

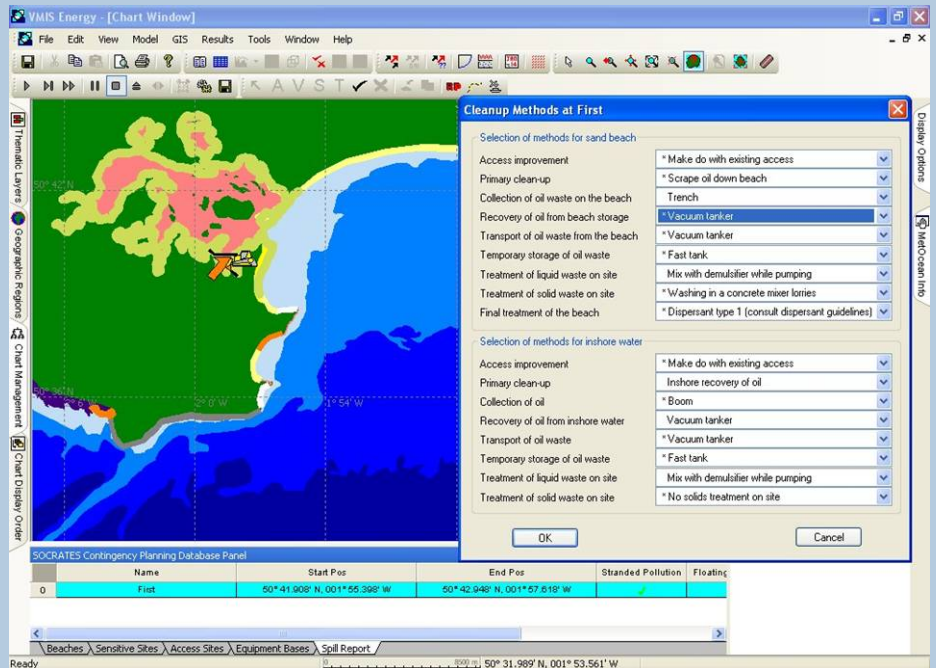
“Where will our knowledge take you?”

## SOCRATES

# Shoreline Oil Cleanup, Recovery and Treatment Evaluation

Major oil spills present an enormous operational and logistical challenge. Immediate access to information on the threatened coastline, guidance on the most appropriate methods for beach cleanup, and the management of data on the cleanup process are vital to a successful cleanup and subsequent recovery of cleanup costs. The SOCRATES integrated management system provides a comprehensive information facility to support shoreline oil cleanup from planning through to documentation.

SOCRATES, developed jointly by BMT and AEA Technology, combines fundamental research on the optimal cleanup of oiled shorelines with leading edge information systems technology. Version 2.0 builds on the previous success of SOCRATES and its implementation in several world regions for both oil companies and national governments.



The screenshot displays the VMIS Energy software interface. The main window shows a map of a coastline with various colored zones representing different cleanup areas. A dialog box titled 'Cleanup Methods at First' is open, allowing users to select cleanup methods for sand beach and inshore water. The dialog box includes dropdown menus for various methods such as 'Access improvement', 'Primary clean-up', 'Collection of oil waste on the beach', 'Recovery of oil from beach storage', 'Transport of oil waste from the beach', 'Temporary storage of oil waste', 'Treatment of liquid waste on site', and 'Final treatment of the beach'. The 'Cleanup Methods at First' dialog box is currently showing the 'Cleanup Methods at First' dialog box.

Name	Start Pos	End Pos	Standed Pollution	Floating
0	50°41.008' N, 001°55.386' W	50°42.942' N, 001°57.618' W		

SOCRATES has been implemented within BMT's Visual Marine Information Systems (VMIS ENERGY) framework which provides a highly flexible user environment and a wide range of facilities for mapping, structure planning, data management and reporting. Within the VMIS ENERGY framework, SOCRATES interfaces directly to BMT/ AEA Oil Spill Information System (OSIS) which provides predictions of marine oil spill trajectory, spreading, oil properties, and shoreline impact. Together, these provide a total information system for oil spill preparedness and response.



Above left: Cleanup operation

Above right: View of BMT's SOCRATES model showing pollution site survey report.

**Pollution Site Survey Report**

Site Physical Operational Stranded Oil Floating Oil Spill Details

Shore type (substrate) Sand Composition (grade) Coarse

Type of water table Surface is dry (well-drained, low water table)

Length of beach [km] 10.00

Width (between H'W and LW levels) [m] 4

Beach slope Gradual

Load bearing character Semi-soft (4WD vehicles)

OK Cancel Apply

**SOCRATES can be configured for any world region, at any scale from national to local. Based on a reference map that can be supplemented with shoreline sensitivity maps, SOCRATES provides structured databases for beach characteristics, sensitive sites, access locations and equipment bases. These databases are directly integrated with the GIS mapping facilities provided within VMIS ENERGY so that they can be viewed on maps supplemented with additional supporting data.**

### Contingency Planning

Contingency Plan data can be viewed directly on the GIS displays and interrogated to access relevant supporting information and images. This data includes full listing of the physical and accessibility characteristics of different beaches, environmentally sensitive site information, beach access points and equipment storage inventories.

### Operational Data Management

Careful documentation of the extent of shoreline impact and the methods and resources used to respond to the spill are acknowledged to be major factors in the acceptance of claims for cleanup costs as well as providing an audit trail for post-operation wash-up and analysis. Following the Sea Empress Spill a structured reporting and logging system has been provided through a process of consultation with responders.

### Shoreline Cleanup Decision Support

Full-scale beach and inshore trials have been conducted by AEA Technology to assess the effectiveness of different cleanup methods over a range of beached and floating oil spill scenarios. Combining these results with information from the Contingency Plan database, SOCRATES is able to determine the optimum cleanup strategy for any oiling scenario. Estimates of the type and quantities of equipment required at each stage of the cleanup are provided. Once plans have been developed, SOCRATES provides a structured report, ready for use on site or for event-logging.