STATEMENT OF NEED

Requisition Number 143021-26-0041

BACKGROUND / SCOPE / MISSION:

The mission of the Northeast Fisheries Science Center's (NEFSC) Ecosystems Surveys Branch (ESB) is to collect accurate data on NOAA vessels to be used for fisheries management as required by the Northeast Region's fishery management plans (FMPs) and as mandated by the Magnuson-Stevens Fishery Conservation and Management Act and the Sustainable Fisheries Act. Data collected by these sensors are part of the database administered and maintained by the NEFSC. Maintaining data continuity and precision is mission critical to the ESB. The ESB requires sensors that are able to capture net mensuration in real time

INTENDED USE / PURPOSE:

The objective of this procurement is to acquire a comprehensive suite of SCANMAR sensors and supporting hardware from OptimERA Marine. This equipment is essential for the ESB Bottom Trawl Surveys conducted by the vessels *Henry B. Bigelow and Pisces*. The purchase serves two primary functions: Modernization: to replace aging sensor units currently in operation. And operational readiness: To ensure a reliable inventory of spares is available on hand to prevent survey downtime.

All requested SCANMAR sensors are currently included on the approved IT list, ensuring compatibility with existing NOAA systems and regulatory compliance.

Equipment Requirements

The following specialized components are required to maintain the high precision of trawl monitoring in the NW Atlantic Ocean:

- Trawl Monitoring: One (1) TEY-2 TrawlEye-NB system, including two batteries and a mounting kit. 4 extra batteries will also be required
- Flow & Velocity: One (1) Flowsensor HC4-TSS (PL) and three (3) complete Flowsensor mounting kits. This sensor is also required to be in FID44
- Environmental & Depth Data: One (1) SS4 Depth/Temperature Sensor.
- Door & Wing Geometry: A full set of SS4 sensors, including:
    - One (1) SS4 Door Master. +1
    - One (1) SS4 Door Slave. +1
    - One (1) SS4 Clumpsensor Master Wing.+1
    - One (1) SS4 Clumpsensor Slave Wing.+1
- Support & Charging: Three (3) QBC-X1 Programming Unit/Chargers and associated bracket modification kits

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Below are the salient and functional characteristics for each primary component:

1. Trawl Monitoring (Headline & Belly)

- TrawlEye-NB (Narrow-Beam): * Primary Function: Acts as a high-resolution echo sounder mounted on the headline to detect fish and shrimp not visible to vessel-mounted sounders.
    - Measurements: Provides real-time data on trawl opening height, headline-to-bottom distance, and bottom contact/clearance.
    - Characteristics: Includes two batteries for extended operation; the "Narrow-Beam" configuration is specifically optimized for high-opening trawls and weak-echo species like shrimp or mackerel.

2. Flow and Symmetry Analysis

- Flowsensor HC4-TSS (PL):
    - Dual Functionality: Measures both TrawlSpeed (water flow into the trawl opening) and Symmetry (side currents).
    - Purpose: Essential for adjusting towing speed to maintain optimal trawl geometry, preventing "bucket effects" from high speeds or fish escape from low speeds.
    - Support: Utilizes specialized mounting kits (complete Flowsensor (PL) kits) to ensure stable attachment to the gear.

3. Gear Geometry & Performance (SS4 Series)

The SS4 generation features double-cast electronics for 100% protection against strokes and high-durability plastic for harsh marine environments.

- Door Master & Slave Sensors:
    - Function: Monitor door distance (spread), depth, and angle (pitch/roll).
    - Master/Slave Interaction: The Door Master on the port door communicates with the Door Slave on the starboard door via acoustic link to calculate distance data, which is then sent to the vessel.
    - Precision: Features speed-of-sound correction based on depth and temperature for highly accurate distance measurements.
- SS4 Clumpsensor (Master & Slave Wing):
    - Purpose: Designed for twin or triple trawl setups to ensure the clump and doors remain in line, avoiding asymmetry.
    - Multifunctional: Measures distance between trawl wings, clump depth, temperature, and bottom contact.
- SS4 Depth/Temperature Sensor:
    - Capability: Provides high-accuracy sinking speed and depth data to help skippers position the trawl at the correct target depth.
    - Efficiency: Offers up to 700 hours of operating time per charge.

4. Support and Maintenance

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- QBC-X1 Programming Unit/Charger:
    - Charging: Provides rapid charging for all SS4 sensors (typically 1.5 hours).
    - Configuration: Acts as the primary interface for programming sensor power levels, transmission frequencies (FID), and update rates (telegrams).
    - Compatibility: Compatible with all chargeable Scanmar sensors except the TrawlEye

DELIVERY LOCATION:

DOC/NOAA/NEFSC. TK Arbusto. 166 Water Street. Woods Hole, MA 02543

DELIVERY SCHEDULE:

Delivery: 30 to 60 days after award for the ESB Bottom Trawl Survey.

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