# FIELD CASE STUDIES: TAPIS-F & IBB

## REPLACEMENT OF DEPLETED ANODES ON TWO FIXED STRUCTURES IN MALAYSIA

### RETROPOD ANODE SLEDS INSTALLED ON TWO AGING FIXED PLATFORMS

Deepwater, in conjunction with WASCO, a local agent, supplied a total of 42 RetroPod anode retrofit systems to protect two aging platforms for ExxonMobil in Malaysia. The structures, TAPIS-F and Irong Barat B (IBB) required a total of 24 RetroPods and 18 RetroPods, respectively. Each RetroPod consists of 4 anodes, 1 set of dual grounding cables, and a RetroClamp used to ensure continuity between the RetroPod and the structure.

The RetroPods were manufactured and assembled locally in Malaysia by WASCO, using Deepwater's design. The RetroClamps and dual tie-back cables were manufactured by Deepwater in Houston and shipped to Malaysia. The installation was preformed from the vessel Atlantis Dweller utilizing an ROV in 60 meters of water. The installation was performed in 63 hours via ROV, (excluding weather and downtime). Another retrofit of unparalleled speed and efficiency. We'd like to thank our partners, WASCO, for their collaboration in the successful delivery of this retrofit solution.

PROTECTED PLATFORM

RETROPODS LOADED ONTO VESSEL


RETROCLAMP INSTALLED ON MEMBER

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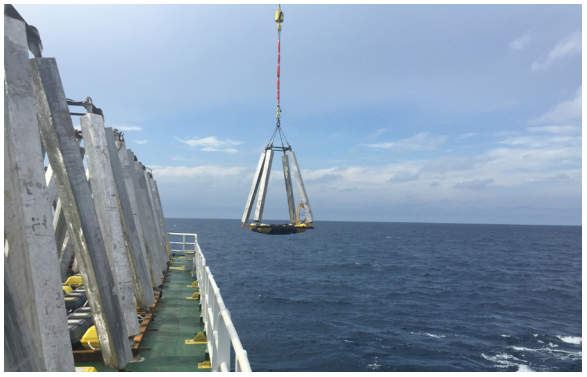
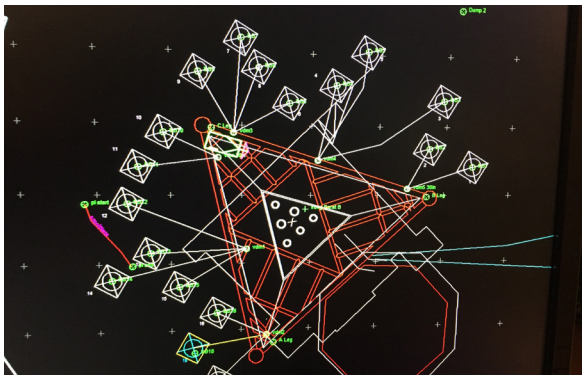
### INSTALLATION

After all anode sleds were loaded onto the vessel, continuity was checked between the RetroPod and the RetroClamp during the voyage to the structures. For easy ROV deployment, the RetroClamps are typically fastened to the RetroPod and the dual
tie-back cables are wound and placed on the mud mat. The RetroPod can then be over boarded and lowered to the seabed utilizing the vessel crane.

Once lowered to its final installation location, the ROV pilot disconnects the lifting sling and retrieves the RetroClamp. Once installed, CP readings are taken on the RetroClamp and the member to ensure that the RetroClamp is electrically continuous (no greater than 10mV delta). In total, 24 RetroPods were successfully installed on TAPIS-F and 18 RetroPods on IBB. Our CP design confirmed that the entire jacket structure could be protected with anode sleds on the seafloor, so there was no need to clamp or weld anodes higher up the jacket, a more costly endeavor.



LOWERING RETROPOD THROUGH SPLASH ZONE



SITE PLAN FOR RETROPOD INSTALLATION

### RESULTS

CP readings were taken on each platform before and after the RetroPods were installed. The readings were taken by ROV from -30m down to the seabed. Below is a summary of the CP data acquired during installation. The post installation readings verify that's both platforms were successfully retrofit.

### CATHODIC PROTECTION READINGS TAPIS-F

| Survey Location | Pre-Retrofit CP Value (mV) | Post Retrofit CP Value (mV) |
|---|---|---|
| Leg A1 -30m | -1001 | -1027 |
| Leg A1 -40m | -1001 | -1032 |
| Leg A1 -50m | -1009 | -1039 |
| Leg A1 -60m | -1030 | -1028 |

### CATHODIC PROTECTION READINGS IRONG BARAT B

| Survey Location | Pre-Retrofit CP Value (mV) | Post Retrofit CP Value (mV) |
|---|---|---|
| Leg A1 -30m | -967 | -1001 |
| Leg A1 -40m | -969 | -1010 |
| Leg A1 -50m | -960 | -1022 |
| Leg A1 -60m | -960 | -1023 |



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