SAND2019-1327R

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

January 2019

Contacts:

Mark Ivey
(North Slope)
mdivey@sandia.gov
505-284-9092

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

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

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

FY2017 Financials (as of January 25, 2019)

	January	YTD
Carryover funds	$4,850,599	
Funds Allocated YTD	$1,740,000	
Carryover plus YTD funds	$6,590,599	
Cost, burdened amount	$2,090,154	
Uncosted Funds	$4,500,445	
Commits, burdened total	$1,753,768	
Current fiscal year uncommitted funds	$2,746,678	
Subsequent fiscal year (SFY) commits	$1,338,389	
Total uncommitted funds, including SFY commits	$1,408,289	
Fully Burdened Staff Costs	$299,000	$1,245,000
Fully Burdened Contract Costs	$207,000	$845,000
Fully Burdened Total Costs	$506,000	$2,090,000

3 Summary of Current Management Issues

Management summary of current issues for January 2019

1. We had useful and productive meetings with Sally, Nicki, and Jim when they visited Sandia first week of January.
2. One microturbine at Oliktok went down. Observers were able to restart it.
3. The long partial government shutdown is affecting project planning. We need approvals from NOAA and USGS to proceed with installation of pilings and a deck in Barrow. Plans to install a hydrogen generator in Barrow and support NWS sonde launches are on hold.
4. We are working with GSA to get our stakebed truck in Barrow repaired after an accident. A loader moving snow near the Air Force DEWLine station backed into the vehicle. We have received an estimate from the UIC repair shop in Barrow to make the necessary repairs (just under $15k).
5. The Sandia North Slope team is planning a visit to LANL to meet with the ARM team there. The purpose of the meeting is to discuss topics of mutual interest, such as cold-weather operations, and look for ways to help each other going forward. Sharing radar tech expertise is another topic of interest.
6. We had Phase 3 weather event at Oliktok mid-January. During Phase 3 events, all travel is restricted and travel to and from AMF3 is not possible. The site stayed running on microturbines during this weather event.
7. Telecom with Quintillion team provided update on high-speed fiber-optic system and data services for Alaska, including a planned data center in Deadhorse, AK and potential for a data center in Utqiagvik/Barrow, AK. May be of interest to DOE for ARM program data collection or transmission. Quintillion is coordinating to integrate services for the current NOAA Barrow Observatory expansion.

Safety

AMF3- No incident/Injury

Barrow - No Incident/Injury

4 Tethered Balloon Operations

TBS Report for January 2019

During the month of January 2019, the TBS crew made progress revamping the equipment to prepare for upcoming 2019 flights. Both winches were upgraded using a SE encore E43 59.3:1 gearbox coupled with a Leeson Permanent magnet motor. This increased the torque capability by approximately 3x and the rotational speed by ~30%. The existing electronics system on one winch was repurposed to power four 3,500 lb ATV winches. These winches will automate the retrieval of the balloons allowing for retrieval during faster winds, and thus increasing potential operating conditions, while also improving crew safety. The ATV winches are expected to be added to the second winch in February. Finally, a new electronics box was designed which will be used to power the new winch motor. The new winch motors are variable speed, meaning they accept 0-180V and the speed correlates to the input voltage. The new electronics boxes will be mounted directly to the winches to allow the winches to be removed from the trailers in case of size/weight operating limitations. The winches will instead be powered directly by 220V generators vs the lead acid battery banks used by the previous systems.

Removed existing winch trailer electronics control box and mounting frame to make the trailer more user friendly.

Trailer was reoutfitted with an old helium rack to add the capability of transporting helium cylinders. Winch was mounted to the frame of the trailer and 4” U-channel was added to further secure the winch to the frame.

A new helium rack being fabricated, and U-channel crossmember being fabricated.

6 North Slope Facilities

AMF3

Current and Upcoming Site Visits

Ben Bishop/SNL	02/9-10	Turbines

Current and Upcoming IOPs

AFC06968 - MACAWS Receiver Site (Pre-Campaign)

Site News

NA

Site and Safety Issues

Turbine 2 shut down with a battery PM (5016 fault), and turbine 1 had a Frame PM (5011 fault); with only two turbines running, the load was reduced so the site could keep run on only two. The manufacturer was contacted, and new PMs (personality modules) were purchased and sent up. The site power was temporarily transferred to a diesel generator while David Oaks replaced the PM's. Once the PMs were replaced, all four turbines were restarted, and the site was successfully switched back to turbine power.

Unmet Needs- NA

Site Changes/Upgrades- NA

Site Staffing – NA

Barrow

Current and Upcoming Site Visits

Ben Bishop/SNL	02/10-13	SACR and MET tower strobe light repair

Current and Upcoming IOPs

SNPP/NPOESS Ground Truth Sonde Launch, Phase 5 – start date Oct 1, 2016
Global Navigation Satellite System (GNSS) – start date July 2017
RIVAL - Sonde RS92 RS41 comparison. (Donna Holdridge)
Arctic Observing eXperiment: March 2013-March 2019
ARM Radiosondes for SNPP/JPSS Validation

Heated Pyrheliometer IOP requesting extension - winter 2018
Seasonal Evolution of Land and Sea Ice Albedo. May 2019
Sources of Ice Nucleating Particles in the Arctic. May 2019
BEAR-oNS. June 2019-August 2020

Site News

NA

Site and Safety Issues

We are working with GSA to get our GSA truck in Barrow repaired after an accident. A loader moving snow near the Air Force DEWLine station backed into the vehicle, there were no injuries. We are waiting for approval and instructions from GSA to have the vehicle repaired.

Met tower strobe lights are flashing red at mid and top locations should be white at top and red at mid.

SACR has glycol leak on W Band side and has been shut down until repairs can be made.

Unmet Needs

Donna Holdridge is working with NWS to modify data format for the RBL. Sandia National Laboratories fire marshal has reviewed the NWS hydrogen generator drawings and has an issue with how much hydrogen will be stored inside the generator shelter. Sandia doesn't believe this meets national code.

Site Changes/Upgrades

Site is operating in winter mode.

Site Staffing Issues

NA

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

- Appendix A: AMF3

INFORMAL AMF3 INSTRUMENT STATUS REPORT FOR January 18, 2019 - January 25, 2019
BRIEF STATUS OF INSTRUMENTS AND SITE IN OLIKTOK AS OF 2019/01/25:

Facilities	Operational
Data Systems	Operational
Vehicles	Operational
Desktop Computers	Operational
SKYRAD - SKY Radiometer on Stand for downwelling	Operational
MFRSR - Multifilter Rotating Shadowband Radiometer	Not Operational
GNDRAD - Ground Radiometer on Stand for Upwelling	Operational
MFR2.5m - Multifilter Radiometer at 2.5m height	Not 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	Not 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 Not Operational
IRT - Infrared Thermometer Operational
MET-AIR - DataHawk Unmanned Aerial System Operational
TBS - Tethered Balloon System Operational
****
* Oliktok Instruments in Detail: *
****
INFRASTRUCTURE --- Facilities --- Operational.
2019/01/24, CM-2019-AMF3-VSN-2793: Ops needed to connect the helium trailer to the balloon fill station. However, ops found that the original fittings had been cross-threaded, so they had replacement parts sent up. Upon starting the process of reconnecting the helium trailer to the balloon fill station, the tech noticed that the new braided hose was not fitted at both ends with a ¼" female pipe thread; one end had a male end instead. After much time searching the site part stocks and trying to borrow a fitting from other support staff, it was suggested who locally might have the correct one. When ops was able to obtain the ¼" Swagelok coupling, they completed the assembly, which successfully passed a leak test. This maintenance period took place between 18:00 and 23:00 UTC on 1/23/19.
2019/01/24, CM-2019-AMF3-VSN-2792: The frame personality module and battery personality module on Turbine #1 failed. Turbine #1 was powered down at 16:15 UTC and the site's power was transferred to the emergency generator. Site ops shut off the turbine's battery breaker and the output breaker. Proper LOTO procedures were followed to ensure that the power source was locked out. Site ops proceeded to remove the top panel of the turbine. After the top panel had been removed, the frame PM was removed and replaced. The top panel was reinstalled and power was restored to the unit. Upon start up, the turbine display notified site ops of a battery PM failure. Ops powered the system back down and relocked the power source. The two right-side panels were removed and the battery PM was replaced. After replacement of the battery PM, the panels of the turbine were reinstalled. At this time, power was restored to the unit. When powered, the turbines display showed that the unit needed a fuel prime procedure performed. Site ops performed the fuel prime procedure and proceeded to start the turbine. Site ops transferred power from the emergency generator back to the turbines at 18:30 UTC. All onsite instruments were restarted and collecting data by 19:25 UTC.
2019/01/23, CM-2019-AMF3-VSN-2788: The battery personality module in Turbine #2 failed, starting at 23:00 UTC on 01/12. Following proper LOTO procedures, ops shut down the battery breaker and power output breaker to the turbine. Ops proceeded to remove the two side panels of the turbine. After the panels had been removed, the failed battery personality module was replaced. The turbine panels were put back on the unit and power was fully restored at 17:30 UTC on 1/23.
2019/01/22, CM-2019-AMF3-VSN-2786: An air handler fan in the AOS arctic entry (AE) failed. While practicing proper LOTO procedures, ops removed and replaced the AE air handler fan between 23:45 UTC on 1/21 and 00:30 UTC on 01/22.

INFRASTRUCTURE --- Data Systems --- Operational.
2019/01/23, CM-2019-AMF3-VSN-2790: The IT Systems Engineer requested that ops swap out the old Disk Backup computer for a new one sent to the site. Ops removed the old computer (property number WE22882) and installed the new computer (CSI 0355324). Ops verified with the IT Systems Engineer that the backup was working properly. WE22882 was kept as a spare and is being stored in Warm Storage 2 as directed by the IT Systems Engineer. This swapout took place between 16:10 and 16:50 UTC.
2019/01/23, CM-2019-AMF3-VSN-2787: HDD S/N NA7JSCHZ was filled, so it was replaced with HDD S/N NA7Q2CSD. Ops will ship HDD S/N NA7JSCHZ via USPS tracking # 9114 9014 9645 0852 3628 07.
2019/01/20, CM-2019-AMF3-VSN-2785: HDD S/N NA76LKKK was filled, so it was replaced with HDD S/N NA7JSCHZ at 18:15 UTC. Ops will ship HDD S/N NA76LKKK via USPS tracking # 9114 9014 9645 0852 3627 08.
INFRASTRUCTURE --- Vehicles --- Operational.
INFRASTRUCTURE --- Desktop Computers --- Operational.
SKYRAD --- SKYRAD general --- Operational.
2019/01/08, DQPR-7365: ADC cleared the ingest on 2018/12/18. Normal plots are appearing on DQExplorer starting at 00:00 UTC on 2018/12/17, and Mark Kutchenreiter has been assigned DQR D190108.4. to notify users about the data with an increased time step. The most recent DQPR status is "in progress - assignments."
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. Heater pads were installed under the Sunshield.
2019/01/24, CM-2019-AMF3-VSN-2794: The radiometer dome was consistently getting frosted, so ops and the mentor decided to connect the heater pads installed on the underside of the sunshield to a 12V power source. The heater pads were powered starting at 23:20 UTC.
SKYRAD --- NIP --- Operational.
SKYRAD --- PSPg --- Operational.
SKYRAD --- MFRSR --- Not Operational. Removed for winter.
2018/11/11, CM-2018-AMF3-VSN-2714/DQPR-7420: MFRSR SN # 199 needed to be removed for winter calibration, so ops powered down the instrument, removed the cables, and sealed them in plastic bags. The unit was packed and shipped for calibration at SGP (shipped to James Martin). Christian Herrera was assigned DQR D181112.3. The most recent DQPR status is "in progress - assignments."
TIPTWR --- GNDRAD general --- Operational.
TIPTWR --- MFR2.5m --- Not Operational. Removed for winter.
TIPTWR --- PIRgnd --- Operational.
TIPTWR --- PSPgnd --- Operational.
MAWS --- Automatic Weather Station --- Operational.
MET --- METTOWER general --- Operational.
MET --- CMH --- Operational.
2019/01/18, DQPR-7557: Site ops alerted Jenni about noisy RH data from the CMH. The mirror cleaning/calibration was done on 12/27, and the mirror assembly was replaced 12/29. Fan failure was noted on 1/11, and then the aspirator was replaced. Data are looking better and trending well with the HMT (as of 1/18, the temperature is starting to look a little high, but Jenni will keep an eye on it). David Oaks notes the replacement fan might be close to failure. Jenni is waiting on a manufacturer quote for replacement fans. The most recent DQPR status is "waiting - for spares."
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.
2019/01/04, DQPR-7530/CM-2019-AMF3-VSN-2770: SDS and the mentor found that the USB to Ethernet device had failed, thus stopping data ingest for roughly a 24-hour period. It was decided previously that if the MPL virtual machine (VM) failed, site ops would change over to a new physical computer that was sent up by the mentor. At 16:14 UTC, ops shut down the MPL and switched the hard wiring/connections to a new physical computer. Site ops then contacted SDS and was able to connect the physical computer to the instrument network. At this point, ops tasks are complete with this change over. SDS and mentor will complete the software changes/updates needed to run the new physical computer. The most recent DQPR status is "open - requires action."
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.
2019/01/25, CM-2019-AMF3-VSN-2797: Technicians are unable to launch the 23:30 UTC balloon due to high wind conditions. Winds are >30 mph sustained and gusting >40 mph. Launches will resume when weather conditions permit.
2019/01/25, CM-2019-AMF3-VSN-2795: Technicians are unable to launch the 17:30 UTC balloon due to high wind conditions. Winds are >30 mph sustained. Launches will resume when weather conditions permit.
2019/01/24, CM-2019-AMF3-VSN-2791: Ops were unable to launch the 17:30 UTC balloon due to power issues on site. Ops needed to provide maintenance on the on-site power system, and after completion, balloon launches resumed.
IMG --- TSI --- Not Operational. Removed for winter.
AOS --- General --- Partly operational, some instruments shut down.
AOS --- AOSMET --- Operational.
2018/10/29, DQPR-7391: Wind speed and wind direction are often missing beginning at 16:46 UTC on 2018/10/16. There were short intermittent periods of missing data prior to this date, but the periods of missing data have become more frequent. Site ops commented that this problem happens every winter since the WXT520 unit sits on top of the AOS connex and is non-heated. It cannot be serviced/maintained over the winter months. Kenneth Kehoe decided to leave the end date of this DQPR open until the ice is no longer an issue as to warn data users now. Jenni Kyrouac submitted DQR D181030.1. The most recent DQPR status is "in progress - assignments."
AOS --- CO - Analyzer --- Operational.
AOS --- CPC (CPCU and CPCF) --- Operational.
AOS --- CAPS --- Not Operational, Instrument at BNL.
2018/10/05, DQPR-5816: The repaired unit is back at BNL and was just used in the ARM-sanctioned PSAP filter laboratory study. One of the three pumps failed during this study and BNL is awaiting the delivery of the replacement pumps. Once replaced, the instrument can be shipped back to the site. DQR D181005.1 has been assigned to Arthur Sedlacek. 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.
AOS --- GHG-Picarro --- Operational. The pump box was replaced.
2019/01/25, CM-2019-AMF3-VSN-2796: The instrument's dry purge flow was not reporting correctly. At 19:05 UTC, site ops first performed a test of disconnecting the dry purge flow tube from the instrument, and placing it in a cup of water to make sure there was indeed airflow produced. After site ops found there was airflow coming from the tube, they proceeded to power down the instrument. Site ops disconnected and removed the instrument's Nafion box from the rack and opened it. They found no abnormalities inside the box, more specifically, with the dry purge flow sensor. Findings were reported to the mentor who at that time requested that the instrument put back together and restarted. The instrument restarted at 19:40 UTC.
2019/01/23, CM-2019-AMF3-VSN-2789: The pump box on the instrument failed. A replacement box was sent to the site by the mentor; ops removed and replaced the failed pump box between 01:00 - 01:30 UTC on 1/23. Due to the temperature of the pump box when it arrived to the site, site ops decided to wait until the following morning

to restart the instrument. After the pump box had time to warm up to the shelter's temperature, ops restarted the instrument at 18:13 UTC on 1/23.
2019/01/18, DQPR-7524: The gas analyzer crashed over a period of time, with problems accumulating from 2018/12/24 through 2019/01/15, at which point the 'oliaosghg' system was shut down. The system should be running normally within about a week, at which point Andrew Moyes will submit a DQR for the missing data period starting at 12/24/18. B1-level data from 11/09 - 12/24 should be available once ENG0004051 is released and that period is reprocessed. The most recent DQPR status is "open - requires action."
2019/01/02, DQPR-7524: The instrument started with roughly 20% of all data missing on 2018/12/01, which has now progressed to 30% of all data missing. This period (12/15-12/21) also had a day (12/21) where the data was completely unavailable.
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. At BNL, Waiting for Parts and Working on Performance Issues.
2018/08/13, DQPR-7136: New parts were installed, and a full flow calibration and a zero test was performed. The instrument is working well. Janek is waiting for an SMPS to become available for SS% calibration. The most recent DQPR status is "in progress - assignments."
Precip --- LPM --- Operational. Ingest Work in Progress.
2018/08/29, DQPR-7265: The ingest is not yet operational. The most recent DQPR status is "open - requires action."
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 --- Not Operational. Will be shipped when Aeronet gives word.
2019/01/18, DQPR-7346: All parts have been packed and are ready to be shipped. The government shutdown is preventing ops from sending the instrument to Aeronet at the moment, but it will be shipped as soon as possible. The most recent DQPR status is "waiting - for spares."
2018/12/04, CM-2018-AMF3-VSN-2740/DQPR-7346: The CIMEL was no longer performing its normal scans. After site ops performed numerous tests, the mentor came to the conclusion that the best thing would be to remove the instrument due to the loss of functionality. Site ops removed the instrument from its base and removed the cables from the shelter between 19:00 and 19:25 UTC. The instrument will be packaged in its case, and shipped to the manufacturer (AERONET) for repairs. The most recent DQPR status is "waiting - for spares."
Other --- DataHawk Unmanned Aerial System --- Operational, not a full time instrument.
Other --- IRT --- Operational.
Other --- TBS --- Operational.
2018/11/11, DQPR-7419: Data was not available from 18:00 UTC on 04/01 to 23:07 UTC on 04/03. DQR D181112.2 was assigned to Dari Dexheimer. The most recent DQPR status is "in progress - assignments."

- **Appendix B- Barrow**

INFORMAL NSA INSTRUMENT STATUS REPORT FOR January 18, 2019 - January 25,2019
BRIEF STATUS OF INSTRUMENTS AND SITE IN Utqiaġvik (C1) AS OF 2019/01/25:
Facilities Operational
Data Systems Operational
Vehicles Operational
Desktop Computers Operational
SKYRAD - SKY Radiometer on Stand for Downwelling Operational
MFRSR - Multifilter Rotating Shadowband Radiometer Not Operational
NIMFR - Normal Incidence Multifilter Radiometer Not Operational
GNDRAD - Ground Radiometer on Stand for Upwelling Operational
MFR10m - Multifilter Radiometer at 10m height Not 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 Not 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 Partly Operational
XSAPR - X-Band Scanning ARM Precipitation Radar 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 Not 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 Not Operational
IRT - Infrared Thermometer Operational
IOP - OYESNSA Operational
IOP - RIVAL Operational
IOP - GNSS Operational

****
* Barrow Instruments in Detail: *
****
INFRASTRUCTURE --- Facilities --- Operational.
INFRASTRUCTURE --- Data Systems --- Operational.

2019/01/21, CM-2019-NSA-VSN-4859: The Network UPS 1 was found off after the power outage, so ops had to restart UPS 1 between 07:40 and 08:00 UTC on 01/19.
2019/01/21, CM-2019-NSA-VSN-4855: A data disk was filled, so it was removed, replaced, and packaged between 17:25 and 17:30 UTC. The disk will be mailed out on Tuesday due to a USPS closure on 1/21. There are 81 more disks available for use.
2019/01/19, CM-2019-NSA-VSN-4858: There was a Barrow wide power outage that lasted about 40 minutes (from 05:30 to 06:10 UTC) and brought the network down. Jimmy and Joshua responded after the power was restored.
INFRASTRUCTURE --- Vehicles --- Operational.
INFRASTRUCTURE --- Desktop Computers --- Operational.
SKYRAD --- SKYRAD General --- Operational.
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.
2019/01/18, CM-2019-NSA-VSN-4854: The heater failed, which the operator noticed from the buildup of frost. Connections appeared fine, so Walter cut out the heater assembly and soldered in the replacement. This work took place between 23:30 UTC on 2019/01/17 and 00:40 UTC on 2019/01/18.
SKYRAD --- MFRSR --- Not operational, winter removal.
SKYRAD --- NIMFR --- Not operational, winter removal.
2019/01/08, DQPR-7224: Christian Herrera was assigned DQR D190108.10. The most recent DQPR status is "in progress - assignments."
TIPTWR --- GNDRAD general --- Operational.
TIPTWR --- MFR10m --- Not Operational, Winter Removal.
TIPTWR --- PIRgnd --- Operational.
TIPTWR --- PSPgnd --- Operational.
MET --- METTOWER general --- Operational.
MET --- CMH --- Operational.
2019/01/24, CM-2019-NSA-VSN-4862: The mentor requested that ops check the fan intake (it was found clear) and clean the mirror with alcohol. The mirror only had a minimal water spot, so the instrument was put back together. This maintenance occurred between 22:30 and 23:00 UTC.
MET --- Barometer --- Operational.
MET --- TEMPERATURE / HUMIDITY --- Operational, but Noisy Data is Being Investigated.
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.
2018/11/16, DQPR-5694: Adam Theisen is wondering when the calibration will happen, and if the ingest is handling missing data vs saturated signals properly. The most recent DQPR status is "in progress - assignments."
ECOR --- ECOR-twr --- Operational.
ECOR --- SEBS --- Operational.
2018/11/06, DQPR-7280/CM-2018-NSA-VSN-4764: David Cook commented that the wetness sensor goes below the lower limit of the range when it's iced up--there is nothing that can be done to prevent it. Data will also spike above the upper limit of the range after the ice melts; the sensor does not need to be replaced. A DQR should be written to explain this situation to the data user, so D181105.10 with the start date of the instrument installation, was assigned to Ryan Sullivan. This information should also be put into the instrument handbook. Walter checked

the rain sensor anyway between 21:15 and 21:30 and found it clean and dry; he also cleaned and checked the ECOR instruments. The most recent DQPR status is "open - requires action."
MW RADIOMETERS --- MWR --- Operational.
MW RADIOMETERS --- MWRP --- Operational.
2019/01/21, CM-2019-NSA-VSN-4856: The software screen was all black, indicating that the software had failed. The program was closed and restarted between 17:25 and 17:30 UTC.
MW RADIOMETERS --- MWRHF --- Operational, but Data Still Shows Excessive Noise Conditions.
2019/01/21, CM-2019-NSA-VSN-4857: There was a power outage on Saturday that caused the program to stop running. The program was rebooted between 18:30 and 18:45 UTC.
2018/02/09, DQPR-4165: Adam Theisen asked Maria Cadeddu if there has been any discussions on the future of the MWRHF. The current DQPR status is “in progress- assignments.”
MW RADIOMETERS --- GVR --- Not Operational. Radiometrics is troubleshooting.
2019/01/25, DQPR-7222: The instrument is having problems again. Andy Pazmany of Prosensing is trying to troubleshoot with Walter. Maria linked D190125.3 for the bad data between 12/15/2018 and 1/19/2019. The most recent DQPR status is "in progress - assignments."
2019/01/23, CM-2019-NSA-VSN-4861: The controller and motor appeared to have failed, and there are no lights lit up indicating proper operation. Walter removed the original controller and motor and installed the replacements. The instrument was connected up inside the shelter for testing. Upon the swap out, Walter saw the controller light appear when the instrument was powered. However, the software still did not run. The instrument will be left inside the shelter while the mentor and Radiometrics troubleshoots.
2019/01/07, DQPR-7222: The software run issue was resolved by fixing a wire out of place. However, sky brightness temperatures still do not appear correct.
MW RADIOMETERS --- GVRP --- Operational. Software is running but the Data Collection is Failing.
2019/01/25, DQPR-7556: The GVRP software was not operating correctly starting at 01/12 at 00:00 UTC. The software is now working and generating data; however, they are not being collected or ingested for some reason. The collection script should be checked. DQR D190125.5 has been linked to this DQPR. The most recent DQPR status is "in progress - assignments."
LIDAR --- HSRL --- Operational.
LIDAR --- MPL --- Operational.
LIDAR --- CEIL --- Operational.
LIDAR --- Doppler LIDAR --- Operational. Blower Needs to be replaced.
RADAR --- KAZR --- Operational.
RADAR --- KaWSACR --- Partly Operational. WSACR Under Testing and Data Are Not Being Collected.
2018/08/31, Warno.arm.gov: The mentor visited the site and performed RF measurements on the subsystems. Configuration, calibration, and testing will continue.
RADAR --- XSAPR --- Operational.
2018/08/31, Warno.arm.gov: The upgrade is completed and the latest repairs are being tested. Discussion for the baseline mode will be initiated soon. The baseline will be discussed in conjunction with the SACR baseline.
Sonde --- BBSS (Autosonde or Great White Manual Launches) --- Operational.
AOS --- General --- Operational.
2019/01/16, DQPR-7551: All AOS instrument data went missing between 2019/01/08 at 20:00 UTC and 2019/01/11 at 18:00 UTC. The metrics were not found in entirety afterward. The most recent DQPR status is "open - requires action."
AOS --- AETH --- Operational.
AOS --- CLAP --- Operational.
AOS --- CPC --- Operational, but Some Data Quality Issues.
2019/01/18, DQPR-7444: The AOS system is operating on the edge of what the pumps can pull due to some NOAA collaborators also using ARM pumps. That could be an explanation for previous oscillating CPC number concentrations; however, the CPC no longer has this problem. Elisabeth Andrews has submitted assigned a DQR (D190118.10) to mark the data for the two periods (DQPR 7443 and 7444) as questionable. The most recent DQPR status is "in progress - assignments."
2018/11/06, DQPR-7443/7444: The CPC number concentration was oscillating with a regular frequency (over about 24 min) from 10/27 at 15:13 UTC to 12:09 UTC on 10/29, and again from 11/03 at 6:43 UTC to 11/05 at

00:01 UTC. Elisabeth Andrews is not sure if the problem is related to the instrument, the sampling system, environmental conditions (e.g., wind), or some combination of things.
AOS --- NEPH --- Operational.
AOS --- IMPACTOR --- Operational.
IMG --- TSI --- Not Operational. Removed for winter.
IMG --- TOWERCAM --- Operational.
IMG --- Great White Camera --- Operational.
Precip --- MASC --- Operational.
Precip --- LPM/LDIS --- Operational, Ingest Work in Progress.
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 "open - requires action."
2018/11/13, DQPR-7427: Since 10/27/18 at 3:57 UTC, metrics were unavailable. The DSView log indicates the following error: status: Could Not Map Input CSV Data To Output Dataset.
Raw data appear to be on the ADC computer so this does not appear to involve a site issue.
Precip --- SRS --- Operational, Ingest Work in Progress.
2018/11/10, DQPR-7416: Data are unavailable starting at 19:00 UTC on 10/19. This appears to be an ingest issue per DSView. This is 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.
2019/01/22, CM-2019-NSA-VSN-4860: Telayna checked the PIP software after Walter requested. The PIP software was not running, so the PIP software was relaunched on 01/21 at 20:45 UTC using the PIP toolbar. All was confirmed operational at this time.
Other --- AERI --- Operational.
Other --- CIMEL --- Not Operational. Will be shipped when Aeronet gives word.
Other --- IRT --- Operational.
IOP --- OYESNSA --- Operational.
IOP --- RIVAL --- Operational.
IOP --- GNSS --- Operational.

Distribution

ARM	
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	

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International, Inc., for the U.U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.