Berkeley BEAR Fleet: *Ursa Minor3*

- Length: 1.4m
- Width: 0.39m
- Height: 0.47m
- Weight: 9.4 kg
- Engine Output: 2.8 bhp
- Rotor Diameter: 1.5m
- Flight time: 15 min
- System operation time: 30 min
Navigation Hardware

1. Navigation Computer Configuration (Ursa Magna 2)

- Ampro P233MMX, 64MB RAM
- 4 ch RS232, 1 Parallel, 1 10BaseT Ethernet, S-VGA, SCSI
- Custom Take-over board
- 82C54x4 CTC Board
- DC-DC Converter
- FlashRAM Card Carrier
- RS232x4 Exp board
- Base board
- Radio Receiver
- Servo system
- Ethernet
- RCV In
- Servo Out
- Parallel
- Ultrasonic Altimeter
- Boeing DQI-NP
- DGPS Correction
- Wireless Modem
- NovAtel GPS
- Compass
- Lucent WaveLAN
- Wireless Modem
- Status LCD
Navigation Software: DQI-NP-Based

- **Ground Station**: Command from Ground Station
- **DQIGPS**: Flight Data
- **SHMCONT**: Control output
- **DQIREAD**: INS Update
- **INS Update**: 50Hz, 100Hz, 1Hz
- **Boeing DQI-NP**: INS Update
- **NovAtel GPS RT-2**: GPS Update

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Flight Control System: SISO Controller Structure

- Profile Generator
- Way-point sequence
- Attitude controller
- Velocity controller
- Position controller
- PID Controller Array
- Position estimates
- Operator control
- Master Servo Control
- Helicopter Dynamics
- Fault Detector
- Navigation System
- Position Estimator
- GPS
- INS
- Attitude, Angular Rate