



Special Temporary Authority to Test Radar Instrumentation

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Table of Contents

A. Purpose of Operation and Need for License	3
B. Locations of Proposed Operation	3
C. Technical Specifications	4
1. Frequency of Operation	4
2. Effective Radiated Power (ERP)	4
3. Modulation Signal Description and Emissions	5
4. Antenna Information	5
5. Equipment Utilized	5
6. Station Class	5
D. Contact Information	5

A. Purpose of Operation and Need for License

The primary objectives of the project are to perform radar test measurements preparation for NASA's OIB (Operation ICE Bridge) program over the Antarctic ice sheets and Antarctic sea ice. NASA contract number NNX13AD53A. The radar data are to be used to determine ice thickness and map both near surface and deep internal layers of ice sheets, as well as map the snow-air and snow-ice interfaces for estimating the thickness of snow over sea ice.

Pre-deployment flight tests within the United States necessary, requiring authorization from the FCC.

B. Locations of Proposed Operation

A 23-day (09/26/2016 to 10/18/2016) STA is requested to allow the testing of ice penetrating radar using an aircraft mounted system. The height of the transmitter will between 1,500 - 20,000 feet AGL (Above Ground Level) and will radiate directly downward from the aircraft. The locations of operation are outlined in Table 1.

Table 1 – Summary of Proposed Operation Locations

Proposed Location	
1. Alluvial Fan Deposits	43mile radius around point 35° 8'25.95"N 118°10'17.05"W
2. Dry Lake Alluvial Fan Volcanics	44mile radius around point 35° 4'59.01"N 117°14'22.58"W
3. Kelso Dunes	48 mile radius around point 34°55'6.94"N 115°43'51.47"W

The actual path will be tracks shown in Figure 1. The 70 mile distance before and after the tracks will allow for equipment startup and shutdown.

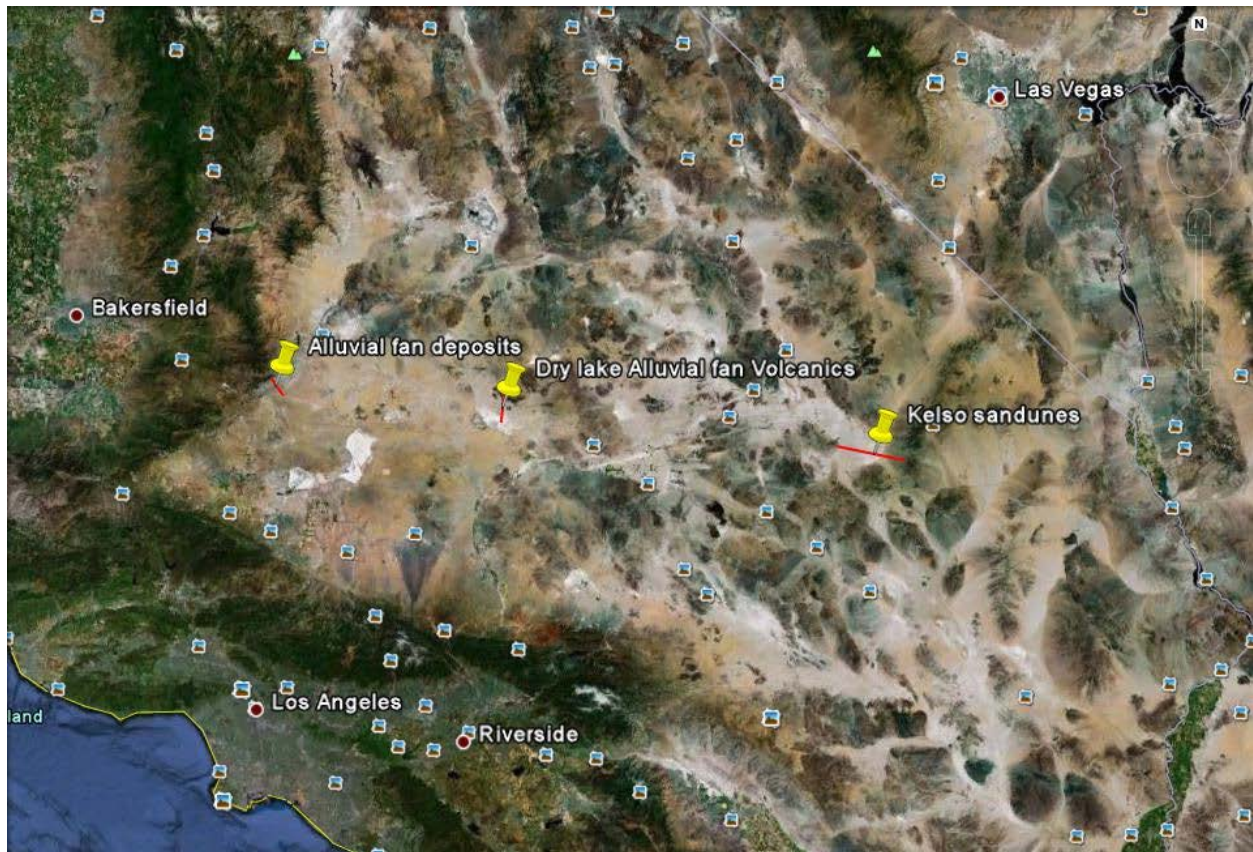


Figure 1: Proposed ground tracks

C. Technical Specifications

1. Frequency of Operation

CReSIS requests authorization to operate:

MCoRDS Radar from 165 MHz to 215 MHz,

Snow Radar from 2 GHz to 8 GHz,

KU-Band Radar from 12 GHz to 18 GHz.

2. Effective Radiated Power (ERP)

The effective radiated power (ERP) will not exceed:

4200 W average for **MCoRDS Radar**,

1 W average for **Snow Radar**,

12 W average for **KU-Band Radar**.

This power is needed to overcome clutter and losses.



3. Modulation Signal Description and Emissions

The signal is a linear FM pulse. Each pulse will be 10 μ s with a pulse repetition frequency of 12 kHz.

4. Antenna Information

The antenna is a 6 element array. The 5 dB beam width at the center frequency (190 MHz) is about 40 degrees and the gain is about 11 dBi. The antenna array is pointed directly downward from the aircraft.

5. Equipment Utilized

Equipment used for this system is custom built at CReSIS.

6. Station Class

This station will be Aeronautical Mobile in the areas described in section B, with an altitude between 1,500 - 20,000 feet AGL (Above Ground Level).

D. Contact Information

For questions about this application or in the unlikely event interference concerns should arise, please contact:

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