



Vigilante VTOL UAV

*Attachment 1, 2008
Vigilante FAA COA
Application*

(b) (6)

**Project Engineer, Weapon & Sensors Team
Systems Integration Division
Aviation Applied Technology Directorate**



Vigilante VTOL UAV Testbed



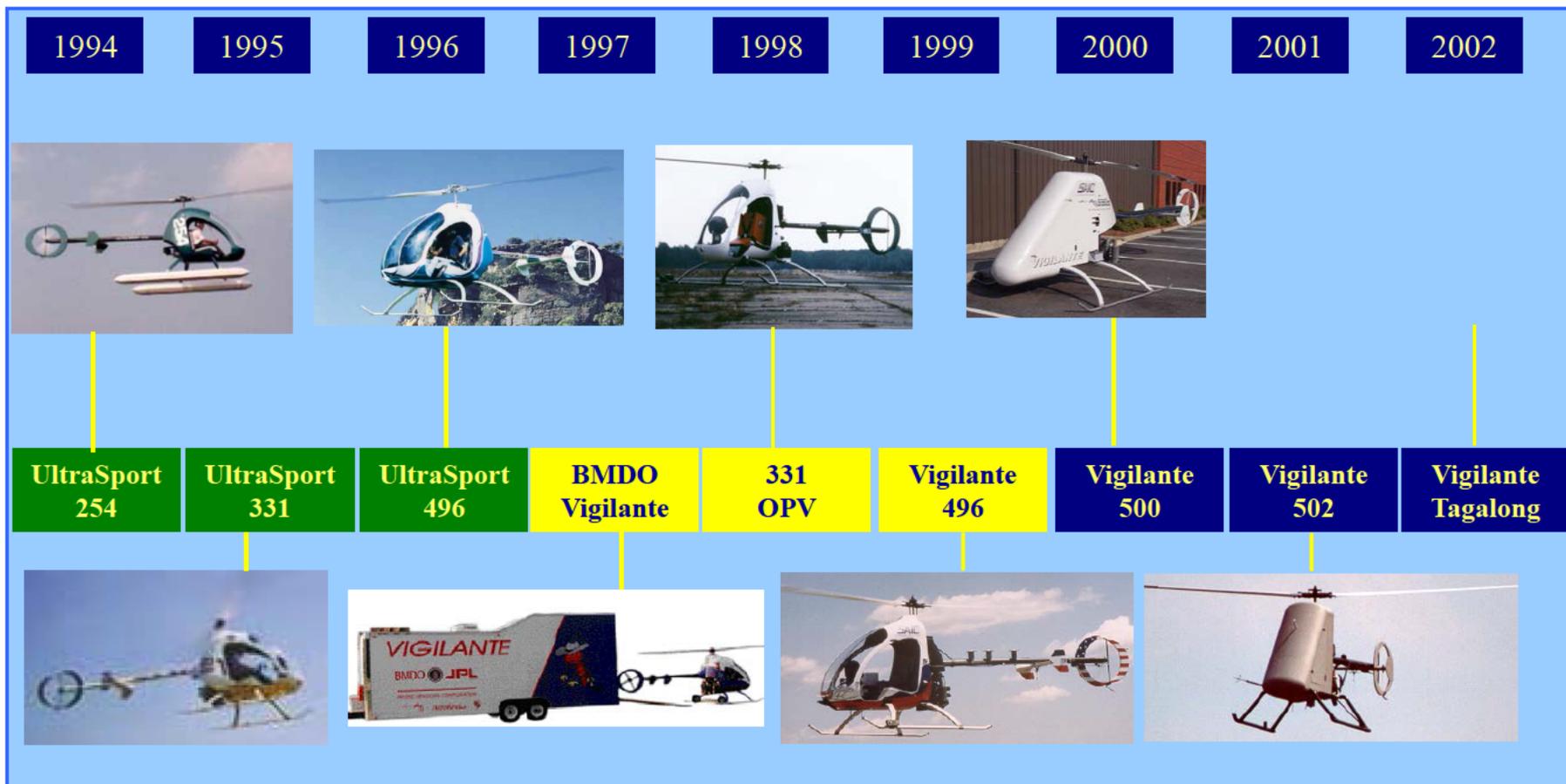
Vigilante serves as a testbed vehicle at AATD for testing and demonstrating manned-unmanned teaming and UAV technologies, including weapons and sensors.

Aircraft Information

▪Powerplant	Rotax 914, 100hp	▪Fuel Capacity	36 gal
▪Length	26 ft	▪Payload	275 lbs
▪Rotor Diameter	23 ft	▪Interior Volume	5 cubic Ft.
▪Height	8 ft	▪Endurance	5 hours (Payload dependant)
▪Width	4ft	▪Range	20 NM (Data link & Test Range Restriction Dependant)



Vigilante's COTS Heritage



Manned

**Optionally
Piloted**

Unmanned

Ultrasport 496 Helicopter



- \$50K Kit
- 2 Passenger / 500lb Useful Load
- 2.5 hrs Endurance / 65 kts Cruise
- Composite Airframe / Blades
- 95HP 2-stroke Engine
- 100+ sold, 2000+ hours on fleet

www.ultrasport.rotor.com



- ATI / Aerobotics IRAD
- Built in Spring 1998 to develop UAV flight controls
- US496 Platform
- Optionally Piloted Vehicle
- Fuzzy Logic Adaptive Controller (FLAC) based flight controls.

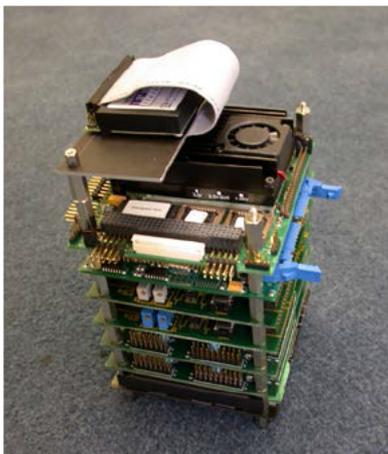


496-OPV w/ SAIC AFCS

- SAIC replaced Aerobotics as control system developer after USN VTOL UAV demo
- 1st ½ of 1999 IRAD
- Global Hawk DDE-based ground control station
- Successfully demo'd waypoint navigation, auto takeoff / land, lost link recovery



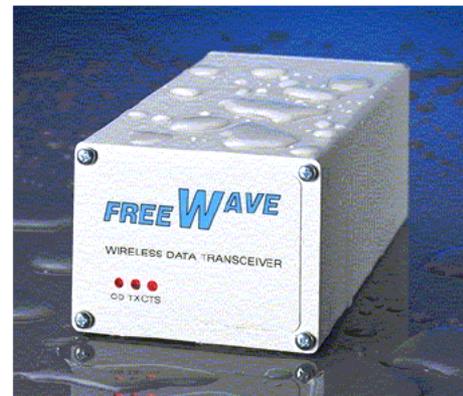
Flight Control System Avionics



- PC/104 processing suite
 - 166-266 MHz Pentium
 - Ethernet
 - Analog conversion
 - Anti-alias filtering
 - Discrete signal conditioning
 - Spare serial ports
 - PWM Conversion
 - Power supply
 - Rugged "CanTainer"



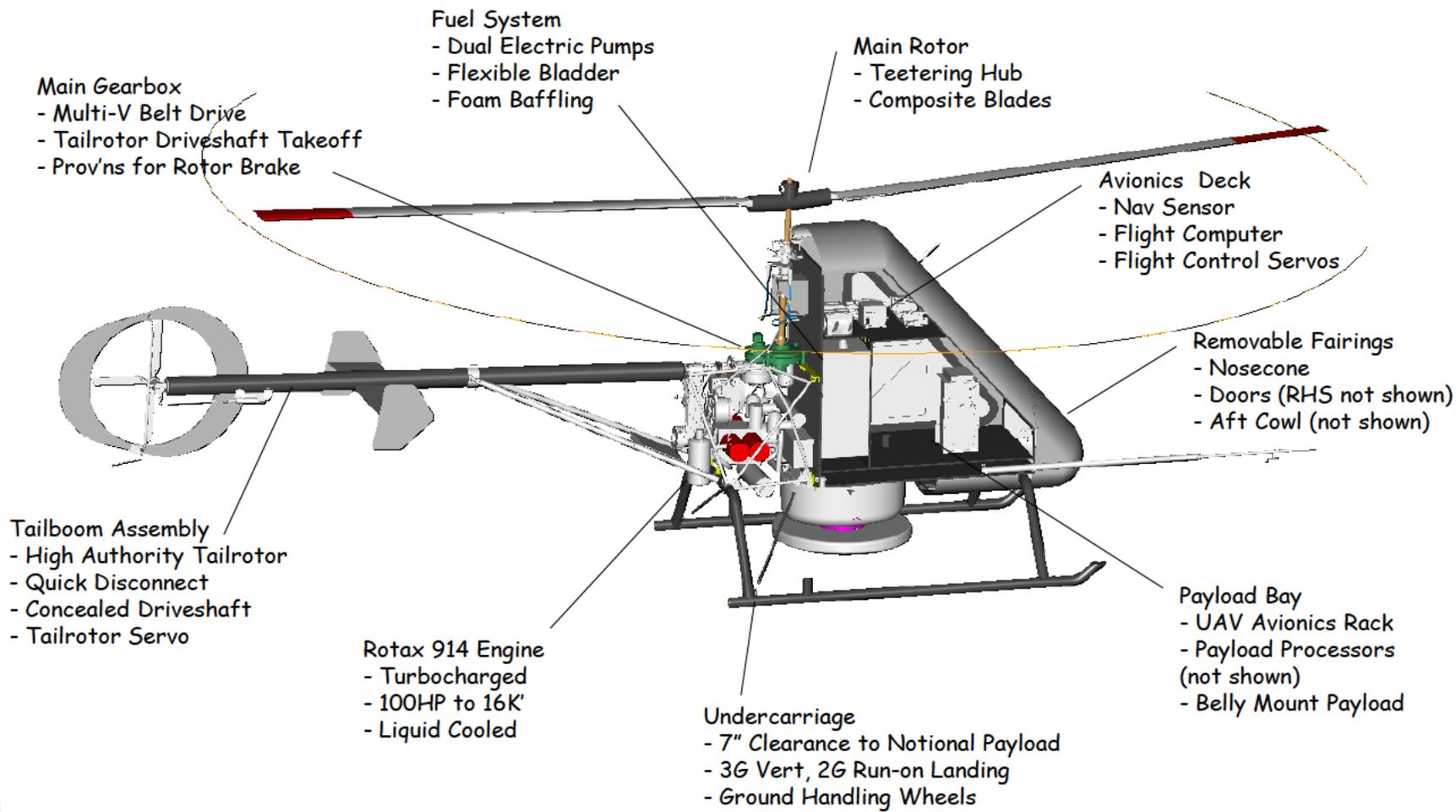
- Navigation Sensor Unit
 - Turnkey IMU/GPS
 - ~216 in3
 - Man-rated
 - Embedded air data
 - \$60k



- Freewave RF Modems
 - 200-400 & (b) (3), 10 U.S.C. § 130 MHz
 - <= 115 kbps
 - 20 nmi range (with amp)
 - FHSS
 - Unique addressing for security



Configuration



Ground Control Station



- Hardware implementation based on field-proven DDE design
- Complete ground control software suite
 - » flight systems controls and displays
 - » data acquisition recording and file management
 - » mission management tools
- User-friendly interface permits safe employment by low-time operators
- Modular design permits rapid incorporation of specialized interfaces.
- Telemetry capture tools integrated with complete postflight data analysis environment.
- Flight simulator for training & mission plan checkout