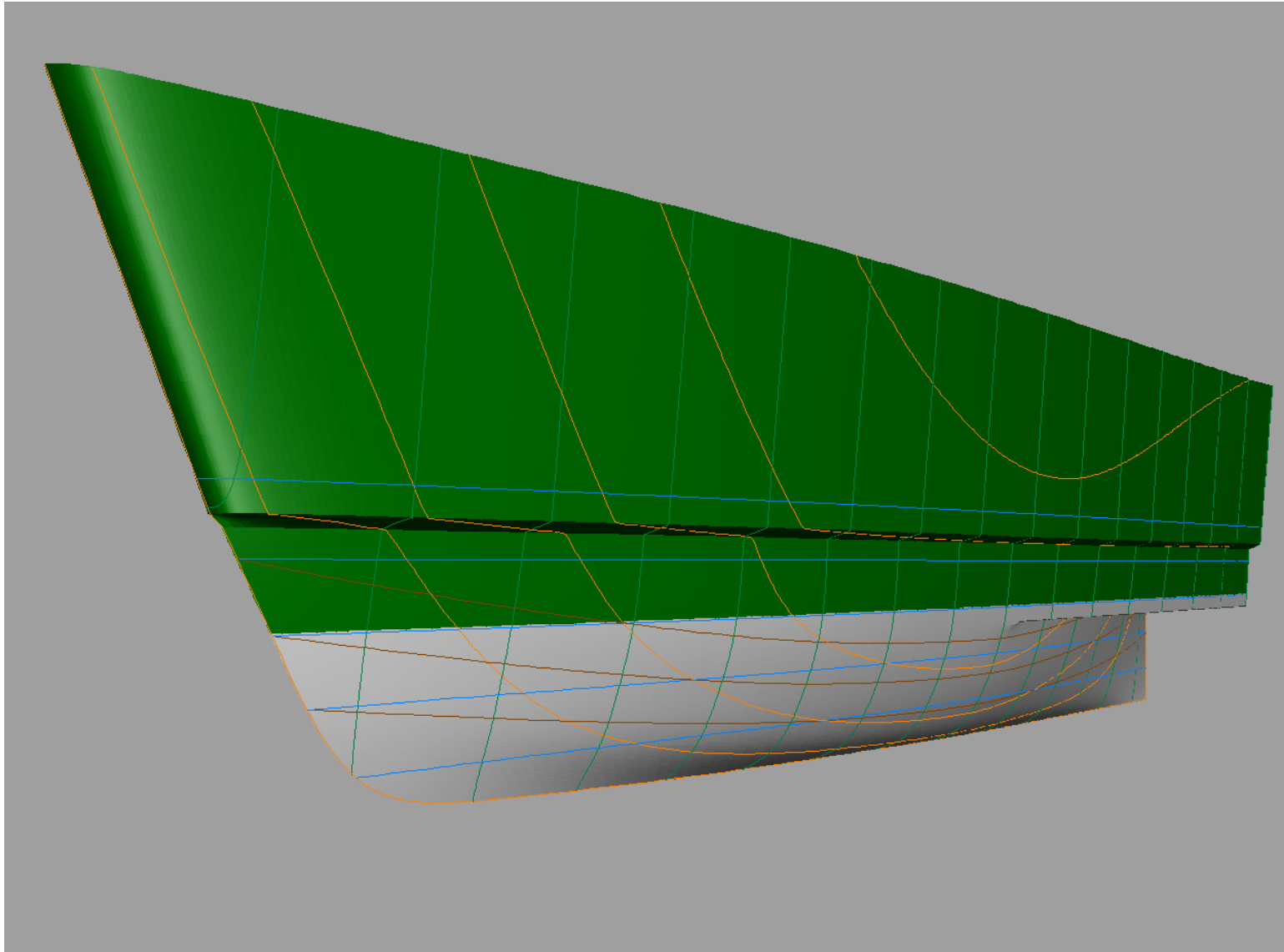


Modelling 52 ft ferry cat

by Martin Schön, Feb. 11, 2007

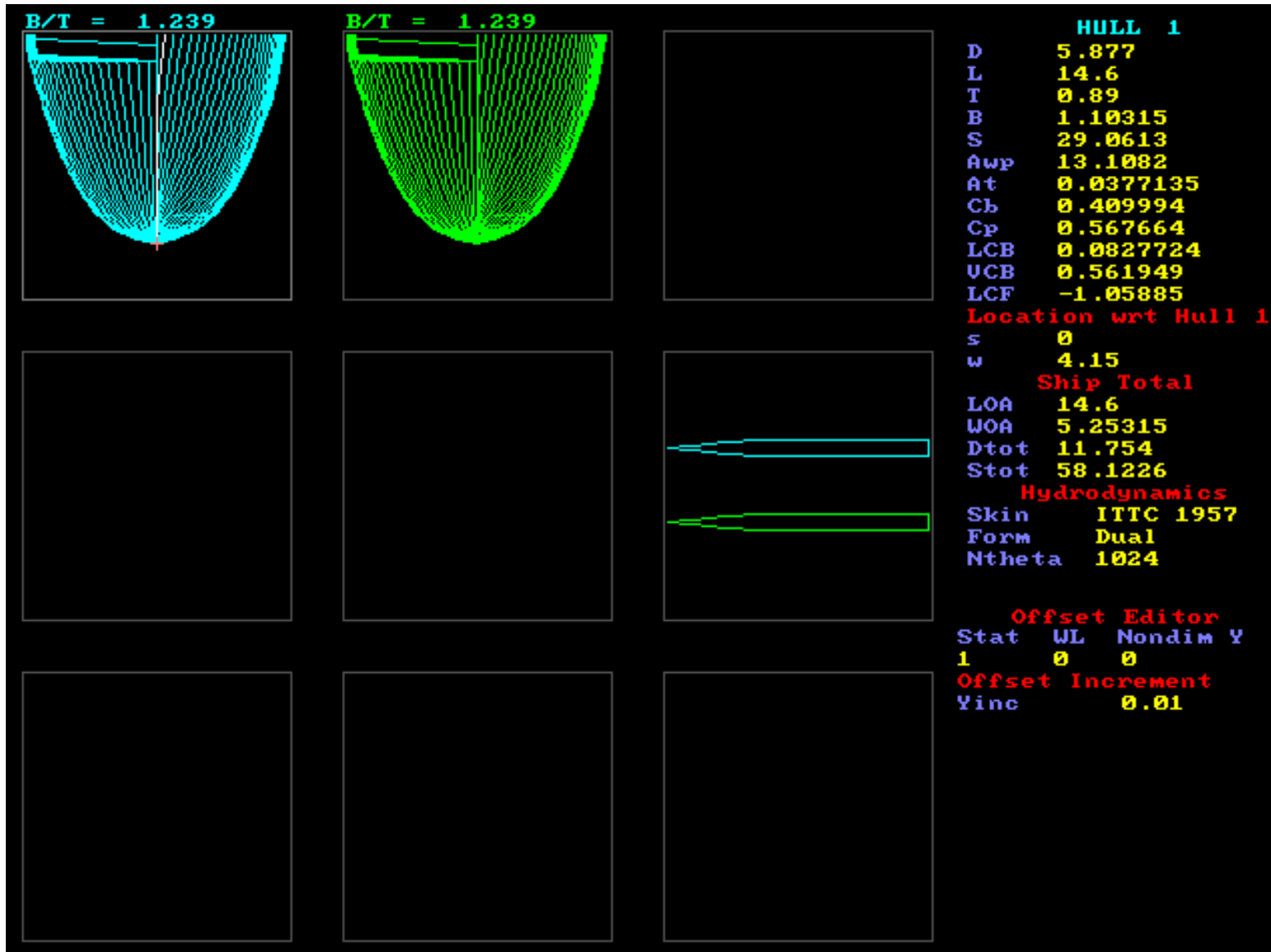


Vessel characteristics

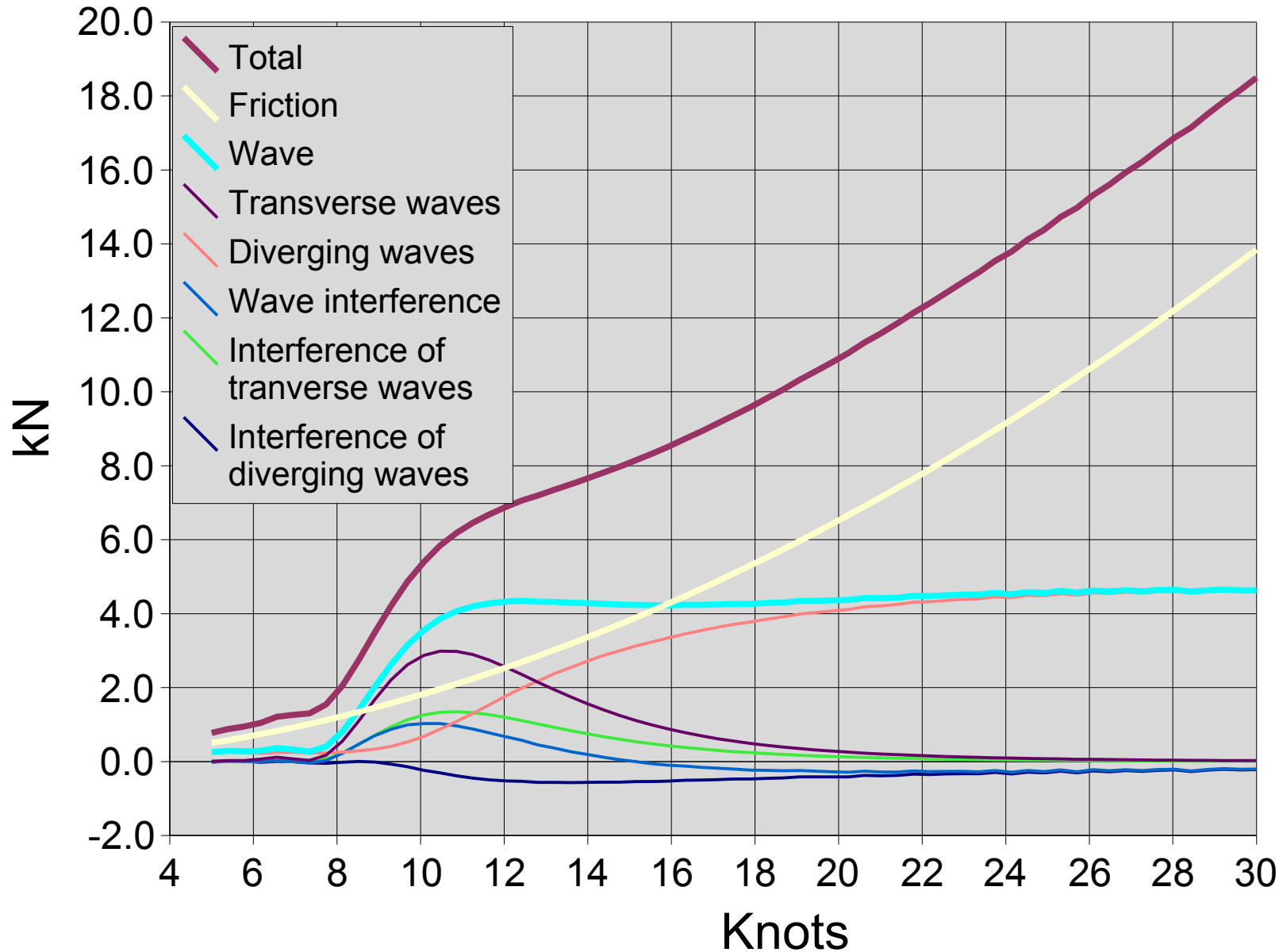


- Data and drawings from <http://tennantdesign.co.nz/>
- Operating speed 25 knots.
- Loaded weight 12100 kg.
- Two 186 kW diesel engines.
- Fuel consumption 3.6 litres/nautical mile.
- Propeller diam. some 0.6 m.

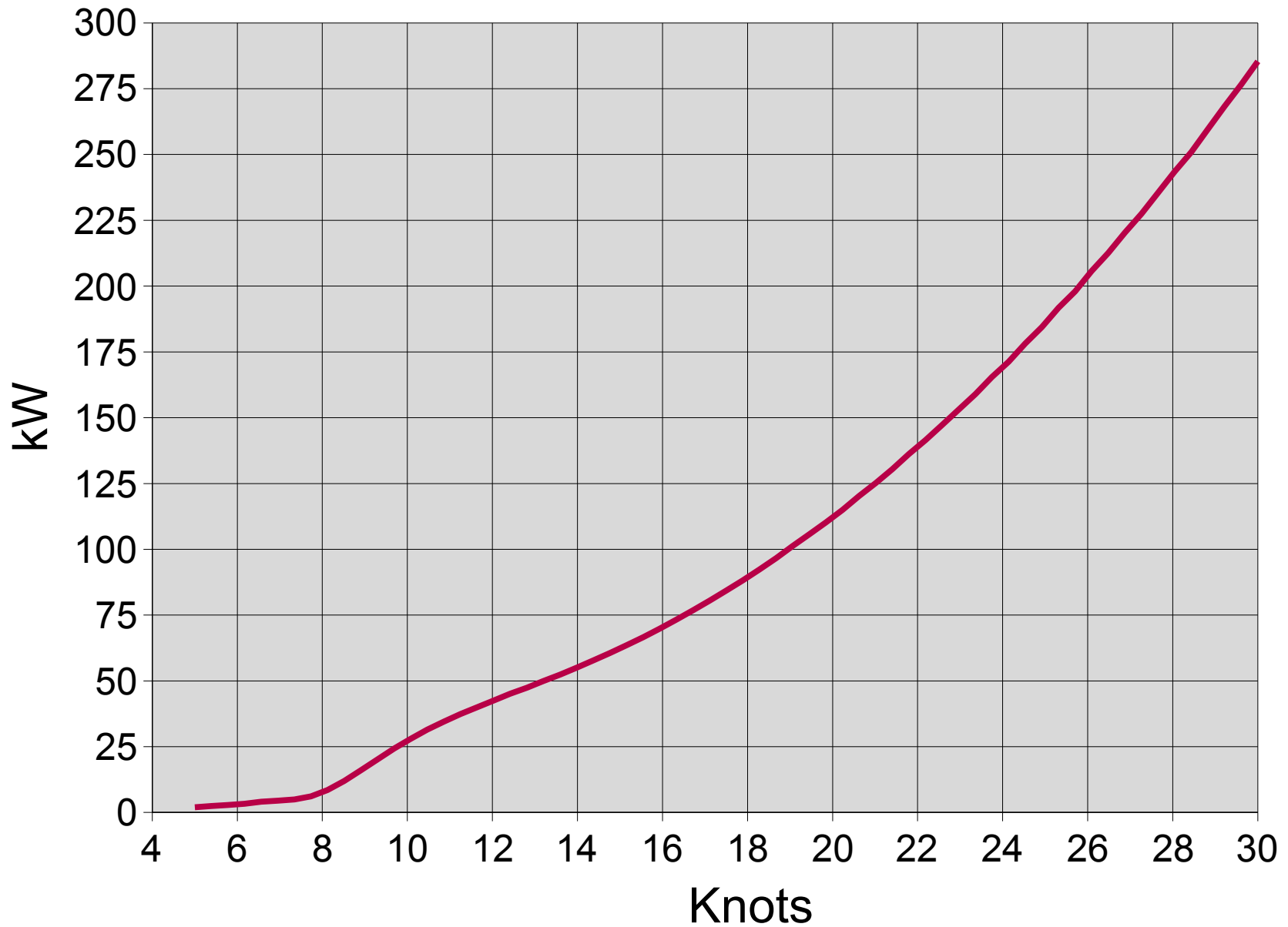
In Michlet



Drag of 52' ferry cat



Power to push 52' ferry cat



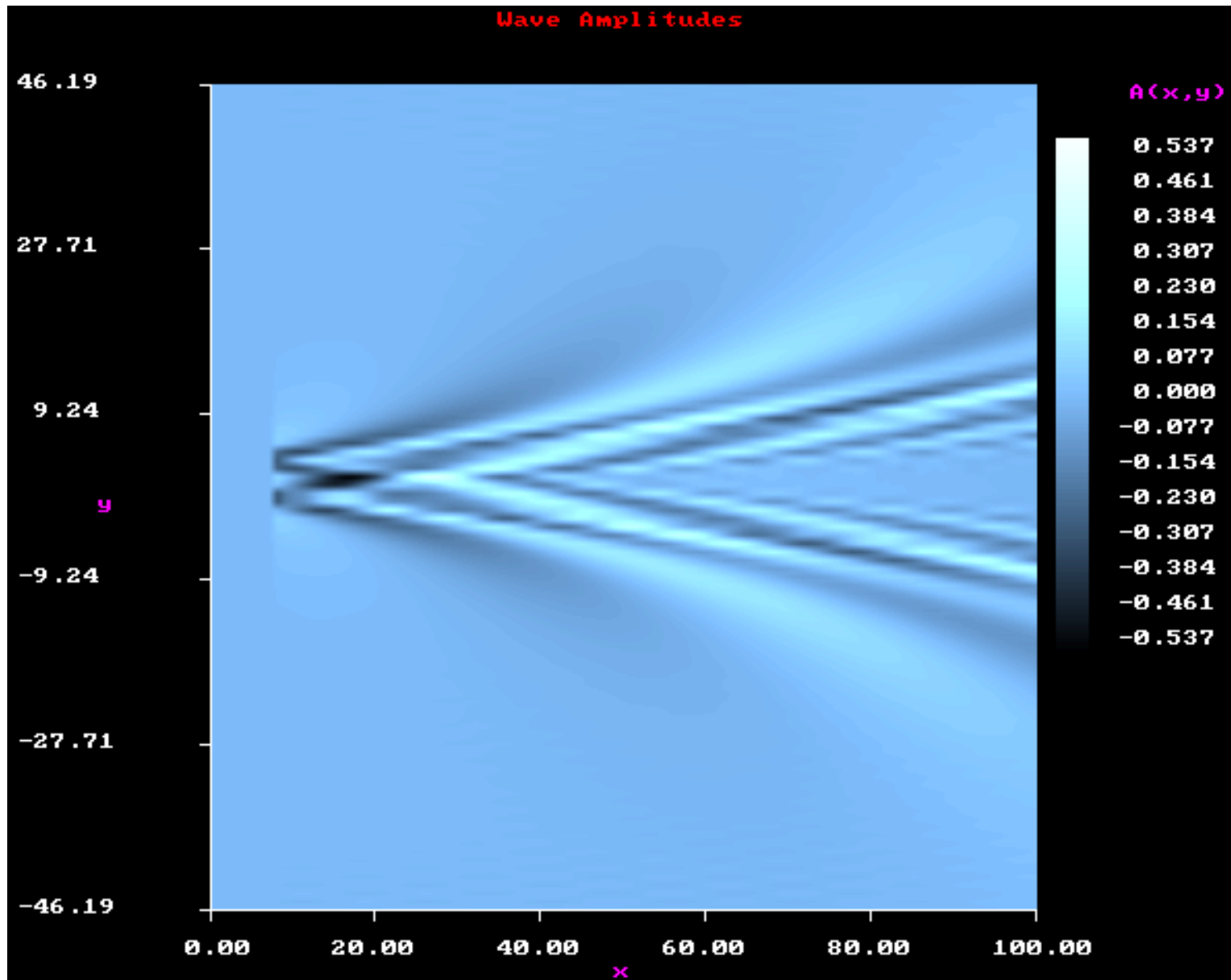
Further power calculations

- Diesel contains 40.8 MJ/litre.
- 3.6 l/nautical mile translates into 1.02 MW of power from the fuel.
- Modelling predicts that 0.19 MW is needed for 25 knots.
- Hence total efficiency is 19%.
- Engine 33% * transmission 90% * propeller 65% = 19%
- $0.19 \text{ MW} / (65\% * 90\%) = 0.325 \text{ MW}$ or 87% of max power.

Discussion/Disclaimers

- Modelling is based on far less hull information than was the case for Afterburner.
- Michlet within $\pm 10\%$ of measured data up to Froude number = 1.
- Propeller design charts indicate somewhat higher efficiency ($\sim 70\%$).
- Volvo Penta's data sheets suggests slightly better efficiency (37%).
- I have no data on transmission efficiency.

Waves @ ca. 25 knots



Waves at interference peak

