TDW's Pig tracking in Australia

When a new liquefied natural gas (LNG) project in Western Australia called for pre-commissioning pigs to be pre-loaded inside a subsea launcher nearly two years in advance, a critical requirement was for the pig tracking system to retain its battery life over such a long period. The new LNG plant will gather and partially process gas and associated condensate from various offshore fields and deliver it to an onshore facility. There, two trains with a combined annual capacity of 8.9 million tonnes (9.8. million tons), will make the LNG commercially viable. The site also includes a domestic gas plant. First delivery of LNG is expected in 2017.

In 2014 — well before the pipe connecting the onshore and offshore infrastructures was scheduled to be laid — the operator fitted the TDW's SmartTrack equipment into the bodies of eight bi-directional pigs intended for use in dewatering, drying, and purging the two 24-inch production lines, and two 14-inch utility lines. The pigs were then loaded into the subsea launcher connected to the pipes, and the entire assembly was transported to Australia. After the lines were laid and the transponders successfully reactivated, pigging operations commenced. The pigs were retrieved from the lines in 2016, 21 months from the 2014 start date.

3X Engineering repairs subsea dent with zero visibility

The objective of the repair performed in September 2016 by **3X ENGINEERING** and its local distributor **SAVIC** was to reinforce a 2.5m length of damaged subsea pipeline. The dent defect (13,1 % dented depth) was situated at 16m depth with zero visibility on a 36 inch diameter pipeline Offshore Nigeria.

After Finite Elements Analysis (FEA), 50 composite layers of REINFORCEKiT 4D SUBSEA (R4D-S) were used to perform a reinforcement designed to last for 5 years. Underwater, several preliminary operations (sediments excavation, removal of concrete and existing coating, marking of the surface to be wrapped) were performed before the essential step of surface preparation to get a good surface roughness (60µ minimum surface profile). 3X wrapping reinforcement was performed following several stages :

1. A foot print of the dent was made in order to manufacture appropriate composite rigid plate.
2. Primer (P3X32) was applied to the defect, using a dispensing gun, providing a good adhesion of the composite materials.
3. Five rigid composite plates covered with F3XSS filler were positioned over the dent and strongly fixed with ratchet belts for a curing time of 3 hours *(illustration picture)*.
4. 82 rolls of Kevlar® tape, pre-impregnated with R3X1050-S resin, using a special 3X device called BOBIPREG) were wrapped around the pipe.
5. Finally, a neoprene soft cover was applied to protect the repair from shells and other elements.

Divers and 3X worked together to repeat each step of the implementation with zero visibility.
Zero injury, schedule respected and repair design controlled concluded this job. A special thanks to Mobil Producing Nigeria representatives and ADS team (divers) for their precious help to complete this project successfully.

Composite plate manufacture on the foot print of the dented area & primer application (training picture).