SAFE PORT SYSTEM

INTEGRAL REAL-TIME MONITORING SYSTEM FOR OCEANOGRAPHIC AND METEOROLOGICAL INFORMATION VIA INTERNET

FOR A SAFE AND EFFICIENT MANAGEMENT OF:

- Commercial Harbours
- Ports
- Marine Bases
- Shipyards

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INTRODUCTION

Maritime ports for commercial, fishing and water sports purposes play an important role of great economic importance in the development of a country. For this reason, port management should always seek the highest levels of safety and effectiveness.Well aware of this fact and with an Engineering Department that boasts the necessary experience and knowledge in the fields of oceanography, meteorology and communication instrumentation, GEONICA has developed the **SAFE-PORT System**. Said system integrates the most advanced instrumentation for the measurement of all the meteorological, oceanographic and hydrodynamic parameters of interest, complemented by the appropriate telecommunications network. In summary, the Safe Port System constitutes a tool of tremendous value to those who are responsible for port management, Port Authorities and all potential users of the port infrastructures including: ships of all kinds, fishing boats, yachts, recreational vessels, etc.

SAFE PORT SYSTEM – GENERAL DESCRIPTION

The **Safe Port System** permits measuring and disseminating the following parameters in real time:

- **METEOROLOGY**: Wind Speed and Direction, Temperature & Relative Humidity, Atmospheric Pressure, Precipitation, Visibility, Solar Radiation, Present Weather, etc.

- **COASTAL AND PORT HYDRODYNAMICS**: Tide Level, Ocean Currents, Scalar Waves, Directional Waves, Water Agitation, etc.

- **WATER QUALITY**: Detection of Hydrocarbons, Measurements of Conductivity, Temperature, Turbidity, Dissolved Oxygen, etc.

Figure 1 provides the schematic of a typical Safe Port System configuration, indicating the location of each component of the system over the map of the port (particularly the Avilés Port in this case).

SYSTEM CONFIGURATION

At each measurement site (see the diagram in Figure 2), a METEODATA/ HYDRODATA-3000C Remote Unit, which is connected with the corresponding sensors, stores data on all parameters and transmits these data to a local Central Station or directly to the GEONICA Server, typically via the GPRS / **3G** cellular network.

Data received by the Server are graphically displayed on the WEBTRANS Platform and are updated in programmable time frames; i.e. every 10, 20 or 30 minutes. Additionally, all the data can be downloaded from the platform by the authorized users in order to carry out specific processing operations on the information, obtain statistical data, etc.

Option GEO-AtoN AIS transponder is integrated with Safe Port System. AIS AtoN is an aid to navigation for ships, an international standard using messages sent by a VHF transponder that are received by all ships having an AIS receiver. All the information obtained by Safe Port that is sent to Data Receiving Center can be sent (at the same time) to all ships with AIS.

VARIABLE MESSAGE SIGNS

The **Safe Port System** permits integrating Variable Message Signs (VMS) in strategic points of the port in order to visually display textual, and pictographic messages, providing meteorological data as well as information on tides, waves, visibility, etc., which is of interest to the vessels that are entering and leaving the port.

PREDICTIONS

The Safe Port System also offers optionally, localized meteorological and hydrodynamic predictions, in the WEBTRANS Platform, time adjusted through the actual measurements and local data, obtained in its own port by the system.

PRESENTATION OF THE DATA AND IMAGES ON THE INTERNET

Figure 3 shows an example of the GEONICA WEBTRANS Platform Screen, displaying data on the Internet.

Access to the WEBTRANS Platform graphics and data is authorized via a username and corresponding “password”.

At URL:”http:// demowebtrans.geonica.com”, a display of real time data, from different types of meteorological or oceanographic stations pertaining to the maritime ports, wind energy measurement sites, pavement status surveillance stations, environmental road conditions, etc., demonstrates that the WEBTRANS Platform, supported by the GEONICA Server, has been conceived to cover a broad range of needs for a variety of sectors and applications.

GEONICA has also developed a specific software permitting access to the WEBTRANS Platform from a PDA equipped with the corresponding modem so that from any position with GPRS coverage, the user can consult port data of interest, in real time, before leaving the port, or before arriving to it from any part of the world.

INTEGRATION WITH VESSEL TRAFFIC SYSTEMS

All the valuable information obtained by the Safe Port System (currents, tides, waves, visibility, wind speed, wind direction, etc) can be easily integrated or incorporated to existing or new Vessel Traffic Systems (VTS) or Vessel Traffic Management Information Systems (VTMIS) projects in ports.

CONCLUSIONS

The **Safe Port System**, in combination with the WEBTRANS Platform, is a highly efficient source of general information for all users and Port Authorities. In particular it offers meteorological and oceanographic data in real time, and as an option, it can even provide localized predictions and images with direct and "universal" access from any computer or PDA with an INTERNET connection. The GEONICA Information Technology (IT) Department offers its customers turnkey implementation solutions for the **Safe Port System**, adapting to the specific needs of each port. To request more detailed information, direct your queries to **info@geonica.com**.

ENVIRONMENTAL & HYDRODYNAMICAL SENSORS

METEOROLOGICAL PARAMETERS

WIND SPEED
WIND DIRECTION
TEMPERATURE
ATMOSPHERIC PRESSURE
SOLAR RADIATION
VISIBILITY
PRESENT WEATHER
PRECIPITATION

HYDRODYNAMICAL PARAMETERS

TIDES
WAVES
DIRECTIONAL WAVES
AGITATION
CURRENTS

WATER QUALITY MONITORING

OIL SPILL DETECTION
WATER TEMPERATURE
CONDUCTIVITY
DISSOLVED OXYGEN
TURBIDITY

WEBCAMS OR IR TERMOGRAPHIC CAMERAS

3000C UNIT

OPTIONAL RADAR VESSEL DETECTOR AND IR THERMOGRAPHIC CAMERA SUBSYSTEM

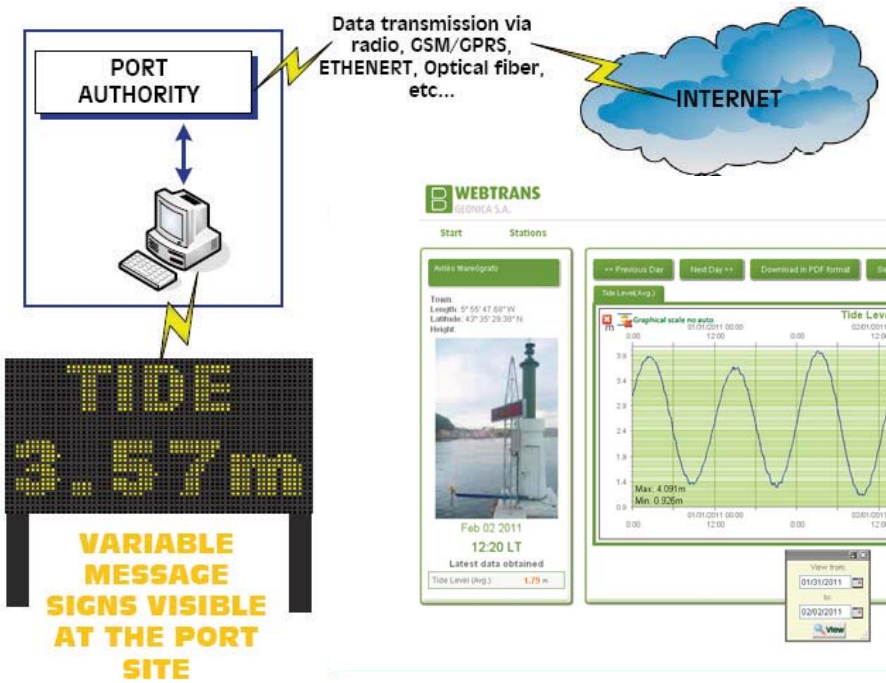

FIGURE 2. SAFE PORT SYSTEM-BLOCK DIAGRAM

WEBTRANS PLATFORM SCREEN IN INTERNET

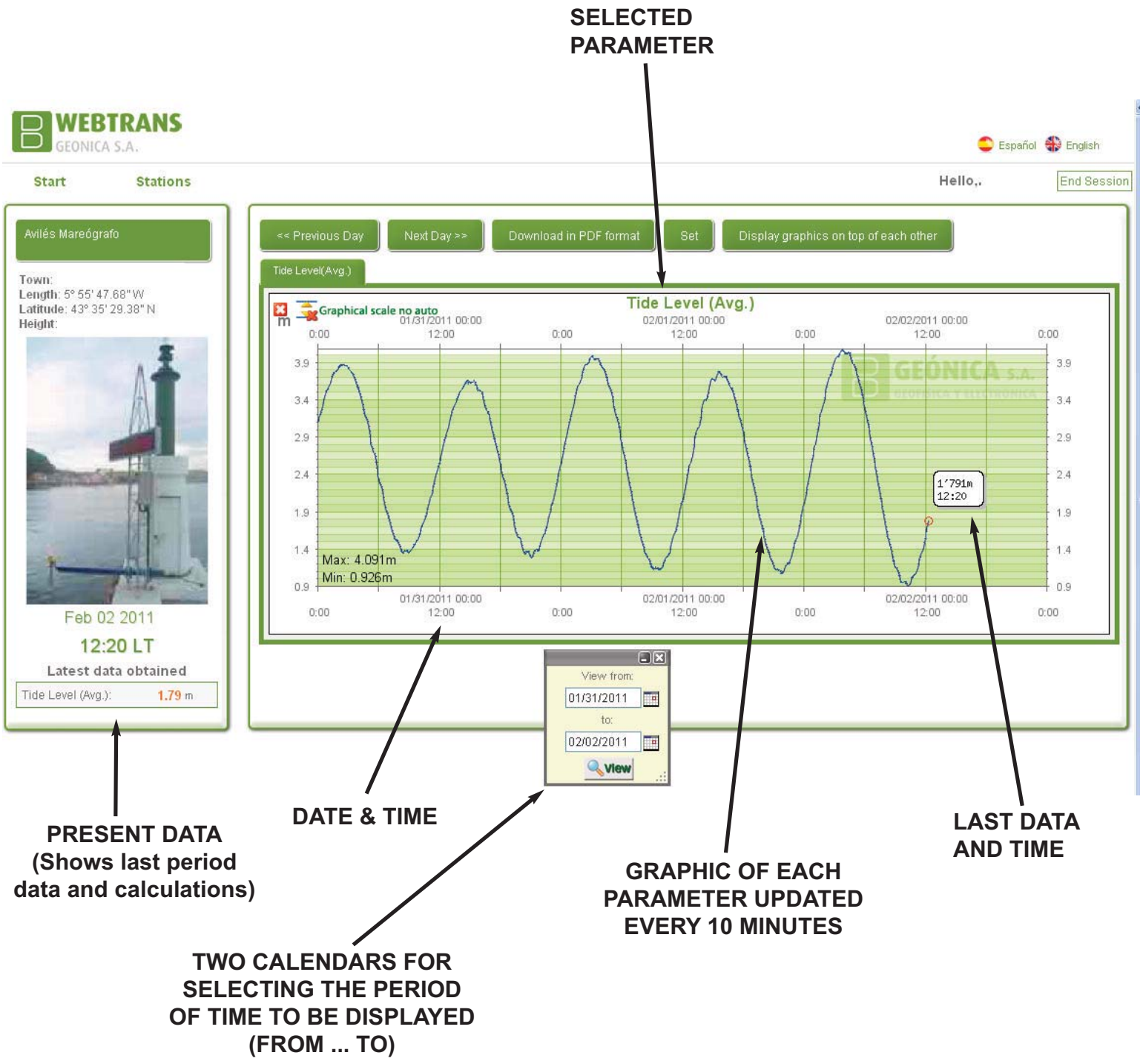

FIGURE 3. WEBTRANS Platform Screen displaying data on the INTERNET