

# **STATEMENT ACCOMPANYING REQUEST TO MODIFY EXPERIMENTAL AUTHORIZATION WG2XVN OF AEROVIRONMENT, INC.**

## **1. Introduction**

By this application, AeroVironment, Inc. (AeroVironment), requests that the Commission grant a modification to call sign WG2XVN to operate facilities within the 1670-1675 MHz band on Alaska's North Slope, including in the waters located immediately to the north in the Beaufort Sea and at the China Lake Naval Air Weapons Station located in California. These proposed sites are detailed in the attached Form 442. We also propose revisions to several sites currently authorized to provide a more precise description and to correct an error. In this statement, we explain the purpose of the modification and why this application is within the Commission's experimental authorization rules.

## **2. Purpose**

The purpose of the Alaska experiments is providing analysis and information to further aerial surveillance in support of oil spill response in remote hazardous environments in arctic waters. The ability of real-time full motion video via small unmanned aircraft system (SUAS) technologies to assist in identifying locations of material in water, directing spill response vessels deploying boom, oil spill trend analysis, shore line assessment and impact and identifying affected wildlife will be examined. Overland missions include aerial monitoring and inspections of critical national infrastructure. The objective is demonstrating that the technology can make a meaningful contribution to these important responsibilities.

The purpose of the China Lake experiments is providing analysis and information to further the availability of SUAS technologies to homeland security responsibilities. The experimental authorization seeks to show how that the technology can make a meaningful contribution to domestic security and emergency response responsibilities at significant cost efficiencies.

## **3. Technology Use**

The experiments embrace a model using a band segment that aligns with technology and equipment currently available. AeroVironment commits to operations respecting other users of the band and those in adjacent segments. The limited power levels proposed are part of this commitment. AeroVironment believes the compelling purpose of bringing these advanced services to these challenges serves the public interest. The 1670-1675 MHz channels provide SUAS control and video and telemetry transmission from the SUAS to the ground. Slots are dedicated for uplink data and a downlink.

In Alaska, operations will be conducted over water with launches from both man-made drilling rig locations and spill response vessels at sea and in overland areas. There will be only one SUAS airborne at any given time. Alaska operations will be limited to 400' and below and the SUAS will remain within 3 nautical miles of the exercise center point.

The location of operations off the North Slope of Alaska will be over water from 70 29.00N 150 00.00W on a bearing of 330 degrees and from 70 13.00N 147 45.00W on a bearing of 360 degrees northward into the Beaufort Sea and within the overland area depicted on the maps provided in the Attachment. Operations will be confined to the Federal Aviation Administration's (FAA) Certificate of Authorization (COA) areas, which is pending.

Operations at China Lake will be located at this Department of Defense (DoD) installation within DoD restricted air space.

#### **4. Nature of Operations**

##### *Surface Based and Airborne Transmission*

As noted in our original application, AeroVironment's communications module, Digital Data Link (DDL), will use the 1670-1675 MHz band segment for purposes of sending ground based command and control data to and from the SUAS and to transmit video and telemetry to the ground control station. The technology, capable of operating within 1625-2390 MHz, requires 4 MHz for full motion video and a 1 MHz channel for video at 15 frames per second. Emission Designators are 4M68G7W and 1M56G7W, respectively with a transmit power at 10W. Transmission control will be from the surface control station to the SUAS via a laptop or console. AeroVironment's DDL system has been adopted by the US Army as the standard communications architecture for all small unmanned systems, including ground robots.

#### **5. Stop Buzzer**

Andy Thurling, Chief Test Pilot, will be available by telephone at 805.581.2198, extension 1892, Cell Phone 805.368.6351 and will act as a "stop buzzer" if any matters involving interference arise during the testing.

#### **6. Transmitting Equipment**

The transmitting equipment is unchanged. It is AeroVironment Transreceiver Model 50280, with 2 units at each location. It is not experimental.

## 7. Antenna

The Antenna details have not changed from the current authorization and are as follows:

<b>Antenna</b>	<b>Gain (Nominal)</b>	<b>Polarization</b>	<b>Orientation in Vertical Plane</b>	<b>Oriental in Horizontal Plane</b>
GCU Antenna ASY AeroVironment Stack Patch	9dbi*	Vertical	30	85
1670-1675 MHz Tailboom ASSY AeroVironment Dipole	2dbi	Vertical	78	360

\*Major Side Lobe

- E-Plane
  - Gain: -2 dbi
  - 120 deg
- H- Plane
  - Gain: -2 dbi
  - 179 deg

## 8. Restrictions on Operations and Interference Protection

AeroVironment understands that experimental operations must not cause harmful interference to authorized facilities. Should any interference occur, AeroVironment will take immediate steps to resolve the interference, including, if necessary, discontinuing operations.

## 9. Waiver of Station Identification Requirements

AeroVironment requests a waiver of the station identification requirements stated in Section 5.115 of the Commission's rules.

## 10. Federal Aviation Administration (FAA) Certificate of Waiver Authorization (COA)

AeroVironment has filed an application for a Certificate of Waiver or Authorization with the Federal Aviation Administration detailing the area in which the SUAS will be flying during Alaskan operations. Flights on military ranges or other COA areas will be coordinated through

appropriate processes. AeroVironment understands that no operations will be pursued until FAA approval of the COA.

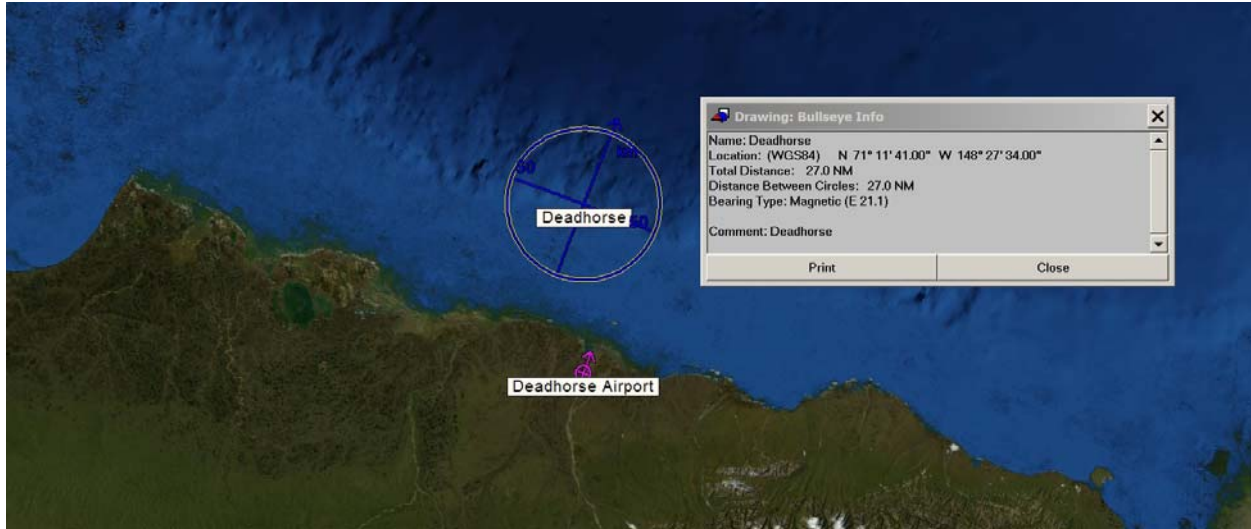
#### **11. Diagram**

A diagram and maps of the proposed Alaska operations is provided in the Attachment.

#### **Conclusion**

AeroVironment appreciates very much the Commission's consideration of this modification application for an Experimental Authorization. Please call upon us if we can respond to any questions.

Attachment  
Map of Alaska Operations



# Operations Diagram



Small Unmanned Aircraft-

Video and Telemetry  
1670-1675 MHz

Aircraft Command and Control Main and  
1670-1675 MHz

