CONFIGURING DEVICES ON THE VEHICLE JOIDES RESOLUTION

Updated Nov. 2003

Once you have configured the Vehicle (in our case, the J. Resolution), you are ready to add devices. The four devices covered in this section are GPS, gyro, echo sounders (3.5 and 12.0 kHz) and magnetometer. There are three basic steps to adding a device.

- 1. From Configure in the top menu bar you must add the device and assign the com data port and baud rate.
- 2. Next, you must go to the Vehicle window, select the Position button and add the device.
- 3. Finally, you must assign each device definable features via Config in the I/O Devices window.

Ashtech GPS

The GPS fixes are collected during all transits and while on site. From the upper menu bar select Configure>Devices>Add.



In the Add Devices screen, select GPS. The next screen is GPS Devices. Select NMEA GPS.

Add Devices	×	GPS Devices	×
Devices : COMPASS COUNTER ELEVATION EVENT GENERIC GPS GYRO INS LBL ACOUSTIC	OK Cancel Help	Devices : MX 1107 MX9400 NAVSTAR XR5 NAVSTAR PR NAVSYMM NMEA GPS NMEA GPS NMEA GPS NMEA GPS (Sercel) NOVATEL CON NOVATEL RS232	OK Cancel Help

Next, the Com data screen appears. Enter a Baud Rate of 9600 and the Com Port, in this case, COM5. Click OK. If you want to use the Omnistar GPS, change the Com Port to COM3 with Baud Rate of 4800. You will also have to change the GPS Antenna offset to +3.05 m (got to Vehicle Configuration section for instructions). The Ashtec GPS Antenna is mounted on the Port side so has an offset of -3.05 m.

Comm Data		×
Baud Rate:		
O 110 O	300 🔿 600	O 1200 O 2400
○ 4800 ⓒ	9600 O 19200	O 38400
Data Bits:	07 • 8	Stop Bits
Parity: None Odd Even Mark Space	Name: NMEAG	PS1 DK Cancel

From the Vehicle Box in the lower left part of the screen, select the Position button.

S Vehicle					_ 🗆 ×
Vehicle Line	J. Resolution	04:14:53.6	FIX 35	6 File 1201	2.DAT
Position Waypt	N19 17.8861	E135 05.9	9473 EL	0.00m	
Config Events	SPD 0.00kts	HDG 019.2	CMG 295.8	091-0342.RAV	V
Name Offset					
 Γ			<u>/</u>		

The Configure Vehicle Calculations screen will pop up. Click on the Add button in the bottom right part of the screen.

Configure Vehicle Calculations	? ×
Position © L/L E135 05.9478 © Grid Elev Copy 0.00m □ Update	Kalman Filter
Data Source C Simulated © Real-Time C Network C File C Telemetry C Pipe Track C Ctrld Remote	Velocity Filter
Calculations Heading Streamer	Range Gate
Devices	
	Add
	Delete
OK Cancel	Help

In the Select Data Items screen, add the GPS. Click OK



In the upper right part of the main screen, go to I/O devices. Scroll to NMEAGPS1 and click on Config.



The Configure Time Output screen will appear. Synchonize with Time should be set to "On \$GPGGA or ODP" and GPS status set to "Accept single point fix".

Configure Time Input	×
Synchronize with Time	
O Off	
On \$GPGGA or ODP	
On \$GPZDA	
0.7 Delta Time Tolerance in Seconds	
Local Time Offset	
0.0 Time Offset (hh.h)	
- GPS Status	
Accept single point fix	
Use CheckSum	
OK Cancel Help	

If GPS data does not begin in WinFrog you may need to run Ashtech Evaluate. To do this, first disconnect the cable that goes from the back of the Asthech (labeled Port B) into WinFrog1 Com 3 port (on the extension port board) and connect it directly to the back of the WinFrog1 machine via Com2.

From the Windows start menu, choose Programs>Ashtech Evaluate. Click on Connect to GPS receiver with last settings.

htech Evaluate startup menu	
Start from	
C Connect to GPS Receiver	ASHTECH
• Connect to GPS Receiver with last sett	ngs Ž
C View log file	
C Emulation	
C Info about Ashtech GPS Receivers sup	ported by Evaluate
Activate Analysis	
Ashtech	Cancel
	Help
Display this menu on startup	

Go to the GPS>Terminal to see if the actual fixes are coming in. If they are, close Ashtech Evaluate. Remove the cable from Com2 in the back the WinFrog1 computer and reconnect it to Com3 in the extension port board.

If not, see chapter on Ashtech Evaluate (not written yet....so for now, go talk to the DP Operator, May 2001).

You may also need to configure the geodetics. Do to this, go to Configure>Geodetics from the top menu bar. The Geodetics screen will open. Select the General Projection. We will almost always be using WGS84 UTM, except in very high latitudes. Select the Specific Projection Zone that corresponds to your longitude. Click OK.

Geodetics		? ×
General Projection	Specific Projection	
WGS84 UTM	Zone 53 - 132°E to 138°E	▼
Map Projection Parameters UTM Zone 53 CM E135 00.0000 Lat Origin: N00 00.0000 False N:0.000m E:500000.000m: S F at CM: 0.999600 Units: Meters	Zone 53 - 132°E to 138°E Zone 54 - 138°E to 144°E Zone 55 - 144°E to 150°E Zone 56 - 150°E to 156°E Zone 56 - 156°E to 162°E Zone 58 - 162°E to 168°E	E dit
Datum Parameters		<u></u>
Datum:WGS84		O User
Ellipse: WGS84		🔘 Standard
17F:298.257224 Semi Major:6378137.00 Delta X:0.000, Y:0.000, Z:0.000		
Rot X:0.00000 Y:0.00000 Z:0.00000 Scale :0.0000000000		Edit
ОК	ancel Help]

Lehmkuhl GYRO

WINFROG 2.62 _ 8 × <u>File Edit View Configure Utilities Window</u> Help ▲ ● ● (Graphics Bird's Eye S:0.0kts H:307.5 D:0.0 👰 👰 🛒 📌 TRUE 263.76deg 163.86m 🛛 🕂 📈 🔩 Profile - 🗆 🗙 🛃 1/0 Dev - U × A Gr Vehicle Window Device Edit I/O Config Page Closure : CLOSURE1 (Serial) Event Stop Last Trigger : > 1 Minute Turnaround time : 80ms <u>M</u>anual Fix <u>C</u>able Event F10 F11 Geo<u>d</u>etics □Hole 1201A Units Vehicle: <u>A</u>dd <u>E</u>dit IO ► Simulator Edit <u>C</u>onfig Delel e 1201D Calculations - 🗆 🗵 Config J. Resolution • I 2 100.0 ▲ ▼ 🐣 Vehicle - 🗆 × Vehicle Line 06:32:35.1 Position Waypt N19 17.8527 E135 05.9512 EL 0.00m ▲ ▼ Config Events SPD 0.25kts HDG 064.2 CMG 125.0 **■** ► 300.0 0.0 Name Offset

From the upper menu bar select Configure>Devices>Add.

The next screen is Gyro Devices. Select LEHMKUHL LR40.

Add Devices	×	Gyro Devices	×
Devices : COMPASS COUNTER ELEVATION EVENT GENERIC GPS CYRO INS LBL ACOUSTIC	OK Cancel Help	Devices : SIMULATED KVH LEHMKUHL LR22 LEHMKUHL LR40 NMEA GYRO NR230 PVP II D&H ROBERTSON AP9 SG BROWN	OK Cancel Help

Next, the Com data screen appears. Enter a Baud Rate of 9600 and the Com Port, in this case, <u>Com 6</u>. Click OK.

Comm Data		×
Baud Rate: —		
O 110 O	300 O 600	O 1200 O 2400
C 4800 O	9600 O 1920	00 🔿 38400
Data Bits:	07 @ 8	Stop Bits
Parity: None Odd Even Mark Space	Name: Lehm Comm Port: COM4	ikuhi LR40 Cancel

From the Vehicle Box in the lower left part of the screen, select the Position button.

🐣 Vehicle					
Vehicle Line	J. Resolution	04:14:53.6	5 FIX 35	6 File 1	1201_2.DAT
Position Waypt	N19 17.8861	E135 05.	9473 EL	0.00m	
Config Events	SPD 0.00kts	HDG 019.2	CMG 295.8	091-0342.	RAW
Name Offset					

The Configure Vehicle Calculations screen will pop up. Click on the Add button in the bottom right part of the screen.

Configure Vehicle Calculations	? ×
Position N19 17.8542 © L/L E135 05.9478 © Grid Elev Copy 0.00m □ Update	Kalman Filter
Data Source C Simulated Real-Time C Network File C Telemetry Pipe Track C Ctrld Remote	Velocity Filter
Calculations Heading Streamer	Range Gate
Devices-	Add Edit Delete
OK Cancel	Help

Add the Gyro. Click OK.

Select Data Items	? ×
Available Data Items	
OUTPUT,EPC9802-3.5,DATA OUTPUT OUTPUT,EPC9802-12,0,DATA OUTPUT	
Gyro, Lehmkuhl LR40, HEADING	
OK Cancel Help	

At this point, the Gyro installation is complete. It should appear in the I/O Devices window in the upper right.



Note on the Gyro: The gyro in the Underway Lab is a repeater of Gyro # 2 on the bridge. It is possible that WinFrog gyro settings will be lost several times during a cruise. A good way watch for this is to run the DP WinFrog vehicle "Sedco 471" (using a different color) in background to the UW WinFrog vehicle "J. Resolution". If the gyro has lost its setting the outline of "J. Resolution" will have a different heading from the outline of "Sedco 471".

Resetting the gyro is done as follows: first call the Bridge to get the correct gyro heading. Then hold down the central button while pushing one of the arrow buttons to the right or left of the central button on the digital gyro repeater display. If the gyro doesn't respond to pressing the keys (and the display seems to dim), try unplugging, then replugging and pressing the buttons again.

3.5 and 12.0 kHz Echo Sounders

***Currently the Echo Sounders are run with the UW Watch Software but if it is necessary to use WinFrog, follow these instructions.



From the Upper menu bar select Configure>Devices>Add.

In the Add Devices screen select Output. The next screen is Output Devices. Select EPC9802.

Add Devices	×	Output Devices	×
Devices : LBL ACOUSTIC MAGNETOMETER OUTPUT RANGE/RANGE RECORDING RTCM ROV RHO/THETA SOUNDER	Cancel Help	Devices : EPC9802 ANALOG SPD ASCII Data Logger BINARY GPS Cascade Cegelec 802 DP Cegelec 901 DP CMS IPL300	Cancel Help

Next the Com data screen appears. Enter the Baud Rate of 19200. Enter the name as EPC9802 - 3.5kHz (or 12.0kHz) and the corresponding Comm Port (Com10 for 3.5 and Com9 for 12.0).

Comm Data		×
Baud Rate:		
O 110 O	300 🔿 600	O 1200 O 2400
C 4800 C	9600 💿 19200	O 38400
Data Bits:	07 08 0	Stop Bits
Parity: None Odd Even Mark Space	Name: EPC980 Comm Port:	2-12.0kHz Cancel

From the Vehicle Box in the lower left part of the screen, select the Position button.

Vehic	le					_ D ×
ehicle	Line	J. Resolution	04:14:53.6	FIX 35	6 File 120	1_2.DAT
osition	Waypt	N19 17.8861	E135 05.	9473 EL	0.00m	
Config	Events	SPD 0.00kts	HDG 019.2	CMG 295.8	091-0342.RA	N
Name	Offset					
	[
	Vehic ehicle ssition onfig lame	Vehicle Line sition Waypt sonning Events ame Offset	Vehicle J. Resolution ehicle Line J. Resolution osition Waypt N19 17.8861 ionfig Events SPD 0.00kts Iame Offset Image: Contract of the second	Vehicle ehicle Line J. Resolution 04:14:53.6 ssition Waypt N19 17.8861 E135 05. forfig Events SPD 0.00kts HDG 019.2 lame Offset	Vehicle Line J. Resolution 04:14:53.6 FIX 35 sistion Waypt N19 17.8861 E135 05.9473 EL onfig Events SPD 0.00kts HDG 019.2 CMG 295.8 Iame Offset	Vehicle J. Resolution 04:14:53.6 FIX 356 File 120 sition Waypt N19 17.8861 E135 05.9473 EL 0.00m onfig Events SPD 0.00kts HDG 019.2 CMG 295.8 091-0342.RAM Iame Offset

The Configure Vehicle Calculations screen will pop up. Click on the Add button in the bottom right part of the screen.

Configure Vehicle Calculations	? ×
Position © L/L N1917.8542 © Grid E135 05.9478 © Grid Elev Copy 0.00m □ Update	Kalman Filter
Data Source O Simulated O Real-Time O Network O File O Telemetry O Pipe Track O Ctrld Remote	Velocity Filter
Calculations	Range Gate
l_ Heading	☑ Off 100.00m
Streamer	
Devices	
	Add
	Delete
OK Cancel	Help

Add the EPC9802-3.5, DATA OUTPUT (or EPC9802-12.0, DATA OUTPUT) . Click OK.

Select Data Items	? ×				
- Available Data Items					
OUTPUT, EPC9802-3.5, DATA OUTPUT GYRD, Lehmkuhl LR40, HEADING					
OK Cancel Help					

In the I/O Devices in the upper right hand, scroll through the devices by clicking the Device button until you reach EPC9802-3.5 (or 12.0). Click on the Config button.

🐣 I/O Devices	- 🗆 ×
Device Edit I/O Config	Page
EPC 9802 : EPC9802-3.5kHz Message Mark Message Mark Message Mark Message Mark Message	

For the 3.5kHz, set the range to the whatever your current depth range is. Have messages set to print hourly, _ hourly and 5 minutes. Set messages to print on the side opposite the bottom profile on the line scan recorder. The other parameters for the 3.5 should be set up as follows:

```
Font - 2
Delay - .100 (=100ms)
Scan - 1
LPI - 75
Key - 1
Sweep - 1
Print Mode - OFF
Leg - XXX
Line # - XX
```

EPC9802 : EPC980	2-3.5KHz		×
Annotation	Font size	Configuration Bathymet	ry O Seismic
Annotate	<u> </u>	Bathymetry 3.5khz	Seismic Analog #1
WinFrog annotation	1	O 12khz	C Analog #2
Enable messages	- Recorder Settings		Print mode
Hourly	Delay 0.100	Scan 1 💌	Immediate
5 minutes	LPI 75 💌	Key 1 💌	Range 2250 - 3000 💌
Message position			Program:
Center	Sweep 1	Leg 195	KKKPPP
O Right		Line # 4T	
ОК		EPC Annotate	Set Program
Concel		EPC Mark	Set Delay
		Set LPI	Set Key
Help			Set Scan

For the 12.0 kHz, set the range in depth check mode (0000-6000m), with messages printing hourly. Set messages to print on opposite side of bottom profile on the line scan recorder. The other parameters for the 12.0 should be set up as follows:

```
Font - 2
Delay - .100 (=100ms)
Scan - 8
LPI - 75
Key - 8
Sweep - 1
Print Mode - OFF
Leg - XXX
Line # - XXX
```

EPC9802 : EPC980	2-12.0kHz		×
Annotation	Font size	 Configuration Bathymetry 	O Seismic
		Bathymetry O 3.5khz	Seismic
WinFrog annotation	ו	12khz	C Analog #2
Enable messages	- Recorder Settings		Print mode
Hourly	Delay 0.10(▼ S	ican 8 💌	Immediate
5 minutes	LPI 75 🔻 K	key 8 💌	Range 0000 - 6000 💌
Message position Eft	Sweep 8 L	.eg 195	Program:
C Center C Right	Lin	ne # 4T	
		EPC Annotate	Set Program
Canad		EPC Mark	Set Delay
		Set LPI	Set Key
Help			Set Scan

TROUBLESHOOTING

WHEN WINFROG IS NOT RECEIVING ECHO SOUNDER SIGNALS

If WinFrog does not appear to be receiving (the line scan recorder will be printing a 1-750 type record showing an "outgoing pulse" and there will be no rotation of parameters in the I/O Devices window for the recorder in question) it is likely that communication between the recorder and WinFrog has been lost. In this case, try deleting and then adding the device in WinFrog as follows:

- Go to POSITION (in VEHICLE box at bottom of screen).
- Highlight the device in question (3.5 or 12.0 kHz) and click DELETE.
- Go to CONFIGURE (top menu bar).
- Scroll down to DEVICE and choose DELETE.
- Go to CONFIGURE again (top menu bar).

- Scroll down to DEVICE and choose ADD.
- In the ADD DEVICES box, scroll down and choose OUTPUT, select EPC9802. Define the Com port (Com 10 for 3.5 and Com 9 for 12.0) and name the device by adding 3.5kHz or 12.0kHz to EPC9802 (e.g. EPC9802 3.5kHz).
- Go back to POSITION (in VEHICLE box at bottom of screen).
- Highlight DEVICE and click ADD. Click OK.
- Go to the I/O DEVICES window in right hand corner. Select the device in question and click on CONFIG..Set the appropriate depth range). Set up as follows for the 3.5 kHz:

Font - 2 Delay - .100 (= 100ms) Scan - 1 LPI - 75 Key - 1 Sweep - 1 Print Mode - OFF Leg - XXX Check messages - hr, _ hr and 5 mins

• Use the following settings for depth check mode on the 12.0 kHz:

Font - 2 Delay - .100 (= 100ms) Scan - 8 LPI - 75 Key - 8 Sweep - 1 Print Mode - OFF Leg - XXX

- Click "EPC Annotate" and see if the recorder readout is correct and note whether the I/O parameter file rotates/moves. Click "set program."
- Turn on Transducer.

Magnetometer

Note: before deploying the magnetometer(s), call the bridge to get the ok. If the ship is up to speed and the bridge gives the ok, deploy the magnetometer. Come back into the lab and turn the power switch on and then flip the toggle (above the power switch) to either the port or starboard maggie depending on which one is in use.

In WinFrog go to the upper menu bar select Configure>Devices>Add.



In the Add Devices screen select MAGNETOMETER. In the Magneto Devices screen, select GEOMETRICS 886.

Add Devices	×	Magneto Devices	×
Devices : GENERIC GPS GYRO INS LBL ACOUSTIC MAGNETOMETER OUTPUT RANGE/RANGE RECORDING	OK Cancel Help	Devices : GEOMETRICS GEOMETRICS 866 GEOMETRICS 886 GSM-19	OK Cancel Help

Next, the Com data screen appears. Enter a Baud Rate of 1200 and Com8 for the Comm Port. Click OK.

Comm Data				X
Baud Rate:				
O 110 O	300	O 600	• 1200 • 2400	
C 4800 C	9600	C 19200	O 38400	
Data Bits:			Stop Bits	
05 06	O 7	• 8	● 1 O 1.5 O 2	
Parity: None	Nam	e: GeoMet	rics 886	
🔿 Odd	Com	m Port:		
O Even		М8	▼ OK	
O Mark				
C Space			Uancel	

From the Vehicle Box in the lower left part of the screen, select the Position button.

🐣 Vehicle	
Vehicle Line	J. Resolution 04:14:53.6 FIX 356 File 1201_2.DAT
Position Waypt	N19 17.8861 E135 05.9473 EL 0.00m
Config Events	SPD 0.00kts HDG 019.2 CMG 295.8 091-0342.RAW
Name Offset	

.

The Configure Vehicle Calculations screen will pop up. Click on the Add button in the bottom right part of the screen.

Configure Vehicle Calculations	? ×
Position N19 17.8542 E135 05.9478 Copy 0.00m Data Source Simulated Network Telemetry Pipe Track Copy Dipe Track	Kalman Filter 0.10 ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
Calculations Heading	Range Gate
- Devices	Add
	Edit Delete
OK Cancel	

From the Select Data Items screen, add both MAGNETOMETER, Geometrics 886, MAGNETOMETER and MAGNETOMETER, Geometrics 886, BOTTOMDEPTH. Click OK.

Select Data Items ? 🗙
Available Data Items
GPS,NMEAGPS1,POSITION GYRO,Lehmkuhl LR40,HEADING OUTPUT,EPC9802-3.5,DATA OUTPUT OUTPUT,EPC9802-12.0,DATA OUTPUT EVENT,CLOSURE1 (Serial),CLOSURE MAGNETOMETER,GeoMetrics 896,MAGNETOMETER MAGNETOMETER,GeoMetrics 896,BOTTOMDEPTH
OK Cancel Help

Go to the Calculation Window in View. Check time series and then highlight both Magnetometer and Bottom Depth. Click on ON and OK.

Calculation Window	? ×
Included Views	
🗖 Position	🔽 Time Series
🔲 Data Item Text	🗆 LOP
Position Comparison	🔲 Heading Comparison
OUTPUT,EPC9802-3.5,E OUTPUT,EPC9802-12.0 MAGNETOMETER,GeoM MAGNETOMETER,GeoM	DATA OUTPUT, Off DATA OUTPUT, Off etrics 886, MAGNET(etrics 886, BOTTOME
On Off	
OK Car	icel Help

Go to I/O devices in the upper right part of the screen. Scroll to Magnetometer Geometrics 886. Click on the Config button.



The Geometrics 886 configuration window appear. Make note of your Lat/Long, look at the map of the earth's magnetic field posted on the starboard bulletin board. Find the value in gammas (earth's total magnetic field strength units) of the magnetic field for your location. Add 5 to that value. Enter this number into the tuning portion of the Geometrics 886 window. Leave Cylce time at 3.0 sec and click OK.

Geometrics 866			×
Tuning ○ Auto ⓒ Manual 50.0	Cycle	Cycle Time	
ОК	Cancel	Help]

Go to the I/O Devices screen again. Your signal value should be in the vicinity of 200. If not, go back into Config and change the tuning value manually by +5.0 in an attempt to optimize the signal. Click OK and wait a few seconds to see if the signal level changes. Repeat until until the signal level is somewhere near 200.

In the Calculations window just below I/O devices, a sprinkling of red dots should be visible. To set the "plot scale" click on the button with the check mark. The scale should be from 0.0-100.0 gammas. Hopefully if ll is well, the values should start plotting in a tight line. The more scattered the display the more noise there is from the sensor or it is a reflection poor tuning. If the dots are still scattered, switch maggies and repeat to see if it is a sensor related problem. Note: there is a 25 gamma offset when switching from port to starboard maggies. The port is 25 gammas higher due to more noise.

