



OFFSHORE PRODUCTION DISCHARGE CONSULTANCY

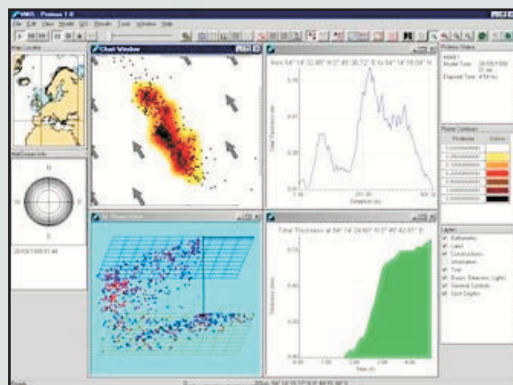
BMT Cordah Limited

BMT Cordah has provided consultancy services for the discharge of offshore production waters for more than 20 years. Our clients include many major oil and gas exploration and production companies, environmental consultancies and government bodies - including the UK Department of Trade and Industry. We can provide a range of services, including all modelling requirements, from PON applications and ecological risk assessment, to the complete management of Environmental Impact Assessments and production of Environmental Statements.

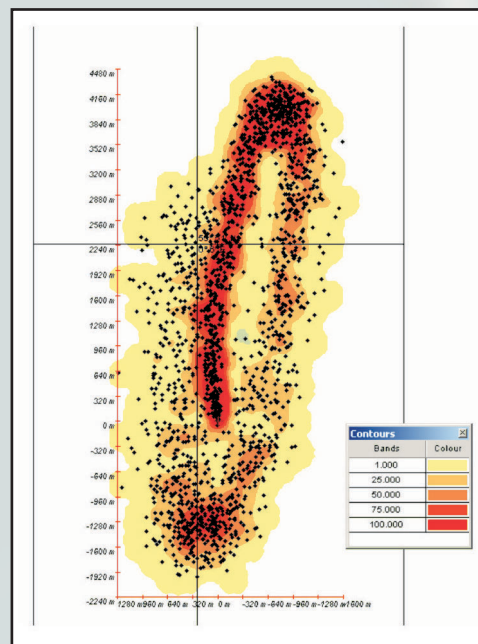
BMT Cordah's PROTEUS model was specifically developed as an information system to simulate the dispersion and dilution of aqueous discharges, such as produced waters, from drilling operations. A full range of chemical effluents of different buoyancies can be modelled and tracked throughout the water column.

PROTEUS Capability includes:

- 3-D dispersion modelling of aqueous plumes; including early jetting phase, dynamic collapse, and subsequent passive dispersion;
- Spatially-varying bathymetry;
- Spatially and temporally varying hydrodynamics;
- Bespoke characterisation of the discharge scenario (pipe configuration, effluent type, concentration and density);
- Mean, maximum or depth-specific concentration contours and suspended particle position export facility;
- Plume extents, and pathway trajectory; and
- Ecotoxicological risk assessment.



BMT Cordah's PROTEUS application: showing chart plot, 3D view, and concentration graphs



Contour plot of PEC:PNEC environmental risk ratios

BMT Cordah recognises the tight deadlines to which the offshore industry works and offer a fast 'turnaround' service, typically completing modelling studies within two weeks.

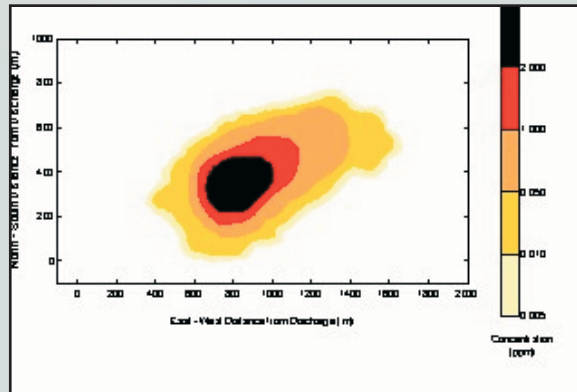


All modelling studies are designed for site specific applications and take full account of operational procedures

Offshore Production Discharge Consultancy

BMT Cordah's discharge modelling reports typically include:

- Full background to scenarios chosen, including both discharge configuration and environmental information such as current regimes;
- Presentation of results as contour plots, tables and graphs, as required by the client;
- Discussion of results to aid decision making; and
- Appendices including complete description of the PROTEUS model.



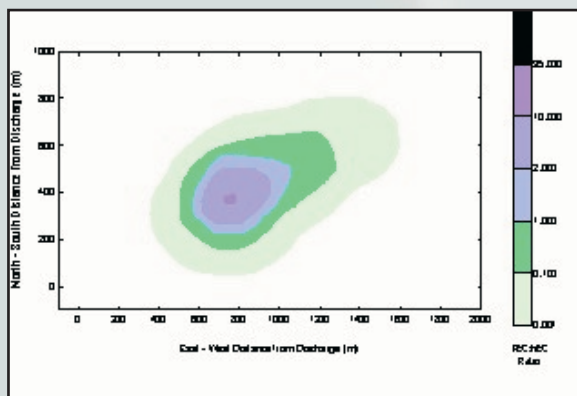
Contour plot of chemical concentration levels

Complementary Services:

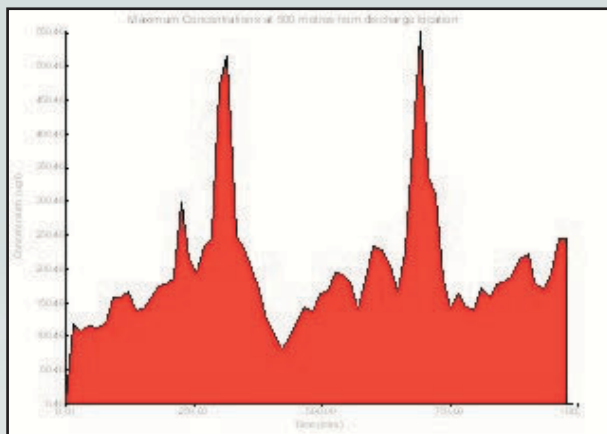
Environmental Impact Assessment

BMT Cordah provides a range of EIA consulting services from scoping studies to full appraisal.

Discharge modelling reports can be submitted independently or as part of an Environmental Statement.



Contour plot PEC:PNEC Risk ratios



Timeseries of Maximum Concentration at 500m

Ecological Risk Assessment

BMT Cordah offers ecological risk assessment with all discharge modelling using a range of methods including PEC:PNEC, CBR and WET schemes.

PON Applications and Offshore Chemical Regulations

BMT Cordah provides advice and assistance for all PON applications and provides expert guidance on the application of the UK Offshore Chemical Regulations. Our discharge modelling studies are also used to support BAT/BEP studies, environmental engineering investigations and studies to optimise the configuration of outfalls and caissons.



BMT Cordah Limited

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