World View
Experimental STA Application
File No.: 1000-EX-ST-2020

Explanation of Experiment and Need for STA

Company Description/Overview:

World View, a Tucson, Arizona based company, was founded to build and launch stratospheric, lighter-than-air balloons carrying a range of payloads. See Figure 1 below for an image of a Stratollite. World View's customers range from the US Department of Defense to private citizens to commercial enterprises looking to take advantage of a platform that can bring them to the edge of space.

World View is seeking this authorization to operate a radio system that will carry telemetry data from its stratospheric balloon during its mission. To prepare properly for a safe launch and operation, this application also seeks temporary authorization for ground-based testing prior to the launch.

Need for an STA:

World View has been working with customers to demonstrate the capabilities of its Stratollite system. The first demonstration is currently scheduled to start on August 1, 2020. World View sought authorization earlier, but AFTRCC declined to coordinate the large area requested because of its need to protect other telemetry operations. After negotiation with AFTRCC, World View is filing this new application to meet its demonstration needs. An STA is appropriate for operations that last less than 3 months.

Technical Synopsis:

- Spectrum requested: at five specific locations 2360-2483 MHz; mobile in Texas: 2400-2483 MHz
- Power levels: 8 W mimo operations, with 5 dBi gain from airborne transmitter
- Limited time of use: ground testing just a few hours, airborne only during flights
- Balloon will operate at 50,000 to 75,000 feet
- Radio operations are directional

Description of Operations:

World View is seeking authorization for operation of a data link system to transmit information from its Stratollite to a mobile ground station that tracks the balloon while it is in flight. The proposed test flights will operate in portions of Texas and Utah, in the areas depicted below in Figure 2.

The radios will be tested to see how far the radio links will reach while delivering reliable information, and the radios will be tested to determine the speed of the data transmissions that can be achieved across various distances. These tests are being conducted to show World View's potential customers the capabilities of the stratollite platform.

Data link: After the launch, the MIMO data link will be in use periodically through the flight. The plan is to use a narrower segment of spectrum, 2400-2483 MHz for general flight operations. The broader spectrum band 2360-2483 will be in use only over the specifically designated locations in Figure 2, which will be very limited in time, perhaps 96 hours per site, no more. The downlink will be used to transmit high-resolution imagery and other telemetry data from the balloon to the ground station. Given the altitude of the balloon, 10 miles or more from earth, the signal at ground level will be very low.

Figure 1. World View Stratospheric Balloon

Area of Operation: see *Figure 2* below:

Portions of Texas
Portions of Utah

The Stratollite movement is controlled by upper atmosphere wind patterns, so each flight will be somewhat different. The stratollite will launch sometime on or after August 1. The

general mobile spectrum request will cover operations of the stratollite while it is in flight from the launch site to the demonstration sites. Then, the specific operations will take place that are for customer demonstrations. It is anticipated that the customer demonstrations will last only for a small percentage of the hours of the flight.

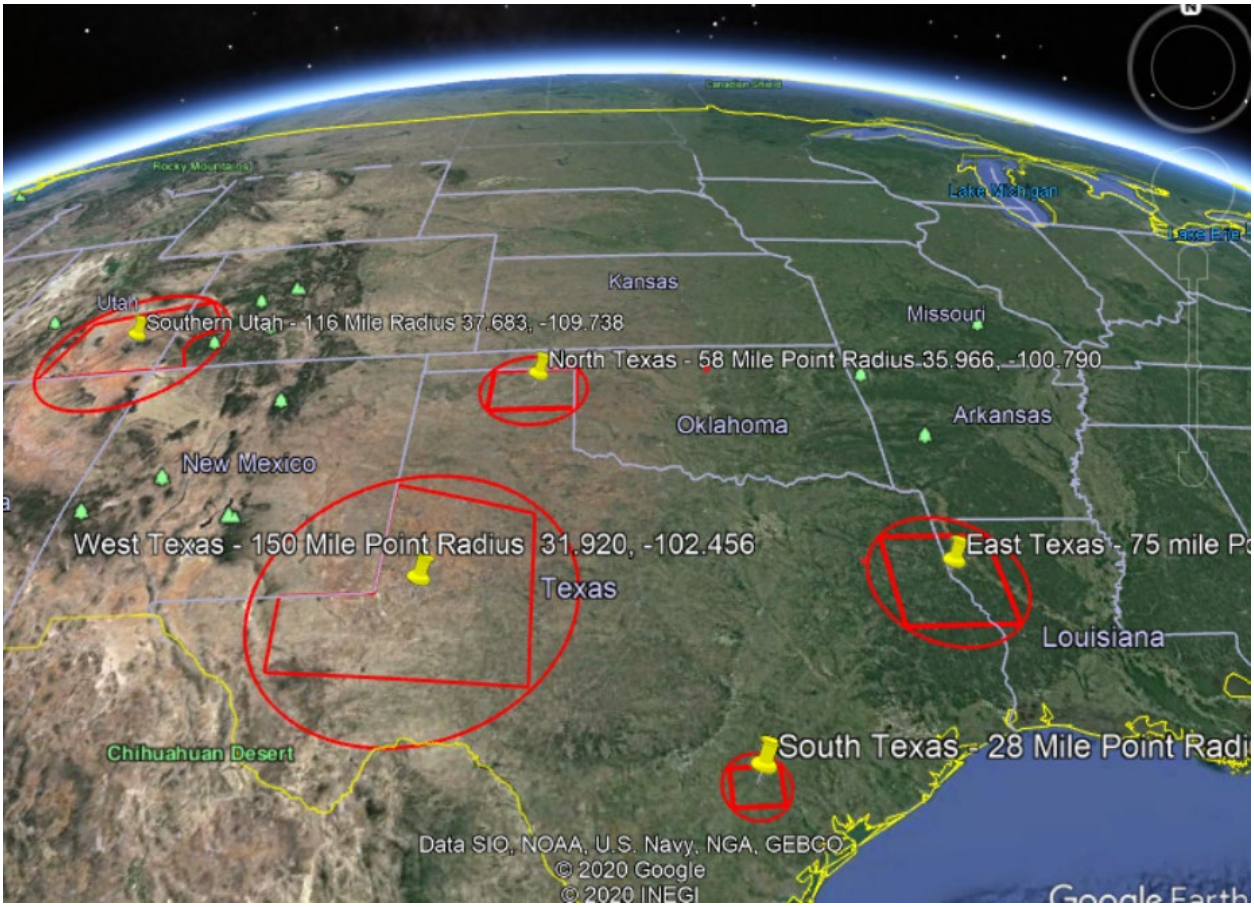

Figure 2. Proposed area of demonstration operations

To optimize the functioning of the radio systems, World View has built a mobile command center that uses a directional antenna to track and receive telemetry information from the transmitter on the Stratollite.

Minimization of risk of interference:

To minimize any potential interference, World View has worked to design a system that puts the most gain into the receive antenna rather than adding power to the transmitter.

Prior Coordination:
As a part of World View's negotiation with AFTRCC, World View has agreed to coordinate its operations using 2360-2390 MHz over the specific demonstration areas with the DOD-AFCs responsible for those areas. First, World View will work with the DOD-AFCs in

advance of the flight to provide information about the probable launch window. The weather and wind variability makes it impossible to pre-schedule the flights at the time of the filing. World View intends to work on coordinated scheduling as soon as possible.

Second, after the launch, World View will coordinate more specifically with each DOD-AFC regarding the expected time when the flight operations are going to use the 2360-2483 MHz band over a particular target area. World View will give at least 24 hours prior notice to the relevant DOD-AFC of the stratollite operations in the area. To the extent possible, World View will keep the relevant DOD-AFCs informed of all flight progress. Further, World View will be in regular communication with the FAA about its flight operations before and throughout the flight.

These efforts should minimize the impact of these high altitude flights on any other users of the 2360-2390 MHz telemetry band.

Stop Buzzer Point of Contact:

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Conclusion:

World View continues to develop its stratospheric balloon platform for a range of government and an emerging sector of commercial customers. As part of the development of the balloon and the business case, World View needs to demonstrate its new capabilities to determine what can be achieved over distances and varying altitudes. The proposed demonstrations will allow World View to show its customers the distances and throughputs it can achieve in imaging. This is essential to the growth of the industry and, in particular, to the growth of this company.

If there are any questions about this application, please contact Anne Cortez, WFS, 520-360-0925 or alc@conspecinternational.com.