

Glider Prep and Deployment Checklists

Glider -
deployment

RV39 - 20230420T1636

Project

RMI
Seasonal 2023 Spring

Deployment
dates

4/20/23 - 5/12/23

Location/notes

Coastal NJ
zooplankton AZFP

Extant

Notes

1) Glider check-out sheet



2) Ballasting/dunk sheets



3) Deployment checklists
(on boat, shore side)



4) Glider check-in sheet



5) Misc. (science, etc.)



CTD



Optode



LISST

6) Other



Compass



GLIDER	RU39
PREPARER	Nicole
PREP DATE	4/13/2023
LOCATION / MISSION	RMI 2023 #1 - Spring
DENSITY @ TEMP	
INSURED?	yes

		Calibration Date (user/factory)
SCIENCE BAY SERIAL NUMBERS	1) CTD 9917p	10/10/2022
	2) PH 12110	10/21/2022
	3) FLUBCD-SLC 7788	9/8/2022
	4) AZFP 59024 (120, 200, 455, 769 kHz)	1/30/2023
	5) VMT 1502896	—
	6)	

PRE-SEAL

TAKE PICTURES OF CONNECTORS AT EACH SEALING JOINT

✓

FORE CHECK

Check pump & pitch threaded rods
(clean and grease) ✓

Grounded nose? ✓

Dessicant Exposed? ✓

Leak detect in place, batteries

secure, grab & wiggle pitch battery to

check secure, white guides free, no

metal shavings, bottles installed ✓

PAYLOAD CHECK

Special Sensors / Additional Sensors?

AZFP VMT

CTD cable clear, no leak at CTD joint, no leak at pucks

Grounded?

Fore Sci Ring

CTD

Corrosion?

Aft Sci Ring

Other?

No corrosion

AFT CHECK

Iridium Card Installed (SIM #) (if not standard)

Flash Card Check (remove old files, backed up? See **Software** section)

Inspect strain on connectors/worn connectors

Battery secured

Ballast bottle present

Aft cap clean/clear of leak

Ejection weight stem grounded? Should it be? (Version specific)

Thruster greased?

Ensure safety of ballast pump prior to powering glider

Battery check: G2/G1 turn glider on with only 1 battery connected; G3 use BMS current

Aft Pack Voltage

Pitch Pack Voltage

Nose Packs Voltage

Emer (if possible) Voltage

Cabling/connectors - lithium vs. alkaline circuit correct?

8988169234003446804

✓

✓

✓

✓

✓

No

N/A

4/19/23
aft = 0.160 amp
pitch = 0 amp

✓ 14.02V, 0.091 amp

✓ 0.674 amp

12.50 Volt,

AK plugged in but

using Li-emergency nose battery.

POST-SEAL, pre-ballast

GENERAL

Pick Point Present?

bail

Special Cargo?

VMT

HARDWARE

Nose cone and pump bladder inspection

Anode grounded? ✓

Pressure Sensor Check (corrosion, clear)

Aft sensor

✓ 0.825 bar

Ejection weight assembly ok/not seized?

Anode size / remainder

✓ silenced
New

Payload sensor

✓ 0.881 bar

POWERED

Put m_coulomb_amphr_total accordingly (0 = new batteries)
Put f_coulomb_battery_capacity (Alk=155, Lilon=225, li=450,625)
Vacuum @ T @ ballast 6.045 @ 30.76°C Stabilized m_battery
Get m_tot_num_inflections. Verify relative < 20000 or sufficient
Get m_leakdetect_voltage, science, forward (>2.3)
Get m_digifin_leakdetect_reading (less than 1019 requires service)
Altimeter test - put c_alt_time 0, verify chirp, note m_altimeter_voltage
Verify Argos ping ✓ Wiggle for 5 minutes

✓
120 no more packs -
14.66 Volts → 15.48 volt
133
✓
✓ 1023
✓
✓

SOFTWARE

(paths are RU specific)

GENERAL

Backup Glider and Science Cards
COOL//gliderData//glider_OS_backups/"glider name"
Format both CF cards - FAT Format FAT32
Apply new copy of latest TWR Software Image
For Glider: COOL//gliderData//gliderDos_releases/archived/"version"/target-glider
For Science: COOL//gliderData//gliderDos_releases/archived/"version"/target-science

Copy/overwrite STATE and CONFIG Folders

FW Transfer latest RU Software Image

COOL//Glidrs//Glider Software Image/"use most recent image"

Software Version

Date OK?

Configure TBDlist

Configure NBDlist

CONFIG

simul.sim deleted

MAFILES

goto_l10.ma (set x_last...)

yo*.ma, surfac*.ma pertinent for each glider and test missions

MISSIONS

b_arg: undervolts: 10.75V alkaline, 9-10 V Li3S, 13.5V Li4S, 12.75V Lilon

Remove unused sample behaviors in missions

AUTOEXEC.MI

Iridium: Numbers may vary. Listed: Main - Rutgers Alternate - TWR

Irid Main: 88160000592

u_iridium_failover_retries = 10

sci timestamp sensors (ctd41cp)

Reset the glider, observe any errors ✓

Irid Alt: 17818711614

u_sequence_start_delay 240

Calibration coefficients

get f_max_working_depth

CACHE MANAGEMENT

del ..\state\cache*.*

after *bdlist.dat are set (exit reset):

logging on; logging off

send ..\state\cache*.cac

send *.mbd *.sbd *.tbd

DOCKSERVER

Version

Check script

TWR BACKUP

Confirm to-glider folder clear

Confirm correct script running

* **Software Burning Tips** : if using Procomm or local folder, copy all the files from the software image locally. Then proceed to edit them for the glider and do a mass freewave transfer of the files. Save these files or prepare the to-glider with these files

* Do a logging on for all these checks, take note of log and transfer before deployment

SENSOR RETURN

put c_science_send_all 1

put c_science_all_on 8

put c_science_on 3

All sensors reporting values?

confirmed azfp-flo offset is increasing

CTD

Tank static comparison OK?

Pumped CTD operational?

Plot ballast *BD log, sci_water_pressure non-noisy and near < .5 m

OPTODE

Check in completed?

Saturation reading in air

OPTICS

Check max return using fluoro sticks

Check dark counts with sensor covered

bb/cdan/chl

Optics file name

LISST

Clean LISST and perform ZSCAT

OTHER

AZFP Config + sync-time GMT
PH soak

OUTSIDE

GPS Alamanc/firmware updated?

GPS check Latitude 40 28.774 N

Longitude

-74 26.259 E

Iridium connect

Alternate number

zero_ocean_pressure

Get m_pressure

-0.0053 bar

Air bladder shutoff (time)?

2 min

Sync_time (proper date?)

Compass calibration

Compass check

For deep gliders, put c_de_oil_vol -1000 to fully retract oil inside reservoir

N/A

ADDITIONAL

***WARNING: Advanced knowledge required to avoid damage/injury

Check burn wire - disconnect, then put c_weight_drop 1, confirm 12 V

Fore leakdetect

Science

Aft leakdetect

THRUSTER

Report ++ m_thruster_current

Put c_thruster_on 20

Verify thruster spins clockwise and current value updates regularly

Put c_thruster_on 0 to turn off

NOTES

4/11: initial pH turn on, ref-voltage = -2.5

tsph: -2.5, -2.5, +3.906e-05, +1.278e-05, 9.4401, 9.4057

did loadmission phon.mic a few times to confirm it can be turned on/off and still work properly.

*Nose bladder inspection → large wrinkle/ripple in top diaphragm.

was able to smooth out w/ hand. moved pump fwd+back and it didn't come back. Should re-inspect after final seal.

AZFP config based on Delphine settings ~~4/13~~ 4/18

- copies saved on cart laptop

- verified no overruns-

Slight gap at SB → AZFP seal...

Pitch Battery position check: verified full forward + full aft not hitting anything nor close.

*Connector pin aft SB was messed up at aft battery connection.

Aft pack was running off emerg cell only. fixed pin

-so, right now Aft pack voltage is higher so it is only running off aft pack -so current on pitch is 0 right now.

Emer cell voltage 15

pitch ~~current~~

but glide turns on w/ each pack.

Pitch voltage 15
Aft voltage 16

	Just Aft	Just Pitch	Aft + Pitch
pitch-current	0	111 mA	0
aft-current	106 mA	0	105 mA
battery-volt	15.5V	14.67 V	15.5V

7/6/2023 B. Buckingham & J. Leonard

- Pump displays early stages of pitting (corrosion) underneath the plastic ring behind rail weight holder. Pump anode did not appear grounded to helicoil for pump anode had some oxidation. A small file was used to ~~expose~~ expose some of the aluminum & the anode was then grounded to the pump
- Upon reassembly ~~one~~ the altimeter mount, one of the plastic washers (clear color) was lost
- Pump bellows from displaced ~~corinates~~ ~~corinates~~ when the piston was fully drawn back however they were able to be smoothed out using a finger (glider had a vacuum pulled)

4/19/23

<u>Just Aft</u>	<u>Just Aft</u>	<u>Just Pitch</u>	<u>Pitch + Aft</u>
Pitch - current =	0	111 mA	0
Aft - current =	106 mA	87 mA	105 mA
battery - cost =	15.5 V	14.67 V	15.5 V

1000
1000
1000

1000
1000
1000

EMER	15
P, A, A	15
P	15
A	16

	98.50
<u>EMER</u>	15.2
A	13.4

AZFP programming
4/13/2023

Phase 1

Burst Interval 2

Ping Period 1

Arg burst No

Max range 6050 samples

Bin avg 55 samples

120 → P.L = 500

200 → 500

455 → 750

769 → 750

~~check~~ "Enable cross talk delay"

Instrument port down is selected

Instrument depth = 3m

Water Depth = 100m

~~} not sure where
to sit these.~~

Did RS232 test - no over run messages.

Deployment		GLIDER	MASS (g)				COMMENTS
RMI 2023 1 - Spring			FORE STEM (minus FBB1,2)	NA			
Glider			FORE HULL	NA			
RU39			AFT STEM (red plug, card)	NA			
Date			AFT HULL	NA			
4/18/2023		COWLING	NA				
Preparer		SCREWS (vacuum, cowling, aft battery)	NA				
Nicole		PAYLOAD BAY	NA				
dunk 4		WINGS	NA				
*re-did H-moment, got similar as		OTHER	NA				
FINAL		AFT BATTERY	NA				
		PITCH BATTERY	NA				
		FORE BATTERY 1, 2, EMER	NA				
		AFT BOTTLE 1 (stbd)	133.4				
		FORE BOTTLE 1 (stbd) (FBB1)	210.3				
		FORE BOTTLE 2 (port) (FBB2)	179.2				
		AFT Bottle 2 (port)	124.5				
		WEIGHT BOTTLES					

ENTIRE VEHICLE (Ohaus Scale)	76150
------------------------------	-------

Tank Specifics		Glider Specifics	
Tank Density (kg/m^3)	1020.50	Glider Volume (L)	74.433
Tank Temperature (C)	21.58	Total Mass (kg)	76.150
Weight in Tank (g)	212.00	Glider Density (in air)	1023.07
Target Specifics		Volume Change (temperature induced)	
Target Density (kg/m^3)	1024.00	Volume Change (target) (mL)	-38.8
Target Temperature (C)	10.00	Coefficient of Thermal Expansion	4.50E-05
		Carbon hulls	4.50E-05
		Aluminum hulls	7.50E-05
Glider Volume (at lab temp) (L)			

Ballasting Using Volume		Ballasting Using Mass	
Should Hang (in tank) (g)	220.8	Adjust Glider Mass (entered volume) (g)	29.7
Adjust by (g)	8.8	Glider Density (target water, using mass)	1023.6
Weight Change (no dunk) (g)	-13.5	minus 1 WRW 4/20 on back deck confirm with nicole	
Glider Density (target)	1023.7		

H MOMENT (rad)		(deg)
Angle of Rotation (before)	-0	-1.6
Angle of Rotation (after)	-0.2	-13.1
Angle of Rotation	0.2	11.5
Weight on Spring (after)	522	
Weight added	296	
Radius of Hull	125	
H-distance	6.8	

*This is similar to the 125 for G2+, deeps

MISC MASSES & VOLUMES	
Pick point - 40 mL - 107 g air - 66 g water	
Wing Rail Weights - 1.8 mL @ 15.4 g each ~ 13.5 g in water	
VMT Transceiver - 173 mL - 162 g water	
FIRE Shroud SN02 (ru01) - 266 mL - 112 g water	
Optode - 130 mL - 92 or 190 g (plastic or titanium)	
LISST Bay - roughly 6.55 L	
Carbon Fiber wing Air -> Water Ratio	0.437209
Plastic Wing Air -> Water Ratio	0.487603
2k syntactic foam 100 g gives you 155 buoyancy	

RM1 2023 Spring

GLIDER: RM39Iteration 1 Log File 0045.0000 Date / Location 3/31/23 DMCS

FORE	EB	SB	AFT	Ballast	Notes
				FBB1 stbd <u>449.4</u>	removed optode + mount
Front Scale <u>110</u>				FBB2 Port <u>200.7</u>	Ohaus = 91.80 kg - 16.10 kg cert
Aft Scale <u>408</u>				Aft BB	
Instrument: <u>1581</u>		Instrument: <u>glider</u>		Made lots of adjustments, see attached note sheet.	
T = <u>23.318</u>		T = <u>23.319</u>		Roll <u>-0.024 rad = -1.4°</u>	
C = <u>4.398</u>		C = <u>4.401</u>		Ballast <u>-1.598 cc</u>	
D = <u>1019.65</u>		D = <u>4</u>		Battery <u>0.0002 in</u>	

* couldn't really feel pump?
maybe normal for pH-CDS.

Iteration 2 Log File 0046.0000 Date / Location 4/6/2023 DMCS

FORE	EB	SB	AFT	Ballast	Notes
				FBB1 stbd <u>199.2</u>	Ohaus = 91.8 kg - 16.10 kg
Front Scale <u>210</u>				FBB2 Port <u>169.8</u>	
Aft Scale <u>190</u>				(S) Aft BB <u>121.8</u>	
Instrument: <u>1581</u>				(P) Aft BB <u>115.3</u>	
T = <u>23.301</u>		T =		Roll <u>-0.049 rad = -2.8°</u>	
C = <u>4.456</u>		C =		Ballast <u>-0.9455 cc</u>	
D = <u>1019.98</u>		D =		Battery <u>0.0018 in</u>	

F	A	
210	-304	
-257	1257	Balance Scales
+192	+192	Add 384g
+25	-25	make note heavy
-40g	+424	

Iteration 3 Log File 0047.0000 Date / Location 4/11/23 DMCS

FORE	EB	SB	AFT	Ballast	Notes
				FBB1 stbd <u>210.3</u>	
Front Scale <u>158</u>				FBB2 Port <u>119.2</u>	
Aft Scale <u>50</u>				(S) Aft BB <u>133.4</u>	
Instrument: <u>1581</u>				(P) Aft BB <u>124.5</u>	
T = <u>21.884</u>		T = <u>21.887</u>		Roll <u>-0.059 rad</u>	
C = <u>4.310</u>		C = <u>4.304</u>		Ballast <u>-1.598 cc</u>	
D = <u>1020.27</u>		D =		Battery <u>0.0034 in</u>	

F	A	Notes
1204g		Add special aft bottle to back of aft battery stbd
+200	+200	Add 2 pils to front SB
		1 stbd top 12" roll
		1 middle top 0" roll
-200		Remove front stbd disk
-40g		stbd bottles
+20g		aft bottles
-200	-200	remove 2 pils top front SB
+140	+200	add Baul (340g) air
+16g		pH battery wires front SB
+160		FBB's

Ohaus = 92.25 - 16.10

Li-Mount:
Scale: 420
roll: 0.120 rad

GLIDER: LU39Iteration 4 Log File 0054.0000 Date / Location DMCS, 4/18/23

FORE	EB AZEP	SB	AFT
------	------------	----	-----

Front Scale

Aft Scale

Ballast

FBB1 stbd 210.3 NCFBB2 Port 164.4Aft BB 154.5Aft BB2 147.6Instrument: 1581 Instrument: _____T = 21.21579 T = _____C = 4.364 C = _____D = 1020.50 D = _____Roll -0.028 rad = -1.6° H-moment: Scale: 522Ballast -1.598ccBattery 0.0018in

Notes

F

A

15850+54+54Barbours
nose heavy+25-25+15+15

Target 1024

-14+44H=6.8

Iteration _____ Log File _____ Date / Location _____

FORE	EB	SB	AFT
------	----	----	-----

Front Scale

Aft Scale

Ballast

FBB1 stbd _____

FBB2 Port _____

Aft BB _____

Instrument: _____ Instrument: _____

T = _____ T = _____

C = _____ C = _____

D = _____ D = _____

Roll _____

Ballast _____

Battery _____

Notes

Iteration _____ Log File _____ Date / Location _____

FORE	EB	SB	AFT
------	----	----	-----

Front Scale

Aft Scale

Ballast

FBB1 stbd _____

FBB2 Port _____

Aft BB _____

Instrument: _____ Instrument: _____

T = _____ T = _____

C = _____ C = _____

D = _____ D = _____

Roll _____

Ballast _____

Battery _____

Notes

Ru39 changes after dunk 1

Front SB plate original w/ 1 pu weight top 287.2g

Removed 4-unit desiccant from inside SB 124.5g

front SB plate w/ 2 9-volt batteries added ~~391g~~ 370g

Net -440.7g

Change stbd fwd bottle to stainless from copper, only fill 1/2 way
was 445.4 → now ~~445.4~~ 179.4 (A280) ~~445.4~~ -250

Also change port fwd bottle

was 269.7 → now 169.7 (-100)

~~Net -380~~ Net -350

~~Add stainless plate to stbd +255~~

Add 200g disk to stbd

Add 66g 2-unit desiccant to stbd.

Remove pick point -131g air

Add VMT, 329g air > front SB

WR 1/2 full, 5 each

So far Net 2pm 4/15/23

N 170g

will add an N220g bail once made. → so might be good for now.

Wait... Aft still needs addressing:

From TWR - 3 aft BB all completely full of copper, plus 2 pie's

Aft stbd 237.25 → now ~~237.25~~ 122.25 (-115)

Aft port: 228.5g → now 115.15 (-113.4)

Aft superspecial stbd: 205.2g → removed, now 0g

↳ switching to stainless

Added 2 ferrits to aft, +14g

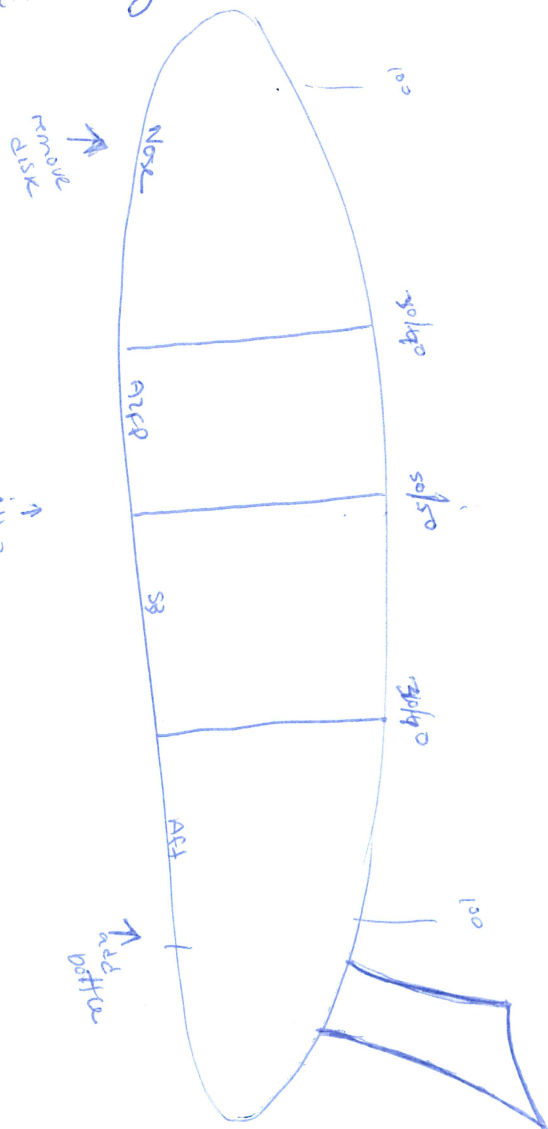
Net aft: -419.6

~~Add 1 pu to bottom aft SB plate~~

Add 1 pu to top front SB stbd +200g

Add aft battery rack +116.5g

Add 204g bottle to aft battery



add 2 pwo
220 (1 stbd aft
1 x 8 center)

F
+200
-200
420 in bottles

A
+200
+200
424 in bottles

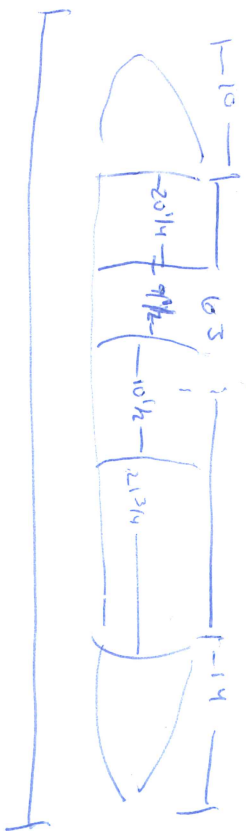
Add 340g
bottle
2041
30140 + 2041 = 32181

$\frac{100}{100} = 2.5$



1.5 put
move aft part
to stbd
by 15cm

center



F
+200
-200

A
+204
+200

super special
bottle stbd 420
add 2 pwo front SB
1 stbd + 20
1 middle 0
remove front stbd disk -5°

$\frac{4342}{2181} = 2$

$22 = \frac{1}{2} = \frac{43}{22}$

COMMERCIAL INVOICE

DATE OF EXPORT	SHIPPER	REFERENCE	CURRENCY
4/6/2023	National Air Cargo	SWOT	US DOLLAR

SHIPPER / EXPORTER	CONSIGNEE
David Aragon Department of Marine and Coastal Sciences 71 Dudley Road New Brunswick, NJ 08901 + 1 (732) 570 1975 dkaragon@marine.rutgers.edu	Ari Friedlaender c/o Rutgers Institute of Marine Sciences UC Santa Cruz 115 McAllister Way Santa Cruz, CA 95060 + 1 (919) 672 0103 ATTN: Rutgers Glider
COUNTRY OF ULTIMATE DESTINATION	
UNITED STATES	
COUNTRY OF MANUFACTURE	
UNITED STATES	

FULL DESCRIPTION OF GOODS	WEIGHT (LBS.)	QUANTITY	UNIT VALUE	TOTAL VALUE
Oceanographic equipment - Slocum underwater glider & support equipment	400.00	1	\$ 200,000.00	\$ 200,000.00
SUB-TOTAL	400.00	1		\$ 200,000.00

TOTAL NO. OF PACKAGES		FREIGHT COSTS
1	(for temporary export/import)	INSURANCE COSTS
		ADDITIONAL COSTS

These commodities, technology or software were exported from the United States in accordance with the Export Administration regulations. Diversion contrary to US Law prohibited.	TOTAL INVOICE VALUE \$ 200,000.00
---	--

I hereby certify that this invoice shows the actual price of goods described, that no other invoice has been issued, and that all particulars are true and correct.

SIGNATURE OF SHIPPER / EXPORTER	RUTGERS Institute of Marine and Coastal Sciences
PRINT NAME HERE	

G35 - where is e-batt?
 Alkaline pack has e-batt?
 and nose has e-batt?
 what about alkaline nose batts?
 why didn't I get 10-cell alk nose?



Center for Ocean Observing Leadership

Slocum Glider Check-IN

DATE: 7/5/2023 GLIDER: 4039 SB: 0917

Vehicle Powered

1. Power on vehicle in order to fully retract pump, and/or to deflate air bladder. ✓
2. Wiggle vehicle for 5 minutes. ✓ log file: 0068.0000

Vehicle Cleaning (hose down with pressure)

Nose cone ✓

1. Remove nose cone ✓
2. Loosen altimeter screws, and remove altimeter or leave temporarily attached ✓
3. Retract pump ✓
4. Remove altimeter and hose diaphragm removing all sand, sediment, bio oils ✓
5. Clean nose cone and altimeter ✓

Tail cone

1. Remove tail cone ✓
2. Hose and clean anode and air bladder making sure air bladder is completely clean ✓
3. Clean cowling

Wing rails ✓

1. Remove wing rails and hose down ✓

Tail plug cleaning

1. Dip red plug in alcohol and clean plug if especially dirty
2. Re-dip red plug and repeatedly insert and remove to clean the glider plug
3. Compress air glider female connector
4. Lightly silicon red plug and replace in glider once silicon has been dispersed evenly in the plugs

CTD Comparison Check ✓

1. Inspect CTD sensor for any sediment buildup, take pictures of anything suspicious or make note.
2. Record results of Static Tank Test on CTD Check-in/out sheet 0069.0000

Optode Check/Calibration

1. Record results on Optode Check Sheet

LISST Check/ZSCAT

1. Record results on LISST Check Sheet

Vehicle Disassembled

1. Check leak points for water or salt buildup ✓
2. **BACKUP FLASH CARDS** in
/coolgroup/gliderData/glider_OS_backups/<glider>/<glider-deploymentID>/<from
glider>,<from sb_0xxx> **** DO NOT DELETE DATA OFF CARDS**** ✓

/home/coolgroup/gliderData/glider-OS-backups/rv39/2023-05-25-rv39-808-
postRMI 2023 1 Spring

3. Change permissions on <glider-deploymentID> folder to read, write, execute for owner and group, and read, execute for everyone _____
4. Remove used batteries and place in return crate _____
5. Re-assemble glider with a vacuum _____

Update Glider/Sensor History/Notes/Inventory _____

1. If needed, add notes to deployment page, glider binder, payloads binder, etc.

Compile Deployment Checklist Packet Check _____

2. Print/fill out checklist packet title page
3. Make sure all pages are accounted for.
4. Scan entire packet and save to:
/coolgroup/glidersData/deployments/<YEAR>/<glider-missionID>/meta/<Glider-missionID_checklists>
5. Put packet into the appropriate year deployment binder.

Glider / Mission:

RU39 / RMI

Cal Location

DMCS Gantry

Date

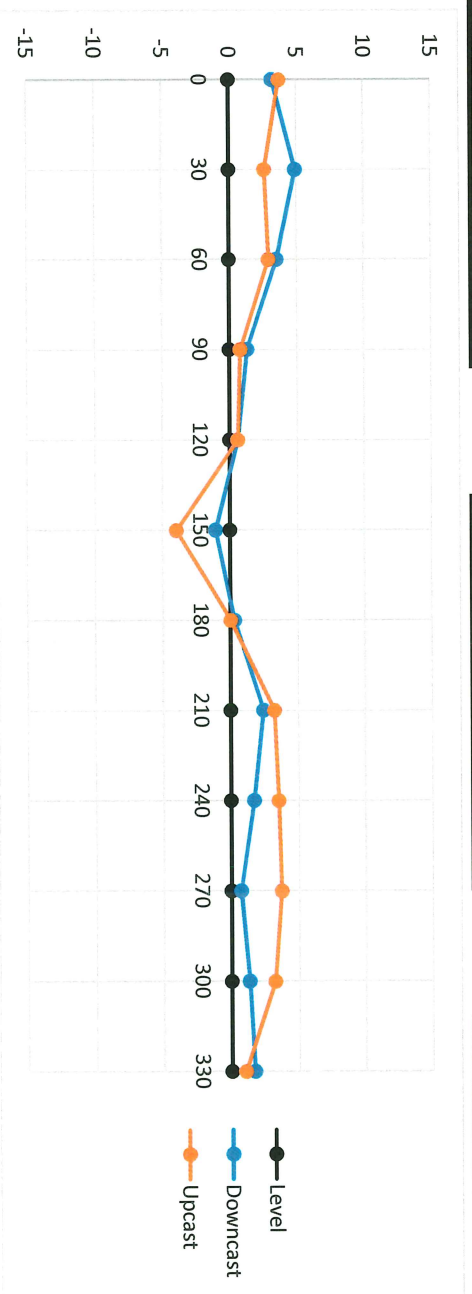
4/12/2023

Operator Nicole, Brian, Tim, Chip

LEVEL		
HAND	GLIDER	ERROR
0		0
30		0
60		0
90		0
120		0
150		0
180		0
210		0
240		0
270		0
300		0
330		0

DOWNCAST		
HAND	GLIDER	ERROR
1	4.2	3.2
29	33.9	4.9
62	65.5	3.5
92	93.3	1.3
122	122.6	0.6
152	150.9	-1.1
177	177.3	0.3
212	214.4	2.4
243	244.7	1.7
274	274.7	0.7
300	301.3	1.3
327	328.7	1.7

UPCAST		
HAND	GLIDER	ERROR
3	6.7	3.7
36	38.6	2.6
64	66.9	2.9
93	93.8	0.8
124	124.6	0.6
154	150	-4
177	177	0
206	209.2	3.2
240	243.5	3.5
275	278.7	3.7
305	308.2	3.2
338	339	1



Slocum CTD Comparison Check

GLIDER: R039 SB: 9917pH DEPLOYMENT: RMI 2023 #1-spring

Pre-Deployment

Date: 4/11/2023

SBE19 s/n: <u>1581</u>	Glider:
Temperature: <u>21.881</u>	Temperature: <u>21.887</u>
Conductivity: <u>4.310</u>	Conductivity: <u>4.304</u>

Notes: verified pump on CTD working
verified

Post-Deployment

Date: 7/5/2023

0069.0000

SBE19 s/n:	Glider: <u>R039</u>
Temperature: <u>22.5701</u>	Temperature: <u>22.5691</u>
Conductivity: <u>4.7288</u>	Conductivity: <u>4.7276</u>

Notes: $|\Delta T| \approx 0.001$
 $|\Delta C| \approx 0.0012$

*** CTD Maintenance if comparison is not acceptable (reference SeaBird Application Note 2D)

1. Perform CTD backward/forward flush with 1% Triton X-100 solution
2. Perform CTD backward/forward flush with 500 – 1000 ppm bleach solution
3. Perform the same on a pumped unit, just different approach
4. Repeat comparison test if above results not within $T < .01$ C, $C < .005$ S/m