

## Meas. No. \_\_\_\_\_

Geological Survey  
Water Resources Division

Processed by BB

## Acoustic Profiler Discharge Measurement Notes

Ck'd by\_\_\_\_\_

Sta. Name MISSISSIPPI RIVER ABOVE CAIRO

Date 5/17 2011 Party BB, CR

Width 9790 Area 204,000 Vel. 2.54 G.H. — Disch. 517,000

Profiler Water Temp. 19.0 °C at 1500 Rated area: \_\_\_\_\_ Index Velocity \_\_\_\_\_

Profiler S/N: 551 Mfg: R01 Freq: 600 Firmware: 10.16 Software Ver: 2.07

Depth Cell Size	18	Other commands:		Profiler Depth	2.70
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No. of Cells					Config. file
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Blanking Distance	25	Deployment	MANMED 13047
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Water Mode	12	Moving Bed	000
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Ambiguity Vel.	170	Moving Bed Present:	Y	<input checked="" type="checkbox"/>
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Water pings	/	Diag. Test <u>yes</u>
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Bottom pings / Diag. Test Errors: Y (N)

Boat/Motor Used WOOLDRIDGE ADCP Time to WT ☐ @ \_\_\_\_\_ GPS: ☒

Mag. Var. 1) moder 2) \_\_\_\_\_ 3) \_\_\_\_\_ 4) \_\_\_\_\_ Avg: -1.5 Comp. Cal.: ✓

Samples collected: water quality, sediment, biological, other: \_\_\_\_\_

Measurements documented on other sheets: water quality, aux/base gage, other: \_\_\_\_\_

Rain gage serviced/calibrated \_\_\_\_\_

Weather \_\_\_\_\_

Wind Spd \_\_\_\_\_ Dir. \_\_\_\_\_

Air Temp. \_\_\_\_\_ °C at \_\_\_\_\_

Water Temp. \_\_\_\_\_ °C at \_\_\_\_\_

Specific. Cond: \_\_\_\_\_

Checkbar/chain found \_\_\_\_\_

Changed to \_\_\_\_\_ at \_\_\_\_\_

Correct \_\_\_\_\_

Wading, cable, ice, boat, upstr., downstr., side bridge, \_\_\_\_\_ ft., mi. upstr., downstr. of gage.

Measurement rated: excellent (2%), good (5%), fair (8%), poor (>8%) based on following conditions:

Flow: MOSTLY EVEN, some swirls & surges

Cross section: UNEVEN GRAVEL MUD, TREES & BRUSH

Control: \_\_\_\_\_

Gage operating:\_\_\_\_\_ Record removed: Y or N      Filename:\_\_\_\_\_

Battery voltage: \_\_\_\_\_ Intakes/Orifice cleaned/purged: \_\_\_\_\_

Bubble-gage psi: Tank \_\_\_\_\_, Line \_\_\_\_\_; Bubble rate \_\_\_\_\_/min.

Extreme-GH indicators: max \_\_\_\_\_, min \_\_\_\_\_.

CSG checked: \_\_\_\_\_ HWM height on stick \_\_\_\_\_ Ref elev \_\_\_\_\_ HWM elev \_\_\_\_\_

Remarks: GPS REFERENCE HAD DIRECTIONAL ISSUES, NOT INCLUDED

GH of zero flow = GH \_\_\_\_\_ - depth at control \_\_\_\_\_ = \_\_\_\_\_ ft. rated \_\_\_\_\_

Station Number:

Meas. No:

Station Name: Mississippi River above Cairo

Date: 05/17/2011

Party: BB,CR

Width: 9,790 ft

Processed by: BB

Boat/Motor: wooldridge

Area: 204,000 ft<sup>2</sup>

Mean Velocity: 2.54 ft/s

Gage Height: 0.00 ft

G.H.Change: 0.000 ft

Discharge: 517,000 ft<sup>3</sup>/s

Area Method: Avg. Course

ADCP Depth: 2.200 ft

Index Vel.: 0.00 ft/s

Rating No.: 1

Nav. Method: Bottom Track

NO CONNECTION Shore Ens.: 10

Adj. Mean Vel: 0.00 ft/s

Qm Rating: F

MagVar Method: None (-1.5°)

RECOMMENDED Bottom Est: Power (0.1667)

Rated Area: 0.000 ft<sup>2</sup>

Diff.: 0.000%

Depth Sounder: Not Used

Top Est: Power (0.1667)

Control1: Unspecified

Control2: Unspecified

Control3: Unspecified

Screening Thresholds:

BT 3-Beam Solution: YES

WT 3-Beam Solution: NO

BT Error Vel.: 0.33 ft/s

WT Error Vel.: 32.81 ft/s

BT Up Vel.: 32.81 ft/s

WT Up Vel.: 32.81 ft/s

Use Weighted Mean Depth: NO

Max. Vel.: 11.1 ft/s

Max. Depth: 66.3 ft

Mean Depth: 20.8 ft

% Meas.: 79.93

Water Temp.: None

ADCP Temp.: 19.0 °C

ADCP:

Type/Freq.: Rio Grande/600 kHz

Serial #:

Firmware: 10.16

Bin Size: 18 cm

Blank: 25 cm

BT Mode: 5

BT Pings: 1

WT Mode: 12

WT Pings: 1

WV : 170

WO : 1, 4

Performed Diag. Test: NO

Performed Moving Bed Test: NO

Performed Compass Test: NO

Meas. Location: above Cairo

Project Name: mississippiabovecairo40

Software: 2.07

Tr.#		Edge Distance		#Ens.	Discharge						Width	Area	Time		Mean Vel.		% Bad		
		L	R		Top	Middle	Bottom	Left	Right	Total			Start	End	Boat	Water	Ens.	Bins	
001	L	609	563	845	50633	417068	39095	11090	343	518230	9803	204095	14:50	15:08	8.25	2.54	9	0	
002	R	599	563	829	49636	409714	36673	20422	-305	516140	9784	203182	15:08	15:25	8.39	2.54	9	1	
Mean		604	563	837	50134	413391	37884	15756	18.9	517185	9793	203639	Total	00:35	8.32	2.54	9	0	
SDev		7	0	11	705	5200	1713	6599	458	1478	13.3	645.6				0.10	0.00		
SD/M		0.01	0.00	0.01	0.01	0.01	0.05	0.42	24.24	0.00	0.00	0.00				0.01	0.00		

Remarks:

LC Version 3.20, July 8, 2010

Processed on: 17-May-2011

Loop File: mississippiabovcairo400011-05-17\_ASC.TXT

Distance Made Good (ft)	Loop Time (sec)	Moving Bed Velocity (ft/s)	Moving Bed Direction (degrees)	Flow Direction (degrees)	Estimated Percent Correction (percent)
180.23	2131.23	0.08	176.20	163.37	5.21

Percent Bad Bottom Track: 8.9

WARNING: Percentage of bad bottom track values exceeds 5.  
Loop may not be accurate. Please review data.

Difference in flow direction between out and back sections: 0.2 deg

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Loop Closure Error not in Upstream Direction -- No Correction Recommended

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Party: BB,CR	Width: 9,390 ft	Processed by: BB
Boat/Motor: wooldridge	Area: 194,000 ft²	Mean Velocity: 2.61 ft/s
Gage Height: 0.00 ft	G.H.Change: 0.000 ft	Discharge: 507,000 ft³/s

Area Method: Avg. Course	ADCP Depth: 2.200 ft	Index Vel.: 0.00 ft/s	Rating No.: 1
Nav. Method: Bottom Track	Shore Ens.:10	Adj.Mean Vel: 0.00 ft/s	Qm Rating: F
MagVar Method: None (-1.5°)	Bottom Est: Power (0.1667)	Rated Area: 0.000 ft²	Diff.: 0.000%
Depth Sounder: Not Used	Top Est: Power (0.1667)	Control1: Unspecified	
		Control2: Unspecified	
		Control3: Unspecified	

Screening Thresholds:		ADCP:
BT 3-Beam Solution: YES	Max. Vel.: 11.1 ft/s	Type/Freq.: Rio Grande / 600 kHz
WT 3-Beam Solution: NO	Max. Depth: 66.3 ft	Serial #:                      Firmware: 10.16
BT Error Vel.: 0.33 ft/s	Mean Depth: 20.7 ft	Bin Size: 18 cm              Blank: 25 cm
WT Error Vel.: 32.81 ft/s	% Meas.: 81.58	BT Mode: 5                      BT Pings: 1
BT Up Vel.: 32.81 ft/s	Water Temp.: None	WT Mode: 12                      WT Pings: 1
WT Up Vel.: 32.81 ft/s	ADCP Temp.: 19.0 °C	WV : 170                      WO : 1, 4
Use Weighted Mean Depth: NO		

Performed Diag. Test: NO  
 Performed Moving Bed Test: NO  
 Performed Compass Test: NO  
 Meas. Location: above Cairo

Project Name: mississippiabovecairo400011-0  
 Software: 2.08

Tr.#		Edge Distance		#Ens.	Discharge						Width	Area	Time		Mean Vel.		% Bad	
		L	R		Top	Middle	Bottom	Left	Right	Total			Start	End	Boat	Water	Ens.	Bins
001	L	205	563	845	50633	417068	39095	3733	343	510873	9399	195384	14:50	15:08	8.25	2.61	9	0
002	R	200	563	829	49636	409714	36673	6819	-305	502536	9385	193161	15:08	15:25	8.39	2.60	9	1
Mean		203	563	837	50134	413391	37884	5276	18.9	506705	9392	194273	Total	00:35	8.32	2.61	9	0
SDev		4	0	11	705	5200	1713	2182	458	5895	9.8	1572.3			0.10	0.01		
SD/M		0.02	0.00	0.01	0.01	0.01	0.05	0.41	24.24	0.01	0.00	0.01			0.01	0.00		

**Remarks:** This mmt updated by TAK on 2/15/12 due to apparent error in left edge estimate.  
 Operators estimated about 600 feet. However, it may be a typo or unit conversion error.  
 Ship track and Google Earth imagery indicate about 200 feet, or about 1/3 of operator estimate.

Party: BB,CR	Width: 2,110 ft	Processed by: BB
Boat/Motor: wooldridge	Area: 113,000 ft²	Mean Velocity: 4.03 ft/s
Gage Height: 0.00 ft	G.H.Change: 0.000 ft	Discharge: 455,000 ft³/s

Area Method: Avg. Course	ADCP Depth: 2.200 ft	Index Vel.: 0.00 ft/s	Rating No.: 1
Nav. Method: Bottom Track	Shore Ens.:10	Adj.Mean Vel: 0.00 ft/s	Qm Rating: F
MagVar Method: None (-1.5°)	Bottom Est: Power (0.1667)	Rated Area: 0.000 ft²	Diff.: 0.000%
Depth Sounder: Not Used	Top Est: Power (0.1667)	Control1: Unspecified	
		Control2: Unspecified	
		Control3: Unspecified	

Screening Thresholds:		ADCP:
BT 3-Beam Solution: YES	Max. Vel.: 11.1 ft/s	Type/Freq.: Rio Grande / 600 kHz
WT 3-Beam Solution: NO	Max. Depth: 66.3 ft	Serial #:                      Firmware: 10.16
BT Error Vel.: 0.33 ft/s	Mean Depth: 53.6 ft	Bin Size: 18 cm              Blank: 25 cm
WT Error Vel.: 32.81 ft/s	% Meas.: 84.86	BT Mode: 5                      BT Pings: 1
BT Up Vel.: 32.81 ft/s	Water Temp.: None	WT Mode: 12                      WT Pings: 1
WT Up Vel.: 32.81 ft/s	ADCP Temp.: 18.9 °C	WV : 170                      WO : 1, 4
Use Weighted Mean Depth: NO		

Performed Diag. Test: NO  
 Performed Moving Bed Test: NO  
 Performed Compass Test: NO  
 Meas. Location: above Cairo

Project Name: mississippiabovecairo400011-0  
 Software: 2.08

Tr.#		Edge Distance		#Ens.	Discharge						Width	Area	Time		Mean Vel.		% Bad	
		L	R		Top	Middle	Bottom	Left	Right	Total			Start	End	Boat	Water	Ens.	Bins
001	L	205	0	228	31824	390240	33283	3733	0.000	459080	2125	113623	14:50	14:55	6.62	4.04	0	0
002	R	200	0	197	31201	382620	30981	6819	0.000	451620	2086	112196	15:21	15:25	7.50	4.03	1	0
<b>Mean</b>		203	0	212	31512	386430	32132	5276	0.000	455350	2105	112909	<b>Total</b>	00:35	7.06	4.03	0	0
<b>SDev</b>		4	0	22	440	5389	1628	2182	0.000	5275	27.5	1009.1			0.62	0.01		
<b>SD/M</b>		0.02	0.00	0.10	0.01	0.01	0.05	0.41	0.00	0.01	0.01	0.01			0.09	0.00		

**Remarks:** This mmt subsectioned by TAK on 2/15/12 to determine main channel vs overflow for the purpose of estimating overflow on other dates.

ncludes updated left edge estimates as shown in corrected total.

Party: BB,CR	Width: 7,280 ft	Processed by: BB
Boat/Motor: wooldridge	Area: 81,400 ft <sup>2</sup>	Mean Velocity: 0.632 ft/s
Gage Height: 0.00 ft	G.H.Change: 0.000 ft	Discharge: 51,300 ft <sup>3</sup> /s

Area Method: Avg. Course	ADCP Depth: 2.200 ft	Index Vel.: 0.00 ft/s	Rating No.: 1
Nav. Method: Bottom Track	Shore Ens.:10	Adj.Mean Vel: 0.00 ft/s	Qm Rating: F
MagVar Method: None (-1.5°)	Bottom Est: Power (0.1667)	Rated Area: 0.000 ft <sup>2</sup>	Diff.: 0.000%
Depth Sounder: Not Used	Top Est: Power (0.1667)	Control1: Unspecified	
		Control2: Unspecified	
		Control3: Unspecified	

Screening Thresholds:		ADCP:
BT 3-Beam Solution: YES	Max. Vel.: 6.56 ft/s	Type/Freq.: Rio Grande / 600 kHz
WT 3-Beam Solution: NO	Max. Depth: 41.9 ft	Serial #:                      Firmware: 10.16
BT Error Vel.: 0.33 ft/s	Mean Depth: 11.2 ft	Bin Size: 18 cm              Blank: 25 cm
WT Error Vel.: 32.81 ft/s	% Meas.: 52.50	BT Mode: 5                      BT Pings: 1
BT Up Vel.: 32.81 ft/s	Water Temp.: None	WT Mode: 12                      WT Pings: 1
WT Up Vel.: 32.81 ft/s	ADCP Temp.: 19.1 °C	WV : 170                      WO : 1, 4
Use Weighted Mean Depth: NO		

Performed Diag. Test: NO  
 Performed Moving Bed Test: NO  
 Performed Compass Test: NO  
 Meas. Location: above Cairo

Project Name: mississippiabovecairo400011-0  
 Software: 2.08

Tr.#		Edge Distance		#Ens.	Discharge						Width	Area	Time		Mean Vel.		% Bad		
		L	R		Top	Middle	Bottom	Left	Right	Total			Start	End	Boat	Water	Ens.	Bins	
001	L	0	563	616	18788	26800	5806	0.000	340	51734	7263	81737	14:55	15:08	8.87	0.63	13	0	#
002	R	0	563	633	18435	27094	5692	0.000	-305	50916	7299	80971	15:08	15:21	8.68	0.63	12	1	
Mean		0	563	624	18611	26947	5749	0.000	17.5	51325	7281	81354	Total	00:26	8.78	0.63	12	1	
SDev		0	0	12	250	208	80.4	0.000	456	578	25.9	541.7			0.14	0.00			
SD/M		0.00	0.00	0.02	0.01	0.01	0.01	0.00	26.11	0.01	0.00	0.01			0.02	0.00			

**Remarks:** This mmt subsectioned by TAK on 2/15/12 to determine main channel vs overflow  
 for the purpose of estimating overflow on other dates.