

Maritime Safety Services

Supporting Safe and Efficient Transfer Operations



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Ship to Ship (STS) Transfer is a critical and important, daily activity in the support of, and delivery of, Offshore Energy.

Transfers can take place between vessels of any size and a variety of cargoes including crude oil, white and black products, LPG and LNG, as well as bulk cargoes. The often critical and hazardous activities can have catastrophic results both commercially and environmentally if things go wrong.

With strong experience in offshore engineering design and operation in the marine environment, BMT has extensive experience of providing operators with assistance during the design, selection and operation of STS activities. Let the experts in their fields help with your safe STS operations.

Issues facing STS operators

To address the issues involved in ship to ship transfer operations, BMT has developed a range of operations support services. These include:

- Effective planning of operations
- Risk assessment/management
- Ship compatibility studies
- Limiting weather criteria (i.e. wind and sea state)
- Weathervaning and relative movement of ships due to wind, waves and currents.

Our offshore support services include a range of consultancy, engineering and forecast services to reduce downtime, increase operational efficiency and reduce risk in offshore and coastal locations throughout the world including:

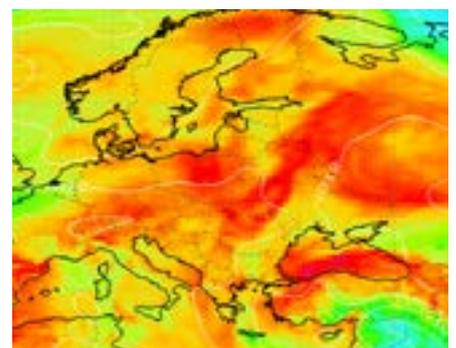
Weather Forecasting Services

Where operations are sensitive to certain limiting criteria or require a specific weather window, our team of marine meteorologists forecast the local weather and metocean conditions at the project site. We notify our customers when conditions are likely to exceed safe operating parameters or a suitable weather window is anticipated, allowing them to plan their operations accordingly. Our team of experienced forecasters are familiar with the challenges of operating in the marine environment, both offshore and near shore. Operating a 24/7 forecasting service with on call duty

forecasters ensures that the operator is supported throughout their STS campaigns. Forecasting services that may be provided, include:

- Operations support 24/7 forecasts service (typically 2x daily forecast issue)
- More frequent forecasts during weather critical operations
- Daily tidal and surface current forecast

- Weather vaning as a result of wind, wave and current conditions
- Route forecast prior to arrival at the site location



Site Specific Metocean Criteria

Global proprietary data sets of wind, wave and current data allow BMT metocean consultants to support planning STS operations with site specific workability criteria for the selection of suitable vessels and weather window analysis to provide information on the seasonal and inter-annual variability of metocean conditions at the location.

Assessments can include:

- Metocean operability criteria (10-year, 100-year statistics)
- Operational downtime and persistence analysis
- Regional metocean hazards (e.g. tropical storms, squalls or solitons)
- Weather vaning studies

Hazard Identification (HAZID)

HAZID workshops improve understanding of risks associated with STS operations. Using a systematic approach, major accident events and other hazards arising from vessel approach, berthing, connection, transfer, disconnection and departure are identified. Workshops ensure that risks are eliminated or reduced to as low as reasonably practicable for the site specific location and associated vessel operations. BMT brings operational experience to studies to ensure the most applicable mitigating and preventative safeguards are proposed to reduce unacceptable risks.



Operational Simulation Studies

Movement of vessels in the offshore environment during operation can be hazardous. BMT has specialised tools and services that can assist with the manoeuvrability and planning of vessel operations during (routine) operations offshore. A combination of our vessel simulation software REMBRANDT and Computational Fluid Dynamics (CFD) can allow the operation to be studied within the boundaries of the site specific metocean conditions, prior to any complex operation involving multiple vessels.

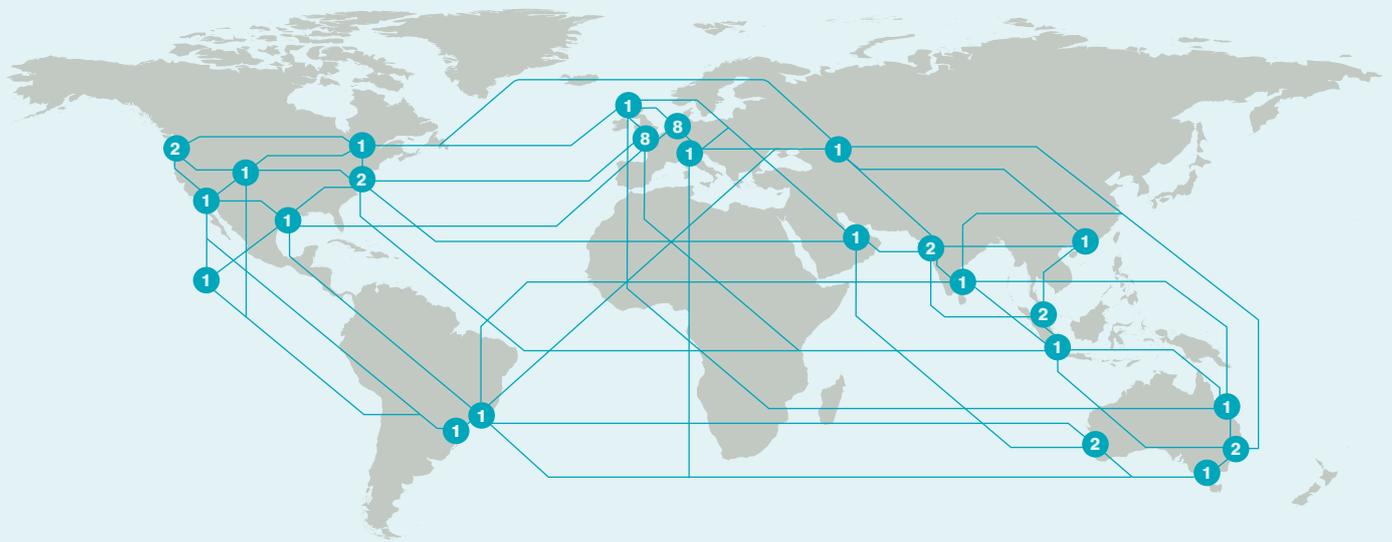
In particular, BMT simulates the relative motions of the side-by-side moored ships (in six degrees of freedom accounting for hydrodynamic interactions) using a full description of the site specific metocean conditions (full 2D wave spectra, wind and current). Where necessary, weathervaning is also included in the simulation.

This enables the effect of cross-seas to be properly accounted for and allows assessment of the potential availability for safe STS transfer operations considering aspects such as loading arm excursion, hull contact and forces in the mooring lines and fenders. This is done using the DMA (dynamic mooring analysis) module of the REMBRANDT suite.



The BMT group is an international design, engineering and risk management consultancy, working principally in the energy and environment, transport and defence sectors.

With locations in all of the major markets we serve, ours is an active network that sees us sharing skills and knowledge, combining disciplines and building international teams to create integrated answers to the questions of our customers.



● Number of local offices.

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