



**North Slope of Alaska ARM Facilities**  
**Monthly Status Update**  
**Sandia National Labs**

**May 2019**

**Contacts:**

Mark Ivey  
(North Slope)  
[mdivey@sandia.gov](mailto:mdivey@sandia.gov)  
505-284-9092

Fred Helsel  
(Barrow/AMF3)  
[fmhelse@sandia.gov](mailto:fmhelse@sandia.gov)  
505-284-3620

Dari Dexheimer  
(Tethered Balloon Systems)  
[ddexhei@sandia.gov](mailto:ddexhei@sandia.gov)  
505-844-7685

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## 1 North Slope Facilities Management Executive Summary

This monthly report is intended to communicate the status of North Slope ARM facilities managed by Sandia National Labs.

### Operations Team

- \* Mark Ivey- ARM Alaska Sites Manager (SNL)
- \* Fred Helsel- Barrow and AMF3 Site Manager (SNL)
- \* Darielle Dexheimer- Tethered Balloon Operations (SNL)
- \* Valerie Sparks- ARM Project Office (SNL)
- \* Martin Stuefer- Rapid Response Team (UAF)
- \* Randy Peppler- ARM DQ Office Manager (OU)

## 2 Budget

FY2019 Financials (as of May 31, 2019)

	May	YTD
Carryover funds	\$4,850,599	
Funds Allocated YTD	\$7,250,000	
Carryover plus YTD funds	\$12,100,599	
Cost, burdened amount	\$4,936,109	
Uncosted Funds	\$7,164,490	
Commits, burdened total	\$1,722,471	
Current fiscal year uncommitted funds	\$5,442,019	
Subsequent fiscal year (SFY) commits	\$596,896	
Total uncommitted funds, including SFY commits	\$4,845,123	
Fully Burdened Staff Costs	\$474,000	\$2,761,000
Fully Burdened Contract Costs	\$384,000	\$2,175,000
Fully Burdened Total Costs	\$858,000	\$4,936,000

### **3 Summary of Current Management Issues**

#### **Management summary of current issues for May**

1. We were able to place a contract and get necessary permits to have geotechnical test wells drilled at the location at the Barrow/UTQ facility where the deck extension will be installed. The wells were drilled week of May 27. Sally was able to sign the BLM form that formally requests permission from BLM to modify that deck (we are on a BLM right-of-way and also require NOAA and USGS approvals).
2. NOAA has been clearing hurdles and proceeding with the early stages of work associated with installation of a new NOAA Observatory in Barrow/UTQ. Pilings for the new building and deck were installed in May.
3. Dari and team flew tethered balloons and instruments at SGP in early May and Oliktok later in the month (see tethered balloon operations below).
4. Lori Parrott took a small group, including our department safety coordinator, to Barrow/UTQ and Oliktok. The safety coordinator generated a short list of items at both sites that need modifications or repair.
5. Todd Houchens headed to Oliktok and Barrow/UTQ at the end of May. He will start up the Raman Lidar at Oliktok and work on radars at both facilities.
6. Mark Ivey and Joe Hardesty attended the annual NOAA Global Monitoring Division meeting in Boulder May 20-22. They also attended a meeting with representatives of BLM, NOAA, and USGS to talk about land use issues and their observatories in Barrow/UTQ.
7. UAF is hiring Ross Burgener, former tech at the NOAA observatory, as a part time field tech. Ross and the new hire for UIC Science, Richard Huddell, will train with Walter Brower before he retires at the end of June 2019. Walter is moving to Arizona after many winters in Barrow.

### **4 Safety**

**AMF3- No incident/Injury**

**Barrow - No Incident/Injury**

## 5 Tethered Balloon Operations

### TBS Report for May 2019

#### SGP:

The TBS concluded its first deployment to SGP on 5/2/19. Seventeen hours of flights were conducted at altitudes up to 1 km AGL. A flight with a prototype of the BTEM instrument, which will operate on the TBS during an IOP in July, was successfully flown. Overall, the first TBS deployment was very successful, and much was learned about what equipment will be needed to operate TBS at SGP.

One challenge occurred during the last two potential flight days. The flight on 5/1/19 was cut short after a crop duster passed very close to the tether while the TBS was flying. The crop duster returned on 5/2, and repeatedly overflew the TBS while it was preparing to launch. The decision was made not to operate the TBS after consulting with SGP site staff and Sandia Org 8863 management. After the campaign the SGP Site Safety Officer spoke with the crop duster regarding TBS operations, and was advised that the pilot does not expect to return to the area for five years. Sandia TBS staff spoke with the FAA regarding obtaining a Temporary Flight Restriction (TFR) for future TBS SGP operations, and was advised that TFRs are not issued for moored balloon operations. Sandia and SGP site staff are working together to notify local crop dusting operators prior to planned TBS activities at SGP in July. The TBS will also be operated with high-visibility white and red LED aviation lights at SGP in the future.



Figure 1 & 2: BTEM prototype on TBS on 7/1/19 and crop duster overflying TBS launch site on 5/2/19.

### AMF3:

Twenty-one hours of TBS flights were conducted at Oliktok Point between 5/12 and 5/20/19. Flights were conducted up to 1.25 km AGL and within supercooled liquid water clouds. Two flight cases were conducted during inversions of 11 °C over 100 m, with particle count disparities of over 500 particles/s between the POPS operated below the cloud and inversion and the POPS above.



*Figure 3: Balloon tether disappearing into cloud base around 60 m on 5/15/19.*

The TBS team is currently refitting one winch trailer with a 5 HP motor solution which will allow the TBS to be operated in higher wind speeds than is currently possible. Based on testing performed to better understand the losses in our system, we can currently continuously pull  $\sim 300$  lb at worst case scenario (balloon near the ground) without exceeding the rated continuous current draw of the 2 HP motor. The motor can operate at a higher current, but it is not recommended by the manufacturer for extended periods of time. While calculating and accounting for the same mechanical losses and the efficiency of the new 5 HP motor, we calculated it should be able to continuously pull  $\sim 1100$  lb of force when the balloon is close to the ground. Meaning, a 366% higher pulling capacity compared to the old 2 HP motor.

In addition to changing the motor, we are also replacing the gearbox with a 75:1 vs the previous 60:1. This allows us to increase our pulling power by 20% to 1100 lb over 882 lb. However, this increase in pulling capability comes at a cost of linear speed. Assuming an 8.4" drum diameter (this changes as tether is let in and out) the 60:1 would provide a maximum speed of 0.67 m/s whereas the 75:1 provides a maximum speed of 0.54 m/s. This correlates to a decrease of 20% in speed with a 20% increase in pulling force.

An additional added benefit of this motor is it is variable speed, which will allow us to control the ascent and descent rate of the TBS. The variable speed motor will also be easier on the instruments by reducing the amount of jarring. This is done by using settings on the motor controller that will ramp motor speed upon starting and stopping.

The last upgrade to the new system is a larger brake. As we are moving to a larger C-frame motor we are also able to install a 95 ft-lb brake on the motor, which equates to a holding force of approximately 6,000 lbs.

## **TBS Datastreams**

- 1) tbsimetxq2
  - Proceeding under INST01268 for SGP and INST01282 for OLI. Ingest 85% complete.
- 2) tbswind
  - Proceeding under INST01269 for SGP and INST01281 for OLI. Ingest 100% complete.
- 3) tbsimet
  - Proceeding under INST01267 for SGP and INST01283 for OLI. Ingest 91% complete.
- 4) tbsslwc
  - Work to create a b-level SLWC datastream is proceeding under ENG0004130 which was created on 5/21/19.
- 5) tbsdts
  - Data for April SGP and May AMF3 TBS campaigns have been uploaded to OME.
- 6) tbsground
  - Data are being collected under INST01272. Data flow is 66% enabled.
- 7) tbspops
  - CPC and POPS data have been collected under INST01271 at SGP and INST01279 at OLI. Fan Mei has provided the processed data files for the April SGP and May AMF3 TBS campaigns to OME.

## **TBS ENGs & EWOs**

- 1) The highboy shelter is being setup in the northwest corner of 50Pad at SGP. As of 5/29/19, the blocks are set and the feet are attached to the blocks but inclement weather has delayed further work. Work is expected to resume on the installation the week of 6/10.

## 6 North Slope Facilities

### AMF3

#### Current and Upcoming Site Visits

Ben Bishop	May 30 – June 5	RL startup and turbine maintenance
Todd Houchens	May 30 – June 1	RL startup and radar work

#### Current and Upcoming Field Campaigns/FCs

[AFC06968](#) - MACAWS Receiver Site (Pre-Campaign)

#### Site News

NA

#### Site and Safety Issues

NA

#### Unmet Needs

Joe Nava, who provided firearms/bear training to NSA Operations for 18 years, retired this past year. Valerie and Fred are looking for a new company to provide training for 2019 and subsequent years. They have submitted a purchase order for bidding and quotes.

#### Site Changes/Upgrades

Sandia National Laboratories ES&H coordinator and management toured the site on May 14th.

The Spine Road at the Kuparuk River was closed May 19 – 27 due to flooding from spring ice breakup, which was about three weeks early this year. Road closure limits access to AMF3.

#### Site Staffing

NA

### Barrow

#### Current and Upcoming Site Visits

Phillip Wilson, Emilia Mayo/UAF	May 12-June 18	Seasonal Evolution of Land and Sea Ice Albedo
Todd Houchens	June 1 – 3	Site Tour with Sandia IH, ES&H and others
Fred Helsel	June 3 - 9	Site Tour with Sandia IH, ES&H and others

**Current and Upcoming Field Campaigns/FCs**

Rival - Sonde RS92 RS41 comparison. (Donna Holdridge)

SNPP/NPOESS Ground Truth Sonde Launch, Phase 5 – Started Oct 1, 2016

Seismic Probes for NSF– POP Ends, Oct 31, 2018

Global Navigation Satellite System (GNSS) – Started July 2017

[AFC06937](#) - How Snow Drives the Seasonal Evolution of Land and Sea Surface Albedos in the Alaskan High Arctic (Pre-Campaign) starts April 11, 2019 Matt Strum

[AFC06948](#) - Arctic Aerosol Sources & Mixing States (Pre-Campaign) ARM duplex being used. OCT 28, 2018 – DEC 20, 2018

[AFC06964](#) - BEAR-oNS (Pre-Campaign)

[AFC06942](#) - Arctic Observing eXperiment 2018

[AFC06916](#) - ARM Radiosondes for SNPP/JPSS Validation

Seasonal Evolution of Land and Sea Ice Albedo. starts April 11, 2019 Matt Strum

**Site News**

NA

**Site and Safety Issues**

NA

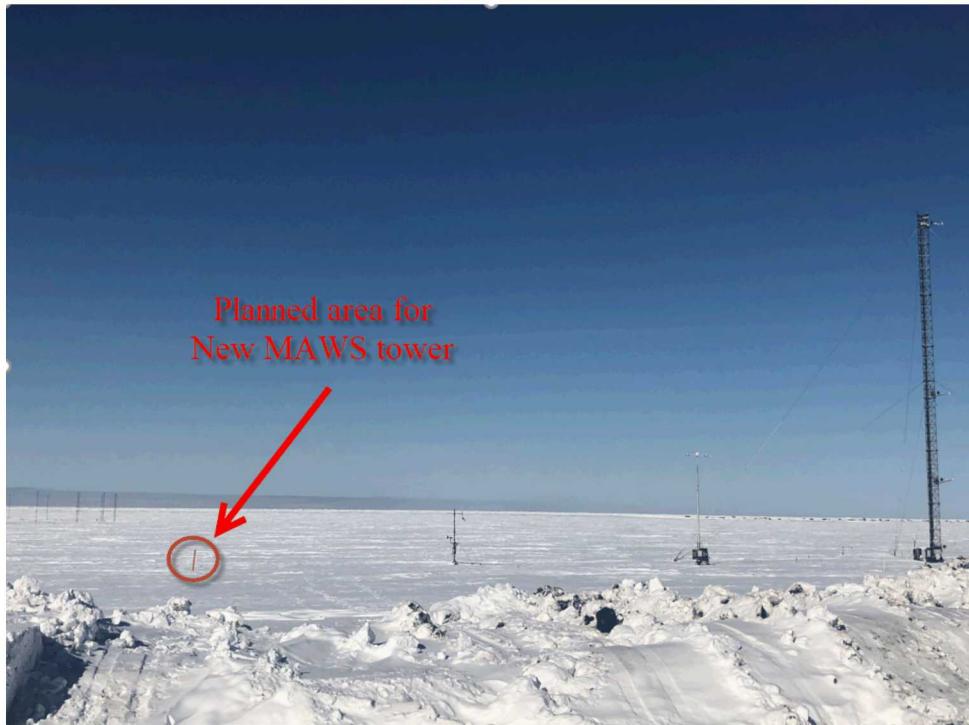
**Unmet Needs**

Joe Nava, who provided firearms/bear training to NSA Operations for 18 years, retired this past year. Valerie and Fred are looking for a new company to provide training for 2019 and subsequent years. They have submitted a purchase order for bidding and quotes.

**Site Changes/Upgrades**

Sandia National Laboratories ES&H coordinator and management toured site on May 15<sup>th</sup>.

MAWS tower assembly was delayed till June due to the tundra still being covered by snow.



*Planned area for the new MAWS tower to be installed the Summer of 2019.*

Two test holes were drilled for a Geotechnical investigation, to determine if there are zones of unfrozen soil between the base of the active layer and the underlying bonded permafrost. This is a requirement before we can start construction on the deck extension, which will support the Raman Lidar Shelter coming over from AMF3 to NSA. It was a mad rush to get a contract and permitting done before the snow on the tundra melted and access wouldn't be allowed.





### **Site Staffing Issues**

NA

*Appendices: Instrument Status – Provided by Martin Stuefer and Telayna Gordon*

**- Appendix A: AMF3**

INFORMAL AMF3 INSTRUMENT STATUS REPORT FOR May 24 - May 31, 2019  
BRIEF STATUS OF INSTRUMENTS AND SITE IN OLIKTOK AS OF 2019/05/31:

Facilities	Operational
Data Systems	Operational
Vehicles	Operational
Desktop Computers	Operational
SKYRAD - SKY Radiometer on Stand for downwelling	Operational
MFRSR - Multifilter Rotating Shadowband Radiometer	Operational
GNDRAD - Ground Radiometer on Stand for Upwelling	Operational
MFR2.5m - Multifilter Radiometer at 2.5m height	Operational
MAWS - Automatic Weather Station	Operational
MET - Surface & Tower Meteorological Instruments	Operational
CMH - Chilled Mirror Hygrometer	Operational
AMC - Soil, up/downwelling radiation measurements	Operational
ECOR - Eddy Correlation Flux System	Operational
MWR3C - Three Channel Microwave Radiometer	Operational
MPL - Micropulse Lidar	Operational
DL - Doppler Lidar	Operational
RL - Raman Lidar	Not Operational
CEIL - Vaisala Ceilometer	Operational
KAZR - Ka ARM Zenith Radar	Operational as per warno.arm.gov
BBSS - Balloon Borne Sounding System	Operational
TSI - Total Sky Imager	Operational
AOS - Aerosol Observing System	Partly Operational
AOSMET - AOS Meteorological Measurements	Operational
CO - AOS Carbon Monoxide Analyzer	Operational
CPC - Condensation Particle Counter	Operational
CAPS - Cavity Attenuated Phase Shift Extinction Monitor	Not Operational
ACSM - Aerosol Chemical Speciation Monitor	Not Operational
HTD-MA - Humidified Tandem Differential Mobility Analyzer	Not Operational
GHG - PICARRO	Operational
NEPH - Nephelometer	Operational
PSAP - Particle Soot Absorption Photometer	Operational
UHSAS - Ultra-High Sensitivity Aerosol Spectrometer	Operational
IMPACTOR - AOS Impactor	Operational
OZONE - AOS Ozone	Operational
CCN - Cloud Condensation Nuclei Particle Counter	Not Operational
LPM - Laser Precipitation Monitor	Operational
GEONOR - Geonor Weighing Gauge	Operational
SRS - Snow Depth Sensor	Operational
AERI - Atmospheric Emitted Radiance Interferometer	Operational
CIMEL - Cimel Sunphotometer	Operational
IRT - Infrared Thermometer	Operational
MET-AIR - DataHawk Unmanned Aerial System	Operational
TBS - Tethered Balloon System	Operational

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\* Oliktok Instruments in Detail: \*

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INFRASTRUCTURE --- Facilities --- Operational.

2019/05/26, CM-2019-AMF3-VSN-2910: Upon arrival to the site, ops heard a low battery chirp from a smoke detector in AE3. The battery was replaced and the smoke detector returned to service.

INFRASTRUCTURE --- Data Systems --- Operational.

2019/05/30, CM-2019-AMF3-VSN-2914: HDD S/N NA7JSC4G was filled and replaced with HDD S/N NA77YRDE at 15:10 UTC. Ops will ship HDD S/N NA7JSC4G via USPS tracking # 9114 9014 9645 0852 3629 37.

2019/05/27, CM-2019-AMF3-VSN-2911: HDD S/N NA7Q2CRB was filled and replaced with HDD S/N NA7JSC4G between 15:30 and 15:35 UTC. Ops will ship HDD S/N NA7Q2CRB via USPS tracking # 9114 9014 9645 0852 3629 37.

2019/05/24, CM-2019-AMF3-VSN-2909: HDD S/N NA75FDD5 was filled and replaced with HDD S/N NA7Q2CRB between 15:05 and 15:10 UTC. Ops will ship HDD S/N NA75FDD5 via USPS tracking # 9114 9014 9645 0852 3629 06.

INFRASTRUCTURE --- Vehicles --- Operational.

INFRASTRUCTURE --- Desktop Computers --- Operational.

SKYRAD --- SKYRAD general --- Operational.

2018/12/07, DQPR-7342: Visual checks of the global horizontal PSP should be made starting at about September 15, 2019, when skies are clear enough, to see if there is any shadowing from about 1 to 2 UTC. The most recent DQPR status is "waiting - for site visit."

SKYRAD --- PIR 1 shaded --- Operational.

SKYRAD --- PIR 2 shaded --- Operational.

SKYRAD --- SOLAR Tracker --- Operational.

SKYRAD --- B&W diffuse --- Operational.

SKYRAD --- NIP --- Operational.

SKYRAD --- PSPg --- Operational.

SKYRAD --- MFRSR --- Operational.

TIPTWR --- GNDRAD general --- Operational.

TIPTWR --- MFR2.5m --- Operational.

TIPTWR --- PIRgnd --- Operational.

TIPTWR --- PSPgnd --- Operational.

MAWS --- Automatic Weather Station --- Operational.

MET --- METTOWER general --- Operational.

MET --- CMH --- Operational.

MET --- Barometer --- Operational.

MET --- TEMPERATURE / HUMIDITY --- Operational.

MET --- WIND INSTRUMENTS (SONIC) --- Operational.

MET --- PWD --- Operational.

MET --- AMC --- Operational.

ECOR --- ECOR --- Operational.

ECOR --- SEBS --- Operational.

MW RADIOMETERS --- MWR3C --- Operational.

LIDAR --- Micropulse LIDAR --- Operational.

LIDAR --- Doppler LIDAR --- Operational.

LIDAR --- Raman LIDAR --- Not Operational. Shut Down for Winter.

LIDAR --- CEIL --- Operational.

RADAR --- KAZR --- Operational as per warno.arm.gov.

Sonde --- BBSS --- Operational.

2019/05/27, CM-2019-AMF3-VSN-2912: Technicians were unable to launch the 17:30 UTC balloon due to high wind conditions. Winds were >30 mph sustained and gusting >40 mph. Launches will resume when weather conditions permit.

IMG --- TSI --- Operational.

AOS --- General --- Partly Operational, Some Instruments Shut Down.

AOS --- AOSMET --- Operational. Sensor Replacement Pending.

2019/05/15, DQPR-7391: The offset is present in the sensor output. Jenni suspects that this is due to slow degradation of the wind sensing components (we have been seeing this at other sites). Site ops will schedule replacement of the sensor when there are enough staff available to drop the stack. The alignment to north should be checked so that Jenni can verify an accurate offset is entered for the new sensor. The most recent DQPR status is "open - requires action."

2019/05/13, DQPR-7391: Jenni closed the current DQR due to there being no significant icing events recently. However, on 1/23, something caused the wind direction data to change, and the data are no longer agreeing well with the nearby MET and MAWS winds. Jenni would like to leave this DQPR opened until we can identify the cause/solution. Jenni will check the offset values first.

AOS --- CO - Analyzer --- Operational.

AOS --- CPC (CPCU and CPCF) --- Operational.

AOS --- CAPS --- Not Operational. Instrument at Vendor.

2019/02/05, DQPR-5816: The 3W-CAPS (originally staged at OLI) is at the vendor due to hardware issues. As of 2019/02/04, the vendor has identified a long-running problem that has plagued this instrument. The problem is now solved and they will be doing in-house testing this week. The unit will be shipped out to BNL during the following week. Once received, BNL will confirm operation and performance before starting the physical swapping of the 1W-CAPS currently at ENA with this 3W-CAPS (along with the concomitant shipment of the 1W-CAPS to OLI). The most recent DQPR status is "in progress - assignments."

AOS --- ACSM --- Not Operational. Removed from Service for Redeployment to AMF2.

AOS --- HT-DMA --- Not Operational. Instrument Removed for the Winter.

2019/05/31, DQPR-7304: The OLI HT-DMA unit was swapped with the AMF2 HT-DMA, and the AMF2 HT-DMA needs maintenance. Installation will be delayed until the proper operation of this unit has been verified. The most recent DQPR status is "in progress - assignments."

AOS --- GHG-Picarro --- Operational.

2019/05/28, CM-2019-AMF3-VSN-2913: The cooling fan in the Nation control box (S/N 003) had failed. Site ops powered down the instrument and proceeded to replace the failed Nafion box with the new Nation box (S/N 005). After replacement, site ops restored power and restarted the instrument's computer. This replacement took place between 18:10 and 18:25 UTC on 2019/05/28.

AOS --- UHSAS --- Operational.

AOS --- NEPH --- Operational.

AOS --- IMPACTOR --- Operational.

AOS --- Ozone --- Operational.

AOS --- PSAP --- Operational.

2018/11/11, DQPR-7418: Data was not available from 02/25 at 18:03 UTC to 2/26 at 18:39 UTC. DQRs for other instruments at this location indicate that the UPS failed during this time. DQR D181112.1 was assigned to Arthur Sedlacek. The most recent DQPR status is "in progress - assignments."

AOS --- IMPACTOR --- Operational.

AOS --- CCN --- Not Operational. Shipped to OLI.

2019/05/31, DQPR-7136: The instrument was shipped to the site for installation. The most recent DQPR status is "in progress - assignments."

Precip --- LPM --- Operational. Ingest Currently Disabled.

2019/04/05, DQPR-7265: The ingest is now running. DQR D190405.8 was assigned to Jennifer Delamere. The most recent DQPR status is "in progress - assignments."

Precip --- GEONOR --- Operational. Ingest Work in Progress.

2018/11/29, DQPR-7267: The ingest is currently down, so we may want to leave this open until start/end dates/times can be accurately determined. The most recent DQPR status is "in progress - assignments."

Precip --- SRS --- Operational. Ingest Work in Progress.

2018/11/29, DQPR-7266: Ingests are currently down, so we may want to leave this open until start/end dates/times can be accurately determined. The most recent DQPR status is "in progress - assignments."

Other --- AERI --- Operational.

Other --- CIMEL --- Operational, but Having Data Transfer Issues.

2019/05/06, DQPR-7735: After creating a directory of 'PhotoGetData' in ftphome, the mentor was able to retrieve the data from Cimel #1032 around GMT 20:00 on 05/03. The Cimel data are currently retrieved from the

instrument #1032 on an hourly basis. The data will be uploaded to AERonet to be processed manually until the transfer problem of CimelTS\_https\_connect.exe can be solved. SDS are checking into the transfer problem now. The most recent DQPR status is "open - requires action."

2019/05/02, DQPR-7735: The 'CimelTS\_https\_connect' program stopped working on 04/25 around 19:00:00 UTC. This was similar to what happened before. In addition, we are having a problem with downloading the data collected from Cimel318T via 'PhotoGetData'. We could only get one record even though the instrument seems to be working and collecting the data via visual checks. Please see the screenshot of PhotoGetData. This new instrument has bigger data storage, so we are hoping to retrieve the backlog of data later after we solve the connection problem. Ops has tried to reboot the computer, disconnect/reconnect the data cable and restart the software without a success. Since this connection issue is so unusual, Lynn Ma contacted Cimel and AERonet for suggestions. Justin sent a picture of Cimel unit #1032 collecting data at Oliktok on 2019/04/30, and this image is posted on the DQPR page. David Swank was asked to run 'CimelUpdate' on the CIMEL computer to update all necessary software.

Other --- DataHawk Unmanned Aerial System --- Operational. Not a Full Time Instrument.

Other --- IRT --- Operational.

Other --- TBS --- Operational.

## - Appendix B- Barrow

### INFORMAL NSA INSTRUMENT STATUS REPORT FOR May 24 - May 31, 2019 BRIEF STATUS OF INSTRUMENTS AND SITE IN Utqiāġvik (C1) AS OF 2019/05/31:

Facilities	Operational
Data Systems	Operational
Vehicles	Operational
Desktop Computers	Operational
SKYRAD - SKY Radiometer on Stand for Downwelling	Operational
MFRSR - Multifilter Rotating Shadowband Radiometer	Operational
NIMFR - Normal Incidence Multifilter Radiometer	Operational
GNDRAD - Ground Radiometer on Stand for Upwelling	Operational
MFR10m - Multifilter Radiometer at 10m height	Operational
MET - Surface & Tower Meteorological Instruments	Operational
AMC - Soil, Up/Downwelling Radiation Measurements	Operational
ECOR-twr - Eddy Correlation Flux System	Operational
MWR - Microwave Radiometer	Operational
MWRP - Microwave Radiometer Profiler	Operational
MWRHF - Microwave Radiometer High Frequency	Operational
GVR - G-band Vapor Radiometer	Operational
GVRP - G-band Vapor Radiometer Profiler	Operational
HSRL - High Spectral Resolution Lidar	Operational
MPL - Micropulse Lidar	Operational
CEIL - Vaisala Ceilometer	Operational
DL - Doppler LIDAR	Operational
KAZR - Ka ARM Zenith Radar	Operational
KaWSACR - Ka-Band Scanning ARM Cloud Radar	Operational
XSAPR - X-Band Scanning ARM Precipitation Radar	Not Operational
BBSS (Autosonde) - Balloon Borne Sounding System	Operational
AOS - Aerosol Observing System	Operational
CLAP - Continuous Light Absorption Photometer	Operational
CPC - Condensation Particle Counter	Operational
NEPH - Nephelometer	Operational
IMPACTOR - AOS Impactor	Operational
TSI - Total Sky Imager	Operational

TOWERCAM - 40m tower camera	Operational
Great White Camera	Operational
MASC - Multi-angle Snowflake Camera	Operational
LPM/LDIS - Laser Precipitation Monitor	Operational
SRS - Snow Depth Sensor	Operational
PIP - Precipitation Imaging Package	Operational
AERI - Atmospheric Emitted Radiance Interferometer	Operational
CIMEL - Cimel Sunphotometer	Operational
IRT - Infrared Thermometer	Operational
IOP - OYESNSA	Partly Operational
IOP - RIVAL	Operational
IOP - GNSS	Operational

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\* Barrow Instruments in Detail: \*

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INFRASTRUCTURE --- Facilities --- Operational.

INFRASTRUCTURE --- Data Systems --- Operational.

2019/05/27, CM-2019-NSA-VSN-4980: HDD S/N NA7Q2DNG was filled, so it was removed and replaced with new HDD S/N NA7Q2E1A at 18:20 UTC. The data disk will be shipped to ORNL for archiving.

INFRASTRUCTURE --- Vehicles --- Operational.

INFRASTRUCTURE --- Desktop Computers --- Operational.

SKYRAD --- SKYRAD General --- Operational.

2019/04/02, DQPR-7655: Site ops does not know of any hardware issues at this point, and the noise issue hasn't shown itself for the past few days. Ops will keep an eye on the data in case the noise reappears. The most recent DQPR status is "open - requires action."

2019/04/02, DQPR-7655: Intermittent PIR1 and PIR2 noise (downwelling longwave) data occasionally appears noisy starting on 2/24/2019. The magnitude of the swings in PIR data varies throughout the time period up to 3/30/19. Now PIR1 and PIR2 plots appear normal. During the periods when PIR2 noise was seen, SKYRAD voltage plot noise was also seen on 2/25, 2/28, and 3/1. See the attached weekly plots on the DQPR page for examples.

SKYRAD --- PIR 1 Shaded --- Operational.

SKYRAD --- PIR 2 Shaded --- Operational.

SKYRAD --- SOLAR Tracker --- Operational.

SKYRAD --- B&W diffuse --- Operational.

SKYRAD --- NIP --- Operational.

SKYRAD --- PSPg --- Operational.

SKYRAD --- MFRSR --- Operational.

2019/04/03, DQPR-7632: Ben used a theodolite to align the base while he was on site. Walter used the gauge, aligned the head position, and confirmed the band shape. The head was leveled and checked at Solar Noon. It is difficult to set the 2nd stop banding. The most recent DQPR status is "open - requires action."

2019/03/28, DQPR-7632: Christian Herrera is waiting for a somewhat clear day to verify band alignment. According to the FFT tests, there is also a slight shading problem in the mornings from ~17:00 - 19:00 UTC.

SKYRAD --- NIMFR --- Operational. Data Are Sometimes Incorrect.

2019/05/30, CM-2019-NSA-VSN-4985/DQPR-7672: Ops was requested to check the connections and take pictures. These pictures were posted on the DQPR page. NIMFR power was removed between 23:30 and 23:40 so that ops could take pictures of the end connections. No corrosion was found on either ends of the connector. The cable had a minor weather crack just in the outer sheathing. The most recent DQPR status is "open - requires action."

2019/05/21, DQPR-7672: The connector is currently secure in place. Jimmy has provided some photos of the instrument connector and the YESDAS data acquisition system.

2019/05/16, DQPR-7672: Detector temperatures seems to be consistently back to normal levels; however, there are still issues with the direct normal broadband measurements.

2019/05/08, DQPR-7672: Walter found the connector off of the instrument last Thursday morning and reattached it. This seems to have made the detector temperature rise back to normal values just past 19:00 UTC on 05/09.

2019/04/08, DQPR-7672: NIMFR direct normal broadband measurements are dipping well below 0 w/m<sup>2</sup> on many days since 3/11/19. See the daily and weekly data plots posted on the DQPR page for more information. The problem is ongoing.

TIPTWR --- GNDRAD general --- Operational.

TIPTWR --- MFR10m --- Operational.

2019/05/25, DQPR-7772: No data were collected from the MFR10m starting at 10:00 UTC on 5/21. Ops went to the MFR10m enclosure at the Tip Tower and power cycled the logger board at 20:00 UTC on 5/22. After the power cycle, data began flowing again, and the collection error was resolved. Gary Hodges was assigned DQR D190531.1 covering this outage. The most recent DQPR status is "in progress - assignments."

TIPTWR --- PIRgnd --- Operational.

TIPTWR --- PSPgnd --- Operational.

MET --- METTOWER general --- Operational.

MET --- CMH --- Operational. Troubleshooting Bad Data.

2019/05/13, DQPR-7571: No errors were reported from diagnostics. With the problem persisting after both the board and head were replaced, it is difficult to identify a possible source of the higher temperature. Jenni doesn't expect that the MET t/rh is low because the other tower levels report similar values. Jenni will contact the manufacturer to see if this might be a temperature circuit problem. The most recent DQPR status is "waiting - for spares."

2019/05/09, DQPR-7571/CM-2019-NSA-VSN-4969: Board S/N 1459 was removed and board S/N 1424 installed in its place. The instrument was removed for calibration at this time. Following the calibration, the instrument was reinstalled. The dew point measurement seems to be ok, but the ambient temperature value is warmer than expected. There could be an error with the temperature circuit, or the CMH could just need further adjustment. Ops was asked to plug the CMH into the maintenance port so that diagnostics and settings could be checked. The most recent DQPR status is "waiting - for spares."

2019/01/28, DQPR-7571: The CMH dew point/relative humidity/vapor pressure data began reading low after a self-check on 1/23 at 18:00 UTC (Telyana alerted via email). Site ops cleaned the mirror on 1/24. The instrument may need recalibrating, or a thermistor may have failed. The data are still trending well with HMT, but are much lower.

MET --- Barometer --- Operational.

MET --- TEMPERATURE / HUMIDITY --- Operational.

2018/11/14, DQPR-7034: The 10m level humidity data are often spiking twice a day, around the same times. This problem was apparent prior to maintenance and is addressed in DQPR-6542. This issue has continued after swap, with a suspected start date of 2017/10/09 at 22:00 UTC. Site ops noted that caps are missing from the shield at that level, which may be causing the problem. Jenni posted a picture of the instrument with the missing cap on the DQPR. The tower swap outs are now scheduled for spring 2019. The most recent DQPR status is "waiting - for spares."

MET --- WIND INSTRUMENTS (SONIC) --- Operational.

MET --- PWD --- Operational.

MET --- AMC --- Operational.

ECOR --- ECOR-twr --- Operational.

ECOR --- SEBS --- Operational.

2019/05/31, DQPR-7773: Starting on April 2nd, soil temperature and moisture sensor 2 began spiking anonymously. The issue first was intermittent, but it has become more frequent as time has gone on. A bad soil temperature probe or a loose lead connection appears to be the cause. Ops have been asked to check if the soil temp 2 probe has become displaced due to freeze/thaw of soil, and rebury it if it is not angled through the 0-5 cm soil layer. They should also check for loose connections from soil temp 2 to MUX 1. If no problem is found, the sensor should be replaced. The most recent DQPR status is "open - requires action."

MW RADIOMETERS --- MWR --- Operational.

MW RADIOMETERS --- MWRP --- Operational.

MW RADIOMETERS --- MWRHF --- Operational, but Data Still Shows Excessive Noise Conditions.

MW RADIOMETERS --- GVR --- Operational.

2019/05/30, CM-2019-NSA-VSN-4984: Ops noticed water on the lens during daily rounds, so the blower was removed and the lens was wiped clean between 18:30 and 18:50 UTC.

MW RADIOMETERS --- GVRP --- Operational.

2019/04/26, DQPR-7729: GVRP data were missing over 24 hours due to a computer issue which appears to have started around 00:00 UTC on 4/20. On 4/22, the computer was found unresponsive. The computer and software were restarted at 18:35 UTC on 4/22/19 (CM-2019-NSA-VSN-4952). The most recent DQPR status is "open - requires action."

LIDAR --- HSRL --- Operational.

LIDAR --- MPL --- Operational.

LIDAR --- CEIL --- Operational.

LIDAR --- Doppler LIDAR --- Operational. Blower Needs to Be Replaced.

RADAR --- KAZR --- Operational.

RADAR --- KaWSACR --- Operational, but Data Quality Need to Be Confirmed.

2019/05/29, CM-2019-NSA-VSN-4982/4983: The SACR was experiencing a communication issue. Ops found the head to be working, so they power cycled the MCC computer and reported it to the mentor between 16:15 and 16:35 UTC. The communication issue persisted, so the network switch was power cycled between 18:00 and 18:10 UTC.

2019/05/25, CM-2019-NSA-VSN-4979: The SACR was remotely shut down between 17:00 and 19:30 UTC to accommodate UIC's drilling of test sample holes for a deck expansion project.

RADAR --- XSAPR --- Not Operational. Transmitter Failure.

2019/04/19, Warno.arm.gov: The transmitter is faulting. A baseline scan strategy is being discussed. The radar team will work on the radar during the summer.

Sonde --- BBSS (Autosonde or Great White Manual Launches) --- Operational.

AOS --- General --- Operational. Data Transfer is Often Lagging.

AOS --- AETH --- Operational.

AOS --- CLAP --- Operational.

AOS --- CPC --- Operational.

AOS --- NEPH --- Operational.

AOS --- IMPACTOR --- Operational.

IMG --- TSI --- Operational.

IMG --- TOWERCAM --- Operational.

IMG --- Great White Camera --- Operational.

Precip --- MASC --- Operational.

Precip --- LPM/LDIS --- Operational.

2019/01/18, DQPR-7427: The LPM ingest is being updated to handle a new data format, hence the stall. The most recent DQPR status is "waiting - for site visit."

Precip --- SRS --- Operational, Ingest Work in Progress.

2018/11/10, DQPR-7416: Data are unavailable starting at 19:00 UTC on 10/19 because the raw data file format for the SRS at NSA (and OLI) has changed (see ENG0003770 for more detail). As such the ingest is not processing the new raw data files. The ingest will be updated to accommodate the new file format (INST01114). The most recent DQPR status is "waiting - for spares."

Precip --- PIP --- Operational.

Other --- AERI --- Operational.

Other --- CIMEL --- Operational.

Other --- IRT --- Operational.

IOP --- OYESNSA --- Partly Operational, the Lower Electric Field Sensor Failed.

IOP --- RIVAL --- Operational.

IOP --- GNSS --- Operational.

## Distribution

<b>ARM</b>	
Sally McFarlane ARM Climate Research Facility Program Manager Climate and Environmental Sciences Division Office of Biological and Environmental Research Sally.McFarlane@science.doe.gov	Jim Mather ARM Technical Director Pacific Northwest National Laboratory P.O. Box 999, MS K9-38 Richland, WA 99352 jim.mather@pnnl.gov
Nicki Hickmon ARM Associate Director of Operations Argonne National Laboratory 9700 S Cass Ave 240-5132 Lemont, IL 60439 nhickmon@anl.gov	



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