



# Flight Testing at the Operator Performance Laboratory (OPL)

## FULL SERVICE FLIGHT TESTING

Fleet of 5 aircraft and 6 simulators  
Maintenance and fabrication shop  
Test cards, instrumentation  
Test pilots, engineers, crewing  
Human Factors assessment  
Ops framework based on OPNAVINST

## INSTRUMENTED AIRCRAFT

2 x AV-L29 Delfin jets  
1 X MIL MI-2 turbine helicopter  
1 x A-36 Bonanza  
1 x Cessna 172N  
1 x Skunkworks QR425S UAS

## FLIGHT SIMULATORS

Aircraft-in-loop simulators  
2 x AV-L29 Delfin jets  
1 X MIL MI-2 helicopter  
1 x A-36 Bonanza  
Fast jet procedure trainer  
Widebody Air Transport (B737)  
Generic GA small aircraft  
UAS GCS in CONEX

## PROJECTS

Range Instrumentation testing  
GPS denied testing  
Avionics displays, HUD, HMD  
Live Virtual Constructive (LVC)  
Spatial Disorientation (SD)  
Radar, LiDAR, EOIR, TSPI  
Datalink, UAS, Secure comms



The Operator Performance Lab (OPL) is a simulation and flight testing organization that has developed an infrastructure aimed at providing low-cost distributed flight simulation and flight test services. The development of the necessary infrastructures was informed by experiences made in over 12 years of distributed simulation flight test involvement ranging from large-scale flight test deployments to small-scale flight tests of no more than one hour duration. OPL has an extensive airborne telemetry infrastructure consisting of a range instrumentation station with datalink antennas as well as a Model 997 HMMWV that serves as a command and control vehicle that can be deployed at test ranges.

- The OPL at the University of Iowa conducts flight test research in operational relevant environments.
  - 100% funded by sponsored research
  - Self-contained facility with flight ops, shops, offices, labs.
  - One-stop flight test R&D organization with “can-do” attitude
  - Directed by Tom Schnell, Associate Professor in Mechanical and Industrial Engineering, Commercial Pilot, Flight Instructor
  - OPL has around 15 members including graduate and undergraduate students, full time research engineers, emeritus faculty, research pilots, and crew chief.



The OPL is situated in an 8500 square-foot vehicle integration hangar, a 2200 square-foot electronics laboratory and software development laboratory space, and a 4500 square-foot maintenance hangar. OPL is a self-contained full-service flight simulation and flight test research organization complete with the necessary organizational and procedural processes to maintain and modify research simulators and airframes for use in OPL's human-in-the-loop tests. Flight test operations are governed by the flight operations manual which has been approved at the leadership levels of the University of Iowa, State of Iowa.



**OPL R&D**  
ENGINEERING  
FLIGHT TEST



# OPL Fleet Aircraft and Simulators

## SPECIAL EQUIPMENT

Binocular cueing helmet (JSF)  
Eye trackers (head worn and remote optics)  
Physiological monitoring equipment (EEG, ECG, SpO2, etc.)  
Hyper-stereo EO/IR pods  
SOA CAAS system in Helicopter  
LVC Avionics in AV-L29 jets  
Range instrumentation pod points  
NGTS SAF, all aircraft and simulators are federated

## UNIQUE CAPABILITIES

Highly reliable quantitative, real-time workload assessment using Discrete Deterministic Nonlinear Algorithms for in flight "drool-cup" assessment and adaptive training systems.  
Aircraft-In-Loop simulation  
OPL has thousands of acres in UAS COAs

## TURNKEY SOLUTIONS

From specification to flight, OPL can handle all flight test assignments in house.  
Staffing includes PhD engineers, test pilots, crew chiefs and mechanics, electronics and software engineers, ground support crews.  
OPL is a part of the State of Iowa system and as public use entity can easily deploy to military bases.



LET OPL SERVE YOUR FLIGHT TEST NEEDS

Contact or visit us anytime

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