

Exhibit 1

I. Introduction

By the instant application (“Application”), Dynetics, Inc. (“Dynetics”) requests that the Commission grant Special Temporary Authority (“STA”) to permit Dynetics to operate the facilities (the “Facilities”) specified in the instant application from March 15, 2019 to September 15, 2019.

II. Purpose and Nature of the Operation

Dynetics, headquartered in Huntsville, Alabama, delivers high-quality, high-value engineering, scientific, and information technology (IT) solutions to customers within the U.S. government and a range of other market segments. Dynetics provides complete lifecycle analysis, engineering, and hardware, to support customer missions.

An experimental STA is requested to test the wireless two-way data link for the Gremlins Air Vehicle prototype UAS. This activity is necessary to support the Gremlins Phase III contract for testing of the Gremlins system. This activity is necessary to test a prototype system being developed for the DARPA Gremlins Phase III contract. Contract information is as follows:

Agency:	Defense Advanced Research Projects Agency (DARPA)
Contract No:	HR001118C0071
Government POC:	Mr. Nate Young, Nathan.Young.ctr@darpa.mil, 571.218.4977

Waiver of the Station ID rules set forth at Section 5.115 is respectfully requested.

Ground-Based Transmissions

- Ground-based transmissions will occur at two locations, Niagara Falls International Airport (Antenna 1) and Lyndonville, NY near Lake Ontario (Misty 1 MOA) (Antenna 2).
- The fixed ground station located at the airport will be used for ground checks between the ground station (Antenna 1) and mobile airborne station (Antenna 3) prior to the aircraft taking off.
- When the mobile station (Antenna 3) is airborne, only the fixed location (Antenna 2) in Lyndonville will operated.

Airborne Transmissions

- The mobile station (Antenna 3) will be onboard a Learjet operated by Calspan Flight Research center, based out of Niagara Falls International Airport.
- Once airborne, the aircraft will transit from the airport to the test area located over Lake Ontario (Misty 1 MOA). The mobile airborne station (Antenna 3) will be operational on the ground at Niagara Falls International Airport, operational during flight transit to the test area, and operational during flight for the test activity within the Misty 1 MOA test area.
- The centerpoint of Antenna 3 operations is defined as centered at a latitude and longitude near Hartland, NY with a radius of 64.36 km (40 miles) to include both the Niagara Falls International Airport and the test area. The elevation of the ground AMSL at the centerpoint coordinates is 125 m. The distance of the nearest aircraft landing area from the centerpoint coordinates is 18 km.
- The altitude of the airborne station will range from 0-6096 m (0-20,000 ft). When operating at the Niagara Falls International Airport, Dynetics will coordinate activities with the airport authority.

The figure below shows the geographical area of the experiment including the locations of the three antennas.



III. Additional Technical Information

All stations have the same performance specifications including modulating schemes, bandwidth, and transmitter power, but different ERPs.

The ground station at Niagara Falls International Airport (Antenna 1) and the airborne station (Antenna 3) will use an omnidirectional (azimuth) antenna with a gain of 1 dBi. Thus the ERP of the Niagara Falls International Airport (Antenna 1) ground station and the airborne station (Antenna 3) will be a maximum of 8 Watts, mean (average).

Directionality of Antenna 2 (Lyndonville, NY): The ground station at Lyndonville, NY, near Lake Ontario (Misty 1 MOA) (Antenna 2), will use a directional antenna mounted on a pan/tilt pedestal to track the airborne station. The ERP of the Lyndonville, NY (Antenna 2) ground station will be a maximum of 800 Watts, mean (average). The radiation pattern of the Lyndonville, NY (Antenna 2) ground station is 15 deg in azimuth and 12 deg in elevation. Orientation in horizontal plane will be pointed arbitrarily in azimuth to track the airborne station. Orientation in the vertical (elevation) plane will be 0-5 deg to track the airborne station.

IV. Modulating Signal Information

The wireless two-way data link, Long Range Data Link (LRDL) Software Radio developed by Aeronix, has a multi-carrier orthogonal frequency division multiplexing (OFDM) transmission. The transmitter output power is 8 W Average at BPSK for OFDM. The LRDL will utilize two occupied bandwidths of 3.5 and 7 MHz. The two emission designators identified represent these two maximum emission bandwidths. The LRDL may use BPSK, QPSK, QAM16, or QAM64 subcarrier modulations, configured as follows:

BPSK 1/2@ 3.5MHz
BPSK 1/2 @ 7MHz
QPSK 1/2 @ 3.5 MHz
QPSK 1/2 @ 7 MHz
QPSK 3/4 @ 7 MHz
QAM16 3/4 @3.5 MHz
QAM16 3/4 @7MHz
QAM64 2/3 @7MHz

The digital datalink can operate on channels of 1-MHz spacing within the frequency range requested. The requested action frequency range represents the maximum usable emission bandwidth when operated on the lowest and highest available channels.

V. Interference Mitigation

Dynetics is well aware of its obligations under Part 5 of the Commission's rules to avoid interference to co-channel licensees in non-experimental services, and will take all steps to ensure compliance with this obligation. As stated above, Dynetics will work with the Commission and/or other stakeholders to carve out a smaller action frequency range or as a

minimum, two specific frequencies within the requested action frequency range to avoid interference to co-channel licensees in non-experimental services. With respect to interference mitigation, Dynetics understands that FAA (or other government stakeholders) may restrict radiation to certain azimuth and/or elevation sectors in order to ensure that the proposed Facilities do not pose a threat of interference to adjacent emitters. Accordingly, this is to confirm that Dynetics stands ready to work with the FAA to identify any reasonably necessary restrictions for the system.

VI. Stop Buzzer

Dynetics advises that the following will be available by wireless telephone and will act as “stop buzzers” if any issues regarding interference arise during testing:

Primary: Chris Statler (256-503-9283)
Secondary: Samuel Petersen (573-578-7748)

For the foregoing reasons, Dynetics respectfully submits that approval of this Application is in the public interest, convenience and necessity.