

## Appendix 2 – Forms and Quick-Reference Guides

### ADVM Installation and Set-up Form



#### U.S. GEOLOGICAL SURVEY ADVM INSTALLATION AND SETUP FORM

August 2011

Station No.	Station Name				
Date Installed	Installed by				
Mfgr/Model	Acoustic Freq.	Firmware Ver.	Serial #	HIF #	USGS W #
ADVM Mounted on			Cable Length		
LB / RB / Other (describe):			ft / m		
Initial Beam Check Filename	Boundary Reflection Identified?				
			at ft / m		
Water Temp	ADVM Temp	Salinity	ADVM Sal.	Deploy Sensor	SDI-12 Address
				SDI-12 or Auto.	
ADVM Date	ADVM Time	Deployment Name		Orientation correction	
Set @:				Yes or No	
Heading	Pitch	Roll	MagVar	Depth	Press. Depth

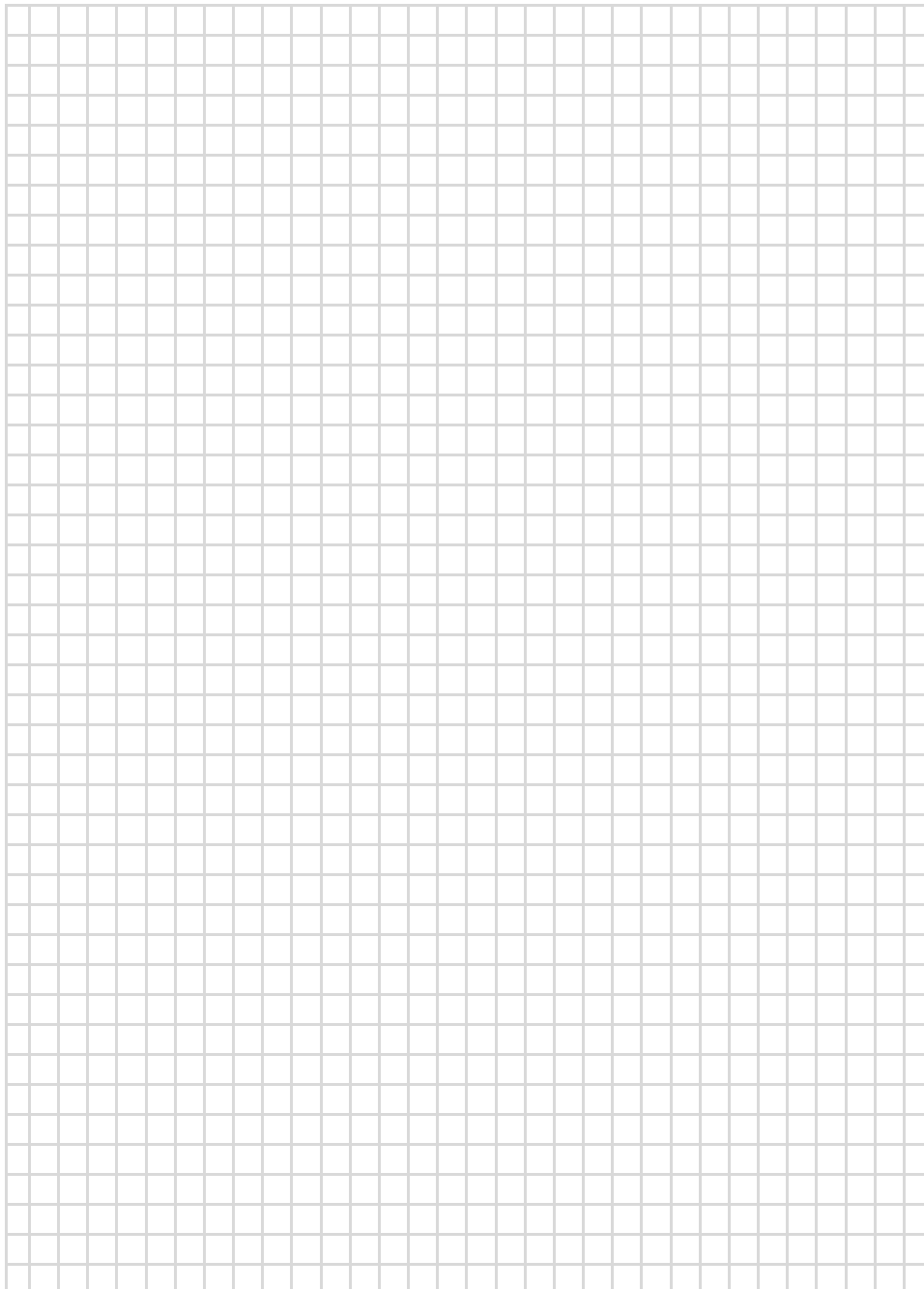
Mid-transducer Face Depth				
Stage	minus	Depth to Transducers	equals	Transducer stage
	-		=	
Elevation of ADVM above streambed:			ft or m	

SonTek ADVM Configuration				
<i>Note: White Molex connector (jumper) <u>connected</u> for RS-232 communications and <u>unplugged</u> for SDI-12 communications</i>				
Output Format	Recorder	Averaging Int. (AI)	Sampling Int. (SI)	PowerPing
		sec.	sec.	On Off
Cell Begin (CB)	Cell End (CE)	Blank (BD)	Cell Size (CS)	# of Cells

Teledyne RD Instruments ChannelMaster Configuration						
Blanking Distance	No. of Cells (WN)	Cell Size (WS)	Water Pings (WP)	Measurement Interval	Time between pings (TP)	Cells Used for Index
				sec.		
Other Commands/Info						

Comments:	

Site Sketch with Dimensions, Remarks, and Initial Beam Check Plots (Attached)





<b>Station Number</b>	<b>Station Name</b>					
<b>Party</b>	<b>Date</b>	<b>Watch Time</b>	<b>Logger Date</b>	<b>Logger Time</b>	<b>Reset?</b>	
					Y / N @	
<b>Battery voltage</b>	<b>Weather (Air temp., Wind speed &amp; direction, etc.)</b>					
Field Observations						
Time (Zone)	DCP/Logger	ETG/TI	OG	RP to WS	Velocity	
ADVM Recorder Data						
<b>Retrieve Data</b>		<b>Names of downloaded file(s)</b>				
Yes or No						
Beam Check						
<b>Beam Check Acceptable?</b>	<b>Beam Check Filename(s)</b>					
OK or Not OK						
<b>Describe Results/ Corrective Measures</b>						
ADVM Observations / Configuration						
<b>Log File Name</b>						
<b>ADVM Sensor Readings</b>	<b>ADVM Date</b>	<b>Watch Time</b>	<b>ADVM Time</b>	<b>Reset Clock?</b>		
				Y / N @		
	<b>Heading</b>	<b>Pitch</b>	<b>Roll</b>	<b>ADVM Stage</b>		
<b>Deploy Sensor</b>	<b>SDI-12 or Autonomous</b>	<b>Water Temp</b>	<b>ADVM Temp</b>	<b>Meas. Salinity</b>	<b>ADVM Salinity</b>	
<b>ADVM Recording Info</b>	<b>Start Date</b>	<b>Start Time</b>	<b>Intervals</b>	<b>Sampling Int.</b>	<b>Averaging Int.</b>	
Save Setup!						
<b>Comments:</b>						

## Field Procedures and Configuration – SonTek™/YSI ADVMs

The following tip sheet provides step-by-step procedures that should be followed when servicing SonTek/YSI Argonaut™ series ADVMs and when making discharge measurements. A detailed version and a short version of these procedures are provided, the latter in the form of a checklist. Even though these procedures are written for sidelooker ADVMs, they may also be adapted for uplooker ADVMs.

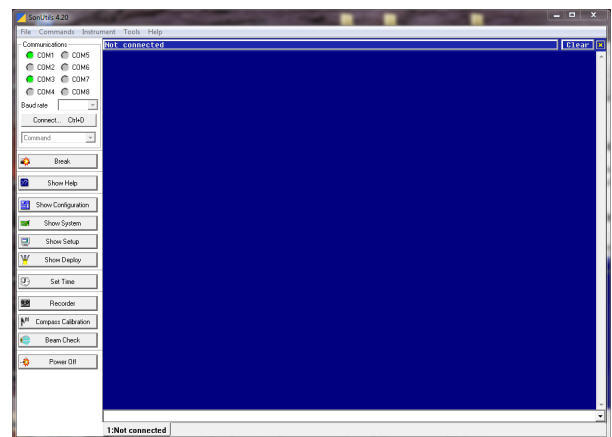
### Tip Sheet for Servicing SonTek/YSI Argonaut™ ADVMs at Index Velocity Stations

In this tip sheet, computer program names are *italicized text*, buttons that are clicked are indicated by ***bold, italicized text***, ADVM commands are indicated by “**bold text enclosed in quotes**,” and window names are indicated by underlined text.

### Tip Sheet for Servicing Argonaut™ ADVMs at Index Velocity Stations – Detailed Version

#### Connecting to the ADVM

1. Plug 9-pin ADVM communication (RS-232) cable into laptop serial port or a USB to serial port adapter.
2. Connect the two white plugs on the ADVM cable.
3. Open *SonUtils*. Click the ***green button*** next to the appropriate COM port.
4. Click the ***Break*** button. If the ADVM was in SDI-12 mode, you should get a response from the ADVM indicating that it is in SDI-12 mode. If the ADVM was self-deployed, you should get a response that the ADVM is initializing.
5. To exit SDI-12 and enter RS-232 mode, type “**?EXIT!**” If the ADVM was self-deployed, you do not need to do anything other than enter direct commands or click on command buttons.
6. Click ***Show System***, and verify that firmware is up-to-date.



#### Downloading Recorder Data

1. In *SonUtils*, click the ***Recorder*** button.
2. In the Recorder window, click ***Select All*** to download all files or click on an individual filename to download.
3. Click ***Browse*** to select the directory where the files will be stored on your laptop (recommend having unique directory for each site).
4. Reset download baud rate to 57600 for faster downloads, using ***tab*** above the Browse window.
5. Click ***Download***.
6. When the file has downloaded, leave *SonUtils* open, and open *ViewArgonaut*. (The following steps are to verify that you retrieved the files from the SL's internal recorder.)
7. On the *ViewArgonaut* window, click ***Processing***.
8. Go to ***File, Open***, and navigate to the file you just downloaded. When the *Argonaut File* window pops up, verify that the file start and end date and time are correct, then click ***OK***.
9. Click on ***Argonaut Config*** and select ***User Setup***. Verify that the ADVM configuration/set up is correct. Review the data plots and look for anomalous data. Close the *Processing (ViewArgonaut)* window.
10. Go back to *SonUtils* and note the memory used and memory available in the *SonUtils Recorder* window.  
If the memory available is less than approximately 300 to 500 kilobytes (kB), you should consider if there is enough memory left to record data until the next station visit.  
If you are satisfied with the data you collected from the recorder, and there is less than 300 to 500 kB, click the ***Format*** button on the *SonUtils Recorder* window.

**Caution:** Once the recorder has been formatted, the files cannot be recovered.

11. Close the *Recorder* window.
12. Compare the ADVm water temperature with an independently measured water temperature made at or near the ADVm with an appropriate field temperature meter. If the ADVm thermistor is not functioning properly, the ADVm will not correctly measure velocities. At the command line prompt in *SonUtils*, type  
**“sensor cont”**  
 The ADVm will respond once per second with the ADVm temperature (degrees Celsius), pressure (decibars~meters), and battery voltage. Record the ADVm temperature and the independent field meter values on the field sheet.  
 Press the **Enter** key to stop the continuous sensor readings.
13. Open a log file to record commands and ADVm responses. Click on **File** from the top menu and select **Open Log File** (**Ctrl-L** are the shortcut keys). A **File-Save** window will open. Navigate to the station directory where you downloaded the Argonaut internal recorder data and name the log file using the following format: **station\_id\_YYYYMMDD**. *SonUtils* will automatically assign the **.log** suffix to the filename. On the main *SonUtils* screen,
  - a. Click on the **Show Configuration** button on the left margin of the main window, review the ADVm configuration and verify that the response is appropriate and the data are correct.
  - b. Click on the **Show System** key, review and verify that the ADVm response and the system settings are correct. Verify that the most recent USGS-approved CPU Firmware version is installed on the ADVm (currently version 12.0, December 2010).
  - c. Click on **Show Setup**, review and verify that the ADVm is properly set up to collect routine data.
  - d. At the *SonUtils* command line prompt, type the following command to document the ADVm SDI-12 address:  
**“sdi12address”**
  - e. At the *SonUtils* command line prompt, type  
**“sensor cont”**  
 Let the ADVm measure for 4 or 5 seconds then press the **Enter** key to stop the data readings. Verify that the values are reasonable, agree with independent measurements, and record appropriate values on the station field sheet (temperature, pressure, and battery voltage).
  - f. If the ADVm is equipped with a compass, at the *SonUtils* command line prompt, type  
**“compass cont”**  
 The ADVm will respond with the heading, pitch, and roll of the ADVm compass. Let the ADVm measure for 4 or 5 seconds, then press the **Enter** key to stop the measurements. Verify that the values are reasonable and have not changed from previous station visits, and record the values on the station field sheet (heading, pitch, and roll).
  - g. If the ADVm has an acoustic water-level transducer, check the distance from the water surface to the acoustic water-level transducer by typing  
**“level cont”** in the *SonUtils* command line. The ADVm will respond with the distance from the face of the acoustic water-level transducer to the water surface in millimeters. Press the **Enter** key to stop the readings.
14. Check the ADVm clock time by entering  
**“time”**  
 in the *SonUtils* command line and by pressing the **Enter** key at the appropriate time. Look at your NIST-time-synchronized watch time and record the watch time and the ADVm clock time on the ADVm field sheet.  
 Reset the ADVm time using your NIST-time-synchronized watch by entering  
**“time hh:mm:ss”**  
 in the *SonUtils* command line and press **Enter** at the exact time you are synchronizing. Record the time on the field sheet. Verify that the ADVm date is correct in the *SonUtils* command line prompt, type  
**“date”** and press **Enter**, recording the date on the ADVm field sheet.
15. Close the log file by selecting **File, Close Log File** from the top menu, or by pressing **Ctrl-L** again.

## Recording and Reviewing a Beam Check

1. In *SonUtils*, click the **Beam Check** button.
2. In the Beam Check window, click the green **Start** button.
3. Click the **Averaging** button to average all of the pings together.
4. Click the **Record** button to save the beam check to your computer.
5. When prompted for a file name, navigate to the same directory where you downloaded the internally recorded Argonaut data file and name the beam check with the station number and date (station\_id\_YYYYMMDD). *SonUtils* will automatically assign the .bmc suffix to the file name.
6. Record a minimum of 50 pings.
7. Look for spikes, increase in amplitude with range, or leveling out in the signal amplitudes for either beam (red and blue solid lines) within or touching the sampling volume, which is marked with vertical dashed lines (cell begin and cell end). The measured signal amplitudes and the theoretical decay line (curved gray solid line) should be relatively similar in shape and follow the same general trend. Also look at the beam signal amplitudes in relation to the theoretical decay curve and the instrument noise line (horizontal dashed line). The signal intensities anywhere in the measurement volume (designated by the cell begin and cell end vertical dashed lines) should be at least 10 to 20 counts greater than the instrument noise line (horizontal dashed line). Click the **Stop** button and close the Beam Check window when finished.

## Recording Data During ADCP Measurements

1. When making an ADCP measurement, reset the sampling interval and averaging interval in the ADVM to collect data on a 60-second continuous basis to more accurately synchronize ADVM velocity data with the discharge measurement(s). To reduce possible confusion or errors, it is recommended to reset the sampling and averaging intervals in the ADVM instead of in the data logger, and have the ADVM record the data internally only.

**Note:** Data will not be sent to the data logger during calibration or validation discharge measurements.

In *SonUtils*:

2. Change the averaging interval (ai), type “**ai 60**” <Enter> where 60 is the desired averaging interval duration, in seconds.
3. Change sampling interval (si), type “**si 60**” <Enter> where 60 is the desired sampling interval, in seconds.
4. Set the correct Start Date (sd), type “**sd YYYYMMDD**” <Enter> for today’s date.
5. Set the correct Start Time (st), type “**st hh:mm:00**” <Enter> (use a time that is a few minutes in the future).
6. Type “**ssu**” <Enter> to save your changes (ssu = savesetup).
7. Enter comments to further document the conditions and procedures.
8. Type “**deploy**” in the *SonUtils* command line and press <Enter>. Verify that the start time will begin at an appropriate time:

### Example:

*Checking Setup Parameters...*

*3801088 free bytes left in recorder. Free space is sufficient for 14.12 days of operation.*

*Data collection will start on: 2010/06/24 at 14:55:00*

*In 0 days, 0 hours, 1 minutes and 15 seconds from now.*

*Data will be recorded to file FTHAM004.*

9. Caution: Disconnect the communication cable to the computer before touching any other keys or buttons on the computer. Leave white jumper plugged together! You are not storing ADVM data to the data logger during this period – it will be stored internally ONLY.
10. Close *SonUtils*.
11. When the discharge measurement(s) is(are) completed, reopen *SonUtils*. Click **green button** next to the appropriate COM port button to connect.

12. Click the **Break** button.
13. Click on the **Recorder** button and download the file from the ADVM.
14. View the file in *ViewArgonaut* to be sure the file is complete.
15. Note the memory used and memory available in the *SonUtils Recorder* window. If the memory available is less than approximately 300 to 500 kB, you should consider whether or not there is enough memory left to record data until the next station visit. If the data collected from the recorder is satisfactory and less than 300 to 500 kB remain, click the **Format** button on the *SonUtils Recorder* window.  
**Note:** Once the recorder has been formatted, the files cannot be recovered.

## Redeploying the ADVM After Measurements

1. In the *SonUtils* command line, type  
`"si xxx" <Enter>`  
 where *xxx* is the routine data measurement sampling interval, in seconds. A copy of the latest set up should be in the equipment shelter, and the *log file* that was captured earlier can be used to verify the correct value.
2. Type  
`"ai xxx" <Enter>`  
 where *xxx* is the routine data measurement averaging interval, in seconds.
3. Click the **Show Deploy** button.
4. Enter the correct start time (st) by typing  
`st hh:mm:00 <Enter>`  
 where *hh* and *mm* are the next nearest routine sample measurement time (ex: 12:15:00, 12:30:00, 12:45:00, 13:00:00, etc).
5. Click the **Show Deploy** button again to verify that changes were accepted.
6. To save all settings type  
`"ssu" <Enter>`
7. If you have made any permanent changes to the ADVM configuration (sampling interval, averaging interval, measurement volume, etc.), record another log file to document the new configuration.  
 Open a log file to record commands and ADVM responses. Click on **File**, and select **Open Log File (Ctrl-L** are the shortcut keys) from the top menu. A **Save File** window will open. Navigate to the station directory where you downloaded the Argonaut internal data file and name the log file *station\_id\_YYYYMMDD\_after\_update*. *SonUtils* will automatically assign the *.log* suffix to the filename.  
 On the main *SonUtils* screen,
  - a. Click on the **Show Configuration** button on the left margin of the main window, review the response, and verify that the response is appropriate and the data is correct.
  - b. Click on the **Show System** key, review the ADVM response, and verify that it and the system settings are correct. Verify that the most recent USGS-approved CPU Firmware version is installed on the ADVM (currently version 12.0, December 2010).
  - c. Click on **Show Setup**, review the configuration, and verify that the ADVM is properly set up to collect routine data.
  - d. Type `"show sdi12"` in the *SonUtils* command line to document the ADVM SDI-12 address. Everything that shows up in the resulting screen will be written to the log file.

**NOTE:** It is recommended that another beam check be recorded and reviewed after the discharge measurements are complete in order to verify that the ADVM acoustic beams are functioning properly prior to leaving the station.

8. Click on **File**, select **Close Log File (Ctrl-L)** from the top menu.
9. When you are finished with *SonUtils* (setup, beam checks, etc.) type  
`"sdi12 on" <Enter>`

The instrument will return a message that the “SDI12 address is n” (n = SDI address assigned to the ADVm) and will show how many days of internal memory are remaining. Verify that there is enough memory left until your next station visit.

**Example:**

```
>“sdi12 on”
Checking Setup Parameters...
3866624 free bytes left in recorder.
Free space is sufficient for 215.39 days of operation.
Switching to SDI-12 mode
SDI-12 address is: 3
OK
```

10. Verify that sufficient memory is left in the ADVm and the SDI-12 address is correct.
11. Disconnect the communication cable to the computer and the ADVm before touching any other keys or buttons on the computer.
12. Close *SonUtils*, and **unplug the white jumper plug**.
13. Archive all files (recorder, beam check, log configuration files, etc.) on the USGS Water Science Center data archive server upon return to the office. It is recommended that the Argonaut internal data files be renamed because of the limited naming abilities in the ADVm.

**Example:** downloaded file is *FTHAM004.ARG*. Site was visited on June 24, 2010.

Rename the Argonaut files to:

- *station\_id\_20100624.arg* for the routine data time series, and
- *station\_id\_20100624\_qmeas.arg* for the 60-second data file collected during the discharge measurement if applicable.



## Tip Sheet for Servicing Argonaut™ ADVMs at Index Velocity Stations – Short Version

Step	Done
<b>A. Downloading Recorder Data</b>	
1. Download datalogger/DCP data (8210,9210, Satlink, etc).	
2. Check datalogger/DCP time and watch time. Record on field sheet.	
3. Plug together white jumper on ADVm.	
4. Connect to ADVm using <i>SonUtils</i> .	
5. Switch to RS-232 mode in <i>SonUtils</i> .	
6. Download internal ADVm recorder data to laptop.	
7. Check ADVm internal clock time and watch time. Record on field sheet.	
8. Reset ADVm internal clock time (“time hh:mm:ss”).	
9. View downloaded files in <i>ViewArgonaut</i> ; look for problems.	
10. Compare ADVm water temperature with independently measured water temperature.	
11. Format/erase internal ADVm recorder.	
<b>B. Recording and Reviewing a Beam Check</b>	
1. Run beam check on ADVm. Look for problems.	
2. Pull up and clean ADVm.	
3. Re-deploy ADVm and secure the mount.	
4. Re-establish communication with ADVm using <i>SonUtils</i> .	
<b>C. Recording Data During ADCP Measurements</b>	
1. If making ADCP measurement, change Sampling Interval (SI) to 60 sec. and Averaging Interval (AI) to 60 sec., else skip to step D-2.	
2. Type in comments (“ <b>comments</b> ” <enter>) <i>Three lines, 60 char. long, are available.</i>	
3. Set Start Date (sd) to current day- “sd YYYY/MM/DD”.	
4. Set Start Time (st) to time slightly in the future- “st hh:mm:00”.	
5. Type “ <b>deploy</b> ” (command used to record ADVm data on internal recorder during streamflow measurement).	
6. Check terminal window for appropriate display. <b>Example:</b> <i>Data collection will start in 0 days, 0 hours, and 4 minutes from now.</i> <i>There is sufficient space in the recorder for 19.72 days of data collection.</i>	
7. Disconnect the communication cable to the ADVm before touching any other keys.	
8. Leave the white jumper connector connected.	
9. Make discharge measurement(s).	
10. After discharge measurement(s) is complete, reconnect to ADVm using <i>SonUtils</i> .	
11. Download ADVm data recorded during discharge measurement.	
12. Record a log file to document changes to the ADVm and any responses from the ADVm after entering commands. Click on the <i>Show System</i> , <i>Show Config</i> , <i>Show Setup</i> , and <i>Show Deploy</i> buttons. Review the values to ensure they are correct.	
<b>D. Redeploying the ADVm After Measurements</b>	
1. Return SI (typically 300 to 900 sec.) and AI to routine data collection settings.	
2. Set start time to nearest quarter hour ( <i>hh:15:00, hh:30:00, hh:45:00, hh:00:00</i> ).	
3. Record an after-measurement beam check.	
4. Put ADVm in SDI-12 mode “ <b>sdi12 on</b> ”.	
5. Read ADVm response to ensure: (a) ADVm received the command, (b) responded appropriately, and (c) there are sufficient days available for data collection.	
6. Disconnect communication cable to the ADVm before touching any computer keys.	
7. Unplug ADVm white connector.	
8. Verify that velocity data are being written to datalogger/DCP and that telemetry works.	



## Field Procedures and Configuration – Teledyne RD Instruments ADVMs

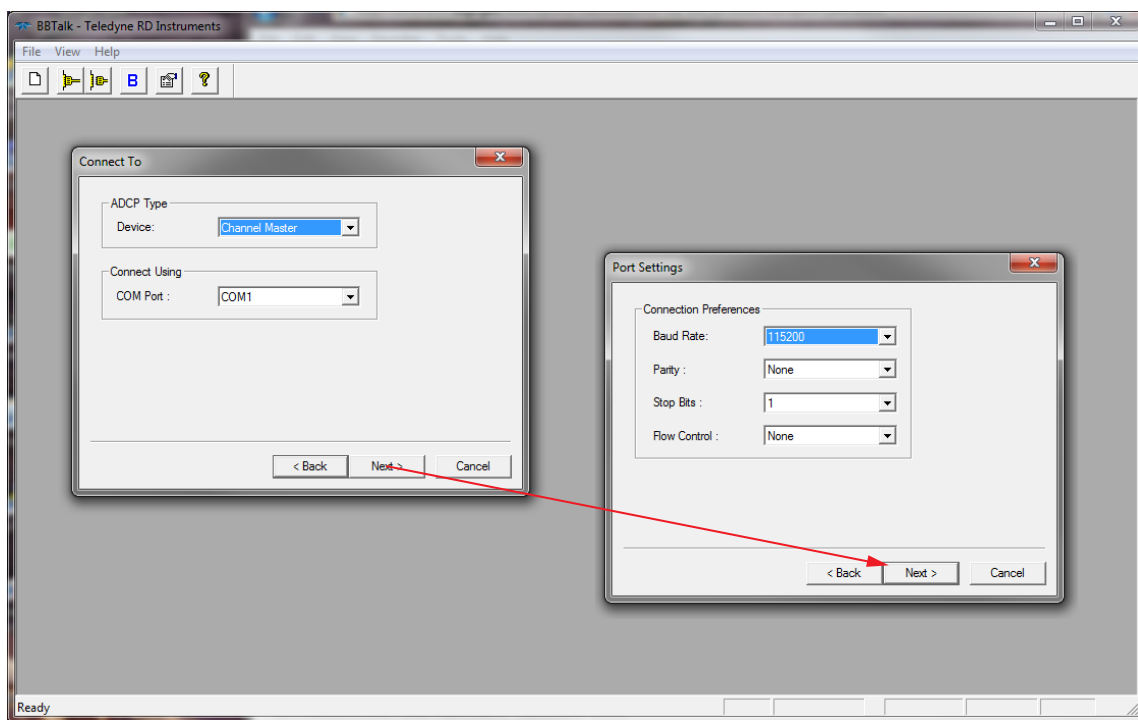
The following tip sheet provides step-by-step procedures for servicing and configuring a Teledyne RD Instruments (TRDI) ChannelMaster ADVM.

### Tip Sheet for Servicing TRDI ChannelMaster ADVMs at Index Velocity Stations

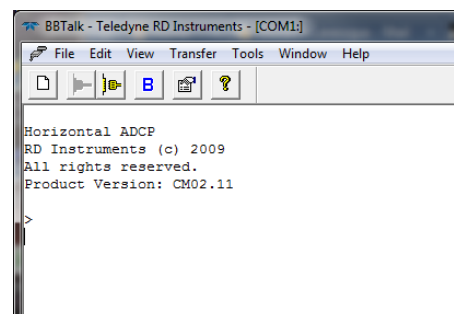
In this tip sheet, computer program names are *italicized text*, buttons that are clicked are indicated by ***bold, italicized text***, ADVM commands are indicated by “**bold text enclosed in quotes**,” and window names are indicated by underlined text. References to the ChannelMaster are indicated by “CM” in the text.

#### A. Connecting to the ADVM

1. Plug 9-pin CM serial cable into laptop serial port or use USB to serial port adapter.



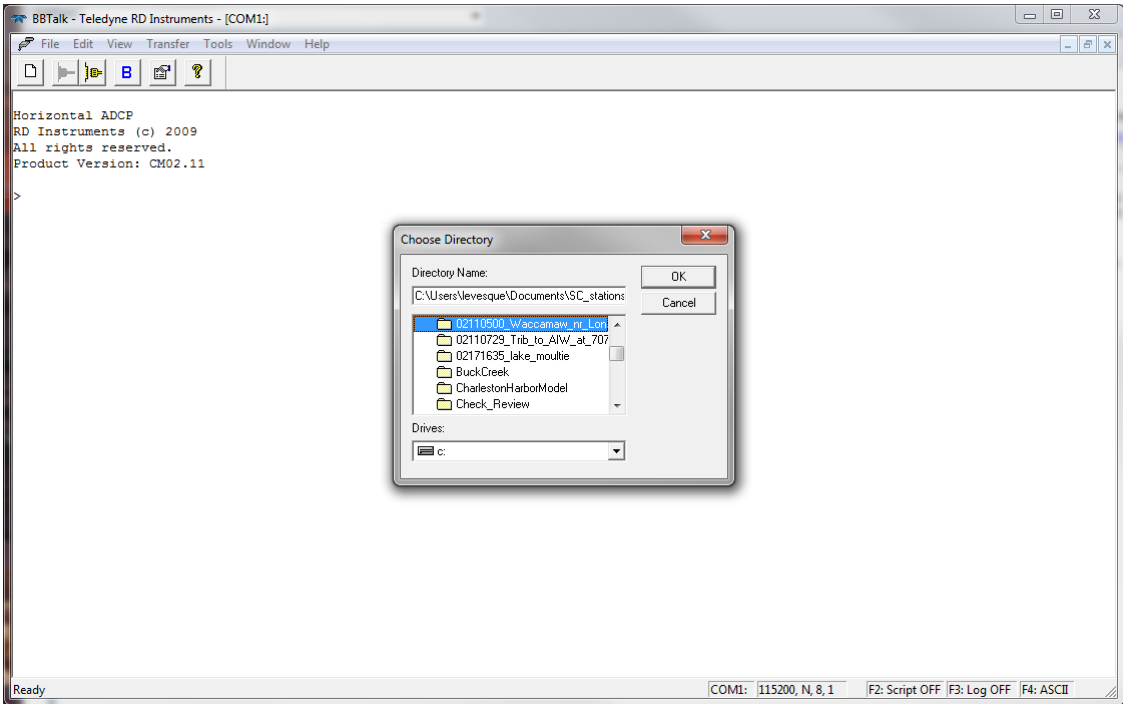
2. When communicating with the CM directly with a laptop, it is recommended that *BBTalk* be used rather than *WinHADCP*.
3. Open *BBTalk*.
4. Choose “ChannelMaster” in the device menu of the Connect To window and select appropriate COM port.
5. Select correct baud rate.
6. In the Options window, only “Send break on New Connection” option is required.
7. Click the button ***Finish***.
8. Once connection is successfully established, you should see a response like that shown to the right, giving the firm-ware version and other information.
9. Check the CM time by issuing the TS? command and comparing results to watch time. Record results on field sheet.
10. If necessary, reset CM time using TS command. Record results on field sheet.



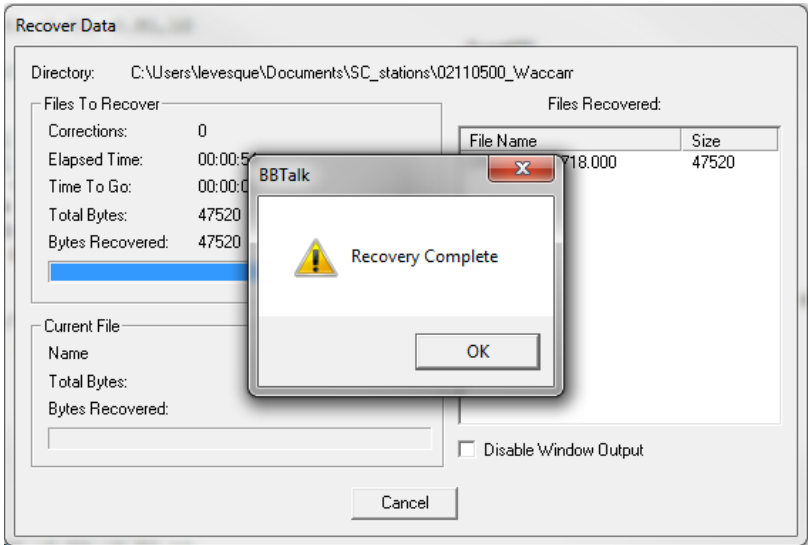
B. Retrieving Loop Recorder Data, Recording Configuration and Temperature

- 1. Having established communication with the CM using *BBTalk*, download data from the loop recorder. Click on the **File > Recover Loop-Recorder** menu option. (The loop recorder in the CM should be enabled.)
- 2. Enter the path on the laptop where the loop recorder data will be saved to.

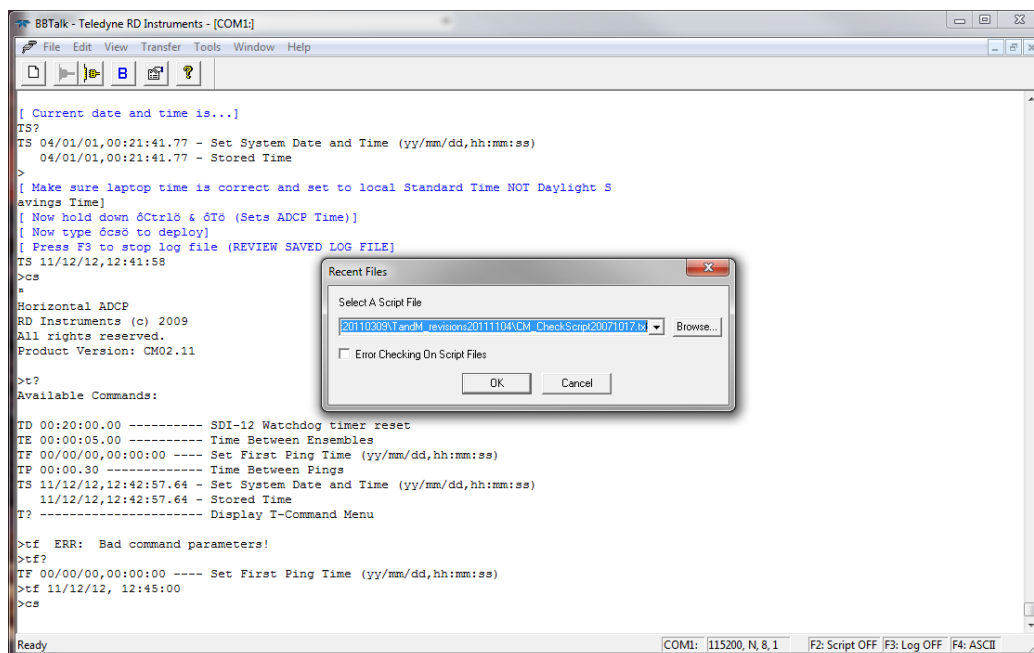
New Connection...	Ctrl+N
Close	
Send A Break	End
Recover Recorder...	Ctrl+Page Down
Recover Loop-Recorder...	
Send Script File...	F2
Edit Script File...	
Log To File...	F3



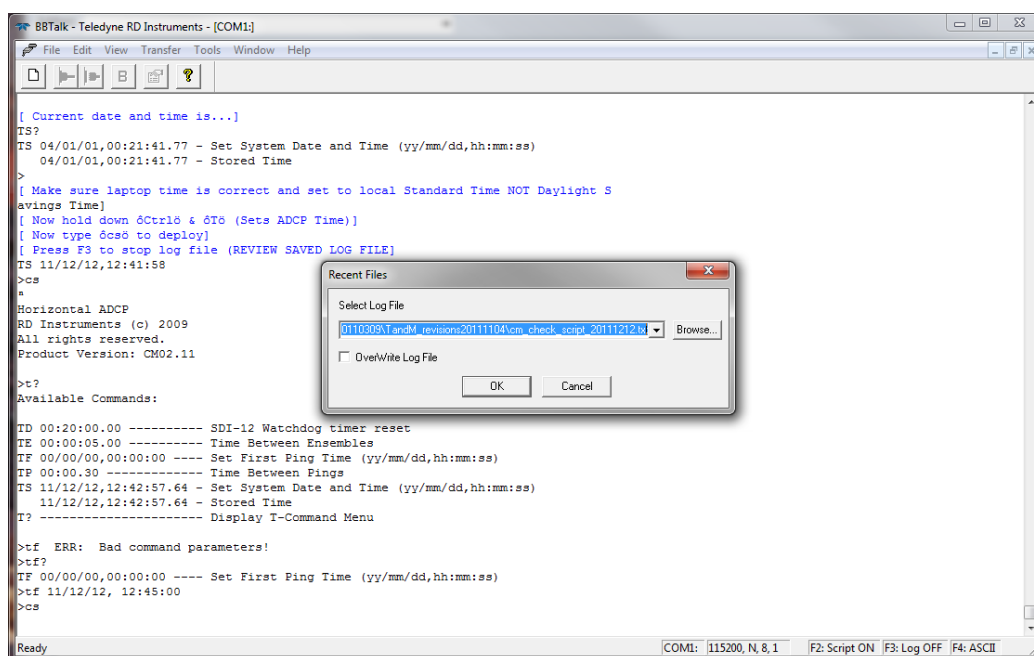
- 3. Once **OK** is clicked, the download will begin. This may take as long as 15 minutes. If the checkbox **Disable Window Output** is checked, the download may be faster. This is a good time to lower the independent temperature sensor to the same depth as the CM and near the CM. After the download is complete, a comparison between the CM temperature and the independent temperature sensor can be made using the “**PC2**” command.



- Next, verify the CM configuration. Open a log file (using **F3**), and name it in accordance with USGS Water Science Center (WSC) naming conventions. The format recommended is station\_id\_YYYYMMDD. Alternatively, a script file (located at the end of this appendix) may be used to log all of the CM setup information to a text file. To execute the script, click on the “**File**” menu and then click on “**Send Script File.**” A dialog window will open. Locate the script file (in this example, the script is named CM\_CheckScript20071017.txt. Once located, click **OK** to run the script.

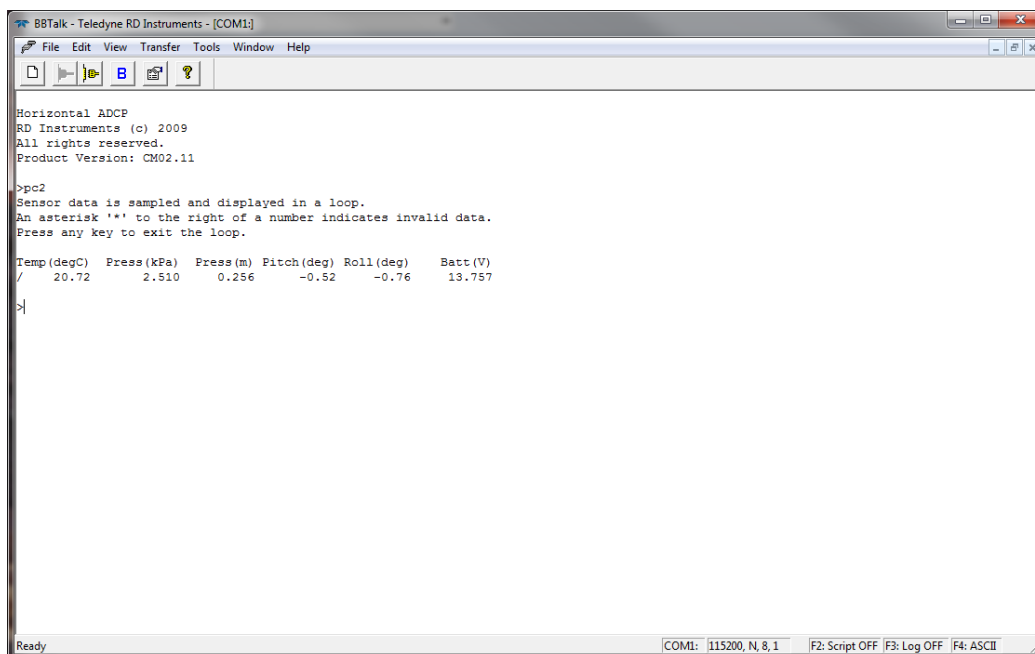


- The script will prompt the hydrographer for a log file name. The format recommended is station\_id\_YYYYMMDD. Store these data in a file and a directory specified in the WSC electronic data archive plan.



## 90 Computing Discharge Using the Index Velocity Method

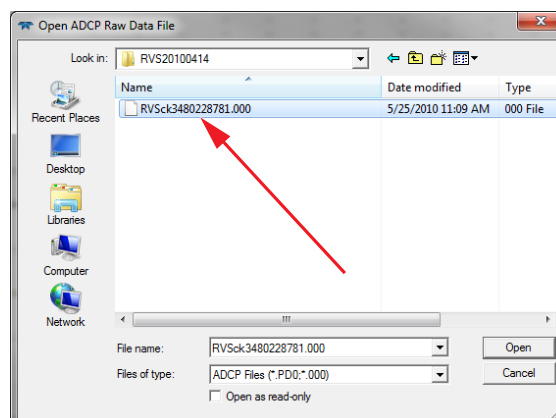
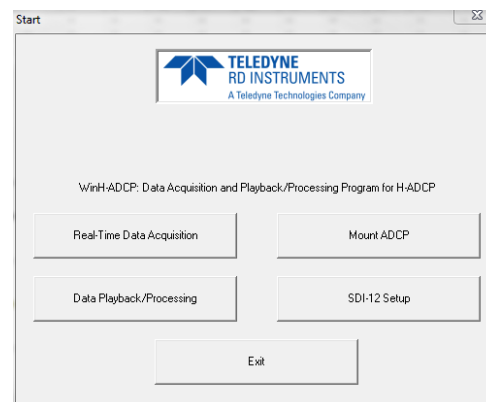
- After the script is complete, issue the “PC2” command and compare the ADVM thermistor readings to the independent temperature sensor and record them on the field sheet.



- Close and review the log file to ensure that the CM is appropriately configured.

### C. Reviewing Loop Recorder Data

- Open *WinHADCP*. The Setup Wizard will appear.
- Click the button **Data Playback/Processing**.
- Select the loop recorder file just downloaded.

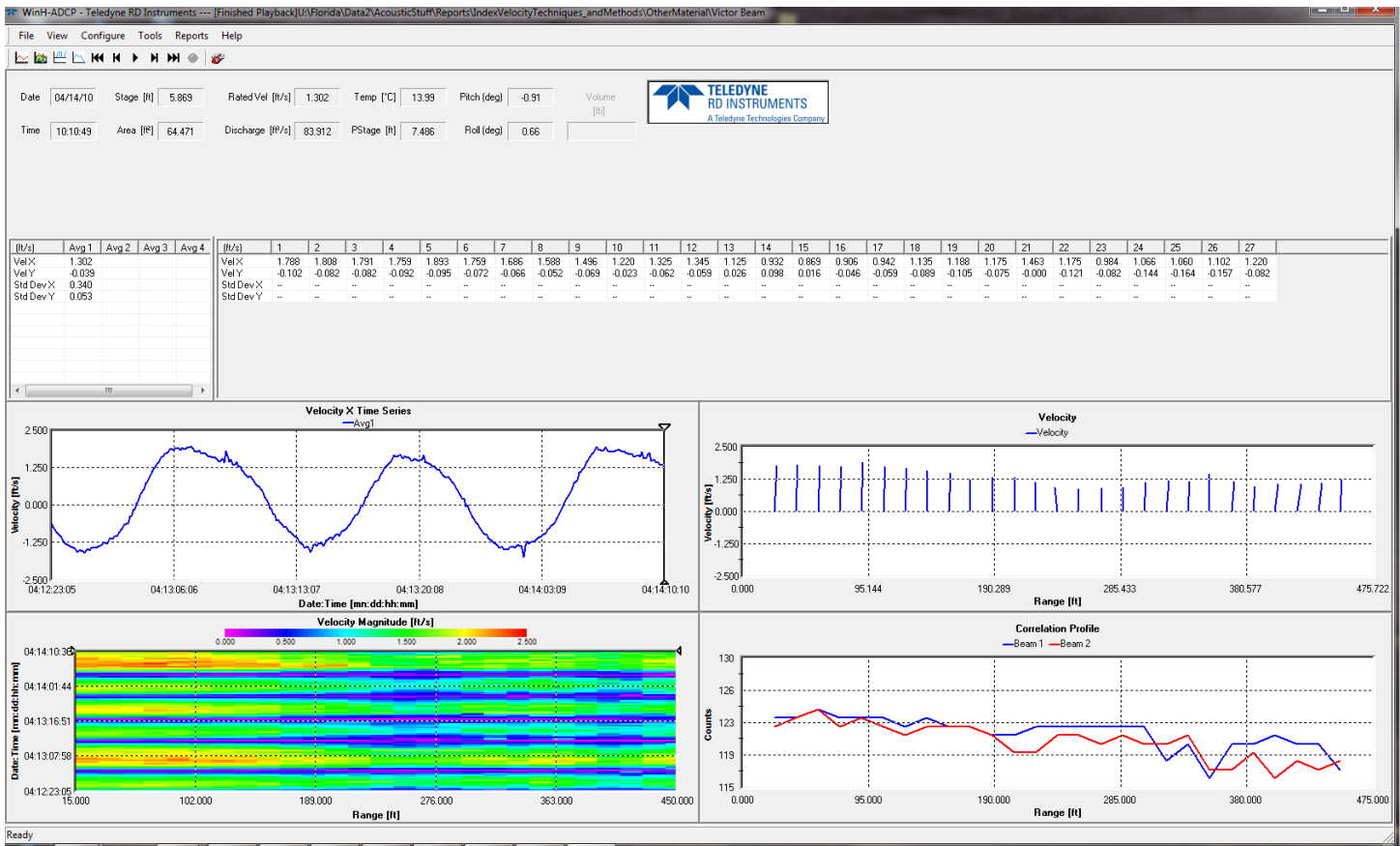


4. In the Configure Processing window note the “Start Time Date” and “End Time Date.” Usually only about 2 days of the most recent data will be available for review due to CM memory limitations. Click on the **Show User Setup** button to see how the CM was configured and compare to previously specified configuration parameters for the station.

5. If a green LED is not shown in the Configure Processing window (step 6), averaging should be set. Click on the **Set Averaging** button in the Configure Processing window (step 6) and when the Average Setup window opens, click on the **1** button.

6. In Average 1 Setup window, enter the “Range Average Start” and the “Range Average End” values to include the cells that are used for the index velocity or the entire range of cells available. Click on the **OK** button and then on **OK** in the Average Setup window. Then click on the **Start Playback** button in the Configure Processing window (step 6). It is also important to view individual cells, because the average value for a number of cells can mask data that may be invalid.

- Review CM data, paying close attention to the intensity profile to see if any obstructions or unusual patterns are evident for either of the two beams. Examine velocity data for unusual data.



## D. Recording Data During ADCP Measurements

- When making an ADCP measurement, the sampling interval and averaging interval in the ADVDM should be set to 60 seconds. Because of current (2011) firmware and software limitations, however, the hydrographer should not reset the CM sampling time during discharge measurements. Given current limitations in CM firmware, it is recommended to always collect 1-minute data with the CM and allow the data logger used for recording and transmission of real-time data to do any averaging desired. If 15-minute data are desired for database storage and records computation, the CM should be configured to collect 1-minute data and the data logger should be configured to average the 1-minute data prior to transmission.
- With this in mind, two options are available to the hydrographer—either use the CM loop recorder data or configure the data logger to temporarily store the 1-minute data. Because many data loggers are available to hydrographers, it is recommended that the data logger manual be used to properly configure the data logger. Regardless of which option is used, the 1-minute measurement interval data should be used to synchronize and synthesize the index velocity data with the discharge measurement durations.
- To use the CM loop recorder, start *BBTalk* and connect to the CM as before.
- If, and only if the data have previously been downloaded for review, erase the CM loop recorder. At the command prompt, enter the command **ME**.
- At the command prompt, type **MN filename** where **filename** is the filename for the discharge measurement data and is specified in accordance with the WSC electronic data guidelines.
- Make the discharge measurement.
- Recover the loop recorder using *BBTalk* (using guidelines shown above) and disconnect the CM serial cable from the laptop.
- Enter the **CS** command at the command prompt to start the CM ping.
- Verify that the SDI-12 data collection is functioning properly before leaving the gaging station.



## E. BBTalk Script for Checking ChannelMaster Configuration

\$L

\$B

\$D2

\$p THIS SCRIPT CHECKS AND LOGS THE CURRENT CHANNEL MASTER PARAMETERS

\$D3

\$p DISPLAYING CURRENT CM SETUP COMMANDS...

mn?

wf?

ws?

wn?

mr?

wp?

tp?

te?

es?

ed?

ez?

cf?

cj?

ct?

cl?

vp?

#vr?

cb?

\$D1

\$p POSSIBLE BAUD RATES ARE...

\$p CB411=9600

\$p CB511=19200

\$p CB611=38400

\$p CB711=57600 (best all around baud rate)

\$p CB811=115200

\$D3

\$p STARTING SYSTEM TESTS...

\$D1

PS0

\$D3

PS4

\$D3

PA

\$D3

PC4

## 94      **Computing Discharge Using the Index Velocity Method**

\$D3

\$p SYSTEM TESTS COMPLETED. CHECK FOR FAILURES!

\$p

\$p DISPLAYING REAL-TIME SENSOR DATA...

\$P Make sure Pitch and Roll are correct and

\$p unchanged from previous log file results

\$P Make sure the Ambient Temp is correct

\$p Press any key to continue

\$D2

PC2

\$D2

\$W62,10000

\$D1

\$p Type your initials now and press “Enter”

\$D10

\$p Current date and time is...

TS?

\$D2

\$p Make sure laptop time is correct and set to local Standard Time NOT Daylight Savings Time

\$P Now hold down “Ctrl” & “T” (Sets ADCP Time)

\$p Now type “cs” to deploy

\$P Press F3 to stop log file (REVIEW SAVED LOG FILE!)