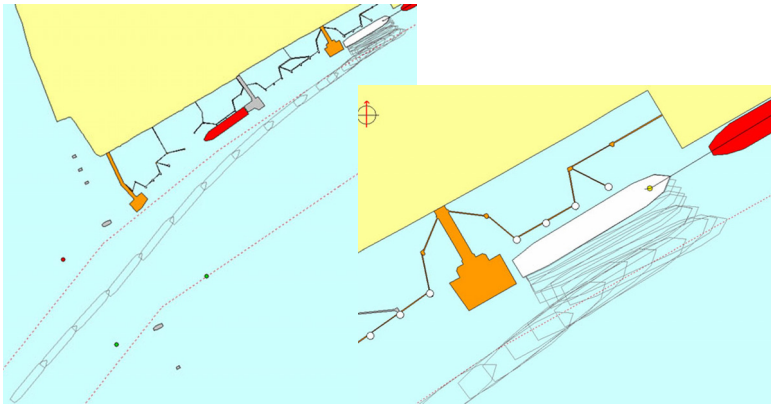
Montoir-de-Bretagne
Trans-Biscay motorway of the Sea (AMT)
Simulation of RoRo ship handling in the port



Country
France

Client
Port Autonome de Nantes - Saint-Nazaire (PANSN)

Date
2007

Sogreah's services
- Local modelling of currents using the TELEMAC-3D three-dimensional modelling system
- Shiphandling study

Context
The Port of Nantes - Saint-Nazaire (PANSN) is promoting a project known as the "Autoroute Maritime Transgascogne" (AMT - the Trans-Biscay Motorway of the Sea) that would involve creating a scheduled link for RoRo vessels with several departures a day between the Montoir-de-Bretagne hub and Spain.

In view of the expected increase in RoRo traffic, in particular through the traffic connected with the AMT, the PANSN intends to extend the existing infrastructure at the port by building three new berths in addition to the existing two.

Aims
In the framework of this extension project, the PANSN commissioned Sogreah wth a shiphandling study aimed at:
- Simulating docking and undocking operations for RoRo ships at all the berths of the future RoRo terminal.
- Determining the navigation and environmental constraints (wind, currents) that this would involve.
- Examining the impact of wind and current conditions on continuity of service, by simulating AMT calls over a complete year.

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Sogreah's role

The current fields required for the navigation study were defined by means of a TELEMAC-3D three-dimensional hydrodynamic numerical model.

A large-scale model of the Loire estuary running from Ancenis upstream and along 40 km of coast provided the boundary conditions for the local model of the project area.

A refined local model was created in order to reproduce local current fields close to the berths and along the route taken to reach them (e.g. passing the piers of Saint-Nazaire bridge).

The shiphandling study involved performing docking and undocking operations at all the RoRo berths by means of an interactive simulator prepared with the PORTSIM software.

These simulations were performed by a team consisting of pilots from the Loire and an instructor from Sogreah's Port Revel training centre.

Various important effects in shiphandling were taken into account in the model: spatially varying current fields, variations in water depth, wind resistance, possible use of moorings or tugs.

Thanks to all the tests carried out, it was possible to fix acceptable wind limits for each configuration. The current alone was never a limiting factor for shiphandling operations.

The AMT service requires arrivals and departures to be scheduled at fixed times. In order to examine the impact of wind and current conditions on continuity of service, AMT calls were simulated at all the RoRo terminal berths over a complete year.