UAS RESEARCH PROGRAM REVIEW

January 18-19, 2012

Dr. John B. Bridewell

Science and Technology for Warfighter Training and Aiding

Research Entities

- University of North Dakota
- John D. Odegard School of Aerospace Sciences
- Department of Aviation
- University of North Dakota Unmanned Aircraft Systems Center of Excellence

And

- Air Force Research Laboratory
- Human Performance Wing
- Human Effectiveness Directorate
- Warfighter Readiness Research Division

Advisory Council

Bruce Smith
Dean
Aerospace Sciences

Dana Siewert
Safety Director

Kent Lovelace
Aviation Department Chair

Al Palmer
UAS Director

Dick Schultz
Director of Flight Operations

John Bridewell
AFRL

Ben Trapnell
UND Academics

Al Frazier
Small UAVs

Mark Hastings
UAS Chief Instructor

UND Researchers

• John Bridewell	Program Manager
• Eleanor Yurkovich	Qualitative Researcher
• Scott Kroeber	Research Assistant
• Paul Snyder	Research Assistant
• Trevor Woods	Research Assistant
• Mark Hastings	Research Assistant
	UAS Laboratory

Subject Matter Experts

- Bob Concannon – MQ-1, MQ-9
- Mike Nelson – MQ-1, MQ-9
- Ric Ferraro – Human Factors/Psychology
- Tom Petros – Human Factor/ Psychology
- Paul Lindseth – Curriculum Development
- Richard Van Eck – Instructional Design, Simulation
- Henry Borysewicz – Technology/CBI/CBT

Purpose

To train a novice pilot in the fundamental knowledge and skillsets required to operate a medium-sized RPA.

Outcome

To produce a state-of-the-art methodology and syllabus that will increase the initial training pipeline for agencies and corporations that require their personnel to fly medium-sized RPAs.

UND UAS CHARACTERISTICS

Tradition of cooperation with military and governmental agencies

Minot AFB

Grand Forks AFB

North Dakota Air National Guard

Customs and Border Protection

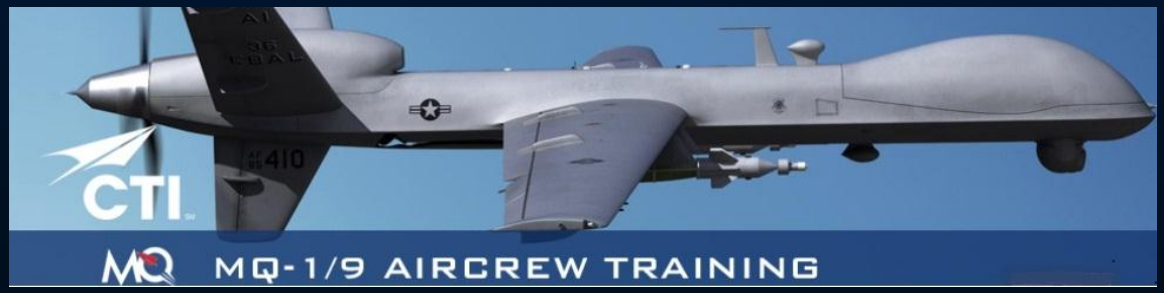
REMOTELY PILOTED AIRCRAFT

Cooperative Entities - MOUs

- North Dakota Air National Guard

- Customs and Border Protection

- Crew Training International



REMOTELY PILOTED AIRCRAFT

UND UAS CHARACTERISTICS

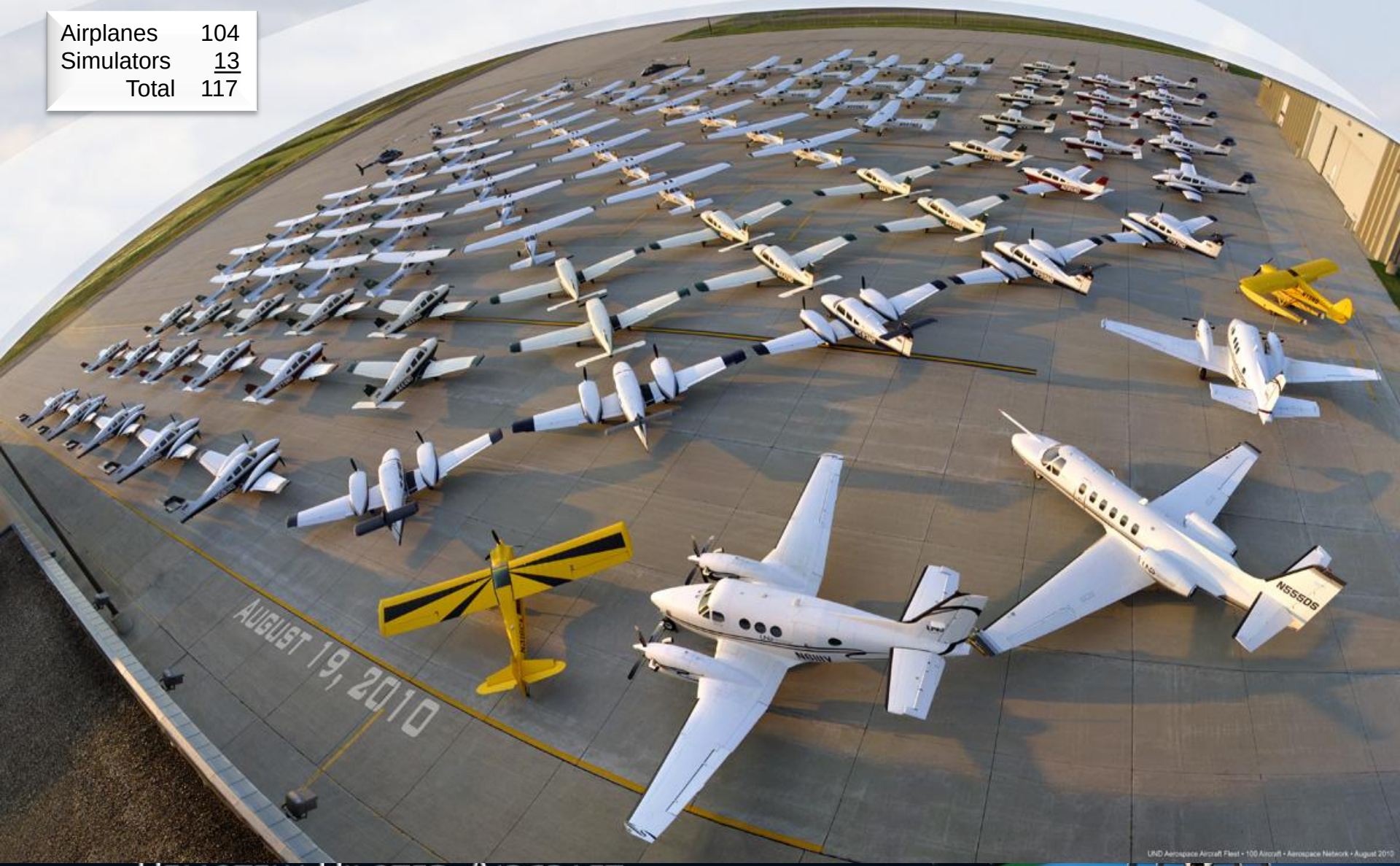
Reputation for excellence in Manned-Aircraft Education and Training, and tremendous potential for Unmanned-Aircraft Education and Training

REMOTELY PILOTED AIRCRAFT

UND AEROSPACE
UNIVERSITY OF NORTH DAKOTA

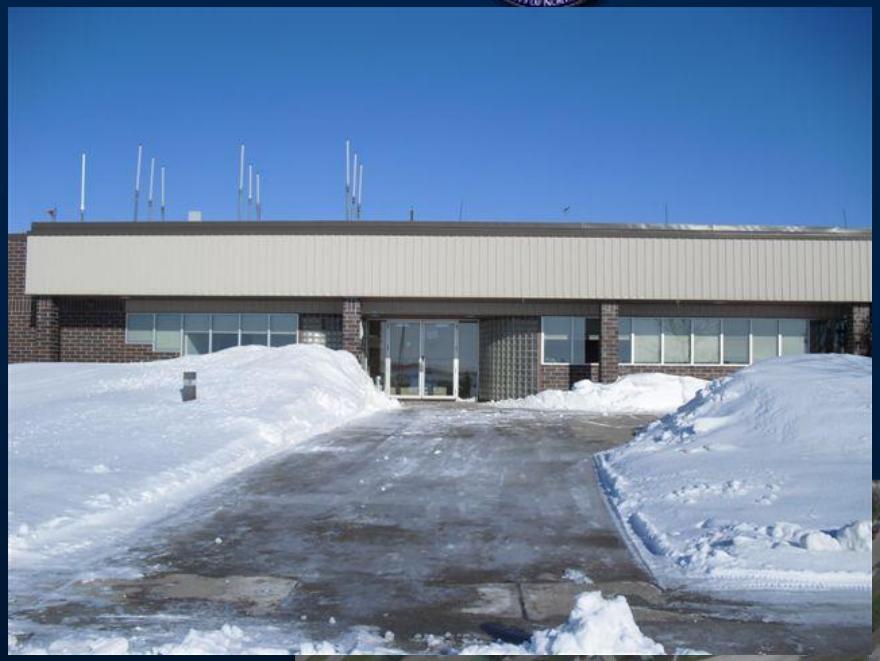
Flight Operations

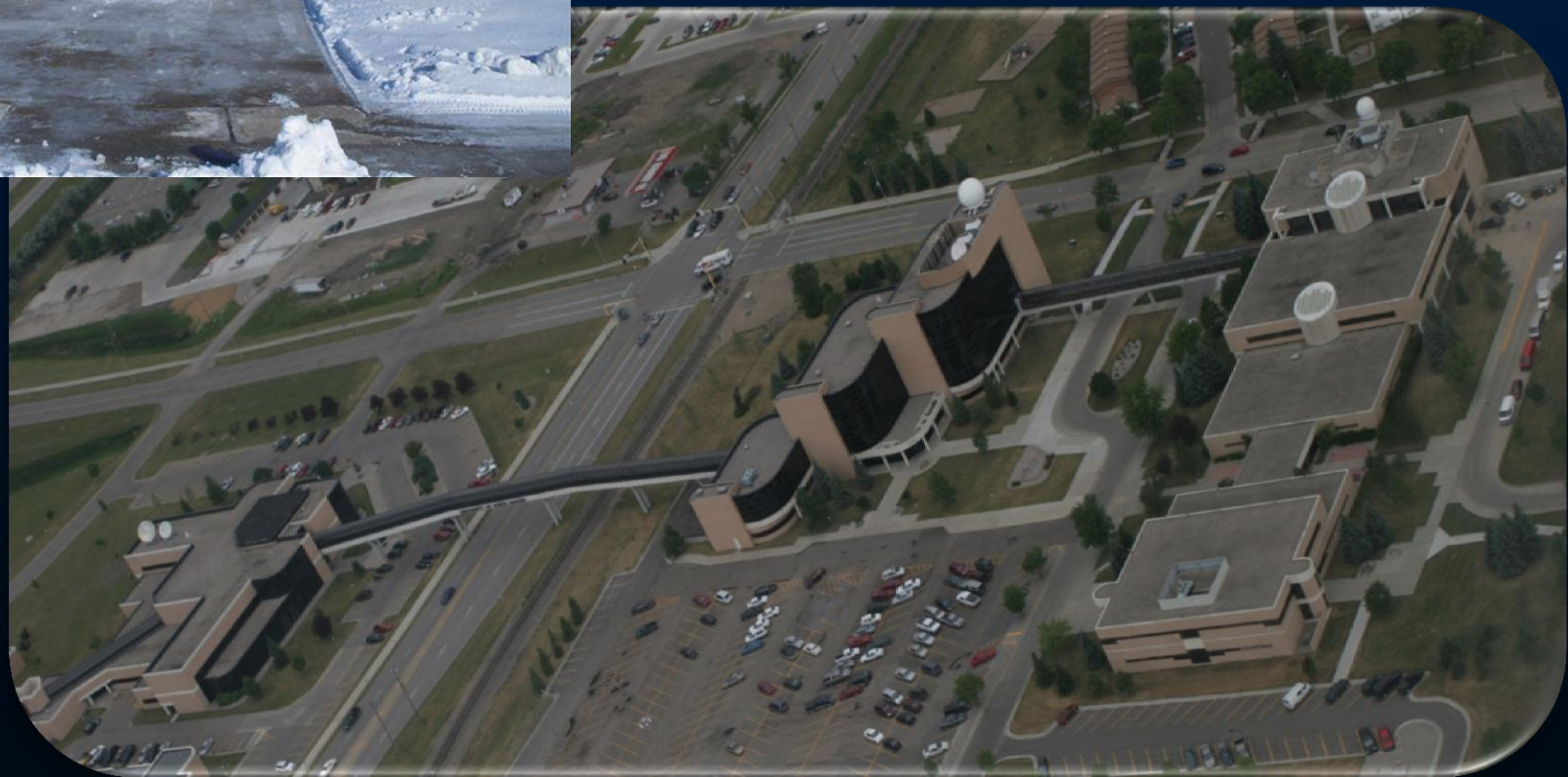
Airplanes	104
Simulators	13
Total	117



REMOTELY PILOTED AIRCRAFT

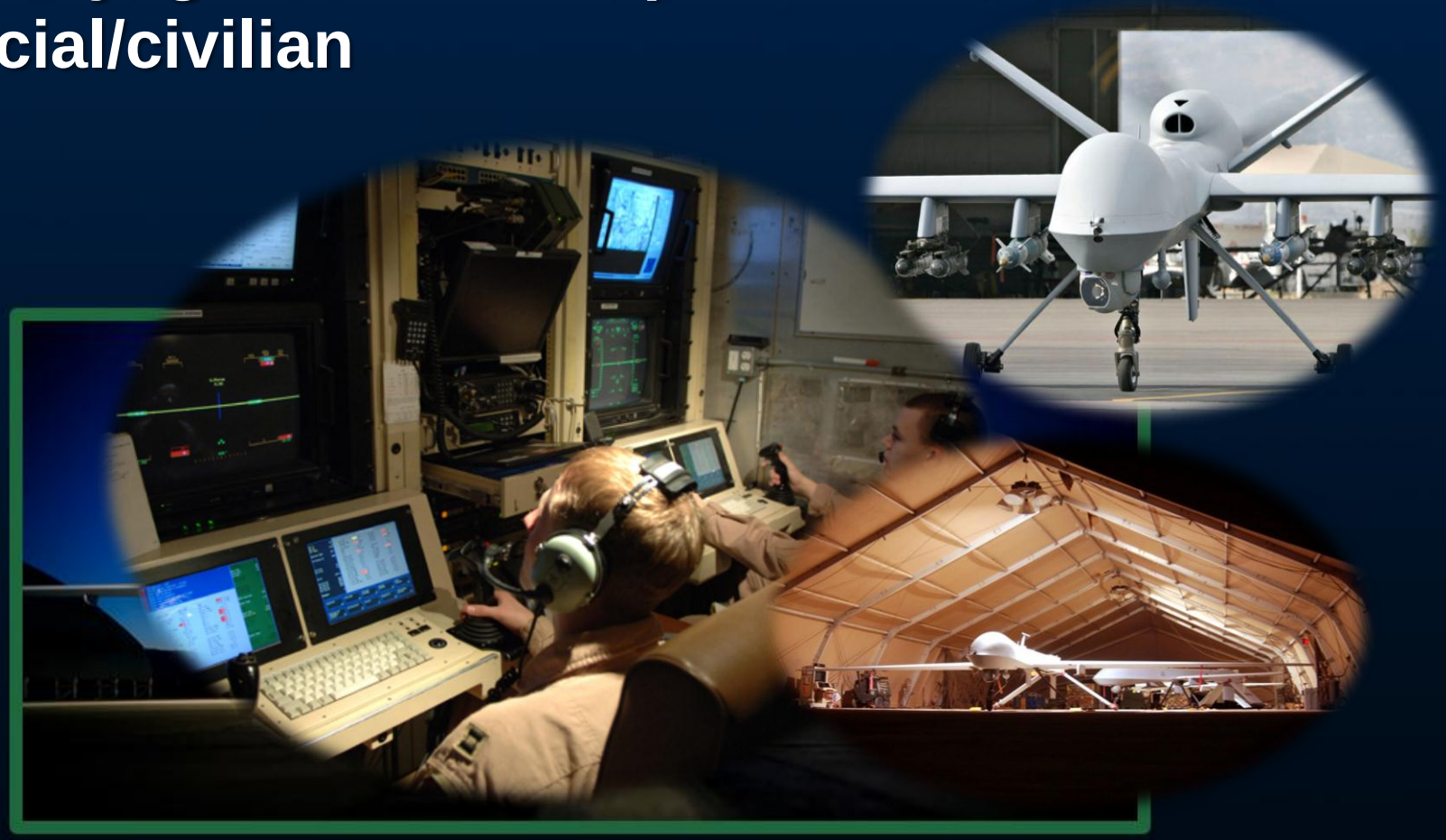
UND Facilities





MALE RPA Course Research and Development

Non-military, governmental, public use, commercial/civilian



Project Flow

Year 1

Year 2

Year 3

Initial Investigation

Curriculum Development And Interventions

State-of-the-Art RPA Course

Interviews Qualitative Analysis MEC Analysis

Investigation Centers Upon Two Major Thrusts

1. Interviews
   - UND – CBP and NDANG
     - Eleanor Yurkovich
     - UND Institutional Review Board approval received
     - MOUs still outstanding
   - AFRL - Creech and Holloman
     - Jasmine Duran
     - IRB approval outstanding
   - Interview Process & Questions Finalized
   - Quantitative & Qualitative Analysis

Mission Essential Competencies℠

George Alliger, Rebecca Beard
The Group for Organizational Effectiveness, Inc.

Mike Garrity
Aptima, Inc.

Traditional MEC Elements

- **Mission Essential Competency** (MEC)
  - Higher-order individual, team, and inter-team competencies
- **Supporting Competency** (SC)
  - High level skills that support the MECs
- **Knowledge & Skills** (K&S)
  - Knowledge – info or fact that can be accessed quickly under stress
  - Skill – compiled actions that can be carried out successfully under stress
- **Experience**
  - Developmental event during training and/or career necessary to learn a K or S, or practice a MEC or SC under operational conditions

Investigation Centers Upon Two Major Thrusts

2. MEC Analysis
   - Non-militarized version
   - ICS Development Workshop in October
   - Summary Report

     Medium Altitude Long Endurance

     UAS INITIAL COMPETENCY SETS (ICS)[SM]
   - Knowledge and Skillset Tool
   - Survey and Gap Analysis
   - COMMAND Workshop – February 2012
   - Final Report – March 31, 2012

Project Flow

Year 1

Year 2

Year 3

Initial Investigation

Curriculum Development And Interventions

State-of-the-Art RPA Course

Interviews Qualitative Analysis MEC Analysis

Curriculum Development

1. Examine Interview and MEC Analyses
2. Outline a State-of-the-art curriculum
3. Examine for Gaps – Determine areas for development – Create Modules
4. Write curriculum
5. Test curriculum in a classroom environment
6. Assess curriculum

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Air Agency Certificate

Number OG5S092N

This certificate is issued to
UNIVERSITY OF NORTH DAKOTA
JOHN D. ODEGARD SCHOOL OF AEROSPACE SCIENCES
whose business address is
GRAND FORKS- MARK ANDREWS INTERNATIONAL AIRPORT
GRAND FORKS, ND 58202
upon finding that its organization complies in all respects with the requirements of the Federal Aviation Regulations relating to the establishment of an Air Agency, and is empowered to operate an approved PILOT SCHOOL
with the following ratings:
PRIVATE PILOT CERTIFICATION
COMMERCIAL PILOT COURSE
FLIGHT INSTRUCTOR COURSE
FLIGHT INSTRUCTOR INSTRUMENT COURSE

This certificate, unless canceled, suspended, or revoked, shall continue in effect UNTIL OCTOBER 31, 2007.

Date issued
OCTOBER 12, 2005

By direction of the Administrator
KENNETH O. SNYDER
MANAGER, FARGO FSDO, GL-21

This Certificate is not Transferable, AND ANY MAJOR CHANGE IN THE BASIC FACILITIES, OR IN THE LOCATION THEREOF, SHALL BE IMMEDIATELY REPORTED TO THE APPROPRIATE REGIONAL OFFICE OF THE FEDERAL AVIATION ADMINISTRATION

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both

FAA Form 8000-4 (1-97) SUPERSEDES FAA FORM 330. AFS Electronic Forms System - v3.2

Federal Aviation Regulation

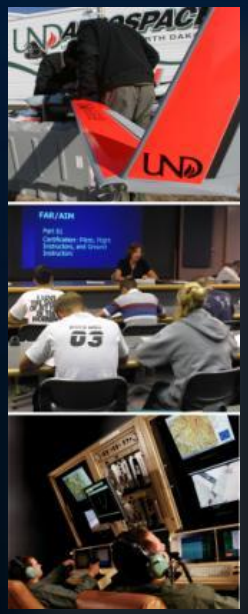
14 CFR Part 141

Pilot School Certificate

Cooperative Agreement Ideally Suited for UND

Matches UND Strategic Plan

- Research
- Education
- Training

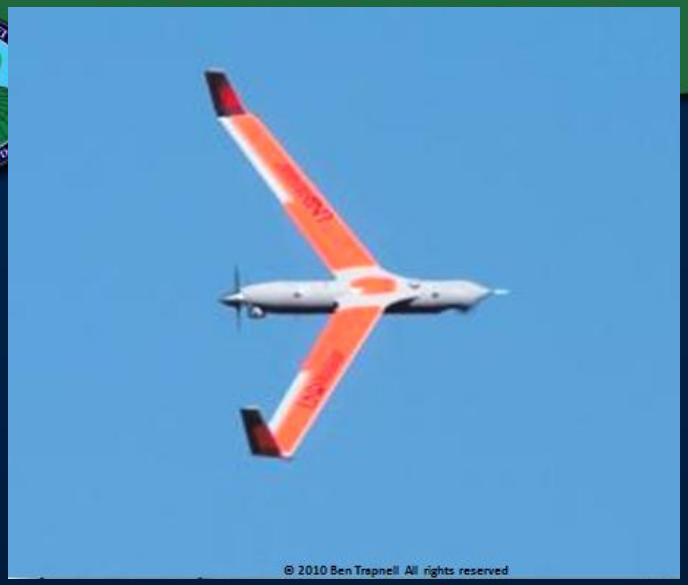


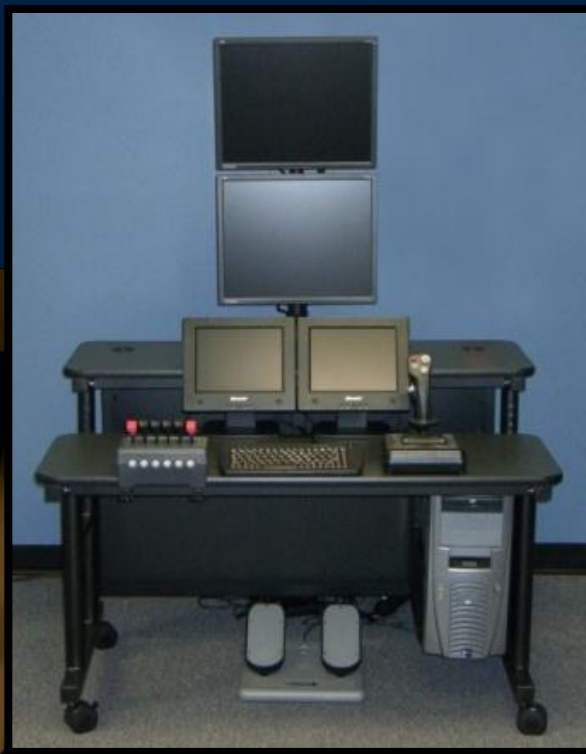
REMOTELY PILOTED AIRCRAFT

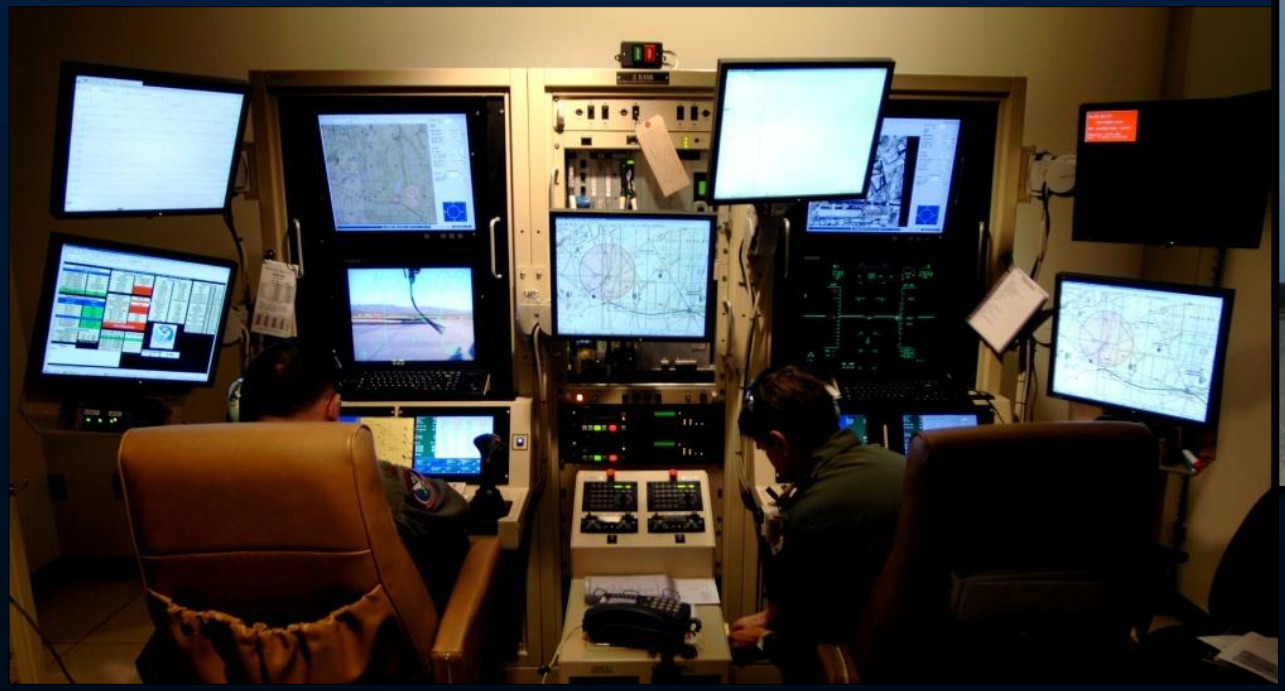
Infrastructure & Resources

A Key element in the Statement of Work

- Three ROVATTS MTDs – 2 inherited from another project
- ScanEagle (with supporting equipment)
- Access to PMATS, Corsair Simulator
- Two MQ-1, MQ-9 SMEs
- Two ScanEagle SMEs







Remotely Piloted Aircraft

UND is Energizing its Resources

. . .and is exited to work with AFRL in meeting the future training needs of RPA pilots and Sensor Operators.