Statement of Work for Acoustic Wind Profiler (SoDAR)

The vendor shall provide one (1), sound detection and ranging (sodar) acoustic wind profiling system for measuring wind profiles at the NASA Armstrong Flight Research Center (AFRC). The sodar is planned to be located in a permanent location at the AFRC campus, used for real-time low-altitude aviation operations and better understanding of local atmospheric boundary layer characteristics. The sodar system shall be delivered within 1 mile (1.6km) of NASA AFRC. The sodar is intended to replace an Atmospheric Systems Corp. model 2000 sodar.

Hardware: The sodar system shall include, but not limited to, an acoustic sound board array, acoustic enclosure for sound dampening, acoustic signal processor, power supply, and network interface. The sodar shall be capable of being mounted to a raised platform, such as a flatbed trailer. Components shall be able to withstand the harsh outdoor desert environment, including temperatures 0°F to 130°F (-18°C to 54°C), humidity 0-100%, 60mph (96km/h) wind gusts, intense solar/ultraviolet radiation, and blowing sand. An option to expand the sodar system's capability to include atmospheric temperature profiling, such as a radio acoustic sounding system (RASS) extension, in the future is desired.

Software: The vendor shall provide operating manuals and the latest software version that operates and collects measurements from the sodar. The vendor shall provide software updates as they become available. The sodar system shall have a user interface, either onboard the sodar itself or a connected computing device, to program the sodar's operations. The interface shall have the ability to synchronize measurements with either local or UTC time.

Power: The sodar shall be capable of operating with an alternating current (AC) power source, 15 amps at 120 volts, using a standard U.S. electrical wall outlet. The sodar systems may be located up to 100ft away from the power source.

Network: The sodar shall be capable of integrating into a network of computing systems, either through a component onboard the sodar unit, an attachable device(s) compatible with the sodar, such as a laptop or server. The sodar system shall be compatible with Windows Server 2022 and/or Windows 11 operating systems. All network-capable components of the sodar system shall have a static IP address.

Measurements: The sodar shall measure profiles of horizonal and vertical wind speed and direction, and produce statistics such as standard deviations, averages, maxima, number of samples per interval, power returned, signal to noise ratio, and data quality indicator. Measurement altitude range shall have a minimum height of no greater than 60m above

ground level (AGL) and a maximum height in the 600-1,000m AGL range. The height interval between each measurement shall be no greater than every 20m. The system shall be capable of producing wind profiles every 1-60 minutes, with 2-10 minute intervals being desired. Wind direction accuracy within 5 degrees and wind speed within 2 knots is required. All measurements are required to be time-stamped.

Data output: The sodar system shall be capable of producing array-based data files so that data can be displayed using Vista Data Vision software. The system shall output text files, e.g. comma separated variables, ASCII text, or similar, that is readable by common Microsoft applications such as Excel and Notepad.