



ARCTIC GEOENCINING

Arctic Vessel Monitoring, Geofencing & Alert Awareness

Aircraft: F22 Raptors
Homebase: Anchorage
Permissions: Approved Training
Pilots: Travis Gymian
Callsign: TopGun

Aircraft: F22 Raptors
Homebase: Anchorage
Permissions: Approved Training
Pilots: Bob Skunk
Callsign: Renegade

Personal: Barrow Native Hunters
Permissions: Approved
Range: 10 miles
Communication Lead: Big Jim
Transportation: Snow Machines

Vessel: Cargo Ship
Port of Origin: Alaska
Permissions: Not registered
Captain: ?
Company: Bulkam Shipping

Animal Species: Humpback
Range: 50 miles
Agency Request: NOAA
Time: 48 hours

On any given day, depending on the time of year, there are 100 to 400 vessels operating within the U.S. Arctic region as defined by the Arctic Research and Policy Act of 1984, exceeding 10,000 vessel transits annually. Arctic active monitoring systems, capable of determining whether vessels are complying with environmental protection regulations, entering marine protected areas, disrupting marine mammal haul-outs, endangering bird nesting areas, or impeding subsistence marine hunting activities, are practically nonexistent. The sheer volume of data required to maintain situational awareness of numerous constantly moving vessels in this region of national importance is overwhelming.

The challenge of managing this volume of information requires the process of sifting through hundreds of vessel movements during any given hour to detect a potential incident. Building on the recent advent of satellite and terrestrial Automatic Identification System (AIS) technology provides the means to monitor and detect Arctic vessel transits that may present an elevated risk to people, property, and the marine environment.

The project team seeks to advance Arctic maritime domain awareness & management by developing enhanced protocols and software to AIS technology, leading to appropriate action for safe and environmentally sound maritime operations in the Arctic. This project will develop and apply innovative AIS software and procedures to automatically transmit “alerts” of vessel movements of concern to authorized parties. The project will aid Coast Guard decision-makers in rapidly distilling, analyzing, and prioritizing potential threats through the development of triggered “watch-dog” alarms facilitated by enhanced geofencing technology. This project will provide the capability for alerts to be configured by a wide range of specified criteria and parameters, including vessel type, size, speed, activity, and geographic location, each of which will be defined with the help of agency regulators and coastal communities.

By providing improved geofencing alerts to the Coast Guard, other agencies, and maritime stakeholders (e.i., Alaska Native coastal communities), the project’s overall objective will enhance maritime security and safety, environmental protection, and vessel regulatory compliance in U.S. Arctic waters.

