Southwest Research Institute
Application for Experimental License
Form 442

EXHIBIT

The information contained herein is provided in connection with the attached application to obtain an experimental license, pursuant to Section 5.3 of the FCC's Rules, 47 C.F.R. § 5.3 (2003). This application is one of four related applications involving a subset of channels in four different frequency bands. See File Nos. 0144-EX-PL-2004, 0145- EX-PL-2004, 0146-EX-PL-2004, and 0147-EX-PL-2004.

(1) NAME AND ADDRESS:

SOUTHWEST RESEARCH INSTITUTE
6220 Culebra Road
P.O. Drawer 25810
San Antonio, Texas 78238-5166

If additional information is required or should you have any questions regarding this application, please contact Mr. LaVarre Bushman, Project Manager, at (210) 522-2005 or lavarre.bushman@swri.org.

(2) NEED FOR A 5-YEAR LICENSE: An extended authorization is required so that the applicant may perform operational tests on experimental equipment developed to meet U.S. military requirements. It is expected that these tests will be conducted on an ongoing basis for at least 5 years.

Southwest Research Institute ("SwRI") is an independent, not-for-profit, applied engineering and development organization devoted to technology development and transfer. Business is conducted with the industry and government (U.S. and other friendly nations) on a worldwide basis. Approximately 50% of the SwRI's business is for the U.S Government.

SwRI has been involved in direction finding (DF) research and development since 1951. Direction finders are receive-only devices utilizing the energy of passing electromagnetic waves to determine their direction of arrival. Direction finding systems can then be used to determine the direction to an emitter. The original DF research and development has expanded to include, among other things, the interception and recognition of a large number of standard and special signals.

SwRI is now working with a number of U.S. Government agencies, including the U.S. Navy, Army, and Air Force Intelligence Services. It provides systems engineering services using RF equipment covering a frequency range from 6 kHz to 26 GHz. These systems provide signal acquisition, recognition, and direction finding for different emitter types. In order to test these systems adequately, the controlled transmission of low power radio wave signals of various modulations

is necessary across a broad range of the frequency spectrum. These transmissions are not continuous, and are only for a brief period of time during the testing stages of a given contract. Typically, these transmissions will last from a few seconds to a few hours at most.

Current government contracts with an agency of the United States Government requiring the development of the mentioned systems are listed as follows:

1. SPAWAR-Charleston-COBLU-00C6383 (sub to BAE System)
2. SPAWAR-Charleston-TRDF-N65236-00-D7026
3. SPAWAR-Charleston-TRDF-N65236-02-P-2372
4. US Government-Shortroot-N68786-98-C-6659
5. SPAWAR-Charleston-Shortroot-N65236-98-C-6659
6. Sub to Computer Science for US Government- Salicon-S-1655
7. MPO-MDA904-02-C-0988
8. Next Century Corp (SBIR)-USZA2203C0008 & USZA2203C0057
9. Windermere (SBIR)-USZA2203C0008
10. Windermere (SBIR)-USZA2203P0038T05559
11. SPAWAR-Charleston-COBLU-0207-04-01 (Sub. to Argon Engineering)
12. SPAWAR-Charleston-UAV DF Support-98-C-6659-03-004

Current foreign government contracts requiring the use of an FCC license are listed as follows:

SPONSOR	CONTRACT NUMBER
Rep. Of Korea	HFW201 Wideband
UK Naval Elec. Warefare	NEWC 1/06147
Royal Australian Navy	C4388832 C4388832-CCP7
Public Works and Government Services, Canada	W8482-02F02

(3) TYPE OF OPERATION TO BE CONDUCTED: Short term and short duration transmission of low power RF across a number of frequencies to verify proper operation of radio direction finding antenna systems, related equipment, and SIGINT collection platforms in an ambient far-field environment.

SwRI must transmit signals to test the systems in real-world environment. The systems are designed to process planar wavefronts in the far-field of the transmit source. The transmitter must be located at a significant distance from the receiver and, therefore, real-world conditions cannot be simulated by testing in an

anechoic chamber of any realistic size. Typical testing of systems at SwRI is intermittent. SwRI transmits for only a few seconds to one or two minutes for a given test frequency and is always at a low power level (< 10 watts input to antenna). On extremely rare occasions, SwRI might need to transmit for a few hours, especially in the HF frequency range when HF skywaves reflected off the ionosphere change significantly over time and day/night transition. Once the test is complete, there can be a period of several months before another system is ready for testing. Because the systems are used to monitor and direction find on any frequency that is identified in its contractually specified operating frequency range, a large number of test frequencies is required. Indeed, the very frequencies that are in common use are the ones most often of interest to our customers.

(4) CLASS OF STATION: Experimental Fixed and Mobile
NATURE OF SERVICE: Communications Research

(5) LOCATION OF OPERATION: The operation will be conducted at Southwest Research Institute. The fixed/base transmitters will be located at coordinates 29º 26' 29"N. Latitude and 98º 37' 56" W. Longitude. Mobiles will operate within Bexar County, Texas, with an approximate center of mobile operation at the coordinates 29º 26' 29"N. Latitude and 98º 37' 56" W. Longitude.

(6) EQUIPMENT TO BE USED, INCLUDING NAME OF MANUFACTURER, MODEL AND NUMBER OF UNITS.

The following equipment is representative of the antennae, amplifiers and other equipment that will be tested under this STA:

EQUIPMENT	MANUFACTURER	MODEL	QTY
Antenna	AEL	APN1696	2
Antenna	EMCO	3106	1
Antenna	EMCO	3115	1
Antenna	EM Systems	10-127438	1
Antenna	Tecom	813355-1	1
Amplifier	Amplifier Research	AT4002A	1
Amplifier	Amplifier Research	10W1000	2
Amplifier	Amplifier Research	5W1000	1
Signal Generator	Agilent	8656B	1
Signal Generator	Agilent	8656D	1

(7) FREQUENCIES DESIRED:

See Application. Because the systems are used to monitor and direction find on any frequency that is identified in its contractually specified operating frequency range, a large number of test frequencies is required. Indeed, the very frequencies that are in common use are the ones most often of interest to our customers.

(8) POWER LEVELS:

See Application. The power levels vary depending on the frequency and use. Mobile equipment operates at lower power levels than fixed base equipment.

(9) TYPE OF EMISSION/BANDWIDTH:

See Application. The necessary bandwidth was based on the manufacture's worst-case accuracy and spectral purity specifications of the transmit source (signal generator). It was not based on any intended modulation of the signal.

(10) OVERALL HEIGHT OF ANTENNA STRUCTURE ABOVE GROUND: The height of the fixed/base antennae will not be greater than 6 meters.

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