



# Oliktok Point

## Long-term ARM Mobile Facility Deployment, Unmanned Aircraft, and Balloon Operations

March 14, 2012

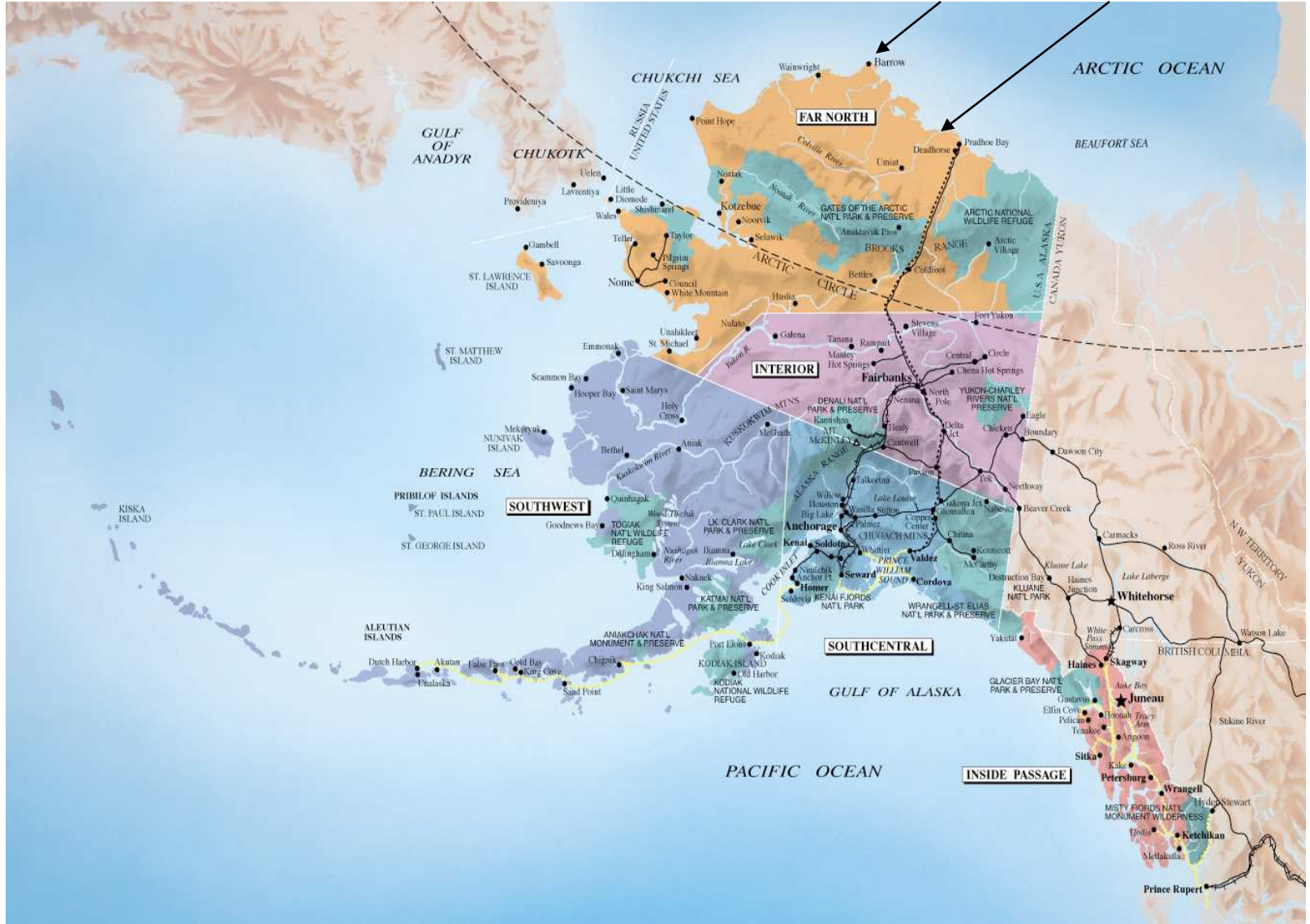
Mark Ivey  
North Slope of Alaska ARM Facility Manager  
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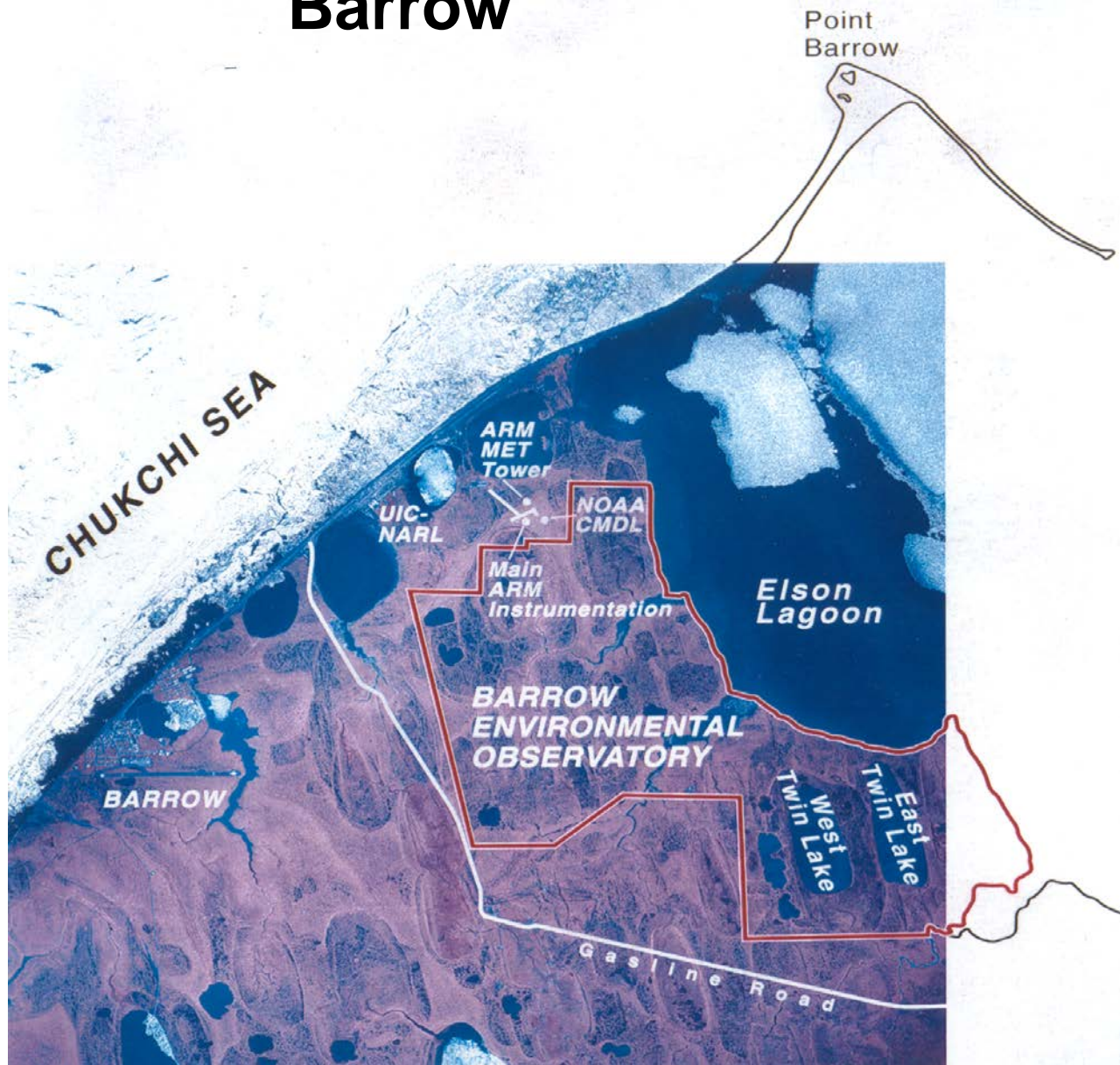


# ARM Climate Research Facilities in Alaska

Barrow and Oliktok



# Barrow



# Categories of Instrumentation at Barrow

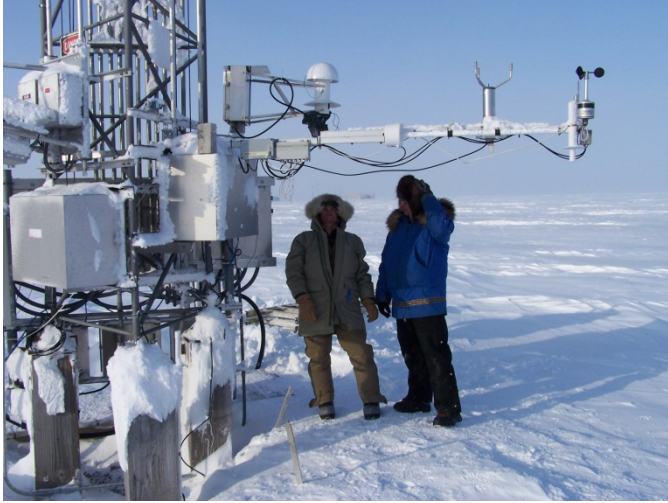
- Surface Meteorological Sensors
- Wind, Temperature and Humidity Profilers
- Cloud Observation Instrumentation
- Downwelling Radiation Sensors
- Upwelling Radiation Sensors
- Aerosol Instrumentation
- Gas Instrumentation

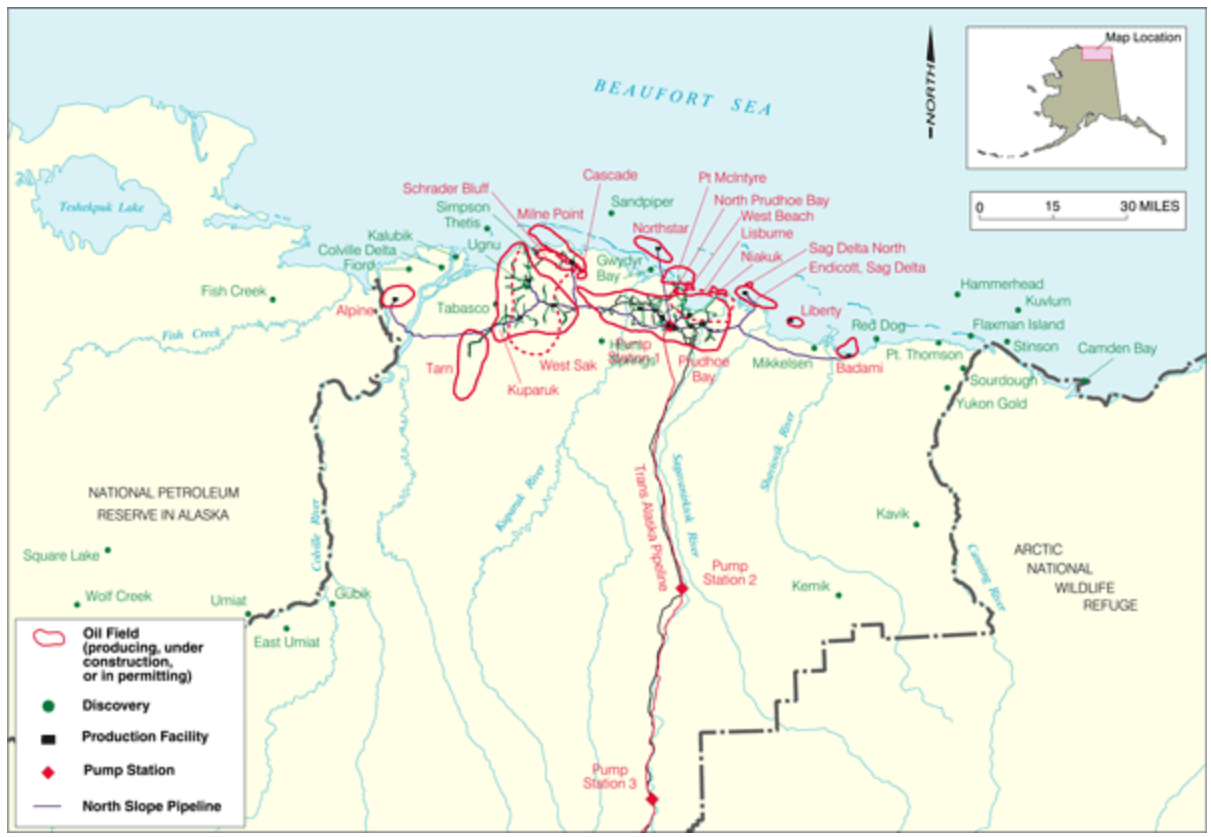
**Additions with ARRA Funding:**  
Scanning instruments, radars,  
3D and 4D cloud profiles



# Barrow ARM Climate Research Facilities

## Existing Facilities and ARRA Additions







Elson Lagoon

Oarlock Island

Smith Bay

Teshekpuk Lake

Arctic Ocean

Arctic Ocean

Weller Bank

Arctic Ocean Cat Shoals

Arctic Ocean

Oliktok LRRS

Oliktok LRRS Airport

Kugaruk

Stockton Islands

Deadhorse

Maguire Islands

Brooks Range

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Image © 2012 TerraMetrics  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

70° 11' 29.42" N 152° 47' 06.75" W elev 154 ft

Google earth

Eye alt 281.14 mi



Stamukhi Shoal

Arctic Ocean

Cat Shoals

Loon Shoal

Arctic Ocean

Simpson Lagoon

Jones Islands

Oliktok LRRS

Oliktok LRRS Airport

Gwydyr Bay

Kuparuk

Prudhoe Bay

Deadhorse

Foggy Island Bay

Tigvar

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Data SIO, NOAA, U.S. Navy, NGA, GEBCO

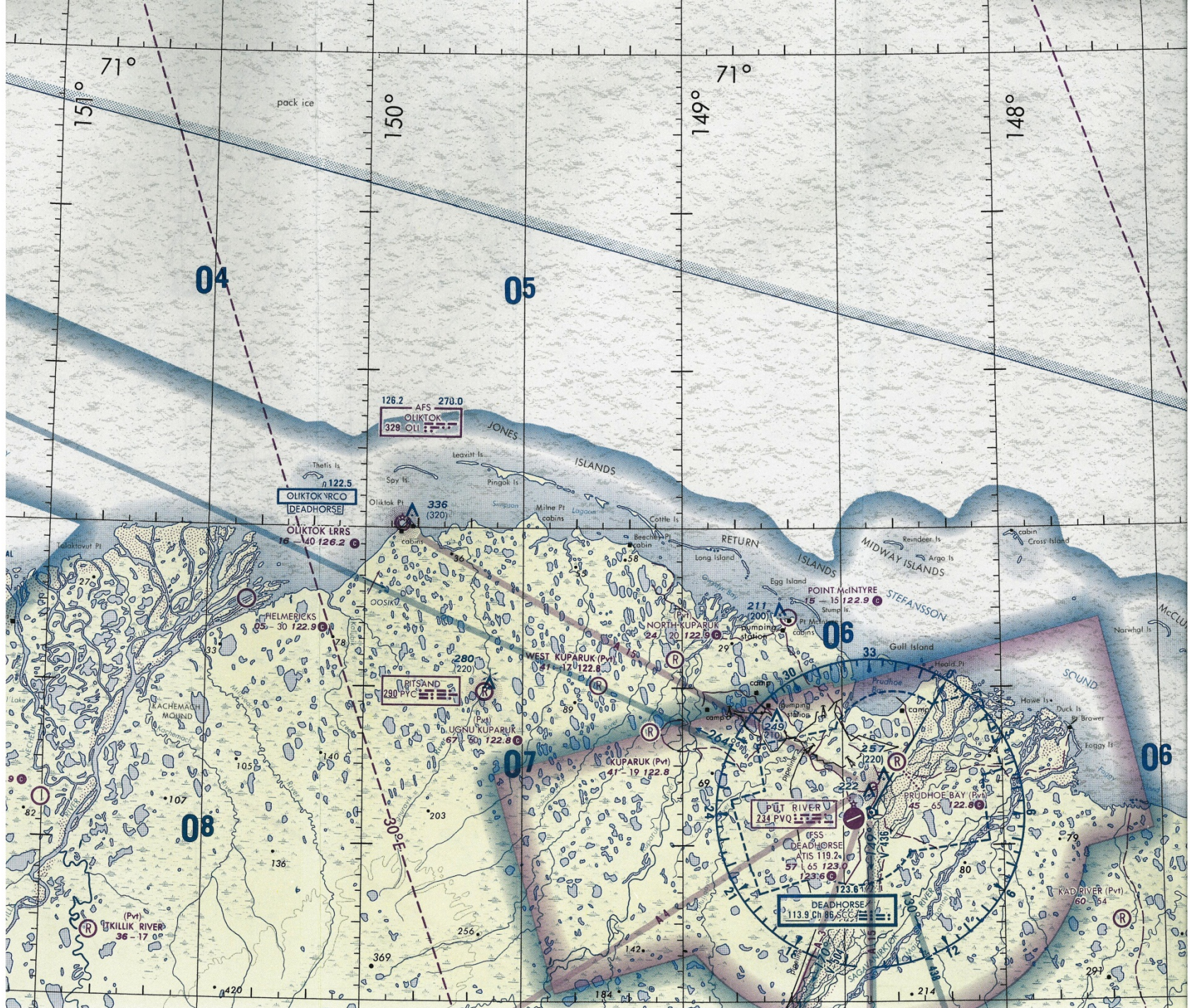
Google earth

Imagery Date: 3/16/2006

70° 19' 16.87" N 148° 54' 37.48" W elev 26 ft

Eye alt 67.89 mi





# Oliktok Point, Alaska

We are pursuing establishment of a designated DOE User Facility at Oliktok Point



0' 1000' 2000' 3000' 4000' 5000' 6000' 7000' 8000'  
Appx. Scale

**Oliktok Point Alaska**

**USAF Oliktok Point Long Range Radar Station: Sandia has a permit from the USAF for use of selected facilities at Oliktok Point, just as Sandia has a permit for use of selected areas on Kirtland AFB; Oliktok is one of several old Distant Early Warning (DEW Line) radar stations that are still active.**



**Restricted Airspace R2204 at Oliktok Pt; originally obtained by Sandia for a field experiment at Oliktok in 2004 (Mixed-Phase Arctic Cloud Experiment [M-PACE]); It's airspace that, when activated (at DOE discretion), DOE controls; Restricted Airspace is the mechanism through which FAA keeps non-participating aircraft out of an area.**



# Oliktok LRRS



# Oliktok LRRS



Photo: Ted Fisher, SPEC

# Oliktok LRRS



Photos: Ted Fisher, SPEC

# Oliktok LRRS





# Existing Hangar at Oliktok Point

**Presently, we have access to the hangar and the area around it, as well as to lodging and other services at Oliktok LRRS. Note that Oliktok is embedded in the Prudhoe Bay Oil Fields, and is about 40 miles from Deadhorse/ Prudhoe Bay Airport.**



# Tethered Balloon Operations at Oliktok

**Flying an instrumented tethered balloon in cloud was the activity that required Restricted Airspace during M-PACE, and that also requires it during the upcoming ALTOS field experiment. Restricted Airspace also makes flying unmanned aircraft much easier under FAA rules.**



# ALTOS Balloon Operations



Photos: Ted Fisher, SPEC



# ALTOS

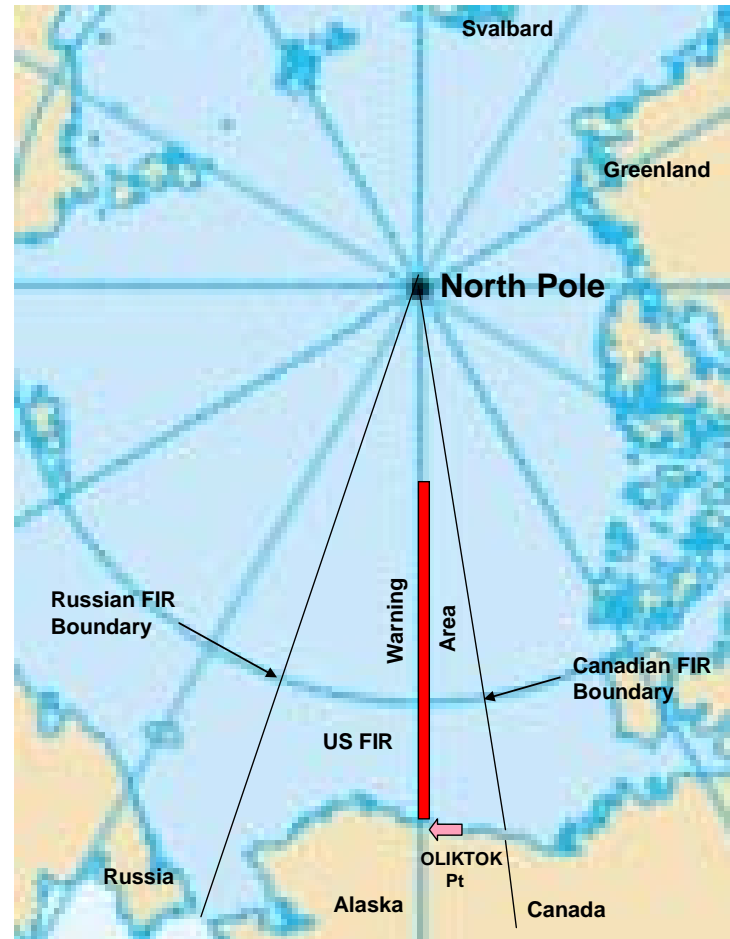


# A Step Towards an Arctic Climate Observatory

DOE has requested from the FAA the creation of a **Warning Area over International Waters** adjoining Olightok to accommodate unmanned aircraft flights and other research activities out over the **Arctic Ocean** focused on the rapid retreat of the sea ice; **Warning Areas** confer similar advantages to **Restricted Airspace**.

**Proposed Warning Area (in red)**

FIR = Flight Information Region (relevant country controls flight in that region)



# FAA Modernization and Reform Act of 2012

- 4 (d) EXPANDING USE OF UNMANNED AIRCRAFT SYSTEMS IN ARCTIC.—

IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall develop a plan and initiate a process to work with relevant Federal agencies and national and international communities to designate permanent areas in the Arctic where small unmanned aircraft may operate 24 hours per day for research and commercial purposes. The plan for operations in these permanent areas shall include the development of processes to facilitate the safe operation of unmanned aircraft beyond line of sight. Such areas shall enable over-water flights from the surface to at least 2,000 feet in altitude, with ingress and egress routes from selected coastal launch sites.

- (3) AIRCRAFT APPROVAL.—Not later than 1 year after the entry into force of an agreement necessary to effectuate the purposes of this subsection, the Secretary shall work with relevant national and international communities to establish and implement a process, or may apply an applicable process already established, for approving the use of unmanned aircraft in the designated permanent areas in the Arctic without regard to whether an unmanned aircraft is used as a public aircraft, a civil aircraft, or a model aircraft.

# Unmanned Aircraft in the Arctic



# Oliktok Point User Facility

## Oliktok Pt. Arctic Research Facility

- DOE User Facility Designation
- Approved by DOE
- Proprietary and Non-Proprietary Agreements
- Provides framework for liability issues
- Provides process for Flight Safety approvals
- Pending IOP Requests for Oliktok Facility