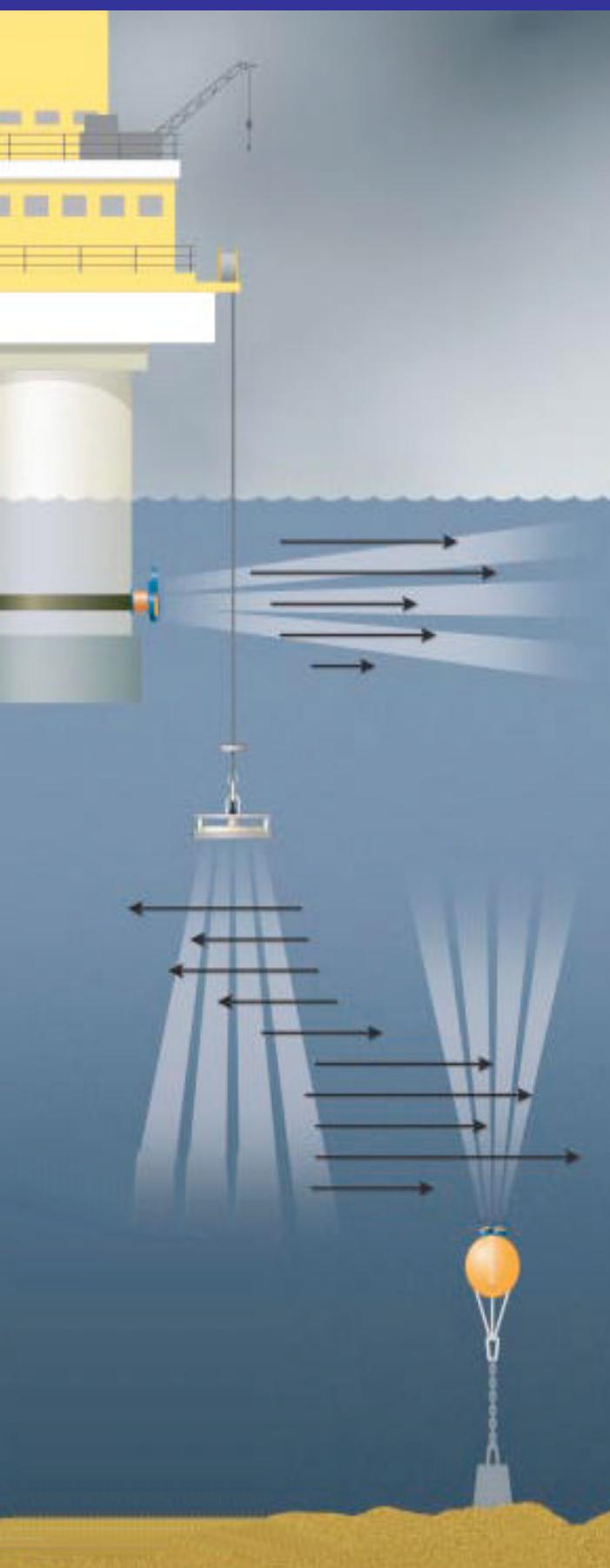


Full Water Column Current Measurement



RD Instruments provides THE complete solution for monitoring the currents affecting your deep water operations.

Measurement:

- Near-Surface – the HADCP
- Top 1,000m – the OO38
- Below 1,000 m – the WHLR75
- Boundary Layers – the WH300
- From an ROV or ROV Garage – the LADCP

Service:

- 24/7 Customer Support
- WebEx Technology
- Exchange Program

Installation:

Close partnerships with most of the major offshore service companies



RD Instruments
Acoustic Doppler Solutions

Full Water Column

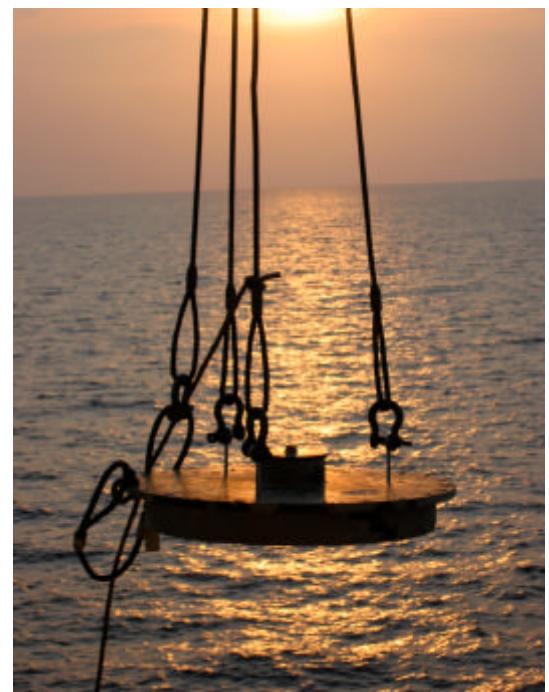
The Near Surface:

The Horizontal ADCP (HADCP) is for profiling the near-surface currents. It has been extensively tested from a variety of platforms, including a dynamically positioned drill ship operating in the Gulf of Mexico (shown at top right). In its GOM deployment it demonstrated a capability to measure the near-surface currents at ranges of up to 200 m – well beyond the influence of the massive and acoustically-noisy drill ship to which it was mounted. Thus, the HADCP has a proven ability measure the near-surface currents that directly affect the platform. The results of the GOM deployment were written up and presented in 2003, and copies are available upon request. In addition, the HADCP can now be configured to measure the directional wave environment. With this one instrument the near-surface currents and the wave field can be characterized in real-time – allowing immediate response to changing environmental conditions that may affect the safety of your operations.



The Top 1000 Meters:

The Ocean Observer 38 kHz (OO38) ADCP is the ultimate in ADCP technology, capable of the longest profiling range ever achieved. Shown at middle right prior to deployment, the OO38 is typically suspended beneath the platform, and is readily capable of measuring the current structure down to depths of 1000 m or more. With the OO38 the current structure affecting subsurface equipment in the top 1000 m of the water column can be monitored in real time – providing information required for go/no-go decision-making on riser safety and ROV deployments. Several offshore platforms are already equipped with OO38s, contact us for references.



Below 1000 Meters:

The Long Ranger (WHLR75) ADCP is a self-contained instrument capable of profiling ranges of up to 600 m. It is typically mounted in a sub-surface buoy as shown at bottom right. It can be deployed autonomously for later data recovery, or (as shown) configured with an acoustic modem enabling real-time telemetry of the deeper current profile obtained from sub-surface moorings. A bottom-mounted, modem-equipped WHLR75 was deployed along with a system suspended from the platform to provide an overall profiling range in excess of 1400 m – these results have been published, and copies are available on request. WHLR75s are frequently deployed in pairs at mid-depth in deep water moorings, oriented such that one looks up and the other down to provide a combined profile of the currents of 1000m or more. Dozens of Long Rangers have been deployed to assist offshore operations.



Current Measurement

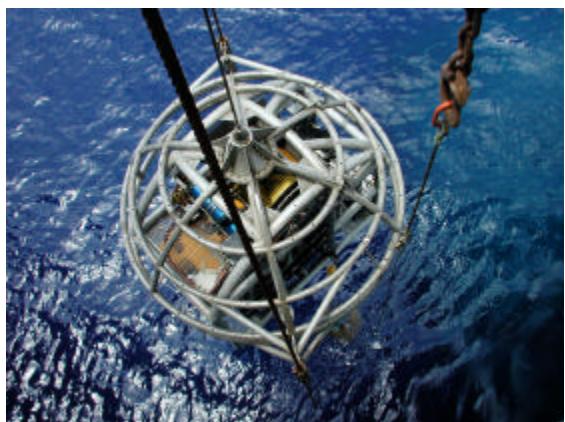


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Boundary Layers:

The Workhorse ADCP is typically deployed in a bottom mounting (shown at top left), surface float or on a subsurface mooring. Thousands of Workhorses have been deployed world wide, in environments ranging from shallow rivers to the deep ocean, and are the *de facto* world-wide standard for high resolution current profiling. They are capable of one meter resolution over several tens of meters (up to 100 m in many environments), and are particularly helpful wherever high resolution profiles of the currents are required (e.g. the bottom boundary layer affect the BOP, high velocity shears in the thermocline, etc.). Like the Long Ranger, they can be deployed autonomously for later data recovery, or with an acoustic modem for telemetry of the data in real time if required.



From an ROV or ROV Garage:

The Workhorse ADCP can be configured for the Lowered ADCP (LADCP) application pioneered by oceanographic researchers. In this technique the full water column profile is constructed by combining the shear profiles measured by an instrument with relatively limited range as it is lowered through the water column. In many deep water operations an ROV is routinely deployed to inspect the riser and other sub-surface structures. Mounting a Workhorse to the ROV or its tether management system to gather data continuously as they are lowered and raised from the bottom and applying this technique will provide a high resolution profile of the full water column with each deployment of the ROV. In addition, the currents near the garage can be measured and considered prior to making any decisions on deploying the ROV from the garage.

DEPLOYMENT GUIDE

Instrument	Range	Deployed at Surface	Deployed at Mid-Depth	Deployed on Bottom	Deployed from ROV	Directional Waves
HADCP	Surface	x				x
OO38	1,000 m	x				
LR75	600 m	x	x	x		
WH300	100 m	x	x	x	x	x



RD Instruments
Acoustic Doppler Solutions

Full Water Column Current Measurement

Minimal Downtime:

24/7 Customer Support:

RDI sets the industry standard for customer support. A field service engineer can be reached via telephone anytime, day or night, seven days a week. If your system goes down, if it starts acting "funny", or if you are uncertain if the data reported represents reality, you can be in direct contact with RDI personnel qualified to help you evaluate the situation within minutes.

WebEx Technology:

RDI has adopted the WebEx technology. If your computer can be placed on-line, it can be set up so that RDI experts are looking at the data you see on your screen at the same time you are. This technology effectively puts a virtual RDI expert on-site with you – seeing the things you see and answering your concerns directly.

Exchange Service:

And lastly, in the rare event of a major system failure, RDI has created an optional exchange program which guarantees that a replacement component will be stocked for shipment to the nearest port or staging area for exchange within 48 hours of determining the requirement.

Installation:

We realize that you are purchasing more than an instrument, and that installation and data management are critical to the operational usefulness of the instrument. We therefore maintain close relationships with most of the major offshore service providers, and are happy to help arrange a complete solution to meet your requirements.

