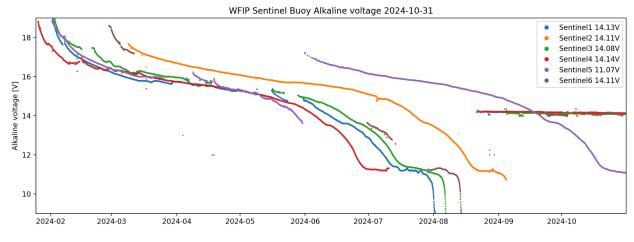
## **Important Dates**

## Tioga deploy week of Nov.18

## STATUS (last updated BG Oct.31, 2024)

Buoy	Location	SITE	Status
Sentinel 1	deployed	1	Deployed 8/27
Sentinel 2	burnpad		burnin started 9/24
Sentinel 3	deployed	2	Deployed 9/12
Sentinel 4	deployed	4	Deployed 8/27
Sentinel 5	deployed	3	Sentinel 5 powered down Nov.12, recovered
Sentinel 6	burnpad		burnin started 9/18
Lidar Buoy	deployed	Lidar	Deployed 8/2.



- Needs burn-in
  - Internal data review
  - o Clear microSD data using PC400 BG 9/18
  - o Double check SNs, update [WFIP SN link]
- Spot tracker new batteries?
- Sensors
  - SR30 troubleshoot intermittent NaNs. Already has SerialFlush() fix. Did we upgrade SIO4A firmware to latest Jan.2024? BG yes, SIO4A fw is up to date BG 9/18 bad cable. Using Sentinel 2 cable
  - SBE37
    - recover internal data and upload to buoy5
    - check batteries and configuration.
    - Re-install, start
  - PRC

- recover internal data and upload to buoy5 AL 9/18
- check batteries and configuration.
- Re-install, start
- battery chassis
  - install new Lithium batteries 9/18 EJ
  - add additional terminals to busbar 9/18 EJ
  - o install new dessicants
  - o drill plates 9/18 EJ
  - o install battery chassis inside well 9/18 EH/EJ
- electronic chassis
  - update CR6 codeto log and telemeter BMP390 pressure sensor BG 8/29
  - o recover internal CR6 data, upload to buoy5 BG 9/12
  - confirm SIO4A firmware is latest version (Jan.2024) do before sealing well; see
    April 17 email w/ instructions
  - o take 360 set of photos and upload to buoy5 prior to installation in well BG 9/16
  - o Install BMP390 internal pressure sensor (Lithium battery monitoring) BG 8/29
- mechanical
  - Screw in one-way valve / vent EJ 9/18
  - Needs extra chain
  - extend buoy vane EJ
  - Add weight under buoy (Lith vs Alkaline)
- real-time add internal\_pressure real-time variable BG 8/29

- Needs burn-in
  - o Internal data review
  - Clear microSD data using PC400 BG 9/24
  - Double check SNs, update [WFIP SN link]
- Sensors
  - Spot tracker new batteries?
  - Wind Monitor
    - troubleshoot wind speed issues. 2Hz loop() may fix this, or may need compass board replacement.
    - Needs RMY Prop it is missing! EH 9/24
    - Double check that wind monitor shield wire is grounded to REF2 BG 9/16 Grounded shield wire to REF2
  - o SR30
    - troubleshoot intermittent NaNs. SerialFlush() code may resolve this issue
    - SR30 splice new cable (borrowed for Sentinel 6 9/23) EH 9/24
  - SBE37
    - recover internal data and upload to buoy5
    - check batteries and configuration.
    - Re-install, start

- o PRC
  - recover internal data and upload to buoy5 AL 9/18
  - check batteries and configuration.
  - Re-install, start
- battery chassis
  - install new Lithium batteries EJ 9/18
  - o add additional terminals to busbar 9/18
  - o install new dessicants 9/18
  - drill plates 9/18
  - install battery chassis inside well 9/18
- electronic chassis
  - update CR6 code
    - Implement Wind Monitor 2Hz fix BG 9/16
    - Implement SR30 SerialFlush() fix BG 9/16
    - replace voltage divider code with CH200 BG 9/16
    - update CR6 code to log and telemeter BMP390 pressure sensor BG 9/16
  - o remove DC converter BG 9/10
  - o recover internal CR6 data, upload to buoy5 BG 9/12
  - update SIO4A firmware to latest version (Jan.2024) BG 9/16
  - mount CH200, remove voltage divider, connect to CR6 BG 9/10 waiting for Digikey connectors 9/13 BG 9/16
  - take 360 set of photos and upload to buoy5 prior to installation in well BG 9/16
  - o Install BMP390 internal pressure sensor (Lithium battery monitoring) BG 9/10
- mechanical
  - extend buoy vane EJ 9/24
  - Screw in one-way valve / vent 9/18 EJ
  - Needs extra chain
  - Add weight under buoy (Lith vs Alkaline)
- real-time add CH200 load mA and internal pressure real-time variables BG 9/16

## **BG EVERYTHING BELOW HERE IS OLD**

Sentinel 3 - Deployment scheduled for Sept.10

## Needs burn-in

- telemetry test BG 8/27 new variables load mA and internal pressure; works
- Internal data review (Austin)
- o Clear microSD data using PC400 9/10 EH via PC400
- Double check SNs, update [WFIP SN link]
- Sensors
  - R3-50 arrived, in lab SN#243201
    - splice R3-50 cable onto Dragonfish MCIL8M BG 8/26, still needs self-vulcanizing and electrical tape EH
    - program R3-50 with Sentinel 10Hz settings BG 8/27

■ Replace RM81000 mounting clamps with R3-50 clamps - getting powder coated

### Wind Monitor

- troubleshoot wind speed issues. 2Hz loop() may fix this, or may need compass board replacement. BG 8/27 RMY works fine on bench after updating CR6 code
- Double check that wind monitor shield wire is grounded to REF2 BG 8/27 added ferrules, heat shrinked shield wire, connected to REF2.
- SR30 troubleshoot intermittent NaNs. SerialFlush() code may resolve this issue
  BG 8/27 SR30 working on bench, firmware fix seems to have resolved this

#### → SBE37

- recover internal data and upload to buoy5
- **■** check batteries and configuration.
- Re-install, start

### → PRC

- recover internal data and upload to buoy5
- check batteries and configuration.
- Re-install, start
- PTB110 troubleshoot sensor failure starting July 21 BG 8/27 PTB110 is working on bench, no issues with cable

## battery chassis

- install new Lithium batteries
- add additional terminals to busbar
- install new dessicants
- drill plates
- install battery chassis inside well
- electronic chassis
  - - Replace RMY81000 code with R3-50 BG 8/20
    - Implement Wind Monitor 2Hz fix BG 8/20
    - Implement SR30 SerialFlush() fix BG 8/20
    - replace voltage divider code with CH200 BG 8/20
    - update CR6 code to log and telemeter BMP280 pressure sensor BG 8/20
  - o remove DC converter BG 8/20
  - recover internal CR6 data, upload to buoy5 AL 8/20
  - mount CH200, remove voltage divider, connect to CR6 BG 8/20
  - update SIO4A firmware to latest version (Jan.2024) do before sealing well; see
    April 17 email w/ instructions
  - take 360 set of photos and upload to buoy5 prior to installation in well
  - o Install BMP390 internal pressure sensor (Lithium battery monitoring) BG 8/26

## mechanical

- o extend buoy vane EJ
- Screw in one-way valve / vent EJ
- Needs extra chain

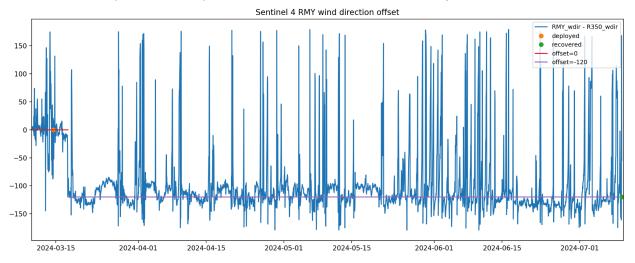
- Add weight under buoy (Lith vs Alkaline)
- real-time add CH200 load\_mA and internal\_pressure real-time variables BG 8/22

#### Sentinel 1

- Needs burn-in. Burnin started 8/24.
- Sensors
  - troubleshoot R3-50; failed for unknown reason July 12th BG 8/14 recommend sending R3-50 to PP systems for repair. Faulty R3-50 replaced with spare ASTRAL R3-50.
  - SR30 troubleshoot intermittent NaNs. Sentinel 1 already has SerialFlush() fix.
    Possible cable issue. BG unable to recreate SR30 problem, sensor works fine on lab bench, cable is in good condition.
  - o SBE37
    - recover internal data and upload to buoy5
    - check batteries and configuration.
    - Re-install, start
  - o PRC
    - recover internal data and upload to buoy5 [Austin]
    - check batteries and configuration.
    - Re-install, start
- battery chassis
  - drill plates EJ
  - add additional terminals to busbar EJ
  - install new Lithium batteries on chassis EJ
  - o install new dessicants EH
  - o install battery chassis EH
- electronic chassis
  - - replace voltage divider code with CH200 BG 8/8
    - update CR6 code to log and telemeter BMP280 pressure sensor BG 8/19
  - recover internal CR6 data, upload to buoy5 BG 8/8
  - mount CH200, remove voltage divider, connect to CR6 BG 8/8
  - take 360 set of photos and upload to buoy5 prior to installation in well BG 8/19
  - Install BMP280 internal pressure sensor (Lithium battery monitoring) BG 8/19
- mechanical
  - extend buoy vane EJ
  - Screw in one-way valve / vent EJ
  - add weight
- real-time add CH200 load\_mA and internal\_pressure real-time variables BG 8/22

- Needs burn-in burnin started Aug.20
- electronic chassis
  - o remove DC converter BG 7/11

- mount CH200, remove voltage divider, connect to CR6 BG 7/11
- SIO4A firmware update x4 ports KT 7/16
- Take 360 set of photos and upload to buoy5 prior to installation in well BG 8/19
  - Install BMP390 internal pressure sensor (Lithium battery monitoring) BG 8/19
- CR6
  - RMY Wind Monitor 2Hz fix BG 7/16
  - o SR30 SerialFlush() fix BG 7/16
  - CH200 SDI12() code BG 7/11
  - upload internal data (CR6,PRC,SBE37) to buoy5- AL 7/16
  - update CR6 code to log and telemeter BMP280 pressure sensor BG 8/19
- battery chassis
  - install new Lithium batteries
    - add additional terminals to busbar EJ 8/13
    - need plates EJ 8/12
  - dessicants EH
  - o install battery chassis EH 8/20
- sensors
  - Needs R3-50 EH 8/19
  - Troubleshoot RMY Wind Monitor wdir and compass flat-lined 8/21
  - SBE37
    - recover data, upload to buoy5, check sensor health EH 7/22
    - restart
  - o PRC
    - recover internal data and upload to buoy5 [Austin]
    - check batteries and configuration.
    - Re-install, start
  - connect RMY Wind Monitor earth ground to RMY32500 GND2 EH 7/22
  - troubleshoot RMY05106 wind direction offset. 120° offset started March 17 (a few days after deployment). Did sensor rotate on mounting pole?



- mechanical
  - extend buoy vane EJ

- Screw in one-way valve / vent EJ
- add weight
- real time add CH200 load mA and internal pressure real time variables BG 8/21

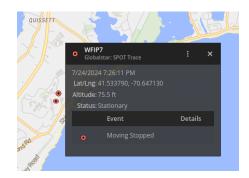
## **BG EVERYTHING BELOW HERE IS OLD**

#### Lidar

- fix Airmar. Lidar wind direction offset BG 8/12
- forward data to DOE DAP BG/AL/EC 8/22

# Lidar Buoy - deployed Aug.2

- Test ssh remote connect capability BG 7/24
- Test remote SBG reset BG 7/24
- Test wiper/pump functionality BG/RG 7/24
- Clear / Format ZX internal memory BG 7/31
- Spot Tracker
  - o install RG
  - o confirm working, record SN BG 7/25 SN:0-4466660
  - add to real-time website BG 7/29
- Assess ZX300 Lidar data storage capacity. upload data to buoy5
- tighten guy-wires RG
- test Xeos Kilo (previously tested April, 2024) RG/BG 7/25



- Resume Sentinel 1 data upload to DOE BG 6/10
- need to correct tower-top alignment BG 6/03
- review internal data
  - SR30 performance after flush() command and firmware update AL 5/30
  - RMY wind performance after 2Hz update AL 5/31
  - confirm SBG reset works (remote command sent 4/17 20:05)
  - upload internal data to buoy5 from deployment February 8 March 14 BG 5/23
- RMY Wind Monitor wind speed issue reports wind speeds much lower than expected
- SIO4A needs Jan.2024 firmware update (ports 1 and 2)
- Needs a Sonic
  - o record serial number SN# 232901
  - o configure 10Hz output, ASCII 115200 BAUD w/ sonic temp, etc.. BG 5/23
  - Mount Sonic Sentinel 1 Sonic is currently in UOP lab (needed to be configured)
  - complete sonic cable splice, test cable BG complete 5/24
- take photos of electronic chassis

- place outside (targeting Friday afternoon) AK/BG outside 5/31
- confirm alignment of wind sensors and compass box BG 6/3
- confirm health of WXT wind sensor (currently blank because SBG needs view of sky) BG
  6/3
- confirm serial numbers, RMY wind monitor swap? KT/BG 5/30
- Confirm ASIMET PRC, SBE37, Globalstar SPOT tracker are installed
- Prepare for transit to dock

  - Remove buoy from stand with highbay crane, fork lift outside for Walter DT,AK,BG
  - Ersen's install padeye/hardware EJ 6/3
- Add chain/ weight to buoy
- ◆ SBE37
  - download SeaTerm version 2 (important)
  - RS232 vs RS485? baud rate? RS232 9600 baud
  - Sync time, sampling rate confirm, confirm internal battery voltage BG sampling every 60 seconds, battery voltage is 10.7V; fresh = 3x3.6V lith = 10.8V
  - → replace SBE37 internal batteries BG 06/03
  - get capture file for configuration BG 06/03
  - recover data from Feb.8 March 14 deployment BG 06/03
  - → Start deployment BG 06/03
- Confirm Globalstar functioning Sentinel 1 #0-4466889 KT

- review internal data
  - download recent internal data; last download was March, 2024 AL m
  - SR30 performance after flush() command and firmware update AL
  - RMY wind performance after 2Hz update AL 5/31
  - confirm SBG reset works (remote command sent 5/30 15:46)
- electronic chassis photos BG
- confirm alignment of wind sensors and compass box; compass ~7 degrees off from SBG
  BG 6/5 realigned Gill, RMY wind monitor. Check real-time after moving outside
  - RMY 32500 compass calibration (highbay) BG 6/18
  - Wind sensor alignment BG 7/1
- confirm serial numbers; RMY wind monitor swap? KT/BG 5/30
- upload internal data to buoy5 from deployment F bnb b ebruary 8 March 14
- Confirm ASIMET PRC, SBE37, Globalstar SPOT tracker are installed
  - Sentinel 5 tower will be moved to Sentinel 6 buoy, so we actually need to confirm that SBE37 is installed on Sentinel 6 buoy BG installed 5/30
- Troubleshoot Gill R3-50 issue; it has been working fine for the last month. Nothing obvious has changed CR6 code is same, same sensor, same cable. New batteries 17V+ causing an issue? BC 06/01 tried switching with SIO R3-50, still issues. Will need to access electronic chassis on Monday to troubleshoot further. BG 6/05 added DCDC converter, replaced 3x desiccant, reinstalled electronic chassis, reinstalled towertop

- If voltage drops below 16.7V during burnin:
  - o physically remove DC-DC converter on electronic chassis BG 6/18
- Swap Sentinel 5 towertop and electronic chassis with Sentinel 6 BG/EJ 5/31
- Move Sentinel 5 outside JS/BG 6/10 RG 6/18
- Sentinel 5 buoy mechanical
  - Install Pad eye
  - Install buoy vane EJ
  - o Install Lithium batteries? no
  - Install lifting bales and handles on Sentinel 5 tower stand BG 6/1 2.5" hardware for big handles, 2" for small handles
  - Order 8x anodes from Stockroom and install BG 5/31
  - Add handle looking hardware under Sentinel 5 buoy BG 6/1

#### SBE37

- download SeaTerm version 2 (important)
- RS232 vs RS485? baud rate? BG 6/4 RS232 9600
- Sync time, sampling rate confirm, confirm internal battery voltage BG 6/4
- recover data from Feb.8 March 14 deployment BG 6/4 downloaded via serial cable, uploaded to buoy5
- Start deployment BG 6/4
- Connect to SBE37 and double check configuration, sync, start time BG 6/18
- sync/start SBE37, reinstall EH 7.8
- upload configuration to buoy5
- Attach "If found adrift contact WHO!" decal to Sentinel 5 buoy foam; previously Sentinel6
  EJ 6/12
- Confirm Globalstar functioning Sentinel 5 # 0-4465675 BG 6/10

- SBE37 SN#6375 located on WFIP "Sentinel#3" rack
  - install fresh batteries
  - configure clear memory, sampling rate, sync time, start
  - upload configuration to buoy5
  - install on Sentinel 6
- Install shortwave on tower located on WFIP "Sentinel#6" rack EJ
- Compass / PTB enclosure
  - use jig to drill gland holes BG 5/24
  - replace existing green compass board with one of the new RMY compass boards
  - o install glands. BG 5/24 used DC734 sealant on gland threads
  - RMY32500 calibration compass spin using highbay crane EH/BG 6/26
  - locate / splice new cable (subconn 5pin) for this enclosure BG 6/25
  - install on Sentinel 6 towertop BG 6/25
- Test new Iridium modem (installed). Previous modem would run for a day or two and then stop BG 7/1
- Needs a Sonic in lab next to "Sentinel#6" rack, on loan from Luc Lenain SIO
  - record serial number [WFIP SN Google Doc] BG 7/8
  - R3-50 mounting clamps?

- Ersens to send in 1 set of R3-50 mounting clamps, add neoprene
- **■** Emerson to paint other set for Sentinel 6, add neoprene
- upload configuration to buoy5 BG TODO
- o configure 10Hz output, ASCII 115200 BAUD w/ sonic temp, etc.. BG 6/04
- mount on towertop
- o R3-50 cable splice EJ 6/26, BG tested 6/27
- order another R3-50 cable for hop-scotching buoys this summer. Otherwise,
  need to pull existing cable off buoys
- ASIMET PRC#216 located on "Sentinel#4" rack
  - install fresh batteries
  - clear memory, sync, start sensor
  - upload configuration to buoy5
  - mount PRC and battery on buoy tower EJ 6/26
- confirm Globalstar SPOT tracker functioning note that it will not transmit if stationary for a long period of time BG 7/8
- take photos of electronic chassis, upload to buoy5 BG 6/27
- place outside and continue burn-in once above tasks are complete
- confirm alignment of wind sensors and compass box
- SIO4A needs Jan.2024 firmware update (all ports 1-4) KT 6/26
- Sentinel 6 buoy mechanical
  - Install Pad eve
  - - order mechanical parts for Lithium battery build
  - → Install buoy vane EJ 7/1
  - Add chain/ weight to buoy

## **BG EVERYTHING BELOW HERE IS OLD**

## Sentinel Buoy

- Sentinel assembly
  - Buoy stands arrived
  - Buoys arrived.
  - Chassis parts arrived
  - Assemble 6x Sentinel buoy towers Ray
    - gaskets arrived
    - tower hardware
  - tie rods
  - Paint buoy
  - 50x U channel Ersen's ordered, arriving Dec.22
- Battery chassis
  - 60x batteries arrived
  - remaining parts
    - rubber bumper

- bottom plate
- rubber dividers (every other)
- standoffs
- assembly 6x battery chassis
- o mount bus-bars EH
- Electronic chassis assembly
  - mounting strategy for <del>CR6, Serial Expander, Fuseboard, SBG EllipseD</del> EH
  - o assemble
  - mount electronic chassis to well plate lid
  - mount bulkheads TODO drill 2x larger threaded holes for Scorpion bulkheads
  - Wire bulkheads to fuseboard
  - Wire fuseboard to CR6
  - o Need CH200 cables campbellsci.com #20769 \$50 x 6
  - ← CH200 mount
  - DC-DC converter after CH200, before Fuse board
    - PCB
    - order converters from Digikey
    - mount, install DC DC converters
    - need current, voltage measuring device to replace CH200
  - Solder fuse board components
- CR6
  - splice Comms bulkhead to Ethernet RJ45 to plug into CR6
  - WFIP Sentinel CR6 code
  - Sampling rate for IMU, Sonics? 5Hz vs 10Hz
  - estimate for CR6 MB/day [Ben]
  - order 7x microSD (sanDisk 64GB Industrial)
    BG ordered Dec.18, arrive Dec.21
- SBG Ellipse D
  - IMUs x6 arrived, antennas x14 arrived, scorpion cables, bulkheads arrived
  - Antenna mounts 3d printed. Ersen'S assemble and install
  - Test, quantify heading accuracy given Halo diameter Ben
  - configure IMUs. Need antenna offsets
  - order IMU to bulkhead adapter [mmex to SMA] [Ben]
  - SBG to Fuse board cable BG arrived.
  - order SBG spare Austin
- Vaisala WXT536
  - WXT x3 arrived and configured.
  - Order missing WXT cable [Ben]
  - splice WXT536 cable to MCIL5M
  - WXT536 cable to M12 vs cable straight into WXT EH
  - mounting solution Ersen'S 3D print pole mount
  - order WXT weatherproofing epoxy EH
  - weatherproof WXTs EH
- Rotronic HC2A



- HC2A x6 arrived, radiation shield x6 arrived.
- splice HC2A cable to MCIL5M
- Ersen'S mount submitted. Arrive Dec.22
- RMY Wind Monitor 05106 + Compass 32500
  - Wind Monitor x6 and Compass x6 arrived.
  - Install ASIMET custom rotor / bearings? Jason: no, 05106 uses different size, 05106 bearings are acceptable
  - cable splice MCIL5M [need 6x cable, bulkheads from Dragonfish]
  - Plugs for unused 32500 cable glands [Ray]
  - pole mount [Ersen'S]
  - order Campbell enclosures for compass boards EH
- Gill R3-50
  - Waiting for R3-50 to arrive. 3x R3-50s w/ cables arrived.
  - 2.25" mounting clamp [Ersen'S]
  - ◆ TODO splice MCBH8 to R3-50 cable
  - TODO configure sensors
  - measure offsets from IMU
  - TODO document configuration procedure to change baud rate
- RMY-81000
  - Determine sampling rate: 4,5,8,10,16,20,32Hz
  - 3" mounting clamp [Ersen'S]
  - BG endcap 1x on hand, order remaining 2x
  - Order MCBH8M for endcap. using 3x Face seal on hand
  - 8 pin M/F Subconn cable RMY 81000 boot/endcap to MCBH8F well bulkhead
  - TODO configure sensors
  - purchased Pelican 1606. TODO order 2x more
  - measure offsets from IMU
- PTB110
  - PTB110 x6 and ENC100 x6 arrived
  - install inside ENC100
  - TODO CR6 code for analog PTB110
  - Mount [Ersen'S]
  - splice PTB110 cable to MCIL5M
- Hukseflux IR20 and SR30
  - IR20 x6 arrived. SR30 x6 arrived, configured.
  - dual Hukseflux mount Ersen's
  - splice SR30 cable to MCIL5M
  - splice IR20 cable to MCIL8M

- Iridium Edge SBD modem
  - 1x arrived Order remaining 5x (BG arrived 9/14)
  - provision 5x modems [Ben]
  - mount [Ersen'S]
  - test modems with existing Taoglas CR6 code
  - splice modem cable to MCIL5M