

## Deep Tow Group annual report for DESSC (May 2000)

In the past 12 months, the Deep Tow Group has converted its Fish 6 instrument package and its Control Vehicle (CV) to operate on a 0.680" tow cable with optical fibers. Both vehicles retain the capability to operate on standard coax 0.680" tow cables when an electro-optical tow cable is not available. Significant improvements enabled by the high bandwidth capabilities offered by optical fibers include:

- (1) real-time video for Fish 6 and the CV;
- (2) taking advantage of daylight for real-time video identification of bottom type while surveying with Fish 6 at 20 m altitude in 60 m of water depth with 110 kHz sidescan sonars, a 4 kHz subbottom profiler, a 24 kHz altimeter/ sediment classifier sonar, a 40 kHz obstacle avoidance sonar, and a precision CTD sensor;
- (3) a short baseline navigation capability yielding range and bearing between the tow fish and the ship, thus eliminating the guess work of fish navigation whenever bottom-moored acoustic transponders are not practical.

The Group has run two Fish 6 surveys for the US Navy offshore San Clemente Island, CA, in water depths ranging from 40 m to 1600 m. These surveys have provided an opportunity to test a new Dynacon slack tensioner, by itself and associated with an accumulator. The slack tensioner alone limits the excursions of the package in deep water to +/-2m, whereas the accumulator bring this range down to +/- 0.5 m.

In September 1999, the CV with its new fiber optic telemetry have been used successfully aboard R/V Atlantis for CORK data logger and instrument string recoveries at ODP 1024C, 1026B, 1027C, as well as logging ODP 1026B. The new telemetry provided real-time video from the tip of the logging probe to the ship, making it possible to re-enter ODP 1026B through its 9 cm ID CORK opening by visual means only. Results were presented by de Moustier et al. at the Fall'99 AGU meeting and at the Undersea Technology 2000 conference in Tokyo (May 2000).

C. de Moustier, F.N. Spiess, R. Zimmerman, D. Jabson, P. Jonke,

D. Price, G. Austin, and C.D. Lowenstein, "Deep seafloor investigations with wireline instrumentation", OS21A-17, EOS Trans. Am. Geoph. U., 1999.

C. de Moustier, F.N. Spiess, D. Jabson, P. Jonke, G. Austin,

D. Price, and R. Zimmerman, "Deep Sea borehole re-entry with fiber optic wireline technology", Proc. Undersea Technology 2000 Conf, May 2000, Tokyo, Japan, pp. 379-384.,