

STA REQUEST

1. **Introduction**

By the instant application ("STA Request"), BAE Systems Information and Electronic Systems Integration Inc. ("BAE Systems") requests that the Commission grant special temporary authority ("STA") to permit BAE Systems to operate the facilities (the "Facilities") specified in the instant STA Request. STA is requested for a period of six (6) months from the date of grant of this STA Request.

As the Commission is aware, the Commission previously granted to BAE Systems Information and Electronic Systems Integration Inc. ("BAE Systems") Special Temporary Authority ("STA") under File No. 0221-EX-ST-2005 for certain antenna test range testing activities at the company's facilities in Litchfield, NH. The frequencies and associated facilities previously authorized under that STA (as supplemented by any appropriate notifications submitted/filed with the Commission) will be referred to as the "Prior Granted Facilities". Under the Commission's rules, BAE Systems has continuing authority to operate the Prior Granted Facilities during the pendency of its application for a two-year experimental license for these facilities. This STA Request is being submitted in order to obtain authority to operate on certain of the Prior Granted Facilities for portions of two additional contracts ("Additional Contracts").

For the Prior Granted Facilities under File No. 0221-EX-ST-2005, the Commission imposed a number of conditions. BAE Systems hereby confirms that it is willing to accept the same conditions for this application as were imposed under File No. 0221-EX-ST-2005.

2. **Purpose of the Operation/Overlap With Prior Granted Facilities**

BAE Systems Information & Electronic Warfare Systems (IEWS), a business unit of the Information and Electronic Systems Integration Sector (IESI) within BAE Systems Inc., will conduct the testing specified in this STA Request. IEWS is a major producer of electronic warfare systems, protection systems, and tactical surveillance and intelligence systems for all branches of the armed forces. IEWS' lines of business include Electronic Warfare/Electronic Protection, Electronic Warfare/Information Warfare, Integrated Defense Solutions, and Mission Electronics with products and services spanning the whole electromagnetic spectrum.

The testing at the Litchfield Antenna Test Range is a critical part of the manufacture and delivery of military systems provided to the Armed Forces in support of Homeland Security as well as war efforts. For the Prior Granted Facilities, the purpose of the facilities for which consent was requested was to measure individually the performance of scale model antennas of various types (i.e., loop, monopole, dipole), then install arrays of these antennas on scale models of various military fixtures, and measure the performance of the antennas in their installed configuration.

The Commission previously granted an STA to BAE Systems under File No. 0221-EX-ST-2005 for the Prior Granted Facilities with respect to certain contractual requirements. This STA Request is being submitted in order to obtain authority to operate on certain of the Prior Granted Facilities for portions of the following two Additional Contracts:

Agency: Naval Sea Systems Command

Point of Contact: Kemal Atam (of NAVSEA) 202-781-0420

Contract #: N00024-04-C-4210

[Contract awarded to BAE Systems by the U.S. Navy for the manufacture, integration, test and installation of a Cooperative Outboard Logistics Upgrade (COBLU) Communications Electronic Support Measures system. This system is being procured by the U.S. Naval Sea Systems Command under a Foreign Military Sales Contract for a Mediterranean NATO Ally.]

Agency: USAF

Point of Contact: Doug Daegele 937-255-2091

Contract #: F33657-03-G-3027

[Purpose: To measure the amplitude and phase response of an array of antennas mounted on a scale model aircraft in order to determine their performance and to generate a calibration table for the purpose of radio direction finding.]

Except for the very minor aspect explained in the following paragraph, upon grant of this STA Request, the operations under these portions of the Additional Contracts will be conducted pursuant to precisely the same technical and operational parameters specified in the Prior Granted Facilities. That means that - among other things - (i) no ungranted frequencies are required; (ii) the operation will be within the same power levels and emissions and will not result in the licensee exceeding the authorized maximum emissions envelope nor in any operations inconsistent with any terms of the outstanding authorization for the station involved; (iii) any antennas and transmitting equipment employed will be from the list of equipment specified in the Prior Granted Facilities and any subsequent notifications, and will have the same height limits, directionality, gain and orientation/beamwidth as specified in the Prior Granted Facilities; (iv) any signal amplification equipment employed will be from the list of equipment specified in the Prior Granted Facilities; (v) transmissions will be limited to the same area of operation specified in the Prior Granted Facilities; and (vi) all of the Special Conditions issued by the Commission for the Prior Granted Facilities will apply to these additional operations.

- It is noted that the tests associated with the Prior Granted Facilities authorized under File No. 0221-EX-ST-2005 involved the placement of the receive element at ground level and the transmit element may be elevated up to 36.6 meters from ground level. For the overlapping frequencies associated with the USAF contract above, the associated test will involve the transmit element placed at ground level and the receive element may be elevated up to 4 meters from ground level. This minor issue should have no impact on the emissions levels or potential for interference associated with the system.

3. Specification of Frequencies Overlapping with Prior 0221-EX-ST-2005 Grant

Upon grant of this STA Request, BAE Systems will operate portions of the above Additional Contracts on the following overlapping frequencies that were authorized under File No. 0221-EX-ST-2005. Specifically, transmission related to these Additional Contracts is intended to be conducted on the following frequencies, all at .007W mean Output Power and ERP:

Overlapping Frequencies/Additional Contract Info.	0221-EX-ST-2005 Approved Freqs
5.01 MHz; 12.5 MHz; 25.02 MHz	5.01 MHz; 12.5 MHz; 25.02 MHz
37.5 MHz; 50 MHz; 62.5 MHz	30-74.8 MHz
125 MHz	120.1-129.2 MHz
200 MHz	174-228.6 MHz
300 MHz	228.8-328.6 MHz
400 MHz	335.4-454 MHz
For use in connection with: Agency: Naval Sea Systems Command Point of Contact: Kemal Atam (of NAVSEA) 202-781-0420 Contract #: N00024-04-C-4210	
8 MHz, 10.5 MHz, 20.02 MHz	8 MHz, 10.5 MHz, 20.02 MHz
30.02 MHz; 40.02 MHz; 50 MHz; 60.02 MHz; 70 MHz	30-74.8 MHz
80 MHz; 90 MHz; 100 MHz	75.2-108 MHz
120.1 MHz	120.1-129.2 MHz
150 MHz	137-152.885 MHz
200 MHz	174-228.6 MHz
250 MHz; 300 MHz	228.8-328.6 MHz
350 MHz; 400 MHz; 450 MHz	335.4-454 MHz
550 MHz; 600 MHz	508-614 MHz
For use in connection with: Agency: USAF Point of Contact: Doug Daegele 937-255-2091 Contract #: F33657-03-G-3027	

4. Other Issues

A. Requested Area of Operation

The Litchfield Antenna Test Range is comprised of multiple separate testing locations on the BAE Systems campus at which the subject experiment may be conducted. In addition, depending on the particular requirements of the experiment (i.e., when generating signals at zero degree elevation), it may be necessary to move a given antenna along the bore site line on the range up to a distance of 100 feet. ***Accordingly, as was approved with respect to the STA granted under File No. 0221-EX-ST-2005, in order to accommodate these requirements, BAE Systems is requesting authority to operate all of the specified facilities within a 1,500 foot (.46 km) radius from the centerpoint geographic coordinates identified in the STA Request*** (i.e., 42-48-22 N.Lat.; 071-25-33 W.Long. [NAD 83]). Commission approval of such area of operation will provide BAE Systems with the flexibility it requires to move the specified test equipment to any appropriate testing location on the Litchfield Antenna Test Range during the authorized term of operation, in response to the requirements of the experiment.

B. Directionality and Height of Antennas

A single Antenna Registration has been submitted for the instant STA Request, and such Antenna Registration specifies “Yes” in response to the questions: “Is a directional antenna used?”, and “Will the antenna extend more than 6 meters above the ground...” In accordance with discussions with Commission staff, such approach was taken in order to simplify the filing process and to reduce the amount of duplicative information contained in the STA Request. However, as further discussed with Commission staff, certain of the antennas involved in the subject experiment are not directional in nature, and certain of the antennas do not exceed 6 meters in height. Therefore, the following breakdown of antenna groupings is set forth to provide an accurate understanding of the directionality and height of the antennas involved in the experiment:

i. Non-Directional (Omni-directional) Antennas With Heights Lower Than 6 Meters

This antenna grouping relates to 8 different antennas which are non-directional (omni-directional) in nature, and which do not exceed 6 meters in height above the ground (or above any structure). These antennas are as follows:

Manufacturer	Model #	Quantity	Gain (Nominal)	3dB BW E (Vertical)	3dB BW H (Horizontal)
Shakespeare	229B	2	-15 to +5 dBi	OMNI	N/A
Sanders	1/4Mon	4	-5.2 dBi	OMNI	N/A
Electro Metrics	EM-6924	2	+2.6 dBi	OMNI	120°
Sanders	TASES 36	2	-60 to -5dBi	OMNI	N/A
Sanders	TASES 24	2	-31.5 to +1.1 dBi	OMNI	N/A
Sanders	TASES 12	2	-10 to -5	OMNI	N/A
Sanders	Slant	1	-20 to -5	OMNI	N/A
BAE	AJCN46	1	-20 to -2 dBi	OMNI	120°

ii. Directional Antennas
With Heights Lower Than 6 Meters

This antenna grouping relates to 3 different antennas which are directional in nature, and which do not exceed 6 meters in height above the ground (or above any structure). These antennas are as follows:

Manufacturer	Model #	Quantity	Gain (Nominal)	3dB BW E (Vertical)	3dB BW H (Horizontal)
Sanders	1/2 Horn	1	+8dBi	60-30°	N/A
Sanders	1/2 Horn	1	+8dBi	60-45°	N/A
Sanders	BRD	1	-30 to -5dBi	35°	N/A

iii. Directional Antennas
With Heights Above 6 Meters

This antenna grouping relates to 13 different antennas which are directional in nature, and which exceed 6 meters in height above the ground (or above any structure).¹ These antennas are as follows:

Manufacturer	Model #	Quantity	Gain (Nominal)	3dB BW E (Vertical)	3dB BW H (Horizontal)
KMA	26500	1	-6dBi	90°	90°
SA	26-0.1	1	+8 dBi	60°	120°
SA	29-0.1	2	+8 dBi	60°	120°
SA	27-1.0/8	1	+8 dBi	9°	1.5°
SA	28-1.0/8/10	1	+8 dBi	9°	4.5°
SA	11-0.9	1	+13.7dBi	40°	35°
SA	11-1.1	2	+15.5dBi	30°	27°
SA	11-1.7	2	+15.5dBi	30°	27°
Condor	AS-48461	1	+5-+18dBi	60-10°	60-10°
Narda	639	2	+16.5dBi	6-20°	6-20°
AEL	H-1498	1	+8-+12dBi	60-30°	60-30°
SA	28-2.0/8/10	1	+8dBi	60-30°	60-30°
Sanders	Dual Horn	1	+8dBi	60-30°	60-30°

C. Note Regarding Output Power/ERP Figures

For the purpose of completion of the attached form, antenna efficiency has been assumed to be 100%. Therefore, the transmitter power and the radiated power are reported as equal (i.e., both the Output Power and the ERP are reported as “.007 W”). In practice the antenna efficiency and cable loss between the transmitter and the antenna will be considered and the transmitter power adjusted to achieve the approved output radiated power level.

¹ In the attached form, the “overall height of above ground to tip of antenna” is identified as 36.6 meters. It should be noted that this figure represents the highest point to which the subject transmit antennas would be raised in the course of the experiment.

D. Note Regarding “Mean” Power Designation

In the attached form, the power levels are reported as a “Mean” value. The transmitter will not be left on continuously due to the nature of the experiment and the need to physically reposition the unit under test between measurements, cycle through frequencies, change elevation angles of the transmit antenna, etc. where the transmit power is reduced to zero. The actual duty cycle of the transmit system is approximately 7%. Mean power is therefore a more accurate representation of the applicant’s proposed activity.

E. Transmitting Equipment

The following information is provided with respect to the transmitting equipment to be involved in the experiment. It is noted that each of these transmitters is non-experimental in nature:

Manufacturer	Model	Quantity
Fluke	Fluke 6060	1
HP	HP8341	1
HP	HP8643A	2
HP	HP8340B	2
HP	HP8662A	1
HP	HP8671A	1
HP	HP8753A	2
HP	HP8753D	2
HP	HP8753E	2
HP	HP8510B	1
HP	HP8510C	1
Agilent	E8257D	1

F. Additional Signal Amplification

Due to the low gain of the transmit antennas, an additional signal amplification may be utilized as follows:

Power Amplifiers	Model	Frequency Band	Power Output	Quantity
OPHIR	5069	.5MHz to 500MHz	8W	1
OPHIR	5094	1MHz to 1000MHz	3W	1
OPHIR	5160	.8GHz to 4.2GHz	7W	1
CPI	VZV-2776K4/K6	4.0GHz to 18GHz	25W	1
ENI	510L	1.7MHz to 500MHz	9.5W	2
ENI	603L	.8 MHz to 1000MHz	3W	1
ENI	550L	1.5 MHz to 400 MHz	50W	1
Amplifier Research	5W1000	1MHz to 1000MHz	50W	1

G. Prevention of Interference

BAE Systems hereby advises the Commission that the tests to be conducted under the requested Commission authorization are to be conducted solely on the campus of BAE Systems' Litchfield, New Hampshire facilities. Such location will result in the separation of the test facilities from other existing transmit or receive facilities. BAE Systems' Richard C. Ball will be personally conducting the test and will be available by wireless telephone at (603) 318-6913. Mr. Ball will act as a "stop buzzer" if any issues regarding interference arise during testing.