

DRONE®

Dynamic Remotely Operated Navigation Equipment

Tracking and providing navigation guidance for remote vessels is critical in offshore operations. Fugro Chance Inc. (Chance) has developed a solution. DRONE is a navigation tool for surveying projects such as rig moves, pipelay, marine construction, and tension leg platform (TLP) installations.

As a portable unit, DRONE provides clear navigation guidance, while requiring minimal configuration from the remote vessel operator as well as minimal assistance from the survey operator. The system has proven valuable as it enables the user to have a broad view of the on-going project.

In the typical configuration of a DRONE network, the survey operator configures and runs STARFIX.NAV® (Chance's graphic survey and navigation system) on the main vessel as the master system and a DRONE unit is employed on each remote vessel, such as tugboats or anchor boats. The DRONE units are configured by Chance personnel prior to placement on a vessel and can be remotely configured from the master system by the survey operator.

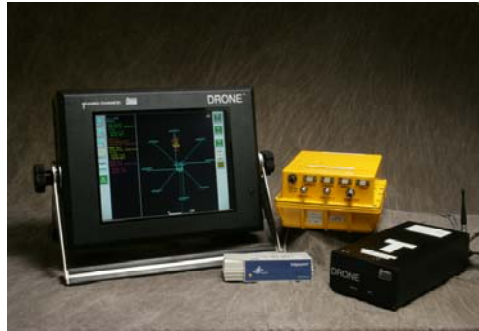
The DRONE unit has two hardware components: the DRONE peripheral box and the DRONE computer.

PERIPHERAL BOX

The DRONE peripheral box component houses an internal GPS receiver, radio receiver, and RS-232 serial communications ports. Although the typical peripheral configuration of a DRONE unit consists of a GPS antenna, a gyro, and a radio antenna, the system is not limited. GPS and gyro data for the remote vessel is collected locally and transmitted to the master system via a high-speed telemetry link. Likewise, the master system transmits DRONE network data to the individual DRONE units, including differential corrections, data for other vessels, and STARFIX.NAV configuration updates. Thus, vessels are synchronized between DRONE and STARFIX.NAV.

COMPUTER

The DRONE computer, an integrated "black box" component containing a touch screen monitor and CPU, runs the Microsoft® Win-



dows XP™ operating system. Other than a simple navigation display, all software and setup procedures are hidden from the user. The display on each networked DRONE is updated in response to data communication via radio from the master system.

DISPLAY

The DRONE display, a scaled-down version of the STARFIX.NAV display, consists of a survey site map and helmsman data. Vessels are positioned in the site map using the allocated positioning device data. The DRONE display includes specific functionality to meet remote vessel operation requirements, such as highlighted targets and cross track guidance lines. Although not required for DRONE operation, an easy-to-use, touch-screen interface allows the user to zoom, pan, and pick helmsman templates. DRONE is compatible with Chance's proprietary, multi-layered GIS database, which is used to identify potential hazards in the Gulf of Mexico.

MAP

The map on the DRONE display is a graphical depiction of the physical site and progress of survey and navigation procedures that affect the remote vessel's operations. The DRONE map displays the following: map data, vessels, proposed locations, anchors and target position.

HIGHLIGHTS

- Provides clear navigation guidance
- Easy to set-up and operate
- Works with Chance's proprietary GOM data base

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