AeroVironment, Inc.

Application for Experimental License

October 26, 2023

Explanation of Experiments and Need for Experimental License

AeroVironment, Inc (AV) designs, develops, manufactures and supports unmanned aircraft systems (UAS). AV tests UAS communications systems to make sure specifications are met and to learn how it can better serve customers. These experimental operations are for testing UAS command and control, telemetry and payload systems. AV proposes a two-year experimental license.

Location of Tests

The tests will be based at a location near 113 Harbor Way, Santa Barbara, CA, where a vessel from where the tests are conducted is moored. The tests will take place in the Santa Barbara Channel of the Pacific Ocean within 20 km of the coordinates. No operations will take place over land, specifically to North, Northwest and Southeast of the coordinates. UAS flights will not exceed 121.9 m AGL.

The coordinates of operations are 20 km within:

N 34º 24’ 13.0” / W 119º 41’ 35.0”

A map of proposed operations is attached.

Purpose and Nature of Operations

Channels 2362 MHz, 2366, MHz 2389 MHz and 2390 MHz send command and control data from the UAS and transmit NTSC video and telemetry to the ground control station with modulation SO-QPSK. Emission Designators 4M70G7W and 1M60G7W, with an output transmit power of 2 w. Transmission control is from a ground control station located on a ship or boat to the UAS via a laptop, tablet or consul.

As noted, operations are within 20 km of a location near 113 Harbor Way, Santa Barbara, CA solely within the Santa Barbara Channel. Flights do not to exceed 121.9 meters AGL. Not more than one UAS is airborne at any one time. Tests are performed at intermittent intervals for several hours daily.

The experiments enable analysis and information in a maritime environment. The Santa Barbara Channel, south of Santa Barbara, presents broad ocean variations for these sea trials. How meteorological and physical elements in an ocean environment effect radio wave propagation is challenging and varies significantly depending on the spectrum segment. How varied elements impact propagation loss, particularly since the antenna height in the UAS varies above the water, will be analyzed. The tests examine the ability of the video technology to discern variations and changes over short and longer time increments. The tests also evaluate how the UAS sensors and transmitted video can discern the breadth, direction and degree of wildlife, ecological material and infrastructure in the channel. The tests also gage how effectively the information can be integrated into real time mapping tools.

Transmitting and Receiver Equipment

Manufacturer	Model	Quantity	Experimental
AeroVironment	66436 ASSY	2	No

Antenna

The following details the antenna information:

Antenna Frequency Segment	Gain (Main Beam)	Polarization	Orientation in Vertical Plane	Orientation in Horizontal Plane
AeroVironment Dual Patch Array	9 dbi*	Vertical	15º	120º
Tailboom AeroVironment Dipole	4 dbi	Vertical	45°	360°

*1st Major Side Lobe
E-Plane N/A

ERP Calculations:

AeroVironment Dual
Patch Array:9.687w

Tailboom
AeroVironment
Dipole: 4.861w

AFTRCC Coordination

This application includes coordination by the Aerospace & Flight Test Radio Coordinating Council (AFTRCC), which is attached. AV agrees to abide by the conditions stated by AFTRCC in its coordination.

Restrictions on Operations and Interference Protection

AV understands that experimental operations must not cause harmful interference to authorized facilities. AV commits to operations respecting other users of the band and those in adjacent segments. The limited power levels proposed and the short-term intermittent use are part of this commitment. Should any interference occur, AeroVironment will take immediate steps to

resolve the interference, including, discontinuing operations.

Waiver of Station Identification Requirements

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

Stop Buzzer

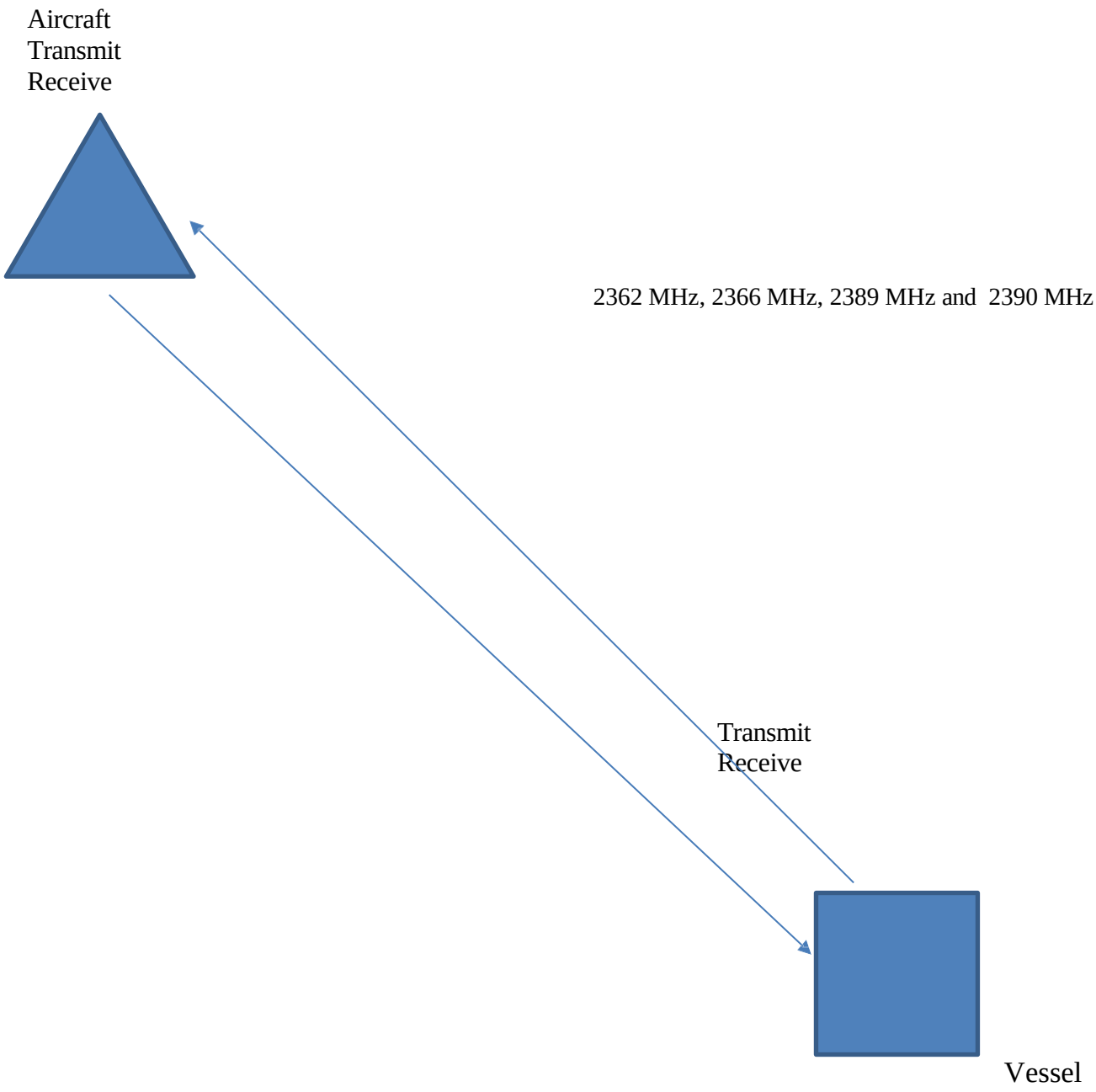
Bart Decker, AV's Director of Flight Standards, is available by telephone or electronic mail at 805.391.1335 and Decker@AVINC.com, respectively and will act as a stop buzzer if any matters involving interference arise during the testing.

Diagram

A diagram and photographs of the proposed operations and follows. A map of the coordinates and broader area is also provided.

AeroVironment appreciates the Commissions, NTIA's and other agency review and consideration. Please let us know any questions.

LINE DIAGRAM



Operations Photographs

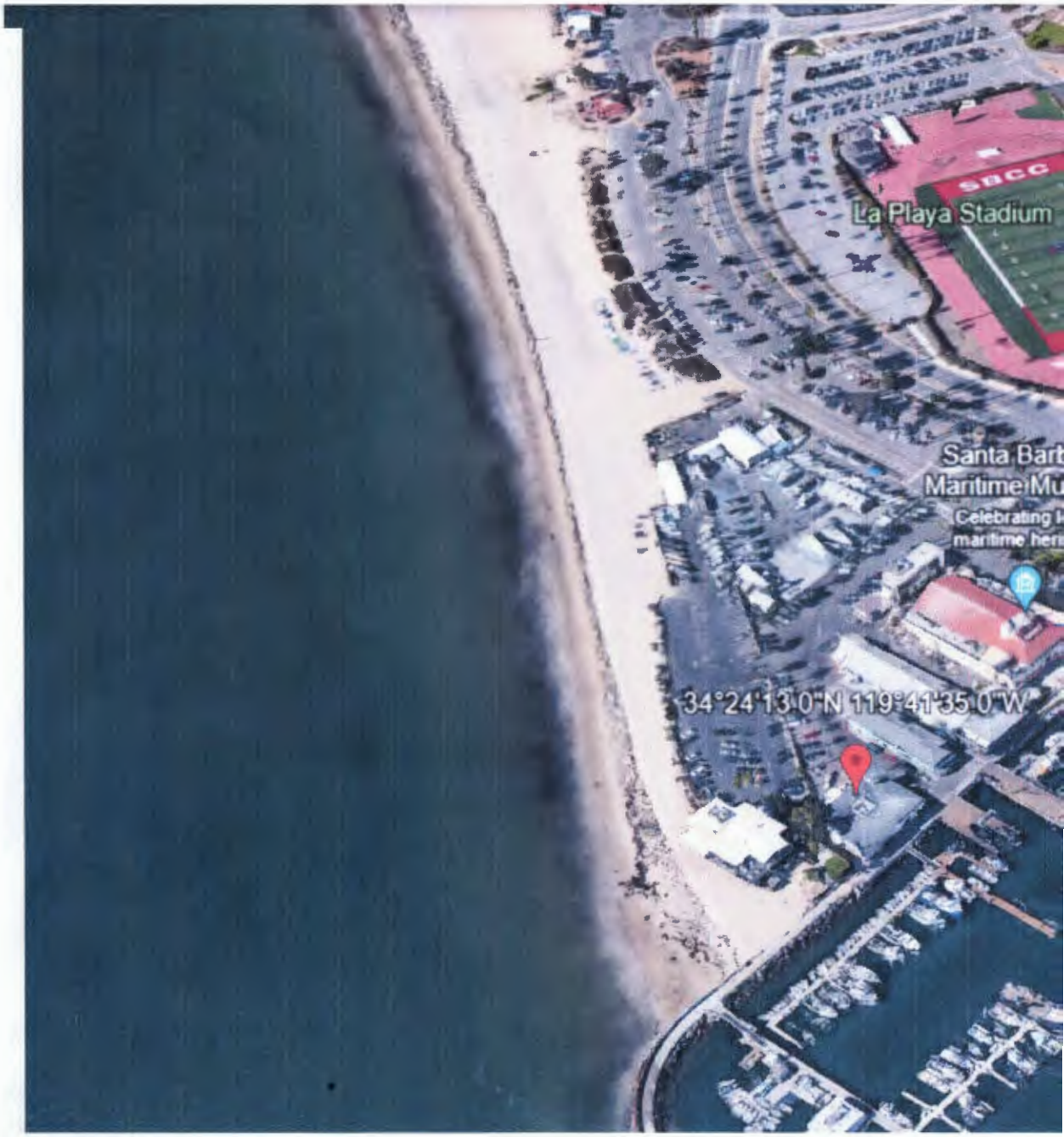
Launch

In flight

MAP of Test Operations Area

File View Add Tools Help

N34 24 13 W 119 41 35



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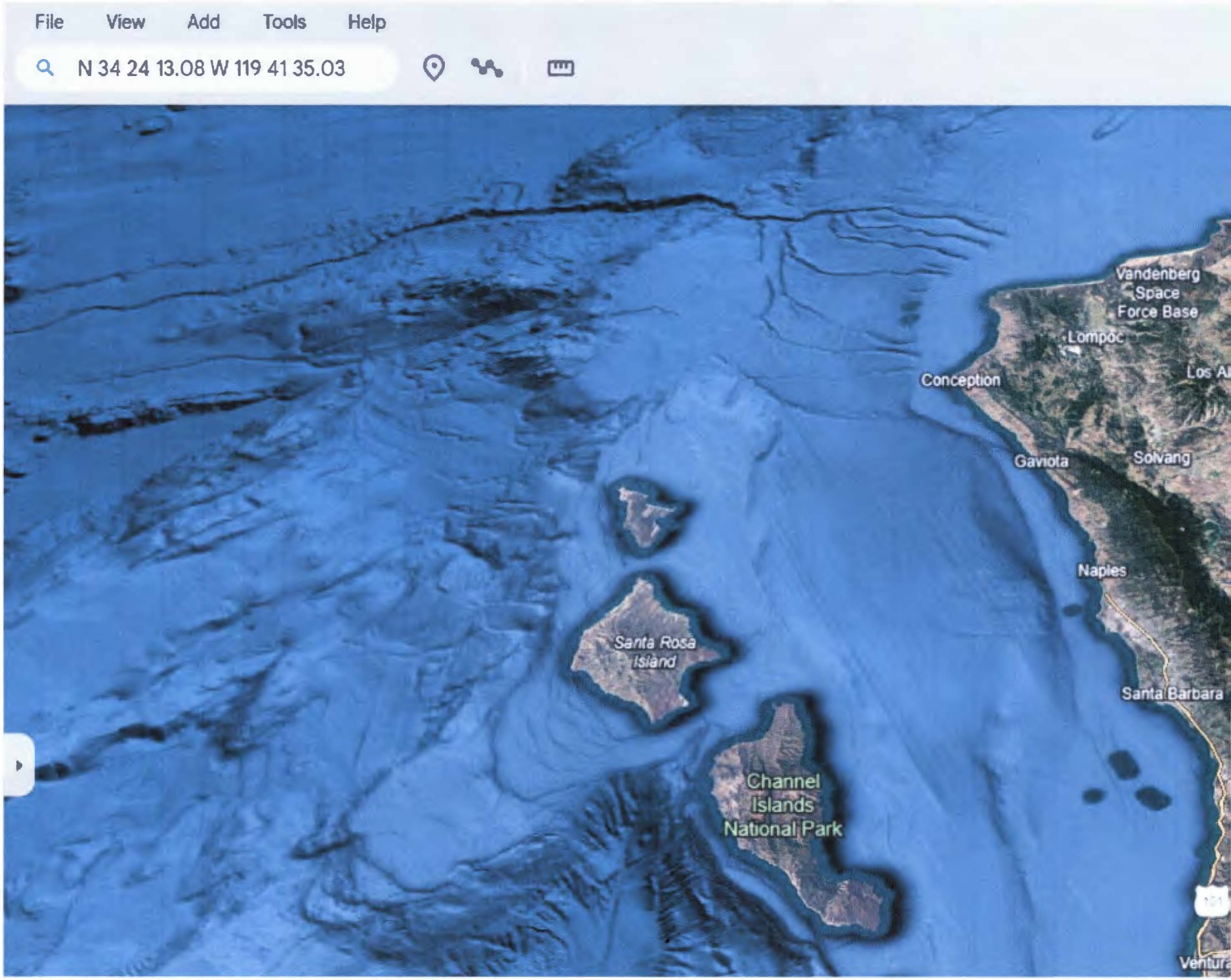
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View
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N 34 24 13.08 W 119 41 35.03
Vandenberg Space Force Base
Lompoc
Conception
Gaviota
Solvang
Naples
Santa Rosa Island
Channel Islands National Park
Santa Barbara