

- Exhibit 1 -

a) description of the nature of the research project being conducted

North American Collection and Location by Satellite Incorporated (NACLS) requests authority from the Federal Communications Commission to operate mobile remote ground transmitters in conjunction with the Argos satellite transponder for demonstration and experimental purposes at various places in the United States for a three-year period. The purposes of the demonstration and experimental program are to begin developing three markets for NACLS: one in the fishing industry related the monitoring of fishing vessels, the other in the container/transportation industry related to the tracking of hazardous waste and the third one in the oil industry related to the monitoring of compressors and flowmeters. All three applications are dedicated to the protection of our environment, thus in accordance with the rules of the Argos system and have been approved by the Argos Operations Committee.

b) a showing that the communications facilities requested are necessary for the research project involved

- Description of the Argos system

The ARGOS satellite system consists of one-way ground-based transmitters broadcasting intermittent messages to transponders on-board the NOAA Polar Orbiting Environmental Satellites. The satellites then immediately download the data to one of three ground stations around the world, or store the information until the satellite passes within range of a ground station at which time the data is then re-transmitted by the satellite. Two satellites and the associated transponders are active at any given time. The satellites are in near-polar, sun-synchronous orbit at 450-470 miles, giving an orbital period of about 102 minutes. The fourteen revolutions per day, in combination with the 3000 mile footprint, allows between eight and twelve passes per day over any location in the continental United States, depending upon the latitude of the location. Alaska receives between 21 and 23 passes per day.

ARGOS Platform Transmitter Terminals (PTT's) provide signals to the ARGOS satellite transponders by transmitting messages at preset intervals without interrogation by the satellite. Each message may contain up to 256 bits of sensor data. A full message uplink takes between 360 and 920 milliseconds. The uplink repetition period is normally set at about 100 seconds, depending upon the application. All PTT's transmit at 401.65 MHz. Separation in time is achieved through asynchronization of the transmissions and use of different repetition periods. Messages are received and processed on-board the satellite by the Data Collection and Location System (DCLS). Separation in frequency will occur due to Doppler effect with different locations of each transmitter. The satellite DCLS can process four simultaneous messages if received at different frequencies due to the Doppler separation.

The Argos ground segment encompasses three principal ground stations (Wallops Island, Virginia; Fairbanks, Alaska; and Lannion, France), several regional receiving stations, processing facilities, and communication links. The satellite systems' two types

of data relay (delayed-time, and real-time) can be characterized as "global" and "regional" coverage, respectively. Messages are retransmitted to the ground station via three paths:

- 1) delayed-time using recorded data playback via S-band (1707 MHz/2.66 mbps).
- 2) real-time on S-band (1707 MHz/665.4 kbps).
- 3) real-time VHF (136.77 MHz at 8.32 kbps).

"Global" coverage messages are received and recorded on-board the satellite by the DCLS. This recorded data is transmitted via the S-band downlink channel when the satellite passes over one of the three ground stations. The data is transmitted to the National Environmental Satellite Data and Information Service (NESDIS) in Suitland, Maryland, where it is separated from other satellite instrument data. It is then forwarded to one of the two Argos Global Processing Centers either in Toulouse, France or Landover, Maryland. NACLS data will be sent to Landover, Maryland. Results are processed to calculate locations and interpret sensor data, and then made available to users.

NACLS has already developed customized Argos transmitters for each application. For fishing vessel tracking experiments/demonstrations, PTT's are expected to utilize one watt powered systems which rely primarily on vessels supplied power for most transmissions but have internal transmitter battery power for backup use. For experiments/demonstrations of container tracking applications, a similar type ARGOS PTT will be required which will be powered solely by internal battery, and designed to last several weeks or months. For the monitoring of compressors and flowmeters, transmitters will be directly interfaced with the Remote Terminal Unit (RTU). These PTT's will use periodic or scheduled transmissions destined for a central collection point. Many of the ARGOS PTT's will be controlled by sensors which acquire the desired data and commence transmissions once the data is available. Some of these systems will transmit the data on a scheduled or timed basis.

Typical ARGOS PTT's will transmit according to the following parameters:

- | | |
|---------------------------------|---|
| - Frequency: | Uplink at 401.65 MHz (± 1.1 rad) |
| - Power: | One to three watts |
| - Modulation: | Biphase L (± 1.1 rad) |
| - Antenna: | Quarter-Wave Whip Antenna |
| - Transmission Characteristics: | Duration 360 to 920 milliseconds
repeating at 100 sec. intervals |