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Measurement of Ship Passages in front of Berth 8 at Offshore Basis Cuxhaven

Client: NiedersachsenPorts GmbH & Co. KG

Location: Cuxhaven, Elbe Estuary

Construction: Offshore Basis Cuxhaven, Berth 8

Scope of Work: Measurement and analysis of ship passage data

Methodology: AIS-System and ship passage database

INTRODUCTION

To verify simulations of swell and surge after construction of berth 8 we were contracted to measure wave systems introduced by deep going vessels (bulk carrier or POSTPANMAX class) passing the Offshore Basis Cuxhaven.

METHODOLOGY

To track ship position and record ship speed over ground, an AIS[1]-Receiver SLR 200 from COMAR SYSTEMS was used. Ship positions were saved in an ACCESS database using AIS Pilot V 3.4 (SPI MARINE GmbH).

This database was queried by a special interface developed under JANET. This interface allows to restrict the query to an area of interest (Fig. 2) for a defined period (Fig. 1).
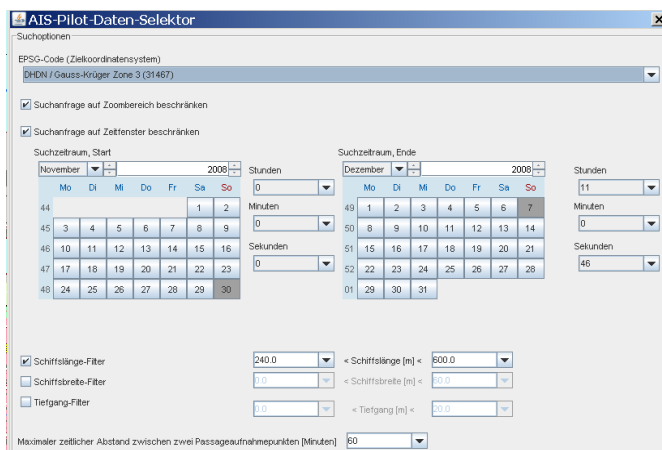

Figure 1: Database query in JANET for the selection of ship tracks

RESULTS

Deep going vessels (L>240m) from Hamburg are passing Cuxhaven around Tnw (+/-1,5h) or Thw (+/-1,0h). Vessels to Hamburg are passing 1,5h to 4,5 h after Tnw.

The speed oft he ships over ground show a significant increase of approx. 3 kn in the direction Cux-HH. The other direction (HH – Cux) shows a reduction of 2,5 kn of ship speed during passage.
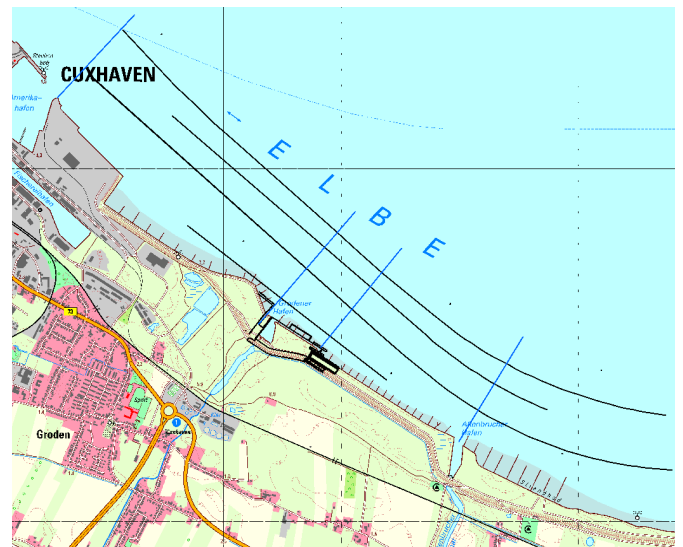

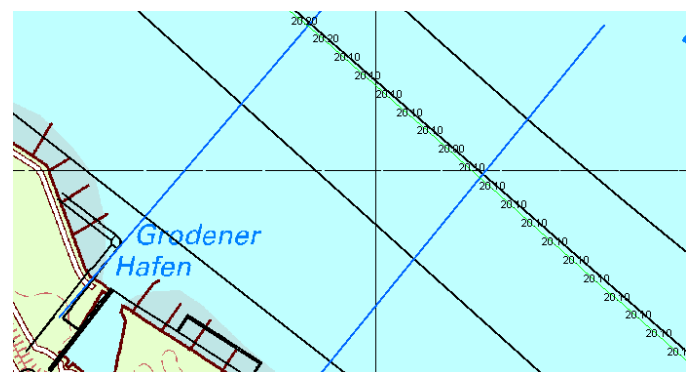Figure 2: Area of interest and boundaries of access channel

Figure 3: Track of a deep going vessel, displaying ship speed over ground [Kn] for every single position

The maximum of averaged ship speed during passage ($v_{mHH-Cux}$= 14,96 kn and $v_{mCux-HH}$=14,12 kn) is always at „Altenbrucher Hafen".

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[1] AIS – Automated Identification System