SHIPMOOR

## Mooring Analysis for the 21st Century

By **WITHERBYS** and HR Wallingford

SHIPMOOR is an easy to use browser-based mooring analysis tool.
Its calculation engine has been used internally for over 40 years by HR Wallingford to conduct ship mooring projects all over the world. The web version of the tool allows users to validate the mooring arrangement of a berthed ship quickly and more accurately than ever before.
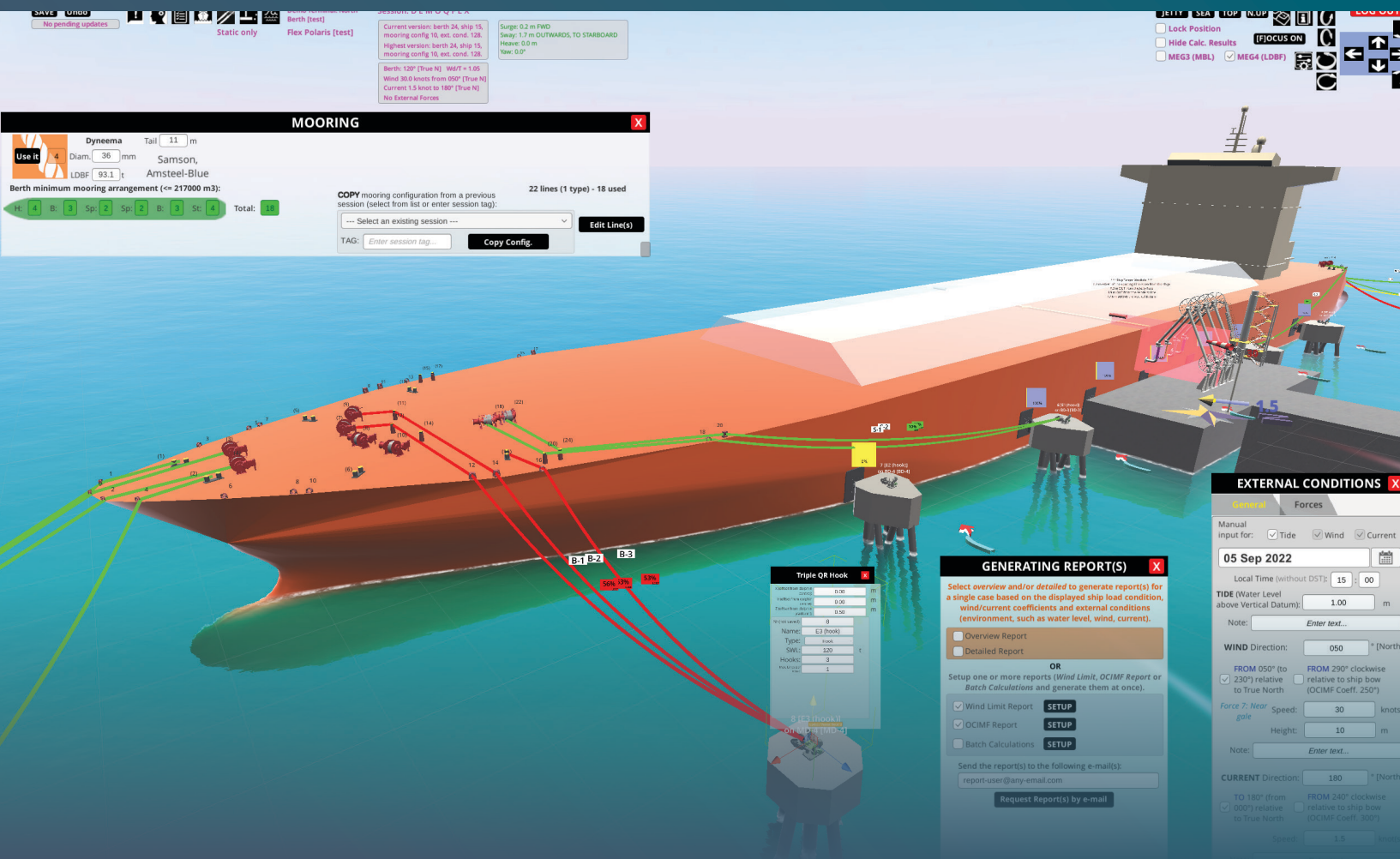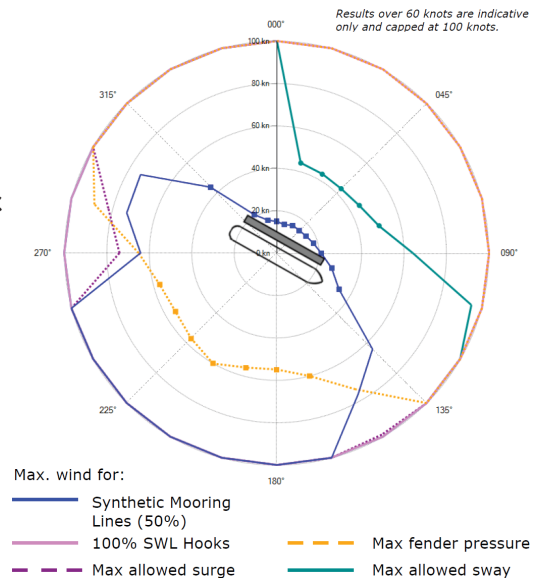
Officially accepted by

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Why choose SHIPMOOR?

- No installation required. Log in from any PC, Mac or Linux computer with an internet connection.
- Easy to use
- Secure data storage and sharing
- Results validated against OCIMF Mooring Equipment Guidelines
- Prepopulated LNG terminal and ship data
- Static and **fully dynamic** mooring analysis

Results over 60 knots are indicative only and capped at 100 knots.

Max. wind for:

— Synthetic Mooring Lines (50%)
— 100% SWL Hooks
– – – Max allowed surge
- - - Max fender pressure
— Max allowed sway

Browser-based tool

SHIPMOOR is an online portal that does not require installation on local machines. It allows secure storage of ship and terminal information in a central database that can be shared with industry partners when appropriate.

There is only **one** copy of a ship or berth that everyone is using, so the most up-to-date information is always provided. The built-in validation steps help users to minimise data entry errors.

The mooring line and fender data are prepopulated from manufacturer catalogues, or from custom data if required.

Static Mooring Analysis

Mooring arrangement

Using the mooring tool is intuitive and requires little time to learn: the selected ship and berth are displayed in a 3D environment and all the mooring points and fairleads are clearly visible. This helps to highlight issues with the mooring configuration. Any adjustment can be made directly in the 3D environment. The external conditions – current, wind and waves – are also shown.

Instant results

The results of static calculations are displayed instantly in the 3D environment using colour-coded representations for the tensions in the mooring lines, the loads in all mooring equipment and the fender contact areas. The results can also be sent out by email as PDF reports.

Reports

A variety of reports are available: overview and detailed reports for a specific case, wind limit and OCIMF criteria reports and batch calculations.

www.shipmoor.com

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1 60 knots of wind from any direction with 3 knots of current at 0° (stern) — FAILED

2 60 knots of wind from any direction with 3 knots of current at 180° (bow) — FAILED

3 60 knots of wind from any direction with 2 knots of current at 010° — PASSED

SWEEP for: ☑ Wind ☐ Current   Enter Current direction: ☑ to, relative to N ☐ from, relative to ship   The berth orientation is 120° from True North. Vertical Datum is LAT.

Set INTERVAL between the sweep directions [°]:   `45` SET   starting sweep from: ☐ North ☑ Ship bow

Set CONSTANT Sweep Speed [knots]:   `30` SET   sweep range 360° ⊟ ──────●──── ⊞   **1 scenario** ADD DEL

Set CONSTANT Current dir. to, relative to N [°]   `180` SET

Set CONSTANT Current Speed [knots]:   `1.5` SET   *Selected scenario: >>> 1 <<<*

Set CONSTANT Water Level [m]:   `1` SET   *Press [ADD] to add up to 4 tables. Click on a table to select it and set the sweep interval or constant value(s) for the sc... Edit any value (except the sweep directions) directly from the table(s) using TAB or arrows to navigate.*

Wind dir. from, relative to ship	000°	045°	090°	135°	180°	225°	270°	315°
Wind dir. from, relative to N	120°	165°	210°	255°	300°	345°	030°	075°
Wind dir. to, relative to N	300°	345°	030°	075°	120°	165°	210°	255°
Wind Speed [knots]	30	30	30	30	30	30	30	30
Current dir. to, relative to N [°]	180°	180°	180°	180°	180°	180°	180°	180°
Current Speed [knots]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Water Level above Vertical Datum [m]	1	1	1	1	1	1	1	1

Dynamic Mooring Analysis

Fully dynamic 3-hour time domain simulation

The dynamic analysis is based on a 3-hour time domain simulation. Until recently, it was impossible to carry out such a task on a single user computer due to the required computation processing power. However, these calculations can now be done within minutes using large numbers of high-performance computing units in datacentres belonging to Microsoft Azure Cloud.
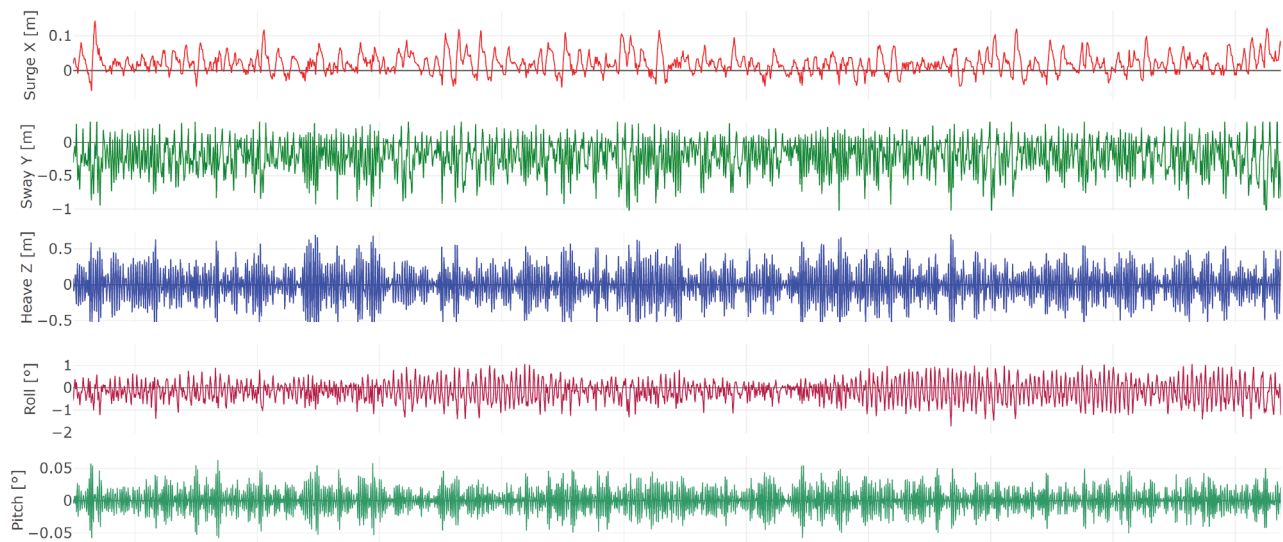
Detailed dynamic report

The detailed report contains the results of the analysis, including minimum, significant and maximum values for ship motions and rotations. The report also includes the ship manifold displacement, the loads on the mooring lines and the forces applied to the quick release hooks, bollards, deck winches and fenders.
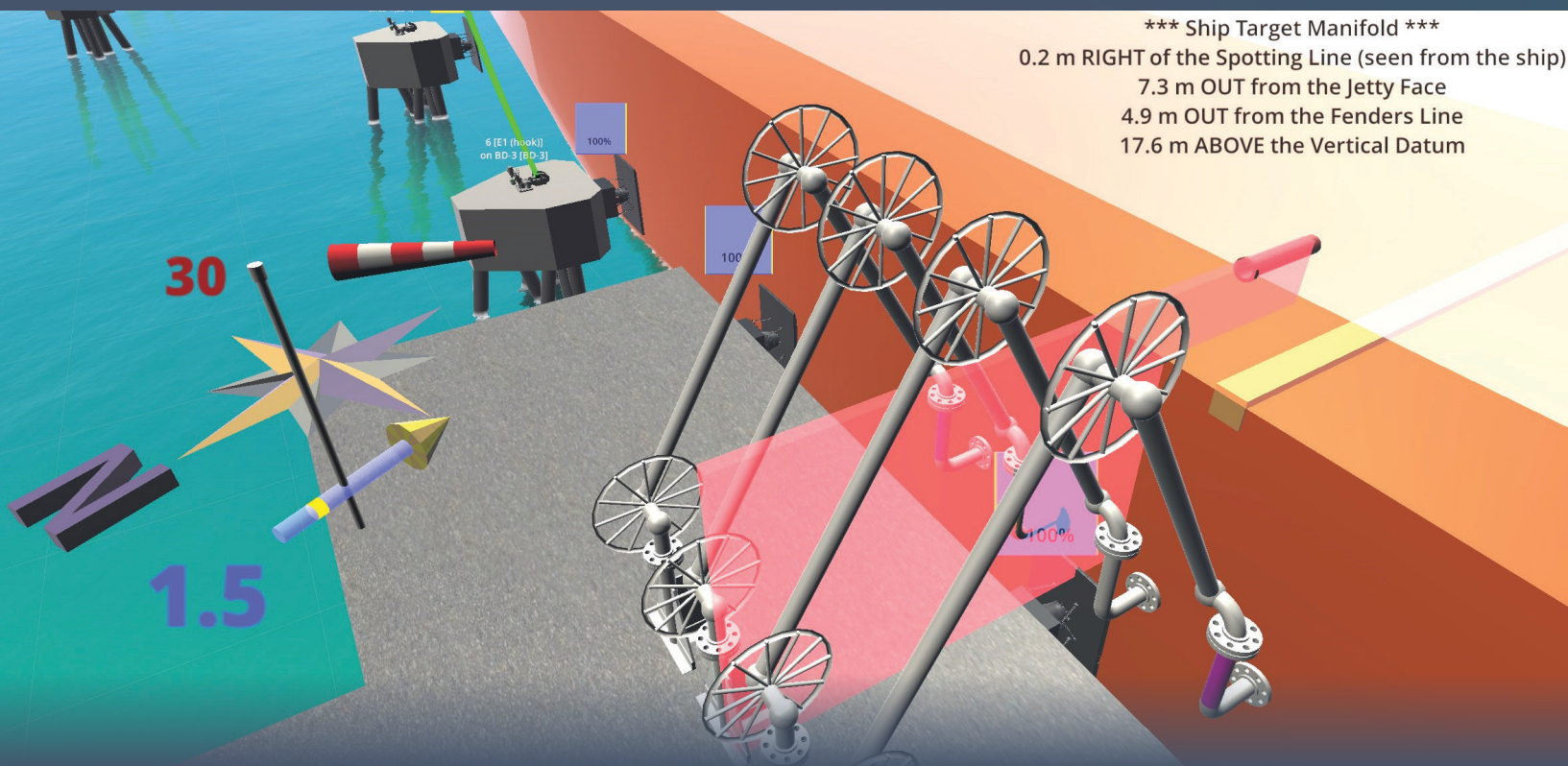
Time series

The time series displays the changes in ship motions, mooring line loads and fender forces over a simulation period of 3 hours.

For more information, including SHIPMOOR quick-start guide, demos and trial requests, please visit our website:
www.shipmoor.com

Or contact our SHIPMOOR team directly via email:
info@shipmoor.com

You can also visit SHIPMOOR YouTube channel where various tutorials and introductory videos can be found:
www.tinyurl.com/shipmoorvideos

*** Ship Target Manifold ***
0.2 m RIGHT of the Spotting Line (seen from the ship)
7.3 m OUT from the Jetty Face
4.9 m OUT from the Fenders Line
17.6 m ABOVE the Vertical Datum

30

1.5

6 [E1 (hook)]
on BD-3 [BD-3]

100%

Witherbys publishes operational guidance and technical standards for the shipping industry. It works in collaborative partnership with a number of key industry bodies.
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