July 24, 2009

Re: Capital equipment purchase for HR0011-09-2-0002.

Dear Khine,

As we discussed, we would like to request funds for additional capital equipment for DARPA project number HR0011-09-2-0002 ("Power producing buoy for strategic applications: Prototype and Testing"). The equipment to be procured is a wave height measuring buoy that will be used during testing of prototype power producing buoys as an independent means of measuring the wave-field the prototypes are being operated in. The model selected is designed to be used in either a moored or drifting mode. I've attached a vendor quotation and specification sheet for this equipment. The total cost will be $27,607.49 (note this is $315 less than the total quote because of the elimination of the paint option. Please let me know if any other information is required.

Best Regards

Andrew Hamilton

Datawell BV
oceanographic instruments

Datawell BV
Zomerluststraat 4
2012 LM Haarlem
The Netherlands

+31 23 531 4159
+31 23 531 1986
info@datawell.nl
www.datawell.nl

Service Department
Voltastraat 3
1704 RP Heerhugowaard
The Netherlands

QUOTATION

Date : 24 July 2009
Quotation : 100546

Your ref. : E-mail S. Radhakrishnan
Tel. Sales Dept.: +31 235 316 053

Monterey Bay Aquarium Research
Institute
7700 Sandholdt Road
Moss Landing, CA 95039
USA

Qty - unit	Description	Price - unit	Amount USD
1 ea	DWR-G4/316 Directional Waverider 0.4m diam. AISI316 hull, GPS for wave measurement and GPS for position tracking, 128Mb datalogger, data transmission via HF-link 27-40 MHz, flashlight, antenna, stabilization chain and batteries installed for 30 days.	15,809.99 ea	15,809.99
1 ea	RX-D2 RX-D receiver type 2 for Directional Waverider and Waverider SG. (no 12v connection)	6,157.50 ea	6,157.50
1 ea	ANTSET/RX Receiving antenna and 25m antennacable.	622.50 ea	622.50
1 ea	W@VES21 Software for wave analysis (Windows)	2,362.50 ea	2,362.50
	Options/spares:		
1 ea	PAINTJOB04 3-layer hull painting for a DWR-G4 with Brantho-Korrex, color yellow.	315.00 ea	315.00
1 ea	DIV02 Delivered with rechargeable batteries and charger.	1,072.50 ea	1,072.50
1 ea	BATSET4/4 Set of 4 batteries, type RC25GS, only applicable in DWR-G4	307.50 ea	307.50
1 ea	CASE01 High quality synthetic case for DWR-G4.	780.00 ea	780.00
1 ea	VRK01 Cost of courier shipment to Moss Landing.	495.00 ea	495.00

Total goods and services	Total in USD
27,922.49	27,922.49

Term of Delivery : CFR Cost and Freight
Terms of Payment : Before shipment
Sales Terms : Datawell Sales/Warranty Terms

This quotation expires on : 23 August 2009

Datawell bv
J.J. Houtman

Mini Directional Waverider GPS

Datawell - Oceanographic Instruments

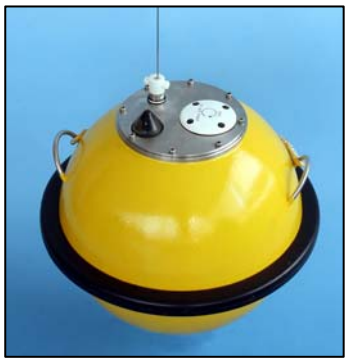
The smallest directional wave measuring buoy on the market

With a 40 cm mini-buoy version Datawell completes its range of GPS buoys: DWR-G9, DWR-G7 and DWR-G4, with 0.9 m, 0.7 m and 0.4 m diameters, respectively.

Just like its larger equivalents the DWR-G4 relies on the Datawell principle of measuring waves with a single Global Positioning System receiver (GPS). By now this technique is well-established in oceanography as evidenced by several publications and well-pleased users in the field.

Small though it is, the DWR-G4 offers full-functionality and full-compatibility with other Datawell equipment. Data links and formats, RX-D and Warec receiver, W@ves21 software, batteries, etc. are all the same or compatible.

Weighing 17 Kg only the DWR-G4 may be readily deployed and recovered by hand from an inflatable boat with outboard engine. Via HF link, directional and spectral wave data are transmitted, e.g. to a portable, compact RX-D receiver connected to a laptop running the W@ves21-software. The LED flasher and/or the HF-transmitted GPS position facilitate tracking or locating the buoy.



0.4 m (hull painting is optional)

electronics unit (bottom)

Alternatively, a GSM link is available for near-shore or in-shore use and an Argos satellite link for worldwide track & trace.
GSM and Argos will transmit compressed spectra, the standard datalogger will secure the full set of wave data.
It can be deployed free-floating or moored for currents up to 1 m/s.

The DWR-G4 may be put to good use as:

- a temporary extra or replacement buoy in monitoring networks
- a sea-state monitoring buoy during dredging, construction, etc. operations
- a drifting buoy

Datawell BV
Zomerluststraat 4
2012 LM Haarlem
The Netherlands

T +31 23 531 60 53
F +31 23 531 19 86
E sales@datawell.nl
W www.datawell.nl

Mini Directional Waverider GPS

Datawell - Oceanographic Instruments

Specifications

Wave motion sensor	Sensor	single GPS (not differential)
	Precision	1-2 cm, all directions (1σ) (excluding GPS antenna pitch and roll motion)
	Periods	heave 1.6 s -100 s direction 1.6 s -100 s (free-floating) 1.6 s - 20 s (moored)
	Calibration	not required ever
	Exclusion	GPS signals do not penetrate through water, occasional data gaps may occur
	Exclusion	not resistant to SA (Selective Availability, may be switched on by US Department of Defence for strategic reasons)
Wave data	Data	north, west, vertical
	Resolution	1 cm (north 2 cm, LSB “north” is GPS data gap indicator)
	Range	–20 m - +20 m
	Rate	1.28 Hz
	Reference	WGS84
Spectral data	Frequency resolution	0.005 Hz below 0.10 Hz and 0.010 Hz above
	Frequency range	0.025 Hz - 0.60 Hz
	Direction resolution	1.5º
	Direction range	0º - 360º
Standard features	HF transmitter	frequency range 25.5 MHz - 35.5 MHz (35.5-45.0 MHz on request) transmission range 10 Km (hand-held receiver) 25 Km (receiver with ground-plane antenna)
	Data logger	type 1 Compact Flash Module 128 Mb
	Flash light	4 high intensity LEDs, color yellow (590 nm), pattern 5 flashes every 20 seconds
	GPS position	every 30 min, precision 10 m
Options	GSM	mobile communication
	Argos	satellite communication
	Water temperature	range −5 - +46 °C, resolution 0.05 °C, accuracy 0.2 °C
	Hull painting	Brantho Korrux “3 in 1”paint system (no anti-fouling)
General	Hull diameter	0.40 m (0.46 including fender)
	Material	stainless steel (AISI316)
	Weight	17 Kg
	Mooring	up to 1 m/s
	Batteries	operational life 30 days 1 section of 4 batteries, type Datacell RC25GS (green) rechargeable batteries on request
	Receiver	RX-C, RX-D or Warec (older Warecs may need modification)

Datawell BV
Zomerluststraat 4
2012 LM Haarlem
The Netherlands

T +31 23 531 60 53
F +31 23 531 19 86
E sales@datawell.nl
W www.datawell.nl