

De Hoop Newbuilding 385 Caballo de Mar

Shipyard de Hoop in the Netherlands made contact with the company Otto Candies L.L.C. in the beginning of the year 2000. After various discussions about type of vessel, size of vessel and the capacities of the vessel, contract was signed in July 2000. Model tests were performed in November 2000 by VBD (Europäisches Entwicklungszentrum für Binnen- und Küstenschifffahrt). Launching was made in April 2001 and the vessel left for Mexico in August 2001.



The "Caballo de Mar" (Photograph: Captain Jan van de Klooster)

In the mean time de Hoop has signed another contract with the same ship owner for a slightly larger vessel. De Hoop in the Netherlands has also taken over a shipyard in Houma, Louisiana, U.S.A. This yard is at present producing six diesel electric supply vessels for Otto Candies L.L.C. These vessels will all have U.S. flag. At present negotiations with Otto Candies L.L.C. are progressing with respect to new contracts.

The newbuilding 385 is designed for underwater survey work and general maintenance work, above and below the surface, on various offshore installations in the oil fields in the Mexican Gulf.

Otto Candies L.L.C.

The company Otto Candies started it's career in 1942 with captain Otto B. Candies achieving a contract for clearing waterlilies in one of the access canals in the swamps of Louisiana, U.S.A. The contract was with Humble Oil Company which is today ExxonMobil. Otto Candies has in the past been involved in

a number of projects for ExxonMobile like the logistics for the development of the Hoover/Diana deepwater project and the logistics around the Exxon Valdez disaster.

Otto Candies is still a typical family company and operates today some 100 vessels. The fleet consist of supply vessels, tugs and barges in the Gulf of Mexico as well as a fleet of push tugs and barges on the Mississippi. Otto Candies L.L.C. has a joint venture with a Mexican company, Oceanografia S.A. de C.V. The ships built in the Netherlands will all have Mexican Flag and be operated by Oceanografia.

Main particulars

Registration:

Port of registration: Ciudad del Carmen, Campeche, Mexico

Builder: Shipyard de Hoop International, the Netherlands

Year of construction: 2001

Classification:

American Bureau of Shipping,
 ✕ A1 (E) Offshore Support Vessel, ✕ AMS,
 ✕ ACCU, ✕ DPS - 2.

Main Particulars:

Length over all:	70.0 m	230'
Length between PP:	64.0 m	210'
Beam:	18.0 m	59'
Depth moulded:	6.1 m	20'
Design draught:	4.5 m	14.7'
Scantling draught:	5.0 m	16.4'
Deadweight:	2,465 tonnes	2,717 short ton
Gross tonnage:	3050 Register-ton	
Cargo deck area:	520 m ²	5,600 sqft
Moon pool ROV:	5.4 x 5.4 m	17.7' x 17.7'
Moon pool Diving:	3.6 x 3.6 m	11.8' x 11.8'
Trial Speed at design draught:	11 knots	
Complement:	56 persons in 1 & 2 person cabins	

Capacities:

Fuel Oil:	585 m ³	154,540 gallons
Freshwater:	575 m ³	151,900 gallons
Ballast water:	970 m ³	256,540 gallons

Machinery:

Diesel Electric Propulsion:

Total installed Power:

2 x 1,424 kW + 2 x 968 kW, total 4,784 kW

Thrusters forward: 2 x 780 kW CPP

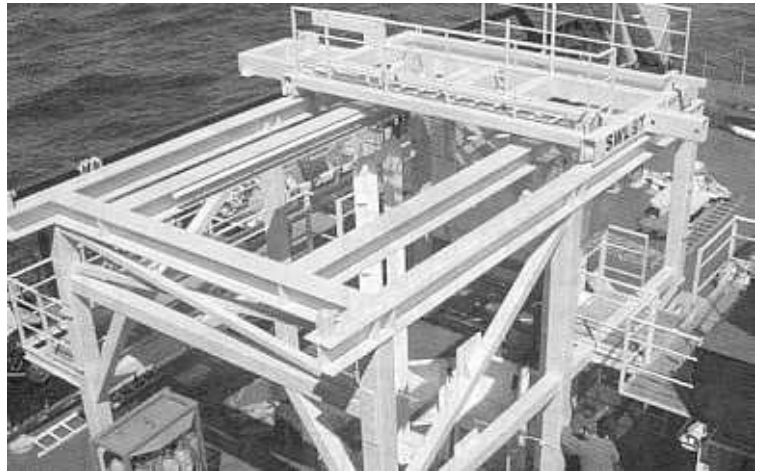
Thrusters aft: 2 x 1,430 kW FPP variable speed

Emergency /

Harbour generator: 180 kW

Crane: 45 ton @ 6m / 15 ton @ 15m

Aframe: 60 tonnes @ 7.8 m aft of stern



Dynamic Positioning:

Duplex Alstom

Reference systems:

2 x DGPS, each independent

Hydroacoustic system, one transducer

Diving spread:

Saturation diving system

Gas mixture Heliox

Max waterdepth: about 200 m

Number of DDC: 3

Total capacity: 16 persons

Diving bell: 1

Gas storage: portable

General Layout

The layout is as for a typical supply vessel, with machinery and accommodation forward and a large open aft deck. The vessel was originally designed as a ROV (remotely operated vehicle) support vessel, with the possibility to fit a saturated diving spread below deck. The ROV spread has not been installed but the main parts of the diving spread were installed just before departure from the Netherlands in August this year.

Gantry crane.

Forward on the tanktop is an auxiliary engine room with the main switchboard. Aft of the switchboard room is the main diesel generator room with four Caterpillar diesels, two of type CAT 3508 and two of type CAT 3512.

A special moonpool for the ROV has been arranged aft of the diesel generator room. The moonpool has a sliding hatch on top and a folding hatch to cover the bottom.

In the 'hold' between the two moonpools the deck decompression chambers are fitted together with the life support equipment and the compressors. The gas bottles for the heliox gas will be taken onboard and stowed on D-deck level aft of the accommodation or on the main deck, as required. Aft of the 'hold' is the aft thruster room with the two azimuthing thrusters and the accessory frequency converters.

The Main deck is forward partly protected by a semi open hangar for the ROV. Around the diving moonpool there is the handling equipment for the diving bell.

Forward in the forecastle and on top of the forecastle is an accommodation for a total of 56 persons, all in one and two man cabins.

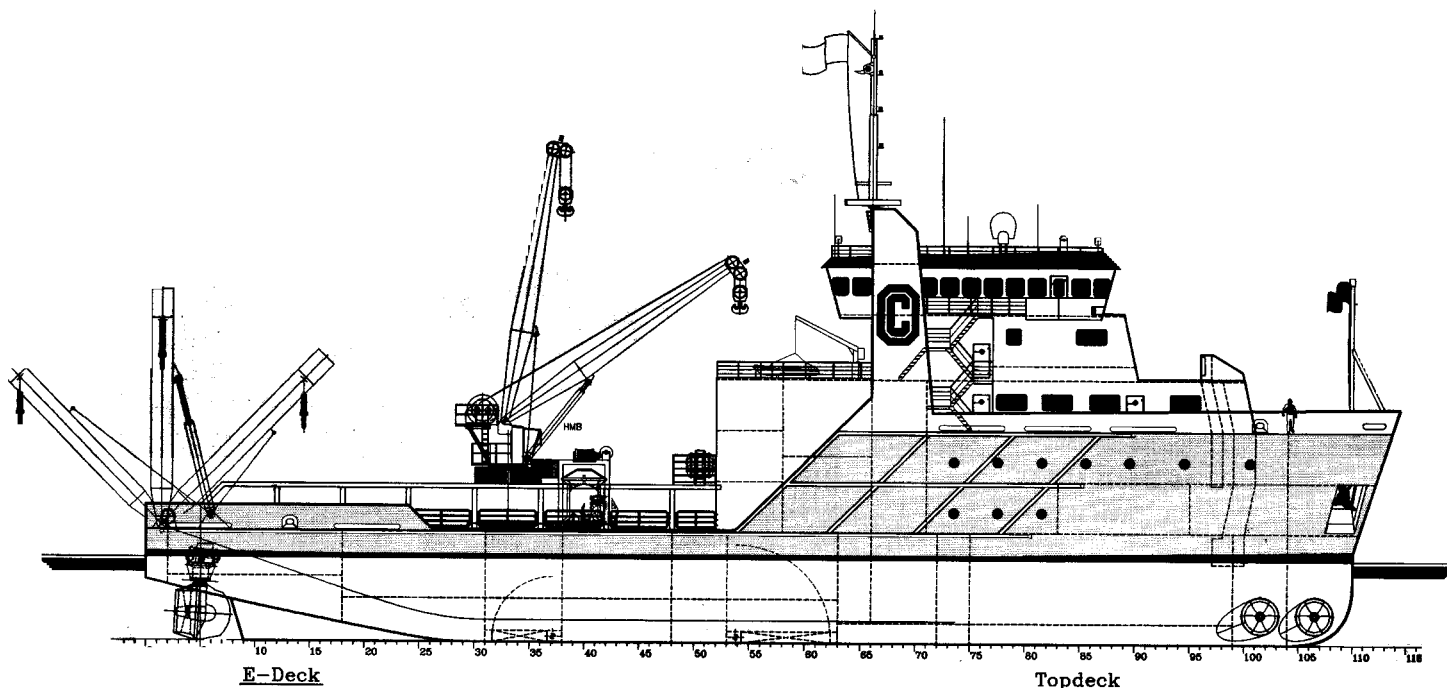
Power plant and electrical distribution

The power plant consists of four diesel generators in one engine room and a harbour/emergency generator in a separate space on the main deck level. Main distribution voltage is 480 V 60 Hz. Secondary voltage is 230 V with 110 V in all cabins. The ship will work in US and Mexican waters and the 230 V is not so popular for domestic appliances in this part of the world. The distribution system is divided in two halves with the auxiliary systems follow suite. This means that no single failure, excluding fire, explosion or flooding, will cause the vessel to loose position. Alewijnse Nijmegen Schepen B.V. was the main electrical contractor responsible for the engineering, installation and commissioning of the electrical distribution, control and monitoring system.

Alstom has provided the thruster motors and the frequency drives for the aft azimuthing thrusters. The drives are of 12-pulse type with pseudo-24 pulse when two azimuthing thrusters are in operation simultaneously. The 12-pulse drives together with the transformers and generators have been tuned to limit the THD (total harmonic distortion) to a maximum of 7.9 %. This is achieved in the 'failure' situation with an open bustie breaker and the azimuth thruster at 100 % load. In the more normal operational condition with closed busbar, the THD is around 4 %. The Classification societies have varying opinions about the THD levels. ABS states less than 5 % for the third harmonic content of the wave form, but this is only applicable to medium tension distribution systems. In general ABS says, the THD should be below 5 %. Bureau Veritas says



DP-console.



maximum THD less than 5 %. Lloyd's Register of Shipping states THD less than 8 % in general.

Dynamic Positioning System and station keeping capability

The vessel is fitted with a duplex DP system delivered by Alstom in the UK. The DP system is using three reference systems, two DGPS via separate receivers and correction signals and one hydroacoustic system with one transducer. The system is good enough to have the vessel on station with an accuracy of a couple of meters.

When all systems are working the vessel can keep its position, un-regardless of heading, up to a significant wave height of 6 meters and a windspeed of about 20 m/second. For the Mexican Gulf this means the vessel will be able to keep position for more than 99 % of the time. With 50 % power available, the limitations are, significant wave height about 3.5 m, wind speed around 13 m/seconds and a current of 1.5 knots. This situation is exceeded 5 % of the time.

Thrusters

All four thrusters have been supplied by Rolls-Royce. The forward tunnel thrusters are from KaMeWa with constant speed and controllable pitch. The aft thrusters are from Aquamaster and are of fixed pitch type with controllable speed. This combination has been selected as the best compromise between cost, space available onboard, fuel consumption and manoeuvrability.

Hoisting appliances

HMB, Hydraulik & Maschinenbau Buxtehude GmbH, has delivered the crane and the A-frame. Capacities of both items have been selected as sufficient for the type of activities the vessel is to perform in the Gulf of Mexico.

Diving spread

In April of 2001 it was decided to fit a saturation diving system in the vessel. The system was purchased, refurbished and arrived at the last moment to be fitted into the vessel. The system consists of one twinlock and two single locks as well as connecting chamber and a diving bell to be handled through the aft moonpool. Theoretically the system can ac-

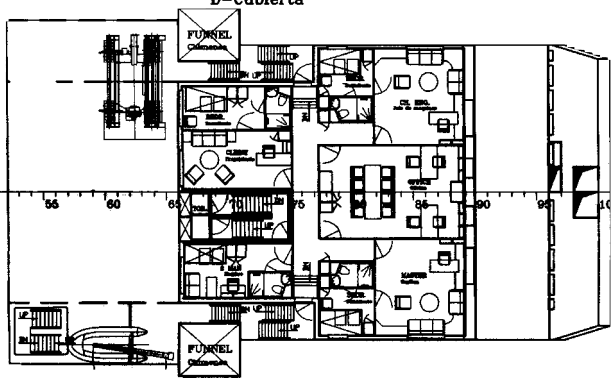
commodate 14 persons, but in practice it will most likely be 9 persons. Two diving teams of each 3 persons and one team in decompression.

Control room for the diving operation as well as for eventual ROV operation is located athwartships on C-deck level on PS in the hangar.

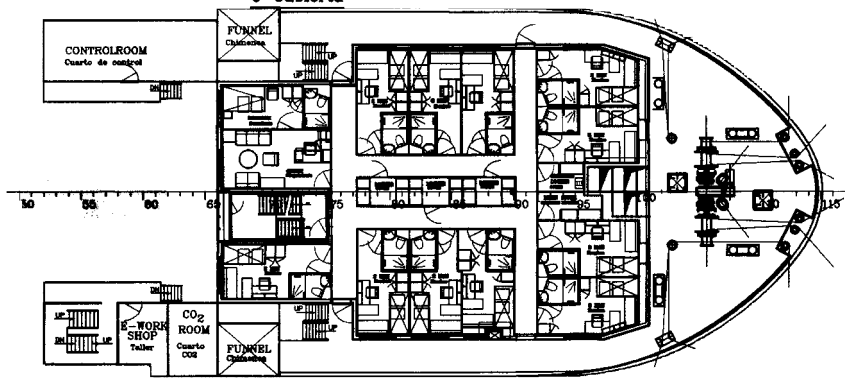
SMST of Franeker has delivered the bell handling equipment including the fixed gantry, overhead trolley, cursor, umbilical winch, guide wire winch and the bell handling winch.



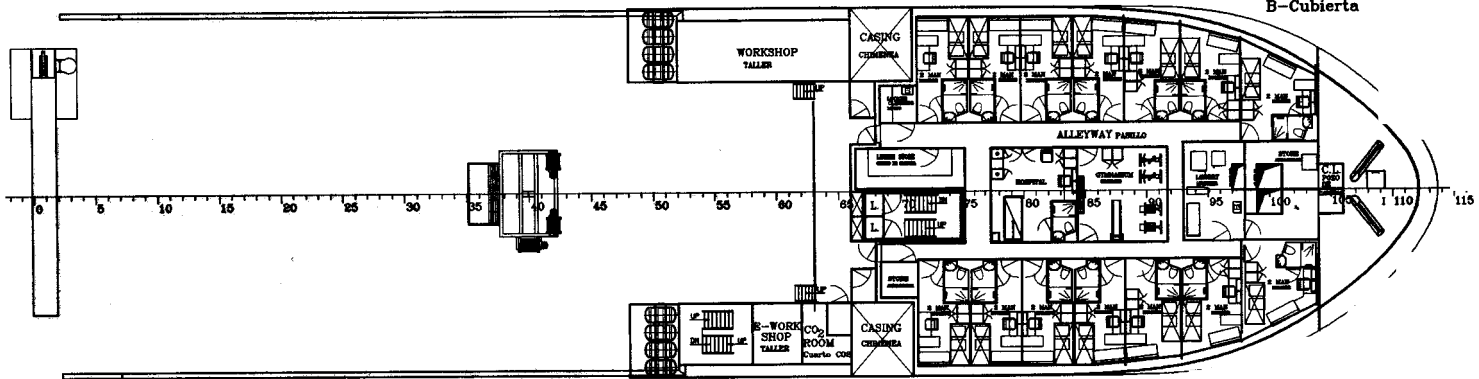
D-Deck
D-Cubierta



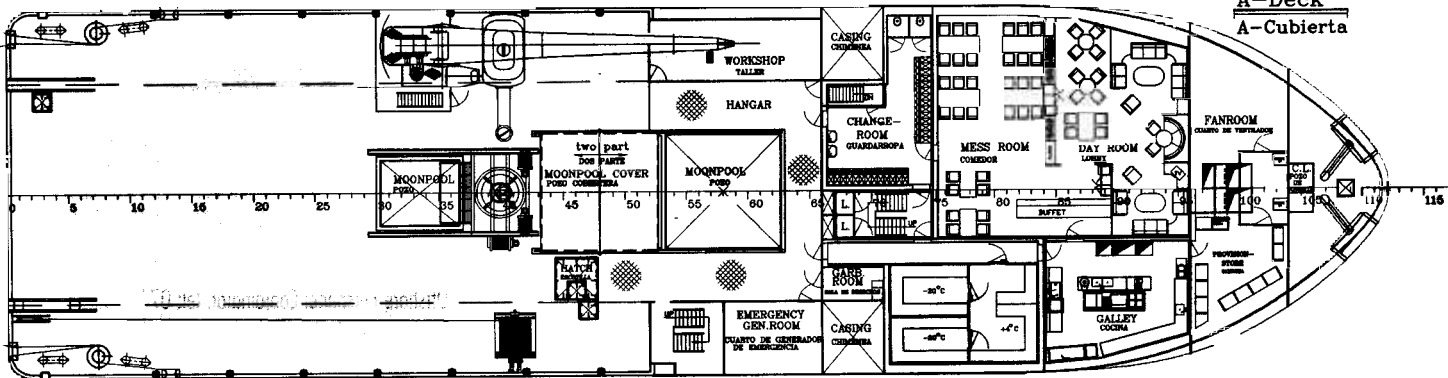
C-Deck
C-Cubierta



B-Deck
B-Cubierta



A-Deck
A-Cubierta



Tanktop
Tanque de lastre

