

## **EXHIBIT B**

**FEDERAL COMMUNICATIONS COMMISSION  
APPLICATION FOR SPECIAL TEMPORARY AUTHORITY**

**Applicant Name**

**Name of Applicant:** General Atomics Aeronautical Systems, Inc.

**Address**

**Attention:** Erica Emel  
**Street Address:** 14200 Kirkham Way  
**P.O. Box:**  
**City:** Poway  
**State:** CA  
**Zip Code:** 92064  
**Country:**  
**E-Mail Address:** erica.emel@ga-asi.com

**Best Contact**

**Give the following information of person who can best handle inquiries pertaining to this application:**

**Last Name:** Herrell  
**First Name:** Russ  
**Title:** Program Manager  
**Phone Number:** 858-924-7974

**Explanation**

**Please explain in the area below why an STA is necessary:**

STA needed to increase authorized radius of emitters contained in this application which were previously approved in file number 0292-EX-ST-2020, conf# EL940111, callsign WQ9XFT from 140km to 240km.

**Purpose of Operation**

**Please explain the purpose of operation:**

Use of ADS-B, TCAS, CNPC C-band radio prototype, and Lynx synthetic aperture radar systems in conjunction with its contractual obligation with NASA for the SIO program. GA-ASI has submitted this spectrum use request for its ADS-B, TCAS, CNPC c-band radio prototype, and Lynx synthetic aperture radar systems in conjunction with its contractual obligation with NASA for the System Integration and Operationalization (SIO) program. The program is the first of its kind in that it is designed to demonstrate the feasibility of integrating an unmanned aerial system (UAS), which by nature the FAA considers an experimental aircraft system, into the national airspace (NAS). The SIO program will advance the technology development and research which has been performed on the integration of an experimental detect and avoid (DAA) system and command non-payload communication (CNPC) command and control (C2) radio prototype, as well as facilitate progress toward generating artifacts for aircraft type certification. The CNPC radio will make use of C-band frequency ranges, which have been previously coordinated with the FAA. The use of ADS-B, air to air radar, traffic collision avoidance system (TCAS), and a synthetic aperture radar (SAR) have also been coordinated with the FAA. SIO as a program of experimentation has more than a reasonable promise of contribution to the development and expansion of commercial applications of UAS in the NAS by demonstrating the safe and effective integration of the air-to-air radar, TCAS, and ADS-B for detect and avoid and a CNPC radio prototype for command and control to successfully conduct aerial inspection and surveillance of critical infrastructure owned by commercial and civil entities with whom GA-ASI has previously coordinated. This type of commercial mission has never been done with a UAS anywhere in the United States - it is a first of its kind and will serve as a proof of concept for future, similar commercial UAS missions. The specific objectives are to integrate DAA and C2 UAS technologies required for a commercial mission, conduct a flight demonstration in the NAS, and make progress toward type certification and operational approval required for routine commercial UAS operations. This work will culminate in a UAS flight demonstration in the National Airspace System with integrated detect and avoid (DAA) and command and control (C2) systems, progress toward UAS type certification, and publicly available documentation of lessons learned from the type certification efforts to benefit the UAS community.

**Information**

**Callsign:** WQ9XFT  
**Class of Station:** FX MO  
**Nature of Service:** Experimental

#### Requested Period of Operation

**Operation Start Date:** 03/22/2020  
**Operation End Date:** 09/22/2020

#### Manufacturer

List below transmitting equipment to be installed (if experimental, so state) if additional rows are required, please submit equipment list as an exhibit:

Manufacturer	Model Number	No. Of Units	Experimental
General Atomics	LNXD22000-003	1	Yes
Honeywell Aerospace	TPA-100B	2	Yes
BAE	DPX-7	1	No
Rockwell Collins	CNPC-5000E	2	Yes

#### Certification

Neither the applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. The applicant hereby waives any claim to the use of any particular frequency or electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.) The applicant acknowledges that all statements made in this application and attached exhibits are considered material representations, and that all the exhibits part hereof and are incorporated herein as if set out in full in this application; undersigned certifies that all statements in this application are true, complete and correct to the best of his/her knowledge and belief and are made in good faith. Applicant certifies that construction of the station would NOT be an action which is likely to have a significant environmental effect. See the Commission's Rules, 47 CFR1.1301-1.1319.

**Signature of Applicant (Authorized person filing form):** Russell A. Herrell  
**Title of Applicant (if any):** Program Manager  
**Date:** 2020-03-11 00:00:00.0

#### Station Location

City	State	Latitude	Longitude	Mobile	Radius of Operation
Riverside County	California	North 33 30 0	West 116 30 0	Riverside County: max altitude 20,000 ft MSL	240.00

**Datum:** NAD 83

**Is a directional antenna (other than radar) used?** No

**Exhibit submitted:** No

**(a) Width of beam in degrees at the half-power point:**

**(b) Orientation in horizontal plane:**

**(c) Orientation in vertical plane:**

**Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building?** No

**(a) Overall height above ground to tip of antenna in meters:**

**(b) Elevation of ground at antenna site above mean sea level in meters:**

**(c) Distance to nearest aircraft landing area in kilometers:**

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	1030.00000000-MHz	MO	398.000000 W 767.000000 W	M	0.00100000 %	20K0G2D	FSK

City	State	Latitude	Longitude	Mobile	Radius of Operation
Riverside County	California	North 33 30 0	West 116 30 0	Riverside County: max altitude 20,000 ft MSL	240.00

**Datum:** NAD 83

**Is a directional antenna (other than radar) used?** No

**Exhibit submitted:** No

**(a) Width of beam in degrees at the half-power point:**

**(b) Orientation in horizontal plane:**

**(c) Orientation in vertical plane:**

**Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building?** No

**(a) Overall height above ground to tip of antenna in meters:**

**(b) Elevation of ground at antenna site above mean sea level in meters:**

**(c) Distance to nearest aircraft landing area in kilometers:**

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	1090.00000000-MHz	MO	500.000000 W 966.000000 W	M	0.00100000 %	18M8Q2D	MSK

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	1090.00000000-MHz	MO	500.000000 W 966.000000 W	M	0.00100000 %	10M0M1D	Pulse

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	1090.00000000-MHz	MO	500.000000 W 966.000000 W	M	0.00100000 %	11M9M1D	Pulse

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	1090.00000000-MHz	MO	500.000000 W 966.000000 W	M	0.00100000 %	13M5M1D	Pulse

City	State	Latitude	Longitude	Mobile	Radius of Operation
	California	North 33 30 0	West 116 30 0	Riverside Count: max altitude 20,000 ft MSL	240.00

**Datum:** NAD 83

**Is a directional antenna (other than radar) used?** No

**Exhibit submitted:** No

**(a) Width of beam in degrees at the half-power point:**

**(b) Orientation in horizontal plane:**

**(c) Orientation in vertical plane:**

**Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building?** No

**(a) Overall height above ground to tip of antenna in meters:**

**(b) Elevation of ground at antenna site above mean sea level in meters:**

(c) Distance to nearest aircraft landing area in kilometers:

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	16.40250000-16.99750000 GHz	MO	360.000000 W 460.000000 kW	P	0.00050000 %	295MQ3N	Linear FM Chirp
New	16.40250000-17.30000000 GHz	MO	360.000000 W 460.000000 kW	P	0.00050000 %	295MQ3N	Linear FM Chirp
New	16.40250000-17.30000000 GHz	MO	360.000000 W 460.000000 kW	P	0.00050000 %	636MQ3N	Linear FM Chirp

City	State	Latitude	Longitude	Mobile	Radius of Operation
	California	North 34 34 12	West 117 40 48	Grey Butte, CA airfield (04CA)	30.00

Datum: NAD 83

Is a directional antenna (other than radar) used? Yes

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point: 30.00

(b) Orientation in horizontal plane: 141.40

(c) Orientation in vertical plane:

Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building? No

(a) Overall height above ground to tip of antenna in meters:

(b) Elevation of ground at antenna site above mean sea level in meters:

(c) Distance to nearest aircraft landing area in kilometers:

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	5045.03250000-MHz	MO	10.000000 W 192.752000 W	M	0.00001000 %	120KG2D	GMSK
New	5046.32250000-MHz	MO	10.000000 W 192.752000 W	M	0.00001000 %	120KG2D	GMSK
New	5048.25750000-MHz	MO	10.000000 W 192.752000 W	M	0.00001000 %	120KG2D	GMSK

City	State	Latitude	Longitude	Mobile	Radius of Operation
Palmdale	California	North 34 34 12	West 117 40 48		

Datum: NAD 83

Is a directional antenna (other than radar) used? No

Exhibit submitted: No

(a) Width of beam in degrees at the half-power point:

(b) Orientation in horizontal plane:

(c) Orientation in vertical plane:

Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing

structure other than a building? No

(a) Overall height above ground to tip of antenna in meters:

(b) Elevation of ground at antenna site above mean sea level in meters:

(c) Distance to nearest aircraft landing area in kilometers:

(d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft:

Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	5045.03250000-MHz	FX	10.000000 W 16.000000 W	M	0.00001000 %	120KG2D	GMSK
Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	5046.32250000-MHz	FX	10.000000 W 16.000000 W	M	0.00001000 %	120KG2D	GMSK
Action	Frequency	Station Class	Output Power/ERP	Mean Peak	Frequency Tolerance (+/-)	Emission Designator	Modulating Signal
New	5048.25750000-MHz	FX	10.000000 W 16.000000 W	M	0.00001000 %	120KG2D	GMSK