

# iAVT® KEEPING SUBSEA PIPELINE SAFE



## INTRODUCTION

The pipeline carries crude from Brunei oil offshore fields as well as from others onshore field in country. Offshore production platforms and subsea pipeline in area are located close to the busy marine geo-services; as a consequence they are at risk of being struck by marine geo-services during drilling and explorations. Such an accident could result in loss of life, incalculable damage to the environment, and a substantial economic loss.

Pims Technologies with alliance partner Orogenic group is prime contract to Brunei Shell Petroleum provide system automatically tracks all vessels to control room staff with early warning of collision threat, so the off-anchoring vessel from then onwards can be monitored more closely, contacted and warned of the pending danger.

The system originally comprised six node based VHF/UHF marine radio on the Brunei offshore and onshore areas. Three on offshore areas and Three in onshore areas providing coverage of over 9,000 square kilometres.

## INTELLIGENT AUTOMATIC VESSEL TRACKING

Original two way VHF/UHF marine radio was designed such that one frequency can broadcast up to 25 channels of communication.

All marine vessels providing geo services in gulf of Brunei will be equipped with iAVT remote unit connecting with DGPS, GPS and Gyrocompass devices. The unit can broadcast data to all six based VHF/UHF stations.

A sub-sea pipeline is most vulnerable in the shallow waters close to the gulf of Brunei where it could be damaged by the anchor gear of vessels attempting to anchor in the vicinity of the pipeline. Such damage and the ensuing leakage could result in an explosion. Lesser damage will result in a shutdown, which even for a short period of time will have major financial consequences. Additionally, oil leakage from a damaged pipeline could cause untold environmental damage along the adjacent gulf of Brunei.

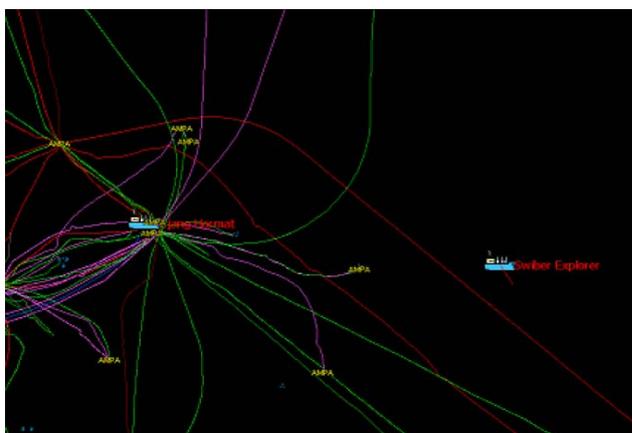


Figure : Sub-Sea Pipeline

To avoid this situation Control Center in Brunei geo-services carefully monitor ships anchoring in gulf of Brunei to prevent them from attempting to anchor in the vicinity of the sub-sea pipeline.

The iAVT has boundary alarms configured as an 'Safe Zone' almost half a kilometer wide, operating continuously on circular coverage and extending along the length of the circle to sea. Any vessel entering the circular area within the 'safe zone' following anchor procedure with broadcast updating every 3 seconds will automatically tracking to ensure anchor drop work in safe position. Out of "safe zone" the system will trigger and alarm warn the Control officer, who will immediately warn-off the offending vessel via VHF radio or e- Massage.



Figure : Gulf of Brunei

### CONTRACT

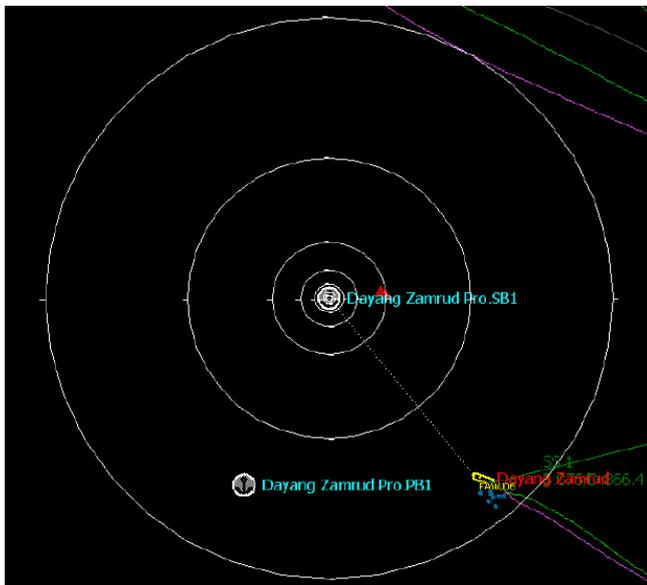


Figure : Safe Zone Analysis

Orogenic Group & Pims Technologies has been contracted to supply iAVT to Brunei Shell Petroleum Geomatics Administration Services for installation at the control center, a head quarter located on Kuala Belait, Negara Brunei Darussalam.

The contract will include the installation of the V2.10 iAVT system and six high performance VHF marine radio to provide increased sub-sea pipeline safety and security at the Gulf of Brunei.

The new V2.10 iAVT system will enable the control center to monitor geo services marine, providing an important surveillance tool for the busy drilling, exploration services, which handles a large amount of heavy equipments from containers to fuel, chemical. Its traffic and services volume in peak time will a substantial 50 marine vessels in gulf of Brunei.

V2.10 iAVT will provide various user groups throughout Center Services with the vessel tracking data they require. An integration to Brunei GIS system are being delivered including a converting Brunei GIS land base and sea chart map running on the customer's intranet. The latest version of this application entered service successful during site acceptance test with witness Brunei IT representative and is proving to be an ideal tool for disseminating vessel traffic data to geographically disperse.

**Products:**  
V2.10 iAVT  
GPS  
DGPS  
Gyrocompass

**Communication:**  
VHF Marine Radio  
Microwave  
WAN  
LAN

**Applications:**  
Geospatial data  
Real time database  
Soft-TDMA  
Safe Zone analysis  
Alarm  
XML

