



## Pipeline Installation Analysis: Australia/ South-East Asia

The MCS Kenny Perth office was contracted by a South-East Asian client to perform a wide-ranging study on the installation of a shallow water pipeline in Singapore. The MCS Kenny team used PipeLay Version 2.4 for this project because of the many productivity-enhancing facilities it offered for ease of analysis specification, automation of a wide range of analysis types, as well as ease of post-processing and results generation. Using PipeLay, the project team were able to design the optimum barge/stinger support configuration as well as provide the analysis supporting the client's offshore installation procedures.

### Scope of Delivery

#### Project summary:

- Shallow water (0-40m);
- Internally & externally coated pipeline;
- High tidal current profile;
- Short, fixed stinger;
- Shore pull procedure at both ends of pipeline crossing

#### Analysis Summary:

- **Normal S-Lay Analysis**
  - Shallow water S-lay;
  - Barge with rigid stinger
  - Stinger/barge support configuration to be optimised
  - Large load case matrix to consider:
    - Range of water depths to be considered (10m-40m)
    - Range of barge tensioners for each water depth
    - Range of vessel trims for each water depth
    - Range of current profiles
- **Abandonment & Recovery Analysis**
  - Same pipeline and vessel configurations as normal lay
  - Same combinations of depth, vessel trim, and current
  - Models to include A&R head and A&R cable
  - A&R analysis carried out in a series of static analyses, paying out A&R cable as well as offsetting the vessel
- **Shore Pull Analysis**
  - Same pipeline and vessel configurations as normal lay
  - Arbitrary seabed modelling the seabed profile at the landfall locations
  - Models to include pullhead and A&R cable
  - Dynamic pay out/pay in of pipeline and cable.

### Benefits

- Project Database and Component concepts facilitated easy and rapid generation and subsequent optimisation of models, as well as minimised repetitive model specification, and the possibility for duplication errors
- Graphical Model Component and dynamic display output give the user a rapid means to check input and evaluate output
- Multiple load cases can be defined within the same Analysis Component allowing fast and effective evaluation of a base case scenario and subsequent sensitivities. Multiple stage procedures, such as abandonment and recovery, that may have static and dynamic runs, can easily be setup, run and post-processed
- Powerful Analysis Component eliminated need for engineers to keep track of the myriad of analysis combinations
- Automated and Custom Postprocessing enabled output to be customised to the Client's requirements and/or for ease of post-processing
- Automated procedures for running and postprocessing analyses meant engineers could concentrate on interpretation of results to optimise installation procedures.