

# Multipurpose Port, Hazira



#### Client

Shell Global Solutions

#### Type of contract

Design

#### Completion

2001 (design)

#### Construction Costs

Euro 400 million (est.)

#### Consultancy Fee

Category 5 (see page 2)

#### Location

Hazira, India

#### Scope

Breakwaters  
LNG Jetty  
Intake and Outfall Facilities

#### Services

Basis of Design  
Basic Design  
Soil/Quarry Investigations  
Model Testing

Delta Marine Consultants carried out the Front End Engineering Design for the marine facilities of the new private port in Hazira, India. The work comprised the design of breakwater, intake and outfall facilities as well as a jetty for the import of LNG.

DMC further coordinated the work of a range of subconsultants for specialised services in support of the FEED.



# Multipurpose Port, Hazira

## Project Description

The lay-out of the port consists of a dredged basin including a LNG jetty, a LNG terminal platform, and a future bulk storage area, protected by the main breakwater and the lee spur. The port is connected to the mainland by means of the North and South causeway and a corridor.

## RoI DMC

DMC was responsible for the design of the marine facilities and the preparation of the technical FEED documents. DMC further coordinated the specialised subconsultant services (hydrodynamic studies, navigation studies, model tests etc).

The construction of the port was split in a number of stages to allow early arrival of LNG Carriers before full port completion.

The 2-D and 3-D physical model tests were carried out to verify the stability of the breakwater. The stability of the toe was verified, the required lowest level of the front and rear artificial armour was determined and wave transmission through and over the main breakwater was established during the model tests. Additionally, tests were carried out to verify the dynamic stability of the rock protection of the LNG terminal platform during construction.

**Consultancy Fees:** 1: 50.000€ 2: 50 - 150.000€ 3: 150 - 300.000€ 4: 300 - 600.000€ 5: > 600.000€



Delta Marine  
Consultants