Unmanned Aircraft System

Airborne Technologies, Inc.
Tim Veenstra
Resolution UAS

Friday, March 19, 2010
UAS OVERVIEW

- 5kg with 2m wingspan
- Marinized (Waterproof)
- Electric motor
- 1.5 hr endurance
- Inexpensive components
Overview of ATI

Company

- ATI is a successful, profitable Alaskan small business
- History of aviation and ocean remote sensing
- Over 900 ocean buoys sold in past 5 years
- High expertise in software design & programming, small UA airframe design, remote sensing systems building and integration
ATI Facility & Equipment

- Incorporated 1999 - Wasilla, AK
- Private runway w/ lake frontage
- 6500 sq. ft facility with office and shop space
- Fully equipped electronics lab and R&D shop
ATI FACILITY AND EQUIPMENT
CNC FOAM CUTTING MACHINE

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ATI FACILITY AND EQUIPMENT

CNC ROUTER MACHINE

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ATI FACILITY AND EQUIPMENT

AIRFRAME MANUFACTURING CAPABILITIES

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Autonomous Vessel-launched Airborne Anomaly Detection and Reporting System
Develop an Unmanned Aircraft System

System Requirements

• CAPABLE OF OPERATION FROM VESSEL 30’ OR LARGER
• AUTONOMOUS WITH ROUTING CAPABILITIES
• DEPLOY A SATELLITE MARKER BUOY
• UTILIZE A POTENTIAL VARIETY OF SENSORS
• AUTOMATICALLY DETECT OBJECTS/SEA-LIFE IN OCEAN
• TELEMETRY BACK DATA TO VESSEL
• MINIMUM OF 1.5 HOURS FLIGHT
• EASILY RECOVERED AND QUICK TURN-AROUND
• LOW COST
SBIR AWARD

Develop an Unmanned Aircraft System
NOAA Applications

- ASSIST IN LOCATING MARINE DEBRIS AT SEA
- PERFORM MARINE MAMMAL SURVEYS
- ASSIST IN HURRICANE CLEAN-UP
- VALIDATE SATELLITE SENSOR DATA
- ATMOSPHERIC DATA COLLECTION
- ASSESS FLOOD EXTENT AND DAMAGE
- ???
MARINE DEBRIS IDENTIFICATION & TRACKING
SBIR PHASE I & II
RESOLUTION UAS
AIRFRAME DEVELOPMENT

PROJECT

DATE

FALL 2008

CLIENT

NOAA SBIR PHASE I
SBIR PHASE I PROTOTYPE
AIRBORNE TECHNOLOGIES, INC.

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RESOLUTION UAS
CUT-AWAY VIEW OF BUOY BAY

DATE: FALL 2008

CLIENT: NOAA SBIR PHASE I

ATTACH POINT
SAT-201 SATELLITE MODEM
O-RING SEAL
BATTERY PACK

120mm DIAMETER
TEST FLIGHT OF MODIFIED AIRFRAME
SBIR PHASE 1 - SUMMER 2008

Friday, March 19, 2010
Benefits to NOAA

- Acquire low-cost (~$15,000 airframe) small UAS
  - Marinized & Rugged
  - Flexible sensor payload & mission assignment
  - Easy operation
  - Adaptable to any vessel or land based

- Acquire small satellite tracker buoy, adaptable for numerous applications

- Acquire specific multi-spectral sensor technology useful for a variety of ocean survey applications
SOFTWARE

- Flight Control
- Ground Control
- Open IrlS (Anomaly Detection Software)
SEA TRIALS - NOAA SHIP
OSCAR E. SETTE

DATE: MARCH 2008

CLIENT: NOAA