

HCR

6

<TARGET><BILL>HCR 6</BILL><SUBJECT>HCR
6</SUBJECT><COMM>SF IN 28</COMM></TARGET>

SENATE FINANCE COMMITTEE REPORT

DATE: 4/8/13

FURTHER:

DATE TURNED
IN TO OFFICE: _____

Finance Committee considered CS FOR HOUSE CONCURRENT RESOLUTION NO. 6(EDT)

HCR 6 EST. LEG. TASK FORCE ON UNMANNED AIRCRAFT

Recognizing the Alaska Center for Unmanned Aircraft Systems Integration at the University of Alaska Fairbanks as a national leader in unmanned aircraft research and development; and relating to a Task Force on Unmanned Aircraft Systems.

and recommends:

- be replaced with SCS HCR 6 (FIN) Same Title Technical Title Change
 New Title/SCR No. _____
- adopt previous SCS _____ (_____) Same Title Technical Title Change
 New Title/SCR No. _____
- attached amendment(s)
- adopt _____ Letter of Intent
- further referral to _____ Committee

| Dept Abbr. | |
|------------|-----|
| ADM | LWF |
| CED | LAW |
| COR | LEG |
| CRT | MVA |
| EED | DNR |
| DEC | DPS |
| DFG | REV |
| GOV | DOT |
| DHS | UA |

| NEW FISCAL NOTE(S) | | | | |
|--------------------|--------|--------|------|------|
| Dept. | Fiscal | Indet. | Zero | FN # |
| LEG | | ✓ | | |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |

| PREVIOUS FISCAL NOTE(S) | | | | |
|-------------------------|--------|--------|------|------|
| Dept. | Fiscal | Indet. | Zero | FN # |
| | | | | |
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| | | | | |
| | | | | |

APPROPRIATION - no fiscal note

| SIGNATURES AND RECOMMENDATIONS: | PRINTED LAST NAME | DO PASS | DO NOT PASS | NO REC | AMEND |
|---------------------------------|-------------------|---------|-------------|--------|-------|
| <i>Anna Fairclough</i> | FAIRCLOUGH | X | | | |
| <i>Cliff Bishop</i> | BISHOP | X | | | |
| <i>Michael J. Duleavy</i> | DULEAVY | ✓ | | | |
| <i>Chris Cotton</i> | COTTON | | | ✓ | |
| CO-CHAIR: <i>K. Meyer</i> | MEYER | X | | | |
| CO-CHAIR: | | | | | |

FISCAL NOTE

STATE OF ALASKA
2013 LEGISLATIVE SESSION

Bill Version HCR 6
 Fiscal Note Number _____
 () Publish Date _____

Identifier (file name) HCR6-LEG-COU-04-05-13 Dept. Affected Alaska Legislature
 Title Recognizing AK Center for unmanned aircraft systems Appropriation Legislative Council
Integration and creating a task force Allocation Council & Subcommittees
 Sponsor Rep Hughes
 Requester Senate Finance OMB Component Number 783

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

| | FY14 Appropriation Requested | Included in Governor's FY14 Request | Out-Year Cost Estimates | | | | |
|-------------------------------|------------------------------------|--|-------------------------|------------|------------|------------|------------|
| | | | FY15 | FY16 | FY17 | FY18 | FY19 |
| OPERATING EXPENDITURES | | | | | | | |
| Personal Services | *** | *** | *** | *** | *** | *** | *** |
| Travel | | | | | | | |
| Services | | | | | | | |
| Commodities | | | | | | | |
| Capital Outlay | | | | | | | |
| Grants, Benefits | | | | | | | |
| Miscellaneous | | | | | | | |
| TOTAL OPERATING | *** | *** | *** | *** | *** | *** | *** |

| FUND SOURCE | | (Thousands of Dollars) | | | | | | |
|--------------|------------------|------------------------|------------|------------|------------|------------|------------|------------|
| 1002 | Federal Receipts | | | | | | | |
| 1003 | GF Match | | | | | | | |
| 1004 | GF | | | | | | | |
| 1005 | GF/Prgm (DGF) | | | | | | | |
| 1037 | GF/MH (UGF) | | | | | | | |
| 1178 | temp code (UGF) | | | | | | | |
| TOTAL | | *** | *** | *** | *** | *** | *** | *** |

| POSITIONS | | | | | | | |
|-----------|--|--|--|--|--|--|--|
| Full-time | | | | | | | |
| Part-time | | | | | | | |
| Temporary | | | | | | | |

| CHANGE IN REVENUES | | | | | | | |
|--------------------|--|--|--|--|--|--|--|
| | | | | | | | |

Estimated SUPPLEMENTAL (FY13) operating costs _____ (separate supplemental appropriation required)
 (discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY14) costs _____ (separate capital appropriation required)
 (discuss reasons and fund source(s) in analysis section)

ASSOCIATED REGULATIONS

Does the bill direct, or will the bill result in, regulation changes adopted by your agency? _____
 If yes, by what date are the regulations to be adopted, amended, or repealed? _____ Discuss details in analysis section.

Why this fiscal note differs from previous version (if initial version, please note as such)

Updated to relect potential fiscal impact

Prepared by Jessica Geary, Finance Manager Phone 465-6626
 Division Legislative Affairs Agency Date/Time 4/13/13 10:05pm
 Approved by Pamela Varni, Executive Director Date 4/13/2013
Legislative Affairs Agency

FISCAL NOTE ANALYSIS

**STATE OF ALASKA
2013 LEGISLATIVE SESSION**

BILL NO. HCR 6

Analysis

HCR6 creates a task force on unmanned aircraft systems within the legislative branch. The task force will have 7 members which will be comprised of one senator, appointed by the president of the senate and one representative, appointed by the speaker of the house and 5 members comprised of public members and executive branch members, appointed jointly by the presiding officers. The task force intends to meet as needed and will submit an initial report to the legislature not later than January 15, 2014 and a final report to the legislature not later than July 1, 2014. If meetings take place during the interim, the task force anticipates being able to meet in Anchorage. With the majority of potential task force members residing in Anchorage, a meeting held there would be at a very minimal cost. It is anticipated that one in-person meeting per year would occur with information shared electronically within the task force membership as needed.

Because the task force intends to utilize existing resources, but the legislation could allow for an unknown cost, the fiscal impact on the legislature is indeterminate.

SENATE CS FOR CS FOR HOUSE CONCURRENT RESOLUTION NO. 6(FIN)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-EIGHTH LEGISLATURE - FIRST SESSION

BY THE SENATE FINANCE COMMITTEE

Offered:

Referred:

Sponsor(s): REPRESENTATIVES HUGHES, Kawasaki, Isaacson, Pruitt, Johnson, Thompson, Drummond, Saddler

A RESOLUTION

1 **Recognizing the Alaska Center for Unmanned Aircraft Systems Integration at the**
2 **University of Alaska Fairbanks as a national leader in unmanned aircraft research and**
3 **development; and relating to a Task Force on Unmanned Aircraft Systems.**

4 **BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

5 **WHEREAS** the Unmanned Aircraft Systems Program at the University of Alaska
6 Fairbanks has, since 2001, been designing payloads and upgrades for unmanned aircraft
7 systems, testing and evaluating their safety and effectiveness, developing and demonstrating
8 new uses for various potential users, working with the Federal Aviation Administration to
9 make the use of unmanned aircraft systems safe, and developing technology to improve safety
10 and is known across the nation for its leadership in advancing the state of the art and the safe
11 use of unmanned aircraft systems; and

12 **WHEREAS** the importance of the program's work to the state was recently
13 recognized by the Board of Regents of the University of Alaska when the regents established
14 the Center for Unmanned Aircraft Systems Integration at the University of Alaska Fairbanks
15 to continue research and development of unmanned aircraft systems for the benefit of the

1 state; and

2 **WHEREAS** the legislature recognizes the Alaska Center for Unmanned Aircraft
3 Systems Integration at University of Alaska Fairbanks as the state's leader in unmanned
4 aircraft systems research, meeting the goals of industry, the Federal Aviation Administration,
5 and government operations; and

6 **WHEREAS** the legislature has provided significant financial support to the Alaska
7 Center for Unmanned Aircraft Systems Integration at University of Alaska Fairbanks to
8 further the center's research initiatives, and to increase its capabilities for use as a possible
9 Federal Aviation Administration test site; and

10 **WHEREAS** the State of Alaska, the University of Alaska, the Alaska Aerospace
11 Corporation, the Alaska Aviation Safety Project, and other public and private institutions have
12 developed cooperation with the National Aeronautics and Space Administration, the Federal
13 Aviation Administration, the United States Department of the Interior, the United States
14 Department of Defense, and others to further advance the research, development, and use of
15 technology to benefit and support Alaskans and Americans with the safe use of unmanned
16 aircraft systems; and

17 **WHEREAS** Alaska state government and the state's business and research community
18 continue to work with the Federal Aviation Administration to promote the establishment of
19 safe unmanned aircraft system ranges onshore and offshore Alaska, which will help establish
20 procedures for the safe operation of unmanned aircraft systems in the National Airspace
21 System; and

22 **WHEREAS** the Alaska Center for Unmanned Aircraft Systems Integration, by virtue
23 of being located in Alaska, has access to an area of geographic and climatic diversity where
24 the air and surface population density is desirable for conducting research and development of
25 unmanned aircraft systems; and

26 **WHEREAS** the state has the highest per capita use of general aviation activity in the
27 nation, and Alaska aviation organizations have helped the Federal Aviation Administration
28 develop the next generation of air traffic control for the nation and the world, while making
29 major gains for the state's aviation safety in the process; and

30 **WHEREAS** unmanned aircraft systems may present a risk to privacy, but neither the
31 Federal Aviation Administration nor any other state or federal agency currently has specific

1 statutory authority to regulate privacy matters relating to unmanned aircraft systems;

2 **BE IT RESOLVED** that the Alaska State Legislature recognizes the Alaska Center
3 for Unmanned Aircraft at the University of Alaska Fairbanks as a leader in aviation
4 pioneering and further recognizes the significant benefit to the state and nation the center
5 provides in research and development of unmanned aircraft systems; and be it

6 **FURTHER RESOLVED** that the Alaska State Legislature fully supports the efforts
7 of the Alaska Center for Unmanned Aircraft Systems Integration at the University of Alaska
8 Fairbanks to become one of the nation's six test sites for unmanned aircraft systems testing
9 and research; and be it

10 **FURTHER RESOLVED** by the Alaska State Legislature that the Task Force on
11 Unmanned Aircraft Systems is created in the legislative branch and shall consist of 7
12 members, who, except for the member from the senate and the member from the house of
13 representatives, shall be appointed jointly by the president of the senate and the speaker of the
14 house of representatives, as follows:

15 (1) one senator selected by the president of the senate, who shall serve as co-
16 chair;

17 (2) one representative selected by the speaker of the house of representatives,
18 who shall serve as co-chair;

19 (3) the commissioner of public safety or the commissioner's designee;

20 (4) the adjutant general of the Department of Military and Veterans' Affairs or
21 the adjutant general's designee;

22 (5) a member representing the Alaska Center for Unmanned Aircraft Systems
23 Integration at University of Alaska Fairbanks;

24 (6) a member of the Academy of Model Aeronautics;

25 (7) a member from the state Aviation Advisory Board; and be it

26 **FURTHER RESOLVED** that a vacancy on the task force shall be filled in the
27 manner of the original appointment; and be it

28 **FURTHER RESOLVED** that the duties of the task force shall include

29 (1) reviewing regulations and guidance from the Federal Aviation
30 Administration regarding unmanned aircraft systems;

31 (2) providing written recommendations, together with suggested legislation,

1 for a comprehensive state policy for unmanned aircraft that protects privacy and allows the
2 use of unmanned aircraft systems for public and private applications; and

3 (3) submitting, not later than January 15, 2014, an initial report to the
4 legislature and, not later than July 1, 2014, submitting a final report to the legislature; and be
5 it

6 **FURTHER RESOLVED** that the task force may meet as frequently as necessary to
7 carry out its responsibilities; and be it

8 **FURTHER RESOLVED** that the task force may meet during and between legislative
9 sessions and may request administrative and technical support from the University of Alaska
10 Fairbanks; and be it

11 **FURTHER RESOLVED** that the public members of the task force serve without
12 compensation but are entitled to per diem and travel expenses authorized for boards and
13 commissions under AS 39.20.180; and be it

14 **FURTHER RESOLVED** that the task force terminates on July 1, 2014.

UNMANNED AIRCRAFT SYSTEMS FOR ALASKA



Ro Bailey
Deputy Director
Alaska Center for Unmanned
Aircraft Systems Integrator
(907) 455-2104

Roadmap

- University of Alaska UAS history
 - Vision, mission, why unmanned
- Projects & why they matter to Alaska
 - Economic value
 - Science, engineering, & safety value
- FAA Test Site Proposal
- What about privacy? Law Enforcement?
- House Concurrent Resolution No. 6

UAF's History of Unmanned Aircraft

- 2001 - Partnership with New Mexico State University
 - Tasked to develop applications within the Technical Analysis and Applications Center (TAAC)
- 2003/2004 - Funded to work with USAF and USCG
 - Maritime domain awareness
 - Wildfires in the Interior of Alaska
- 2006 - Acquired first ScanEagle with 50% loan from University Foundation
- 2007 to present - Multiple missions for science, emergency response, humanitarian needs, and engineering development
- Today our unmanned aircraft fleet is diverse and growing
 - Existing fixed wing systems
 - Existing rotor systems
 - Developing new systems



June 2007

First UAF Launch

Altair "Mariner" Alaska July 2004



Meeting Alaska's Needs

- **Research**
 - Science
 - Engineering
- **Public Safety / Emergency Response**
- **Natural Resource Management**

Bering Sea



Circle



Aleutians



Nome



Prudhoe Bay



Valdez



Value to Alaska

- **UAF alone has brought in over \$4.5 M**
- **Technology**
 - **Three small company start-ups since 2010**
 - **Two aerospace companies opened/opening offices in Fairbanks—one is ARTIC, or Atkinson Robotics and Technology Integration Corporation**
 - **Both Alaskan and Outside companies partnering with UAF to pursue FAA Test Site**
- **Value to Alaska business**
 - **Fish & game management & protection**
 - **Support oil industry, mining, fisheries, others**

Economic Impact in Alaska

Before Expected Impact of a Test Range Designation



Northern
Embedded
Solutions



Alaska-based development partners

Expected Value

- **Value to Alaska**
 - Better deploy wildfire fighters
 - Support disaster response
 - Assess/protect transportation routes—e.g., monitor slopes
 - Search & rescue in remote areas
 - High resolution mapping
 - Infrastructure monitoring
 - Oil spill response & monitoring
 - Counter unilateral Federal decisions with facts
 - River monitoring during breakup

Why Unmanned?

- **Risky work: over remote, extreme terrain or unreachable locations in volatile weather conditions**
 - Nov 1999: Helicopter crashed, two Nez Perce biologists conducting surveys seriously injured
 - Polar & distant maritime locations
- **Dirty work: observations over chemical spills, volcanoes, wildfire smoke**
- **Dull: capturing thousands of photos to process into 3D maps is boring, repetitive work**
- **Other means not possible**
 - Monitoring sea ice from under 1000 ft
 - Flying through volcanic ash plumes

What Alaska Offers

- **Vast open airspace with little traffic**
- **Wild, extreme, unpopulated, diverse terrain**
- **Access to large military ranges with data gathering ability**
- **History of pioneering aviation technology**
- **Culture of innovative use of aviation**
- **Close relationship with regional FAA**
- **Perhaps most important, willingness to be thoughtful and methodical in potential policy decisions**

Vision

Develop, test, and ultimately exploit emerging unmanned aircraft technology and its uses to create a positive economic and social benefit within the State of Alaska.

When the cost of the hardware is no longer a factor what will people do with the capability?

- **Plan today to prepare for the future**
- **Develop what is needed to support**
- **Participate in policy development for benefit and protection of Alaska & the nation**

Mission Statement

A research center for small, unmanned aircraft systems providing integration of unique payloads and supporting pathfinder missions within government and science communities, with a special emphasis on the Arctic region.

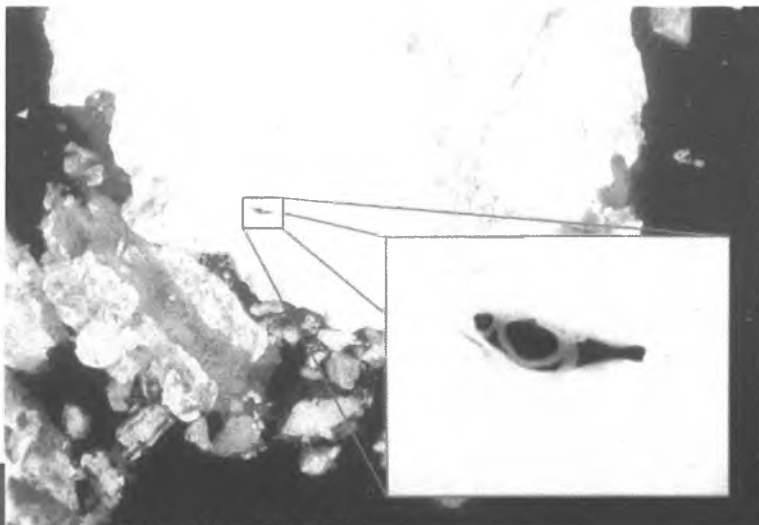
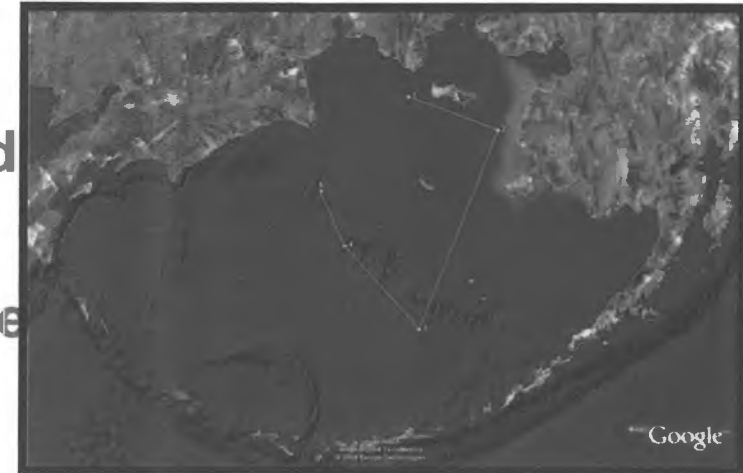


Conducted over 150 mission flight days worldwide in 2012

The Evidence: a sample of projects

Ice Seal Population Study

- **Scientific Need**
 - Marine Mammal Protection Act mandated
- **Relevance**
 - Large-scale, systematic ship-based survey
- **Outcome**
 - Safer (than manned aviation)
 - More effective (they do not startle seals)
 - vs. manned fixed wing or helicopters



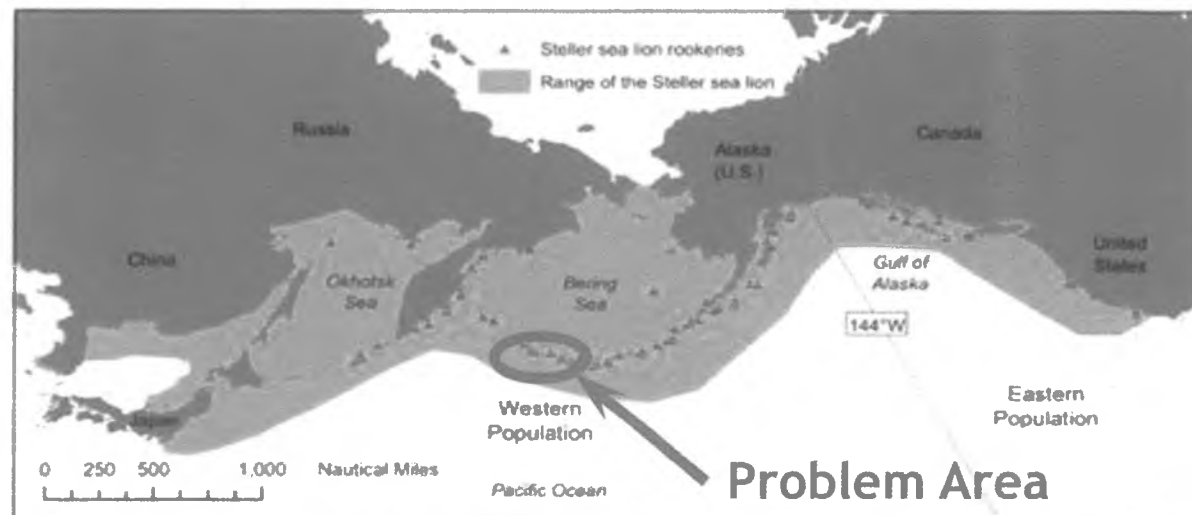
2009 First Deployment
2014 Proposed Expanded Survey
Joint NOAA and US Navy Funded

since 1917

Augmenting Steller Sea Lion Surveys

Western Aleutians

- **Problem:** Biological opinion, based on limited observations, eliminated a commercial fishery
- **Goal:** Demonstrate a method to collect high quality imagery for population surveys in hard to observe areas
- **Possible Benefit:** Improved understanding of animal use of and movement through their habitat



Steller Sea Lion Habitat Monitoring



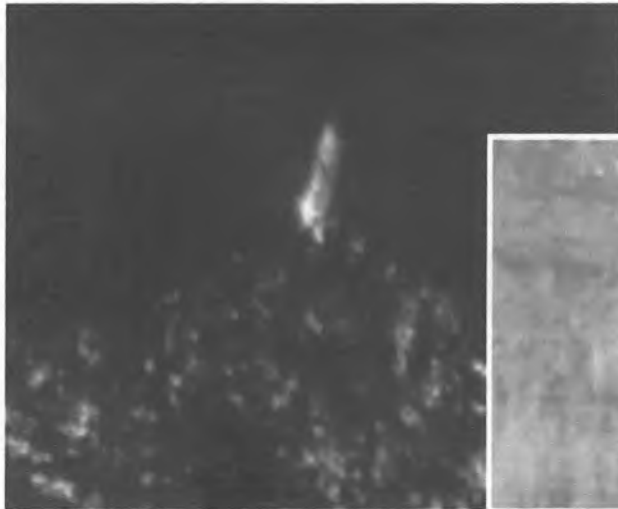
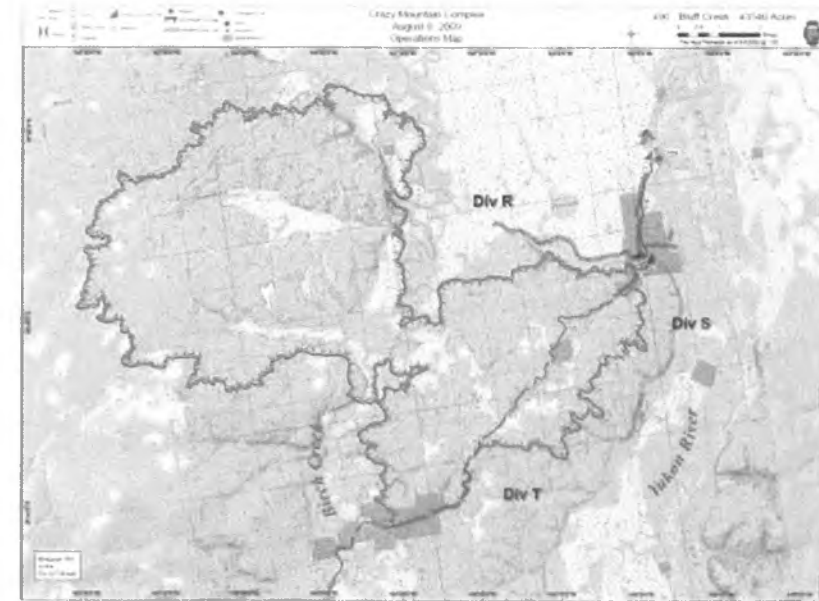
Preliminary Findings
- Migration Patterns
- Transient Killer Whales



Crazy Mountain Wildfire

Alaska Fire Service Incident Command Team Support

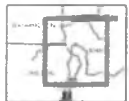
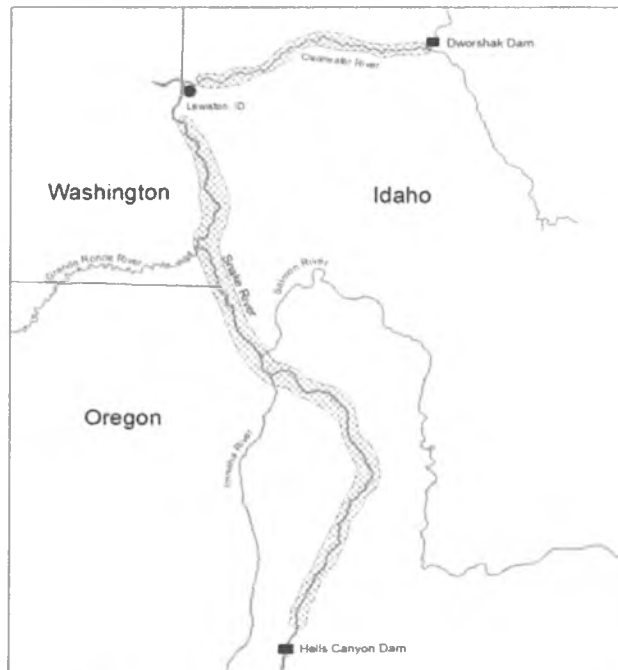
- Tasked by Alaska Fire Service Incident Command Team
- Manned aviation not flown for 5 days due to the smoke and limited visibility
- Satellite imagery (MODUS) incapable of showing critical activity

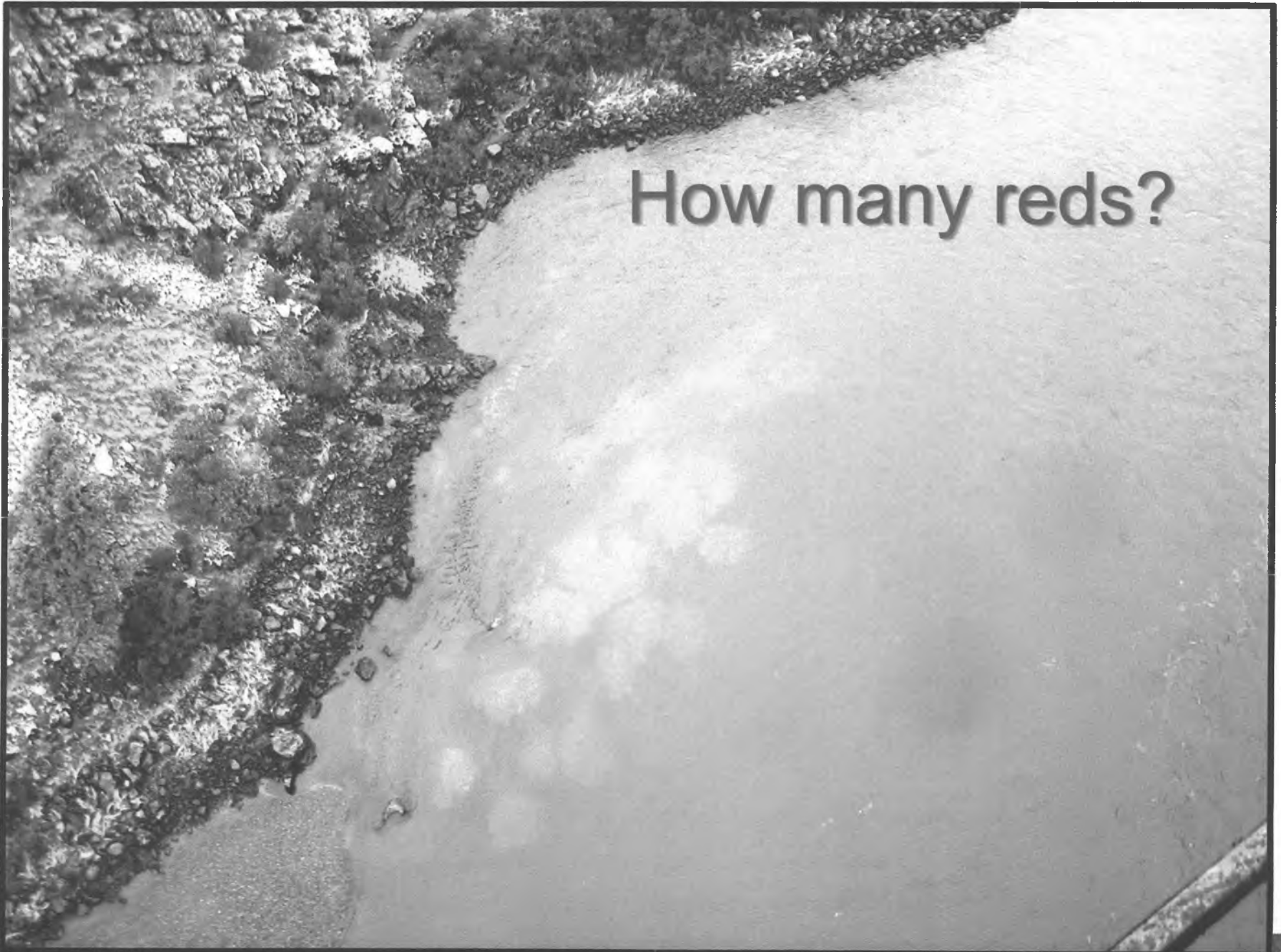


Salmon Spawning Habitat

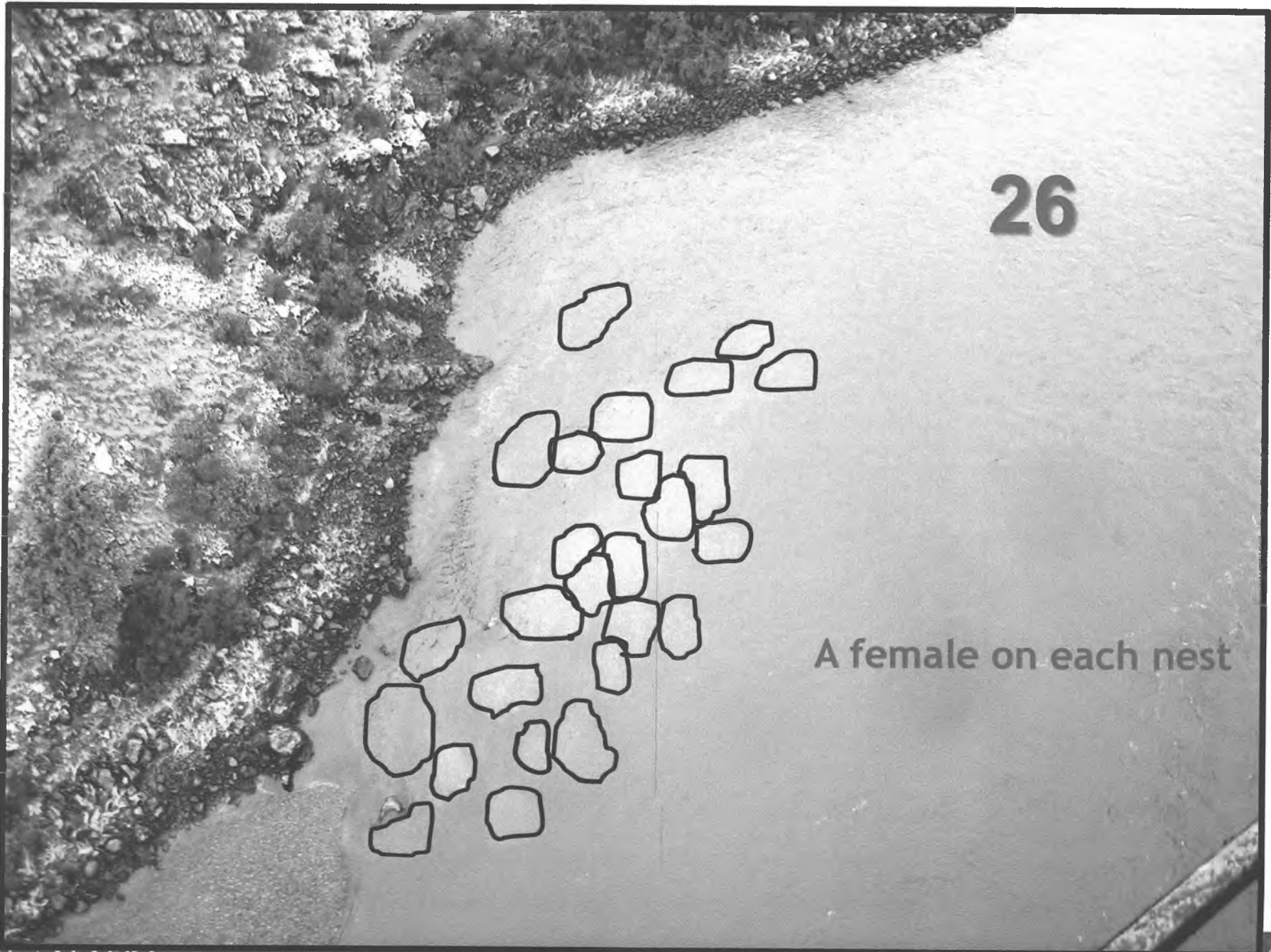
October - December 2012

- Mapping Fall Salmon Nests along a 162 km of the Snake and Clearwater River in Idaho, Washington, and Oregon
- **“THREATENED”** under the Endangered Species Act





How many reds?



26

A female on each nest

Fish Habitat Data Products

Weekly Mosaic Images of Select Sites



Rx-CADRE

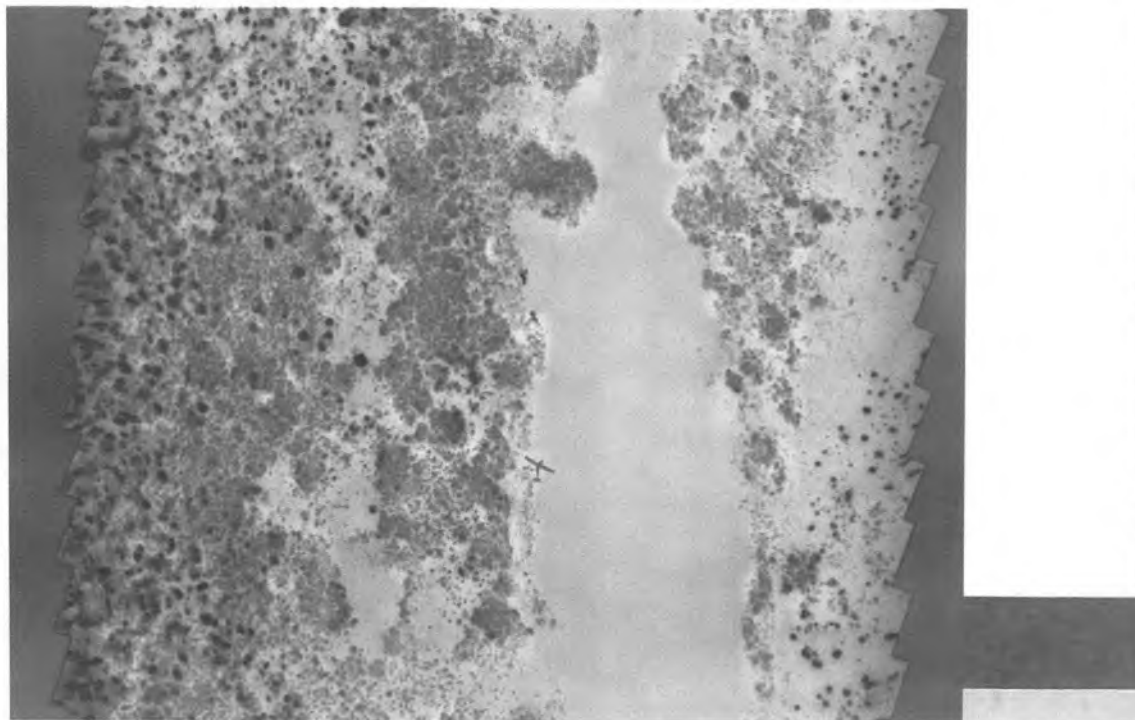
Prescribed Fire Combustion and Atmospheric Dynamics Research Experiment

- October 29 - November 17 2012
- Eglin AFB Florida



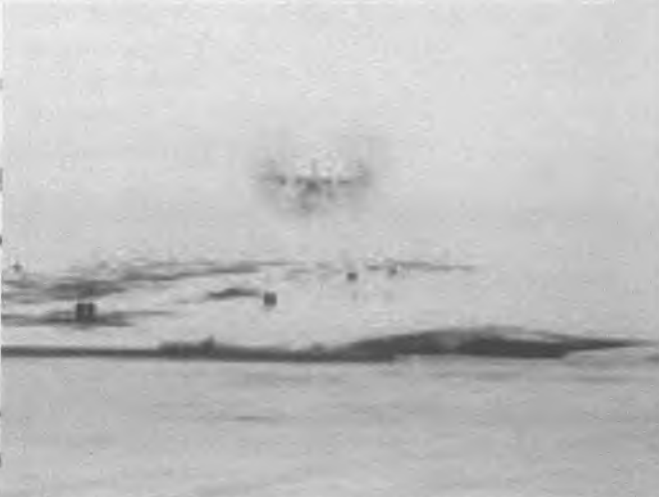
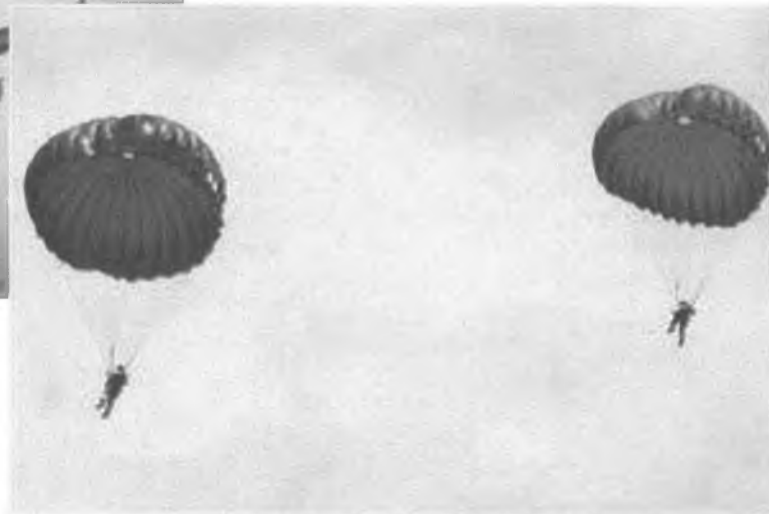
Bear Bite - SAREX

“I’ve worked with the MQ9 and the MQ1 before and when compared these products were pretty sweet” - SAR Duty Officer statement at after action review 11 Feb 2013. “Within just a couple hours imagery was collected and turned into mosaic products in the field”



Bear Bite - SAREX

cold weather operations – our most challenging yet



Shoreline Clean-up Assessment Technique (SCAT) Evaluation

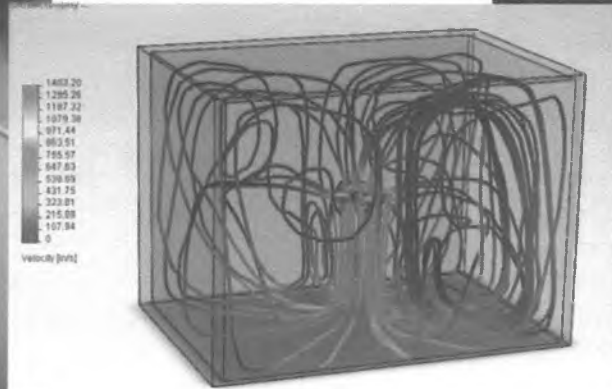


BP Exploration (Alaska) Inc. Partnership

Oil Infrastructure Monitoring Research



- Flare Stacks
- Pipelines
- Processing Facilities
- Access Roads



BP North America Partnership

High Arctic Ship Piloting Experiments

Aboard the Canadian CCGS LOUIS S. ST. LAURENT



Phase I Research conducted by
Capt Stephen Wackowski (USAF)

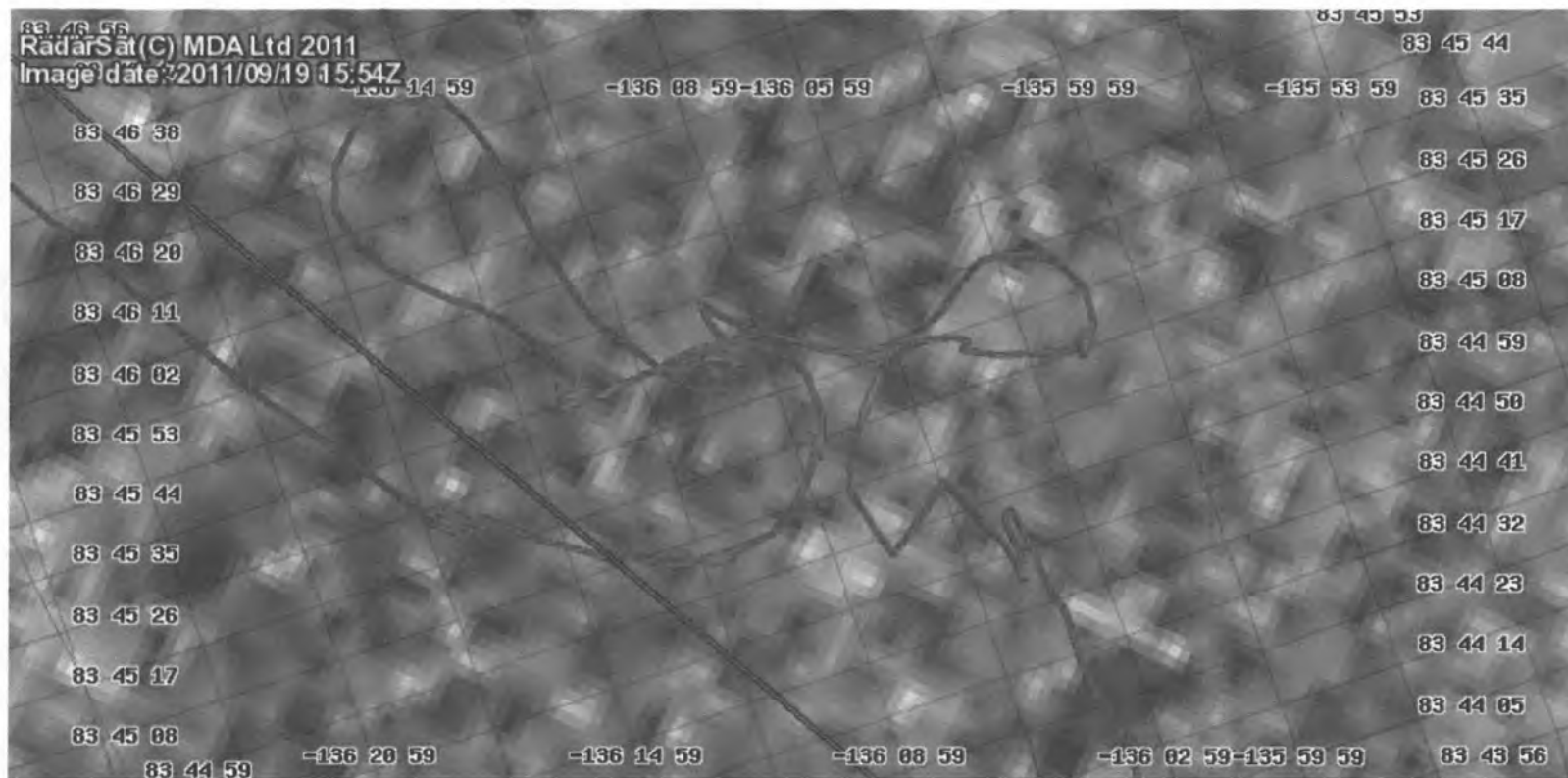
Phase II Ongoing with UAF
graduate students with modified
Raven systems acquisition

Imagery Used For Ship Piloting in Ice

Ship tracks superimposed (Sept 2011)

Background Image: National Ice Center highest resolution RADARSAT

- Desired icebreaker track (green)
- Actual navigation track (red)



Small UAS Imagery of Ice Ridges

IR image from RAVEN UAS (Sept 2011)



Navigating Sea Ice during the Nome Fuel Delivery

University Engagement and Decision Support



Mission

1. Identify potential safety concerns for those working on the ice
2. Document the site for mission response activity
3. Collect imagery for the USCG Public Affairs Officer

iPASS

UAF's Portable Airspace Surveillance System

Designed and built by UAF for Alaska's airspace monitoring needs



Status

Operational, used in
Canada and NASA
Certified

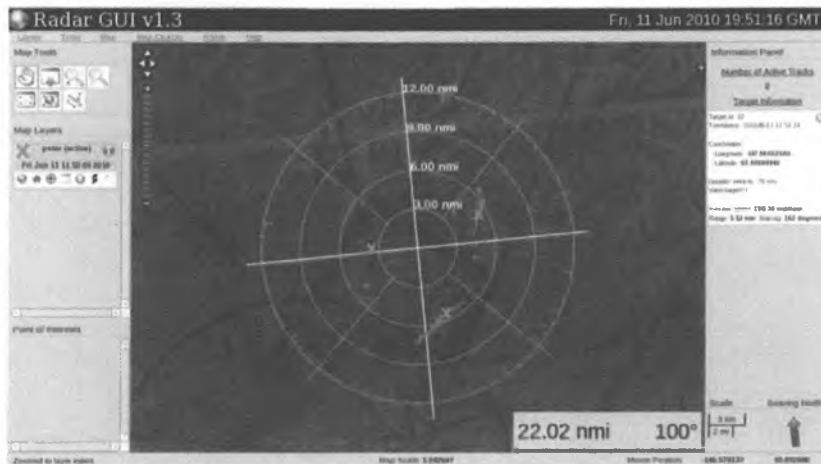


Airspace activity monitoring

Monitors airspace use patterns and validates traffic
pattern assumptions

Enhanced situational awareness during aircraft or spacecraft operations

Provides real-time position and track of local
airspace activity to assist in traffic avoidance

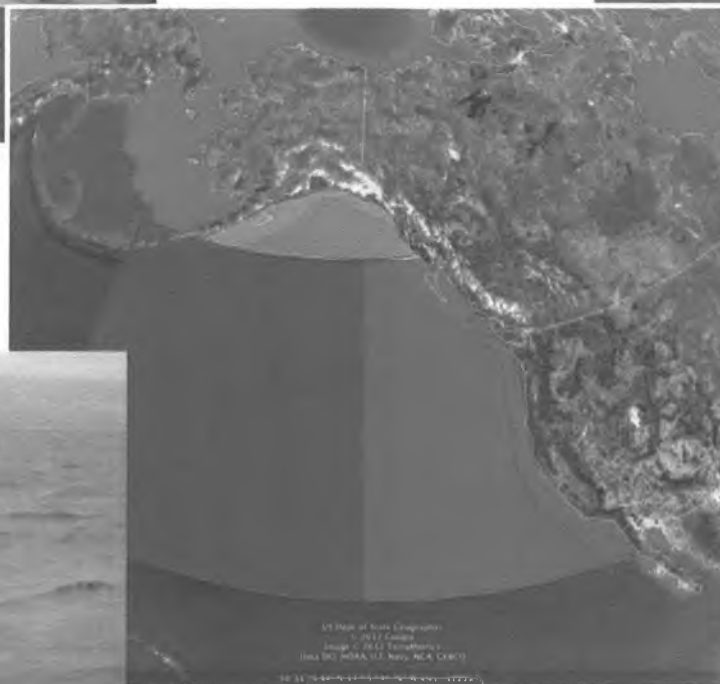


Ongoing UAS Survey of Marine Debris

Generated by 2011 Japanese Tsunami



NOAA Funded Effort



Partnering with a Wasilla Alaska based UAS Manufacturer Airborne Technologies Inc



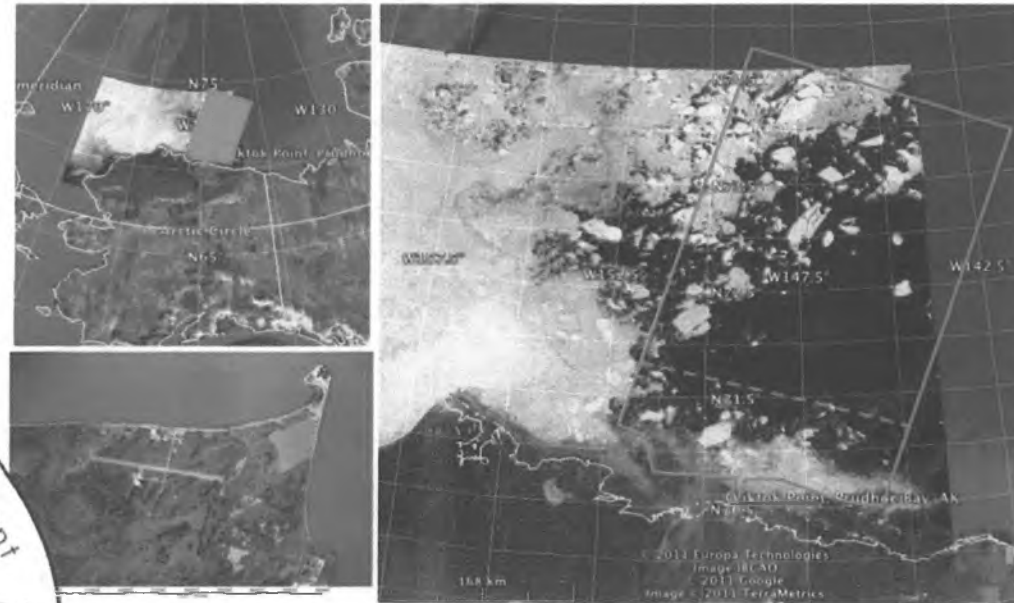
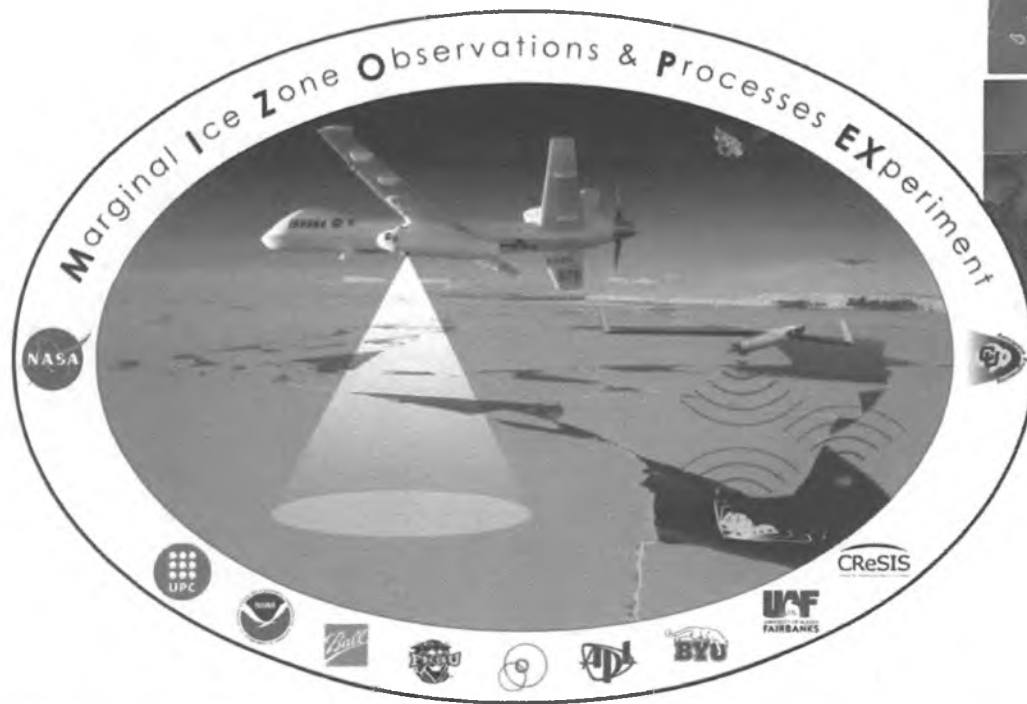
Upcoming ACUASI Projects

Marginal Ice Zone Ocean and Ice Observations and Processes EXperiment (MIZOPEX)

UAF deployments

NASA Exercise July 2013

Preparation May/June 2013



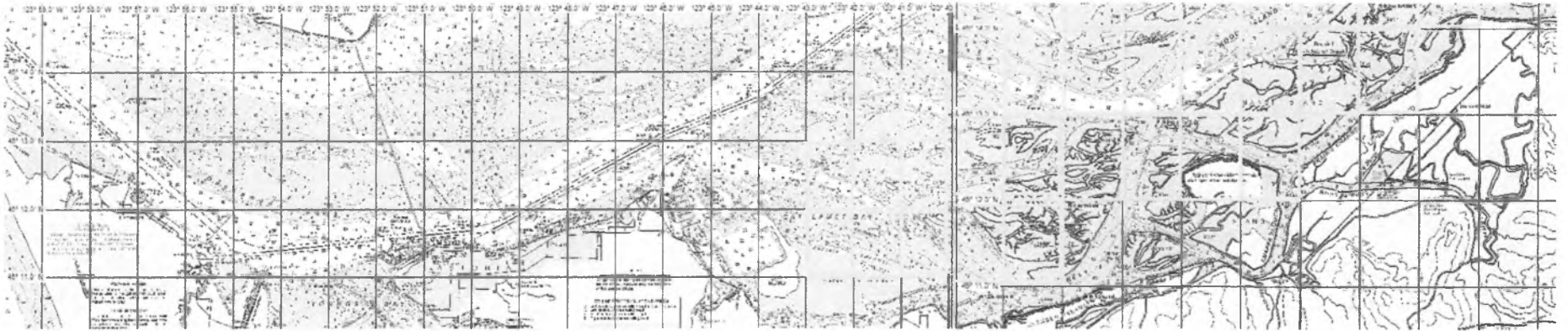
Multiple aircraft simultaneously
Many new scientific payloads

Alaska Department of Public Safety

- **Provided demonstration of a vertical takeoff UAS**
- **Provided concepts in which a UAS could be used including:**
 - **Forensic evidence at crash or crime scene**
 - **Search and rescue**
 - **Wildlife protection**
- **Provide UAS subject matter expert as AST forms its concept of operations**
- **Possible development of UAS training package to train State troopers**
- **Supporting any FAA interaction needs**
- **Providing connections to legal experts on privacy**

Most Recent ACUASI Project

Oil Spill Response Exercise - Columbia River Estuary



- **11-13 March 2013**
- **Puma AE Operation**



Low-altitude, over-the-pole capability

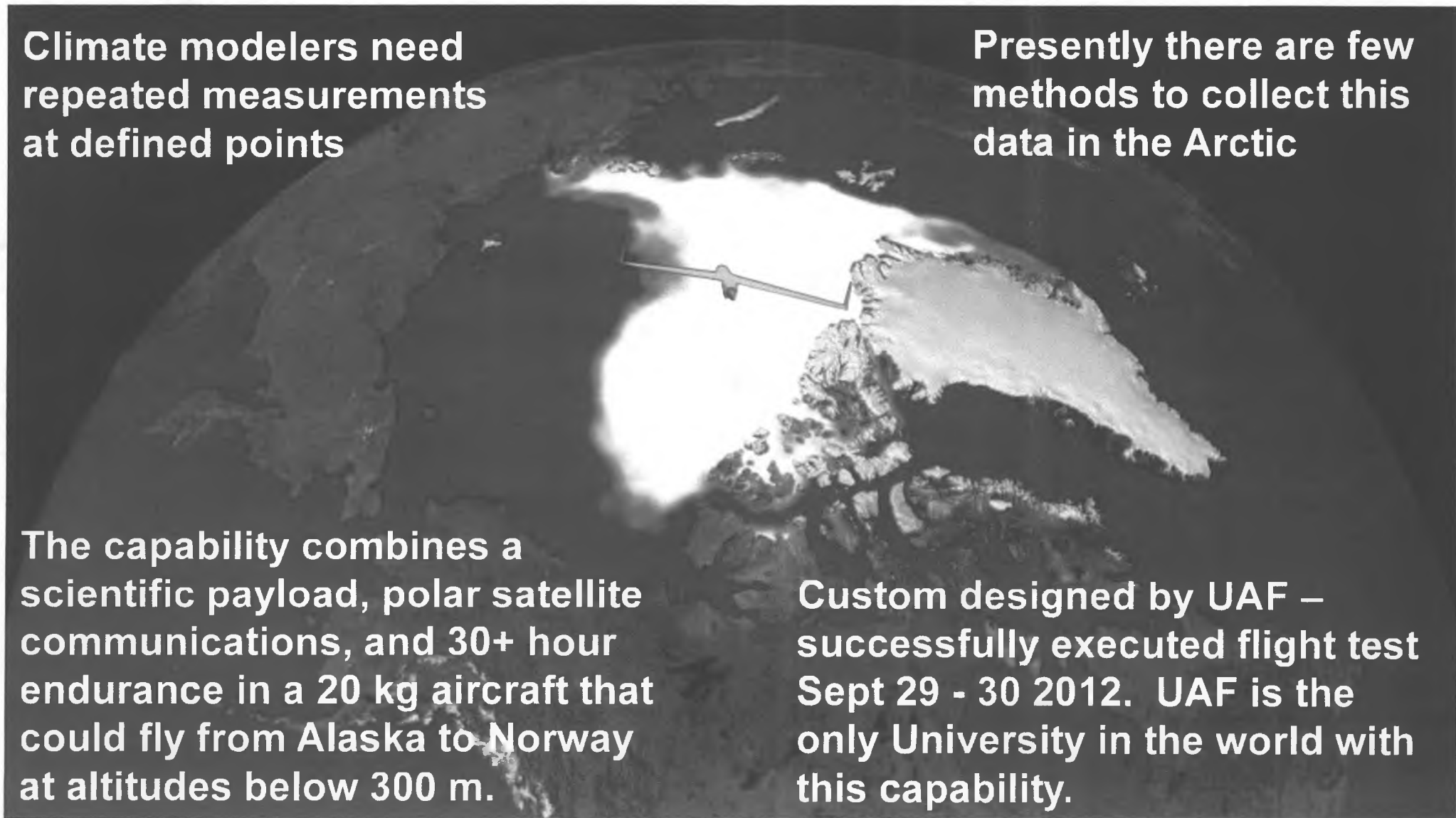
**Fuel-injected, Iridium-communication-enhanced,
long-endurance, small unmanned aircraft**

**Climate modelers need
repeated measurements
at defined points**

**Presently there are few
methods to collect this
data in the Arctic**

**The capability combines a
scientific payload, polar satellite
communications, and 30+ hour
endurance in a 20 kg aircraft that
could fly from Alaska to Norway
at altitudes below 300 m.**

**Custom designed by UAF –
successfully executed flight test
Sept 29 - 30 2012. UAF is the
only University in the world with
this capability.**



Volcanic Ash Analysis and Detection

USAF Small Business Innovative Research

- Collaboration between UAF researchers and new industry
- Opportunity to launch a business to capitalize on USAF funding with UAF Intellectual Property



FAA Test Site

- **Jan 2012: FAA Reauthorization Act directed FAA to select 6 Test Sites to research and test for safe integration of UAS into the national airspace**
- **Feb 14 2013: Solicitation was released**
- **UAF leads team for states of Alaska, Oregon, and Hawaii, plus 56 additional team members**
 - **Includes state agencies (DOT, DPS, Forestry of DNR, DHS&EM, National Guard**
 - **Universities, EDCs, corporations**
- **Proposals due multiple dates, last by May 6**
- **Selection targeted by FAA for Dec 31 2013**

Pan Pacific UAS Test Range Complex

- University ACUASI is lead
- Fourteen specific spots around the three states
 - Strong link with military JPARC ranges
 - Forging links with manned aviation safety specialist
- Key questions to answer:
 - Procedures to protect manned aviation
 - Policies to protect privacy
 - Technical testing to assure control, see & avoid, lost link procedures work, etc

How is Privacy Protected?

- **We're dedicated to protect privacy so beneficial uses can be obtained**
- **Current statutory/case law strongly protects privacy while defining legal airborne activities (manned)**
 - **Unmanned a new technology, but subject to same restrictions**
 - **DHS & National Institute for Justice have taken on task of defining specific UAS privacy rules**
 - **FAA committed to incorporating into Test Site and future rules once developed**
 - **DoD & Guard training on domestic privacy well underway**

More on Privacy

- **International Chiefs of Police issued guidelines for law enforcement use of UAS**
 - Handout with full text available
 - The essence:
 - Follow FAA rules
 - Use strict supervisory accountability
 - Get warrants if any possibility of use for surveillance or investigation
 - Notify locals of intent to fly over them
 - Delete recordings not authorized by warrant, training use, or as required by law
- **UAF working with DPS to assist with program, procedures, all to be set up before first flight**

What about Weapons on UAS?

- **Despite media scares, this won't happen**
- **The Unmanned Aircraft System community uniformly against any such use**
- **Small UAS incapable of carrying weapons**
 - **But even if they could...**
- **FAA prohibits weapons completely—or any dropping of objects from aircraft**
- **IACP advises against even considering—sees as unlikely technologically, unacceptable to public, ineffective use of UAS**

HR No 6

- **Thank you for a thoughtful and balanced view of the potential benefits and risks of UAS**
- **Recognition of UAF's work to date is gratifying—our goal always has been to benefit Alaska**
 - **You've seen many benefits already, but potential remains far greater**
 - **Military users & media treatment have created an impression of danger for domestic use**
 - **No violations yet; we pledge to work hard both on the task force and in the test site to craft solid, defensible policy for your consideration**



UNIVERSITY OF
ALASKA
FAIRBANKS

Alaska Center for UAS Integration

2012 Alaska Legislature Capital Budget

| | | |
|---|-----------|-----------|
| Research and Development of Unmanned Aerial Systems | 5,000,000 | 5,000,000 |
|---|-----------|-----------|

16 (HD 1-40)

It is the intent of the Legislature that the University of Alaska collaborate with the Federal Aviation Administration in establishing a research and development program and possible test facility for Unmanned Aerial Systems in Alaska. Unmanned Aerial Systems are already being utilized in Alaska in many ways and as the Arctic race progresses, they will become even more vital as a resource to the State and the Country.

Excerpt From DoD Training Briefing



General Principles

- Do NOT infringe on US Persons' Constitutional rights
- Protect privacy rights of US Persons
- Collect, retain, and disseminate information based on a lawfully assigned mission and function
- Employ the least intrusive lawful techniques
- Comply with all regulatory requirements





Unmanned Aircraft System Operations Industry "Code of Conduct"

The emergence of unmanned aircraft systems (UAS) as a resource for a wide variety of public and private applications quite possibly represents one of the most significant advancements to aviation, the scientific community, and public service since the beginning of flight. Rapid advancements in the technology have presented unique challenges and opportunities to the growing UAS industry and to those who support it. The nature of UAS and the environments which they operate, when not managed properly, can and will create issues that need to be addressed. The future of UAS will be linked to the responsible and safe use of these systems. Our industry has an obligation to conduct our operations in a safe manner that minimizes risk and instills confidence in our systems.

For this reason, the Association for Unmanned Vehicle Systems International (AUVSI), offers this Code of Conduct on behalf of the UAS industry for UAS operation. This code is intended to provide our members, and those who design, test, and operate UAS for public and civil use, a set of guidelines and recommendations for safe, non-intrusive operations. Acceptance and adherence to this code will contribute to safety and professionalism and will accelerate public confidence in these systems.

The code is built on three specific themes: Safety, Professionalism, and Respect. Each theme and its associated recommendations represent a "common sense" approach to UAS operations and address many of the concerns expressed by the public and regulators. This code is meant to provide UAS industry manufacturers and users a convenient checklist for operations and a means to demonstrate their obligation to supporting the growth of our industry in a safe and responsible manner. By adopting this Code, UAS industry manufacturers and users commit to the following:

Safety

- We will not operate UAS in a manner that presents undue risk to persons or property on the surface or in the air.
- We will ensure UAS will be piloted by individuals who are properly trained and competent to operate the vehicle or its systems.
- We will ensure UAS flights will be conducted only after a thorough assessment of risks associated with the activity. This risks assessment will include, but is not limited to:
 - Weather conditions relative to the performance capability of the system
 - Identification of normally anticipated failure modes (lost link, power plant failures, loss of control, etc) and consequences of the failures
 - Crew fitness for flight operations
 - Overlying airspace, compliance with aviation regulations as appropriate to the operation, and off-nominal procedures
 - Communication, command, control, and payload frequency spectrum requirements
 - Reliability, performance, and airworthiness to established standards

Professionalism

- We will comply with all federal, state, and local laws, ordinances, covenants, and restrictions as they relate to UAS operations.
- We will operate our systems as responsible members of the aviation community.
- We will be responsive to the needs of the public.
- We will cooperate fully with federal, state, and local authorities in response to emergency deployments, mishap investigations, and media relations.
- We will establish contingency plans for all anticipated off-nominal events and share them openly with all appropriate authorities.

Respect

- We will respect the rights of other users of the airspace.
- We will respect the privacy of individuals.
- We will respect the concerns of the public as they relate to unmanned aircraft operations.
- We will support improving public awareness and education on the operation of UAS.

As an industry, it is incumbent upon us to hold ourselves and each other to a high professional and ethical standard. As with any revolutionary technology, there will be mishaps and abuses; however, in order to operate safely and gain public acceptance and trust, we should all act in accordance with these guiding themes and do so in an open and transparent manner. We hope the entire UAS industry will join AUVSI in

adopting this industry Code of Conduct.

Supported By:





INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE

AVIATION COMMITTEE

Recommended Guidelines for the use of Unmanned Aircraft

BACKGROUND:

Rapid advances in technology have led to the development and increased use of unmanned aircraft. That technology is now making its way into the hands of law enforcement officers nationwide.

We also live in a culture that is extremely sensitive to the idea of preventing unnecessary government intrusion into any facet of our lives. Personal rights are cherished and legally protected by the Constitution. Despite their proven effectiveness, concerns about privacy threaten to overshadow the benefits this technology promises to bring to public safety. From enhanced officer safety by exposing unseen dangers, to finding those most vulnerable who may have wandered away from their caregivers, the potential benefits are irrefutable. However, privacy concerns are an issue that must be dealt with effectively if a law enforcement agency expects the public to support the use of UA by their police.

The Aviation Committee has been involved in the development of unmanned aircraft policy and regulations for several years. The Committee recommends the following guidelines for use by any law enforcement agency contemplating the use of unmanned aircraft.

DEFINITIONS:

1. **Model Aircraft** - A remote controlled aircraft used by hobbyists, which is manufactured and operated for the purposes of sport, recreation and/or competition.
2. **Unmanned Aircraft (UA)** – An aircraft that is intended to navigate in the air without an on-board pilot. Also called Remote Piloted Aircraft and “drones.”
3. **UA Flight Crewmember** - A pilot, visual observer, payload operator or other person assigned duties for a UA for the purpose of flight.
4. **Unmanned Aircraft Pilot** - A person exercising control over an unmanned aircraft during flight.

COMMUNITY ENGAGEMENT:

1. Law enforcement agencies desiring to use UA should first determine how they will use this technology, including the costs and benefits to be gained.
2. The agency should then engage their community early in the planning process, including their governing body and civil liberties advocates.
3. The agency should assure the community that it values the protections provided citizens by the U.S. Constitution. Further, that the agency will operate the aircraft in full compliance with the mandates of the Constitution, federal, state and local law governing search and seizure.
4. The community should be provided an opportunity to review and comment on agency procedures as they are being drafted. Where appropriate, recommendations should be considered for adoption in the policy.
5. As with the community, the news media should be brought into the process early in its development.

SYSTEM REQUIREMENTS:

1. The UA should have the ability to capture flight time by individual flight and cumulative over a period of time. The ability to reset the flight time counter should be restricted to a supervisor or administrator.
2. The aircraft itself should be painted in a high visibility paint scheme. This will facilitate line of sight control by the aircraft pilot and allow persons on the ground to monitor the location of the aircraft. This recommendation recognizes that in some cases where officer safety is a concern, such as high risk warrant service, high visibility may not be optimal. However, most situations of this type are conducted covertly and at night. Further, given the ability to observe a large area from an aerial vantage point, it may not be necessary to fly the aircraft directly over the target location.
3. Equipping the aircraft with weapons of any type is strongly discouraged. Given the current state of the technology, the ability to effectively deploy weapons from a small UA is doubtful. Further, public acceptance of airborne use of force is likewise doubtful and could result in unnecessary community resistance to the program.
4. The use of model aircraft, modified with cameras, or other sensors, is discouraged due to concerns over reliability and safety.

OPERATIONAL PROCEDURES:

1. UA operations require a Certificate of Authorization (COA) from the Federal Aviation Administration (FAA). A law enforcement agency contemplating the use of UA should contact the FAA early in the planning process to determine the requirements for obtaining a COA.
2. UA will only be operated by personnel, both pilots and crew members, who have been trained and certified in the operation of the system. All agency personnel with UA responsibilities, including command officers, will be provided training in the policies and procedures governing their use.
3. All flights will be approved by a supervisor and must be for a legitimate public safety mission, training, or demonstration purposes.
4. All flights will be documented on a form designed for that purpose and all flight time shall be accounted for on the form. The reason for the flight and name of the supervisor approving will also be documented.
5. An authorized supervisor/administrator will audit flight documentation at regular intervals. The results of the audit will be documented. Any changes to the flight time counter will be documented.
6. Unauthorized use of a UA will result in strict accountability.
7. Except for those instances where officer safety could be jeopardized, the agency should consider using a "Reverse 911" telephone system to alert those living and working in the vicinity of aircraft operations (if such a system is available). If such a system is not available, the use of patrol car public address systems should be considered. This will not only provide a level of safety should the aircraft make an uncontrolled landing, but citizens may also be able to assist with the incident.
8. Where there are specific and articulable grounds to believe that the UA will collect evidence of criminal wrongdoing and if the UA will intrude upon reasonable expectations of privacy, the agency will secure a search warrant prior to conducting the flight.

IMAGE RETENTION:

1. Unless required as evidence of a crime, as part of an on-going investigation, for training, or required by law, images captured by a UA should not be retained by the agency.
2. Unless exempt by law, retained images should be open for public inspection.

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HCR6 Unmanned Aircraft Task Force

Sponsor Statement

April 1, 2013

HCR6 recognizes the accomplishments of the University of Alaska Fairbanks, Center for Unmanned Aircraft Systems Integration and the research conducted to advance this technology in a safe manner. The research team at the Center has proven that unmanned aircraft can complete tasks more efficiently than traditional means, provide better information, and reduce life safety risks to animals and humans.

HCR6 also recognizes that with new technology comes the need to revisit certain laws to ensure the safety of our citizens and protect their privacy. This resolution forms a task force made up of legislators, government officials, and industry members. The task force will consider recommendations for privacy, appropriate use, and possible remedies for misuse. A preliminary report to the legislature is due in January 2014 and a final report of recommendations due January 2015.

While national news has sparked debate regarding the privacy concerns and the use of "drones" in U.S. National Airspace, Alaska has responsibly used unmanned aircraft for more than ten years. Some privacy concerns are due to limited understanding of this technology and some concerns are justified. The task force will consider regulation already in place by the Federal Aviation Administration and industry codes of conduct while reviewing Alaska state laws to determine the changes that may be necessary to protect the privacy of all Alaskans.