



TRNC DRINKING WATER SUPPLY

Northern Cyprus Water Pipeline Project



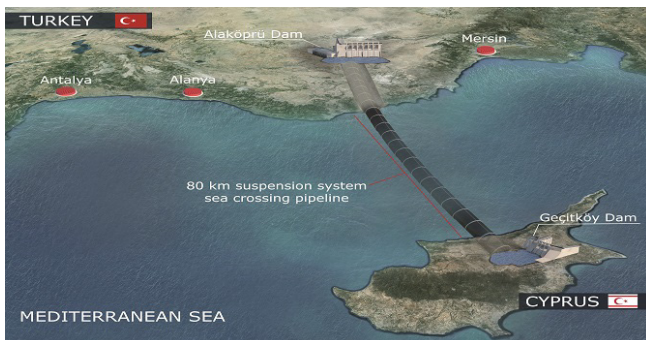
Project Details

Location: TRNC route Turkey - Cyprus
 Water Depth: 290m to 1400m
 Date: Q1/Q2 & Q4 2014
 Client: IKM Subsea Pte Ltd



Scope Of Work

iSURVEY Pte Ltd (ISFE) was contracted by Jumbo Offshore through IKM Subsea Pte Ltd to assist with navigation, survey and positioning services required for the installation of 126 gravity anchors, with tethers and subsea buoys, to which the pipe line would be installed at a later stage. Anchor installation position tolerance was $\pm 5\text{m}$, and was $\pm 5^\circ$ for heading.



Pipeline Route

iSURVEY scope of work involved provision of:

- Survey & Positioning of M/V FAIRPLAYER.
- Subsea positioning by combined USBL/INS on dual ROV systems involved in the anchor installation.
- Subsea positioning of anchor systems to within precise positioning tolerances by cNODE acoustics.
- Subsea positioning and tracking of subsea buoys and tethers during installation.

A combined iNAV® & iROV® system provided positioning of the vessel and ROV systems. Sonardyne Sprint INS systems with DVL were installed on each ROV system. Digiquartz depth sensors were used for precise depth measurements of buoys.



M/V FAIRPLAYER

Kongsberg cNODE acoustic beacons were deployed for anchor positioning from the vessels upgraded HiPAP system. In addition, cNODE beacons were also used on the ROV, TMS, crane wire, clump weights and deployment frames. The ROV position was used to assist in the anchor positioning and take the final position fixes and heading measurements.

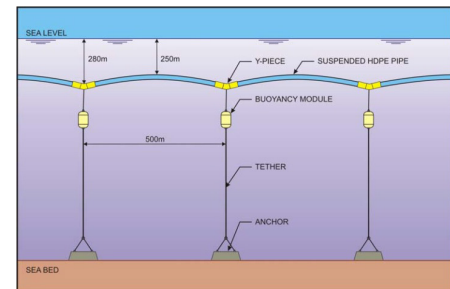


Illustration of Anchoring Design

The project requirement demanded an innovative positioning solution that would reliably and precisely meet the tight installation tolerances and project schedule, without the use of dedicated seabed arrays. The iNAV® & iROV® system provided live graphical and numerical information about the installation vessel and ROV system positions. The integrated INS and DVL systems used with the vessels upgraded HiPAP system provided for precise ROV position and heading information.

The ROV System position was used to assist in the anchor positioning and take the final position fixes. An ROV Spin test was performed on a seabed transponder at 250m depth intervals along the route to enhance system accuracy.

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