

UT THREE

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BIOMIMETICS • VEHICLES





SOUND TEST

AutoNaut vehicle approaching the rig, inside the zone of exclusion

SOUND TEST

Defining the 'sound field' within an underwater area is essential when trying to understand the noise impact of offshore operations on marine life.

In recent years, environmental researchers have been particularly concerned with the potential effects of underwater sounds generated from offshore operations on fish and marine mammals. It has led to the industry looking for novel ways of monitoring sound sources (such as with unmanned surface vessels) and even mitigating or masking noise (such as employing bubble curtains and quieter hammers).

But what of offshore oil and gas installations themselves?

Measuring sound fields from offshore rigs is more problematic because of the physical difficulty in collecting the data in areas of high activity.

In some cases, the sound data transmitted into the water from individual support vessels and other maritime traffic can be measured by

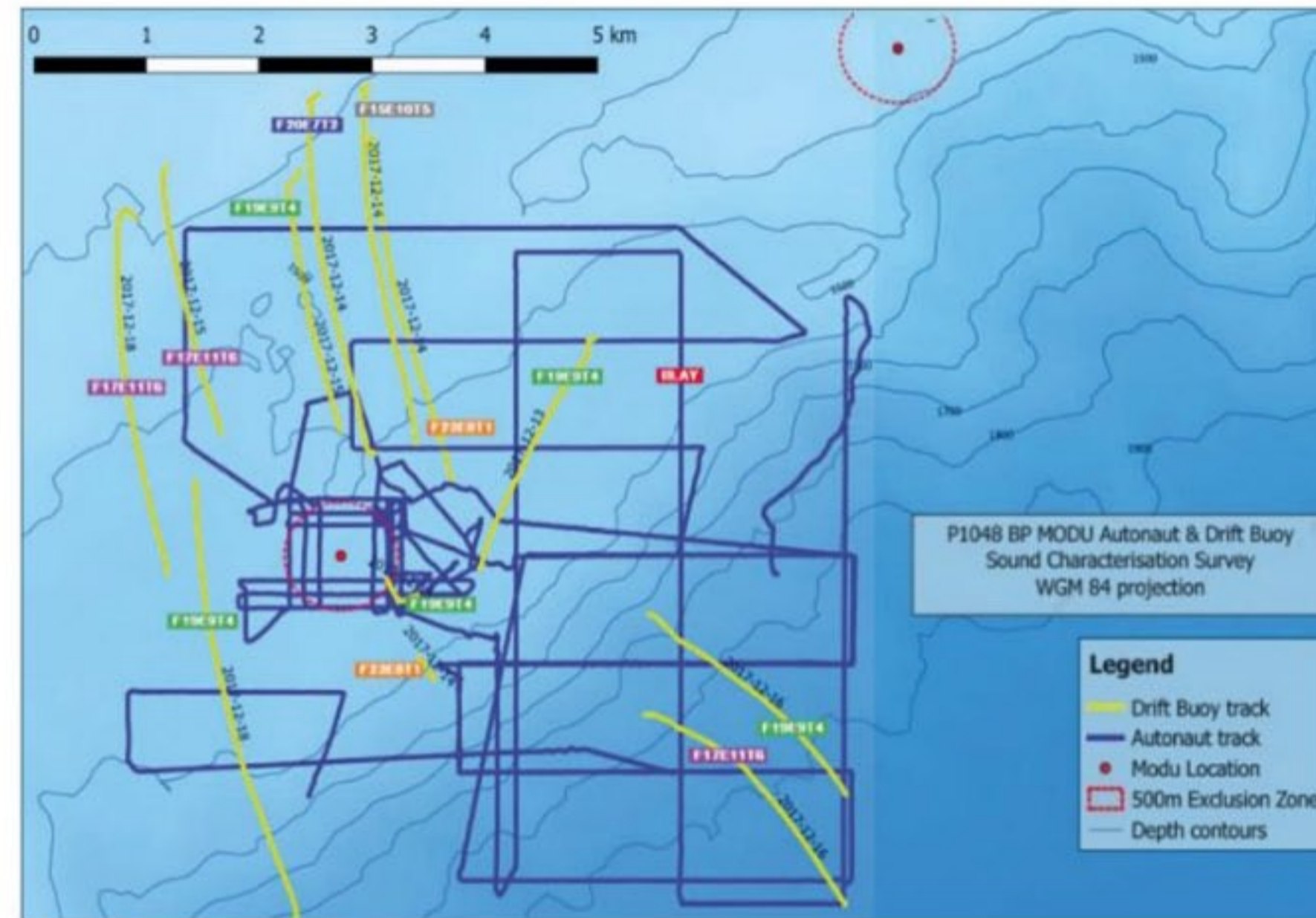
locating acoustic sensors nearby.

This becomes more arduous near the rig or platform itself, however, because of the statutory 500m exclusion zones imposed to prevent vessels accidentally colliding with drilling/production tubulars and equipment. One tool that is commonly used to measure offshore data is the drift buoy. This collects audio and navigation data as it moves at the surface.

It consists of mast (strobe and radar reflector), metal housing (battery and tracking system), e-tube, wet leg, and 60m cable with 4 hydrophones placed in pairs at 30m and 60m. The different gain for coincident hydrophones can extend dynamic range.

The drawback of a drift buoy is that it moves with the swell and currents, but these have an element of randomness in their movement.

Seiche, therefore proposed the use of its AutoNaut 5m unmanned surface vessel to provide a navigated solution.



Map of AutoNaut movement



Approaching the MODU



The AutoNaut vehicle *Islay*

system offers cost and safety benefits.

The AutoNaut works by harvesting the movement of the water using wave foil propulsion technology so zero carbon footprint, with clean continuous power. The very low self-noise of the system also eliminates potential for contamination of the data set.

If the vehicle needs to move in emergency however, it has a set of auxiliary thrusters.

At night, the AutoNaut operates outside the Safety Zone under 'remote' control and only enters the perimeter during daylight hours under 'local' control.

While small, the vehicle has a large enough payload space to incorporate measurement tools as well as communications system, hull-mounted PAM unit and 25m towed hydrophone cable.