Specification for a Transportable Tower System

There is a requirement for three (3) Transportable Tower Systems (TTS) to support the Rocket Launch Spotter (RLS) program. These systems will consist of a trailer, tower, and associated equipment, and must be capable of operation in harsh environments, transportable via military aircraft, and capable of supporting the RLS equipment as specified below.

Tower Requirements:

1: Tower must extend to a minimum of 100' platform height and be capable of both self-supported (unguyed) and guyed operation.

2: Tower must maintain stability during operation to within 0.5 degrees in azimuth and 1.5 degrees in pitch and roll.

3: Tower must be capable of being erected in wind gusts up to 35 mph and of operating in winds up to 100 mph with an appropriate guy system. The tower must survive winds of up to 130 mph; however it is not required to maintain the stability specified in item (2) in winds above 100 mph.

4: Tower must be capable of rated performance with a mast top payload weight of 500 pounds.

5: Tower must be capable of deployment and elevation with a 500 pound payload attached to the tower platform.

6: Tower must be capable of being deployed, elevated to full height, and secured by a mechanical tower lock mechanism by one person in less than 30 minutes. Tower must also be capable of retraction and stowing for road transportation in less than 30 minutes.

7: Tower must be capable of 100 repeated erection and retraction in a desert environment.

Additional requirements:

1: TTS system must be air transportable via C-130 military aircraft as well as sea or rail transport. System must be equipped with appropriate lift, tiedown, and lashing provisions. Additional information on C-130 compatibility and restrictions is available at http://www.fas.org/man/dod-101/sys/ac/docs/24000100.pdf

2: System must be towable by pintle hitch equipped tow vehicles over paved and unpaved roads, and must be equipped with trailer brakes and an emergency breakaway system.

3: System must be equipped with outrigger-type stabilizers, wheel chocks, leveling jacks, and jacking pads compatible with desert operation. System must be capable of leveling tower on slopes up to 5 degrees.

4: System must include a diesel fueled electrical generator of at least 7kW capacity to provide prime electrical power to operate the tower erection/retraction mechanisms, cabinet mounted electronics, tower emergency lighting, work lights, and additional related equipment. The generator and engine must be enclosed in a weatherproof, sound attenuated locking enclosure. Under full load, measured sound level must not exceed 65 dbA at 35 feet. System must include sufficient fuel storage to enable unattended operation for at least 50 hours without refueling. System electrical harness and all electrical components must be sealed for all-weather use.

5: System must be equipped with two (2) weatherproof equipment cabinets with the following specifications:

Front and rear lockable doors
Shock-mounted mounting rails, 19" EIA standard, 100 inches total usable height (50" each)
Air conditioning to allow operation in desert environment
White painted or powder-coated exterior

6: System must be equipped with a standard grounding package, including all required cabling, connectors, grounding rods, and grounding lugs (tower and equipment).

7: Provision must be made for storage of all vendor supplied equipment, tools, and accessories during transportation. All small items (such as the guy kit, tools, manuals, etc.) are to be stored in a sealed, lockable storage box designed for this purpose.

8: System must be equipped with a lightning protection subsystem, including a tower-top mounted lightning rod and all required cabling and connectors.

9: System must be equipped with a tower guy system including all appropriate cables, fittings, connectors, and anchors.

10: System must be equipped with a night vision goggle (NVG) compatible aviation obstruction lighting subsystem, including all required cabling and electrical connections. System must also be equipped with trailer work lights. All lights must be installed and ready for use upon delivery.

11: System must be equipped with two (2) cable reels. A multi-strand cable is envisioned, with a maximum outer diameter of approximately 3 inches (exclusive of connectors).

12: System must include a work platform to allow payload mounting when the tower is horizontal. System must allow tilt and erection of the tower with the payload installed.

13: The system must be designed with a structural safety factor of 2.5 times overall, and 4 times in critical load areas.

14: The system and related accessories must be compliant with MIL-STD-810-F with respect to temperature, humidity, altitude, sand / dust, moderate ice accumulation, salt fog, fungus and insects, rain, sun, and corrosion. Equipment must survive the specified operating and storage conditions without excessive degradation.

15: Workmanship must be in accordance with best commercial practice. Special attention will be given to neatness and thoroughness of items such as soldering, markings of parts and assemblies, wiring, welding, brazing, plating, riveting, finishes, machine operations and screw assemblies as applicable to construction.

16: All three systems must be delivered to NRL. At least one complete system is required no later than 28 Feb 05.

17: Manufacturer must provide operations training at NRL upon delivery for 10 personnel. Additional training for end users within CONUS is to be provided as a contract option.

18: Vendor must provide operating and maintenance manuals in both hard and soft copy upon first delivery.