

Explanation of Experiment

Overview:

Raytheon Company is a primary defense manufacturer in the US, supplying systems ready to operate to the US military. Raytheon's experience with missiles has led its customers to seek UAV technology based on some of its existing platforms and knowledge. This has led Raytheon into the development of advanced UAV technology as well.

This application seeks authorization for the use of a radio that is used in the development and testing of its advanced UAVs. The radios incorporated into the UAVs support the mission of the UAV testing.

Need for an STA:

Raytheon has a contract with the DoD for the advanced development of the UAV systems. Raytheon's customers are requesting a test/demonstration at Yuma Proving Grounds for two test events, one in June and one in September. Additional time was requested on the license should the demonstration be postponed for any reason.

Raytheon agrees to coordination with the regional AFC and installation spectrum manager as required.

Technical Synopsis:

- Spectrum Needed: 1370-1390 MHz
 - occupied emission is 4.25 MHz wide, system frequency hops between 3-4 channels
 - Frequency selected due to previous FAA comments on restricted use in the M1350-M1370 range on previous coordination(s).
- Limited Time of Use: only occasional testing at this location
- Limited time of use: 1-2 hours per day of radio use
- Limited area of operations: maximum 3000 feet elevation
- Power levels are low for airborne operations: 13 W ERP
- Ground control maximum ERP: 10 W

ERP Specifications					
Site	TX Power	Antenna	EIRP → ERP	Total	Total
X-net Airborne	37 dBm	6 dBi	-2 dB	41 dBm	13 W
X-net Ground	37 dBm	5 dBi	-2 dB	40 dBm	10 W

Description of Operations:

Raytheon needs to demonstrate performance characteristics of its UAV system. This UAV platform has been designed to perform a range of tasks. This application is for a dedicated datalink that is essential to the performance of this UAV platform.

Limited Time of Use:

The UAVs are tested using batteries. The battery life lasts up to two hours. Because the program will need to process test results, they normally only schedule one test per day to take advantage of overnight recharging for the batteries.

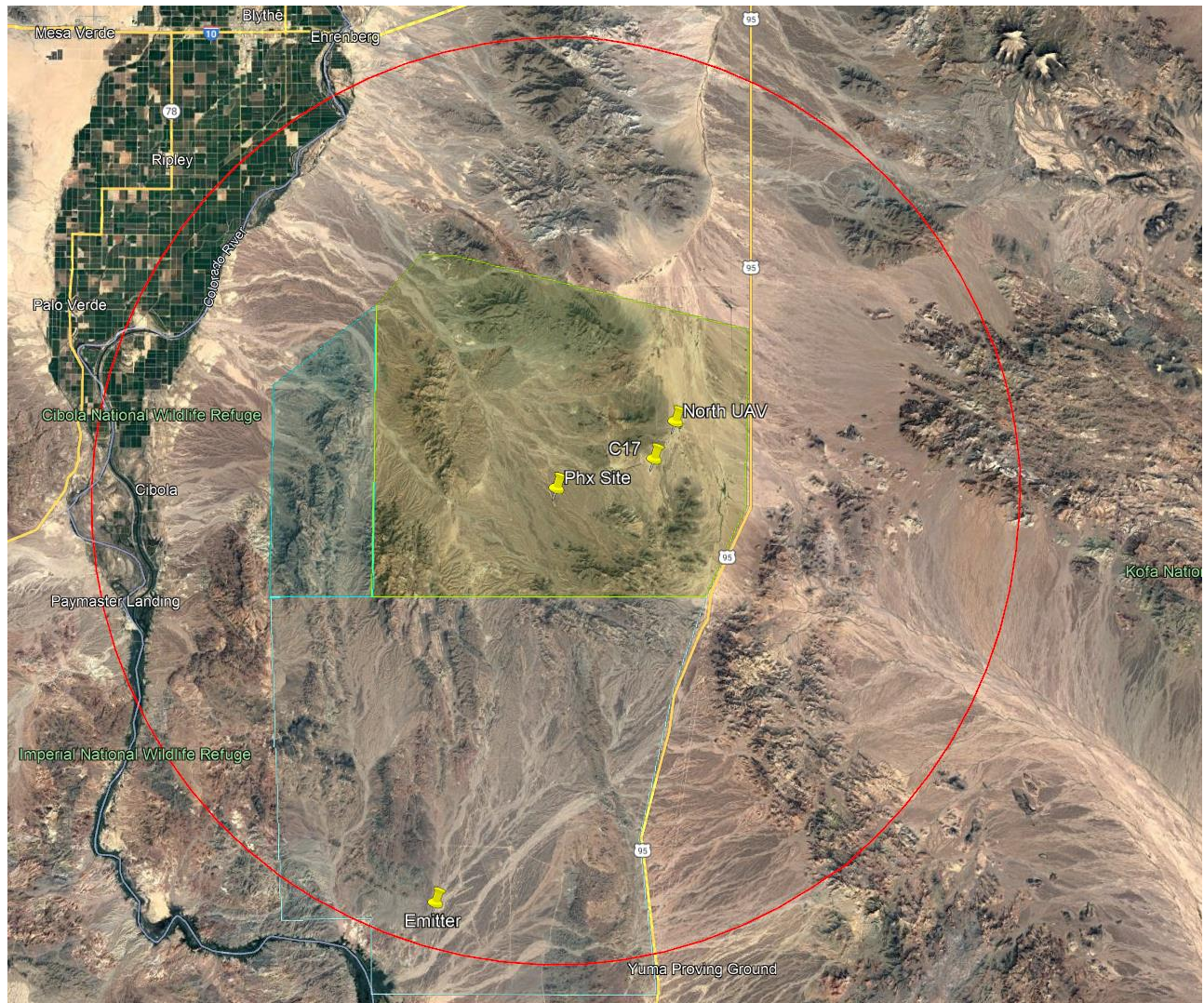
The demonstrations will only take place occasionally, as the program will be testing in other locations around the country. So, the spectrum use will be very limited at this location.

Locations of Testing:

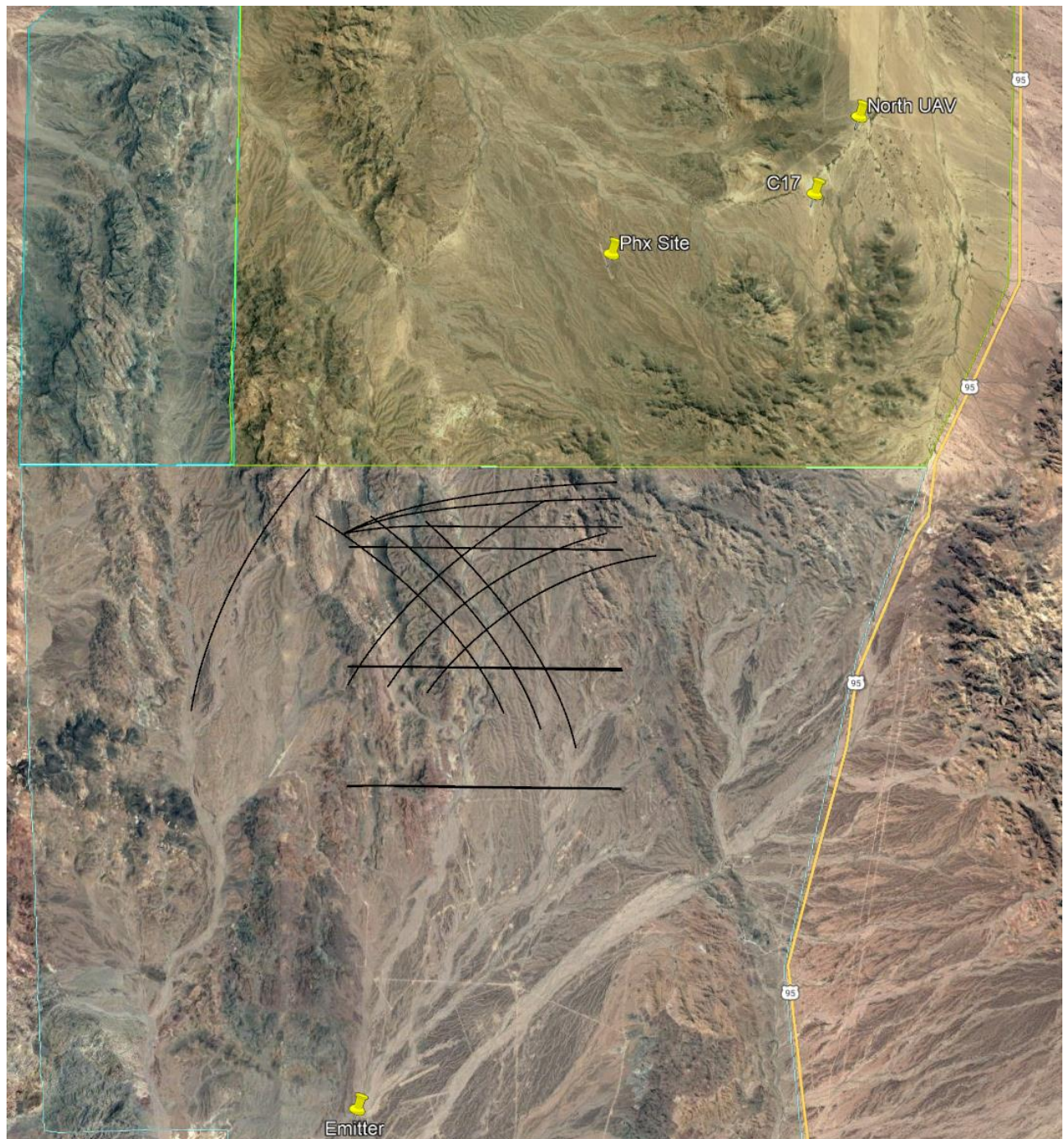
Location #1: Yuma Proving Grounds

Lat/Long: 33° 18' 39.04" N 114° 21' 56.03" W

Radius: 37.1 Km



Flight Paths in Black



Stop Buzzer Point of Contact:

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Raytheon Missiles & Defense
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Conclusion:

Raytheon is seeking an STA for temporary test/demonstration operations. The operations are to show the development of the system. The proposed testing will be limited in nature. The radio use will be limited, because the systems will not be tested in all locations at the same time. Furthermore, only selected parts of the frequency bands requested will be in use at any time. The bands were requested to expedite local spectrum coordination.