

**REQUEST FOR LIMITED 7 DAY STA  
FROM APRIL 21, 2012 THROUGH APRIL 27, 2012  
TO CONDUCT A DEMONSTRATION FOR THE US ARMY**

**1. Introduction**

By the instant application (“Application”), DRS Sustainment Systems, Inc. (“DRS SSI”) requests that the Commission grant a very limited seven day special temporary authority (“STA”) to permit DRS SSI to operate the facilities (the “Facilities”) specified in the instant application to conduct a demonstration for the US Army. .

**2. Purpose and Nature of the Operation**

**This STA is requested for the same facilities that were recently authorized under File No. 0009-EX-ST-2012, but at a new location (Invokern Airport), to allow DRS SSI to conduct a demonstration of DRS SSI’s ATS-100 device for the US Army, at the request of the Army. This experiment will demonstrate the ATS-100’s ability to stimulate 160<sup>th</sup> Special Ops rotary winged aircraft. DRS requests grant of a very limited seven day STA for this new location, from 4/21/2012 through and including 4/27/2012,<sup>1</sup> with the same terms and conditions imposed for the prior grant under File No. 0009-EX-ST-2012.**

**DRS SSI received the request to conduct this demonstration only three days ago, and has acted as quickly as possible to prepare and submit this request for Commission authority. A separate Request for Expedited Processing has been submitted along with this Application. The Army POC for this demonstration is:**

**Jason Grimes – Aircraft Survivability Equipment Specialist:  
Bldg 7280-3  
Night Stalker Way  
Ft. Campbell, KY 42223  
Tel: (270) 798-5697**

The Facilities DRS has designed related to the instant application provide a highly mobile capability for aircraft maintenance crews to conduct diagnostics and system verification in the field so that U.S. military men and women can have the confidence to focus on the mission at hand. DRS’ immediate effort to demonstrate the Facilities is intended to save lives in a rapidly evolving surface to air missile (SAM) threat environment. The impact on military operations when there is a lack of Aircraft Survivability Equipment (ASE) test capability can be devastating. This vulnerability was revealed by the defeat of Soviet forces in Afghanistan which was largely enabled by SAMs in the hands of the Mujahedeen. While such a threat has been largely contained by control over arms sales, the recent collapse of the Libyan regime resulted in the release of over 5,000 Russian SAMs into uncontrolled markets. This places US aircrews and passengers in Afghanistan and in other regions in immediate threat when their ASE readiness cannot be verified before flight operations in hostile territory.

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<sup>1</sup> The demonstration itself is planned to commence April 23, 2012, but grant is requested as of April 21, 2012 to permit pre-demonstration testing and set-up to ensure a successful demonstration for the US Army.

This particular experiment will involve ground-based mobile transmissions to support the development and testing of DRS SSI's ATS-100 device, a hand-held instrument used to test the Radar Warning Receivers (RWRs) of military aircraft, fixed and rotating wing. In appearance and mode of operation the ATS-100 resembles a radar 'speed gun' as used by the police. An RWR detects radar signals from hostile ground or airborne sources and alerts the pilot that his plane is potentially exposed to the enemy. Transmissions under the requested STA will involve pointing the ATS-100 device at an aircraft on the ground with a series of simulated radar transmissions to ensure that the correct warning is triggered in the cockpit. The ATS-100 device will typically be operated at a distance of 1-10m from the aircraft, and the test transmissions will typically be repeated at four points around the aircraft to ensure that the pilot receives correct information about the direction of the threat.

### **3. Signal Characteristics/Modulating Signal/Bandwidth**

The signal can be continuous (CW) or pulse modulated. In pulse mode the modulating signal is a pulse train with pulse width and repetition rate programmable. The repetition rate can be between 1Hz-1MHz and with pulse widths of between 50ns-100us. Repetition rates and pulse widths are selectable in a 1,2,5,10,20,50 etc. sequence. There are 182 valid combinations of repetition rate and pulse width for each RF frequency setting. (Invalid combinations arise when the pulse width exceeds the time between pulses). In all cases the RF signal is simply gated on and off – no AM or FM modulation is applied and the signal carries no information.

The maximum bandwidth requirement occurs when the shortest duration pulse width is used for modulation. Under these circumstances (i.e with 50 ns pulse width) the bandwidth is approximately 20 MHz (10 MHz either side of the carrier). When no pulse modulation is selected (CW operation) the transmission is effectively a spot frequency.

### **4. Directionality of Antenna**

The instant form requests directionality/information information for “directional antenna[s] (other than radar)”. Because the antenna (a horn-type) is a radar system, a “No” answer has been inserted on the form. However, for the purpose of completeness, the following information is provided with respect to the radar signal to be used in this experiment:

| Band     | Width of Beam in Degrees at the Half-Power Point | Orientation in Horizontal Plane                                                        | Orientation in the Vertical Plane                         |
|----------|--------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 3-5 GHz  | 80°                                              | 0-360° (as the ATS-100 is mobile and can be situated anywhere on the Horizontal Plane) | The ATS-100 will be used in a horizontal position +/- 20° |
| 8-12 GHz | 60°                                              | 0-360° (as the ATS-100 is mobile and can be situated anywhere on the Horizontal Plane) | The ATS-100 will be used in a horizontal position +/- 20° |

|           |     |                                                                                                       |                                                                    |
|-----------|-----|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 14-16 GHz | 41° | 0-360° (as the<br>ATS-100 is<br>mobile and can<br>be situated<br>anywhere on the<br>Horizontal Plane) | The ATS-100 will<br>be used in a<br>horizontal position<br>+/- 20° |
|-----------|-----|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|

##### **5. Comment Regarding Emission Designator**

The ATS-100 operates in two modes, either Continuous or Pulse modulation. When operating in Continuous mode, the designator is clearly “P” as there is no modulation. However, when operating in Pulse mode, there is modulation, however no information is being carried. DRS SSI could not identify a third symbol for the designator which clearly described the ATS-100 Emissions while in Pulse mode operation, therefore DRS SSI was left to assign the “X” designator for the second symbol.

##### **6. Interference Mitigation**

DRS SSI 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. With respect to interference mitigation, DRS SSI advises as follows:

- The maximum ERP levels are very low, with a maximum ERP of 180 mW between 3-5 GHz; 600 mW between 8-12 GHz; and 220 mW between 14-16 GHz.
- Operation of the requested Facilities will not be continuous. Rather, authority for only sporadic operation of the Facilities is requested during the authorized timeframe. The ATS-100 will issue highly intermittent transmissions of very short duration, which will significantly limit the potential for interference to authorized users. DRS will typically run 4 – 10 tests per aircraft tested. Each test will consist of transmitting for up to 10 seconds. If the aircraft has no functional problem, only four tests will be necessary for each plane. If the aircraft does appear to have a problem, we will run multiple tests (at different power levels), but not more than 10 test will occur per aircraft. In the off state, no measurable power will be radiated. In fact, there may be extended periods of non-operation during the authorized period, while other non-RF transmission aspects of the experiment are conducted.
- DRS SSI understands that FAA (or other stakeholders) may require certain limited azimuth and/or elevation blanking in order to ensure that the proposed Facilities do not pose a threat of interference to adjacent emitters. Accordingly, this is to confirm that the subject radar device has such blanking capabilities and that DRS SSI stands ready to work with FAA to identify any reasonably necessary azimuth and/or elevation restrictions for the system.

##### **6. Stop Buzzer**

DRS SSI hereby advises the Commission that the following personnel will act as “stop buzzers” if any issues regarding interference arise during testing:

Primary: Phil Niosi – 321-368-0768

Alternate: Mario Saracino – 314-553-4630