with dredged sand to form the center of the island. The total base area of the exploration island was 7,947 M³. The island was designed for 12m storm waves and ice up to 5.6m thick. The

design ice loading was 560 MN and design ice pressure was 4.1 MPa.

PROJECT INFORMATION

Year of Completion: 1981

Client & Owner: Dome Petroleum



Transport of caissons from Vancouver, B.C. to Beaufort Sea



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