NASA ER-2: Flying Laboratory for Earth Science Studies and Remote Sensing

ASPRS 2007 Annual Conference
-Identifying Geospatial Solutions

Tampa, Florida

Presented by Robert Navarro,
NASA Dryden Flight Research Center

May 7 – 11, 2007

ER-2 Specifications

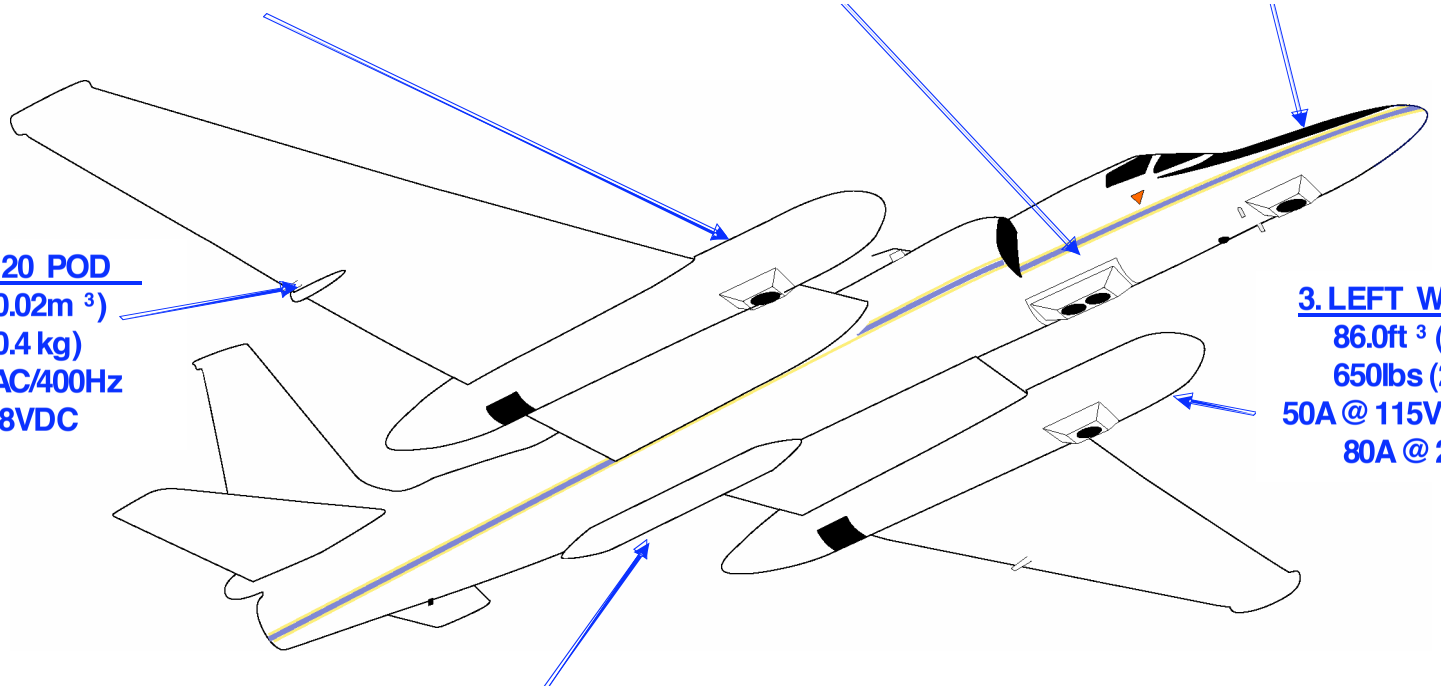
Crew:	One Pilot
Length:	62 feet, 1 inch
Wingspan:	103 feet, 4 inches
Engine:	One General Electri F -118-101 engine
Altitude:	Above 70,000 feet
Range:	Over 6000 nautical miles, subject to pilot duty time limitations
Duration:	Over 10 hours
Cruise Sp eed:	~400 knots above 65,000 feet altitude (~210 Meters/sec)

ER-2 Basic Configuration

4. RIGHT WING POD
86.0ft ^{3} (2.43m ^{3})
650lbs (294 kg)
50A @ 115VAC/400Hz
80A @ 28VDC

2. Q - BAY
64.6ft ^{3} (1.83m ^{3})
1000lbs (454 kg)***
100A @ 115VAC/400Hz
140A @ 28VDC

1. NOSE
47.8ft ^{3} (1.35m ^{3})
700lbs (317 kg)***
50A @ 115VAC/400Hz
70A @ 28VDC



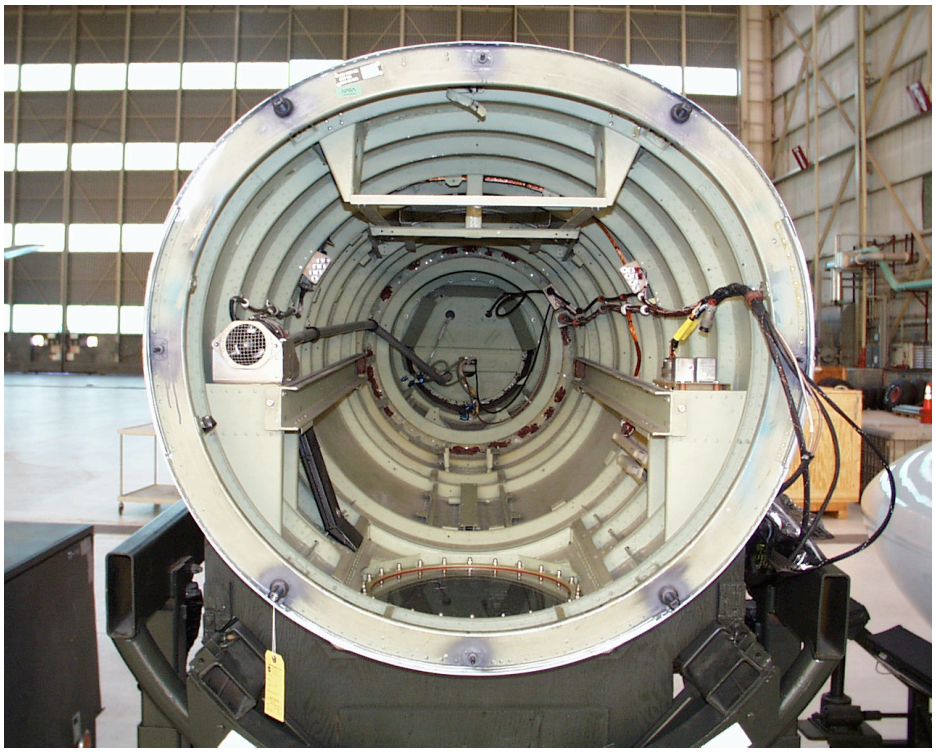
5. SYSTEM 20 POD
0.74ft ^{3} (0.02m ^{3})
45 lbs (20.4 kg)
30A @ 115VAC/400Hz
30A @ 28VDC

3. LEFT WING POD
86.0ft ^{3} (2.43m ^{3})
650lbs (294 kg)
50A @ 115VAC/400Hz
80A @ 28VDC

6. CENTERLINE POD
14.0ft ^{3} (0.40m ^{3})
350lbs (159 kg)
Electrical Shared with
Q-Bay

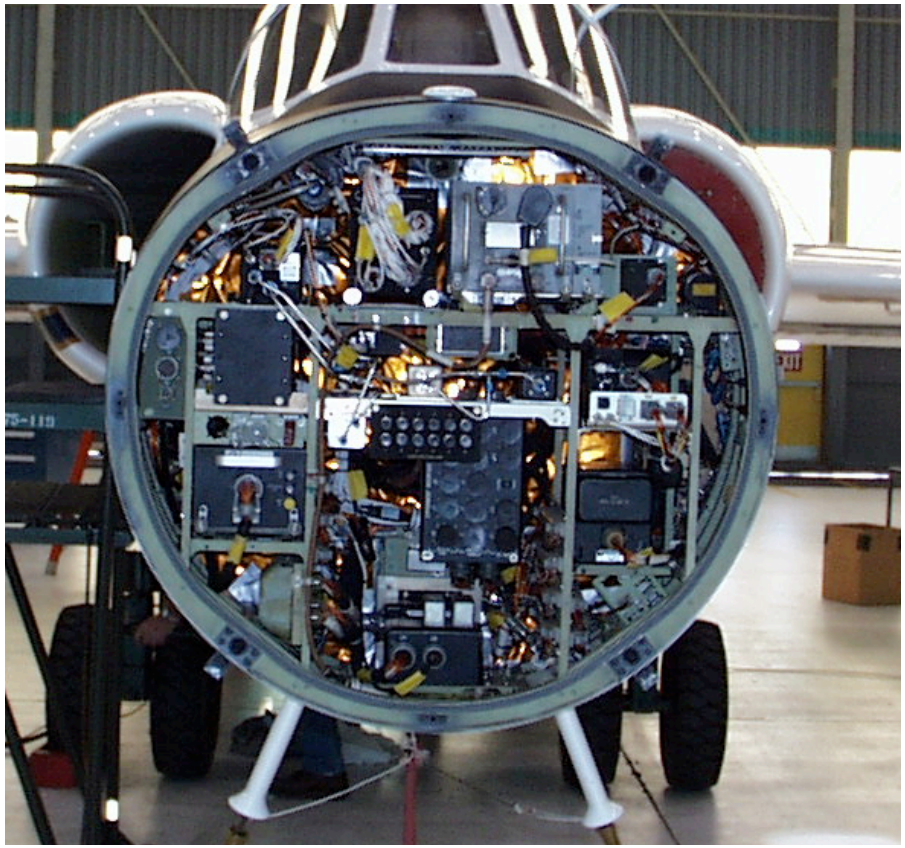
*** - Max combined Q -Bay and Nose payload cannot exceed 1300lbs

ER-2 Payload Areas: Nose Area

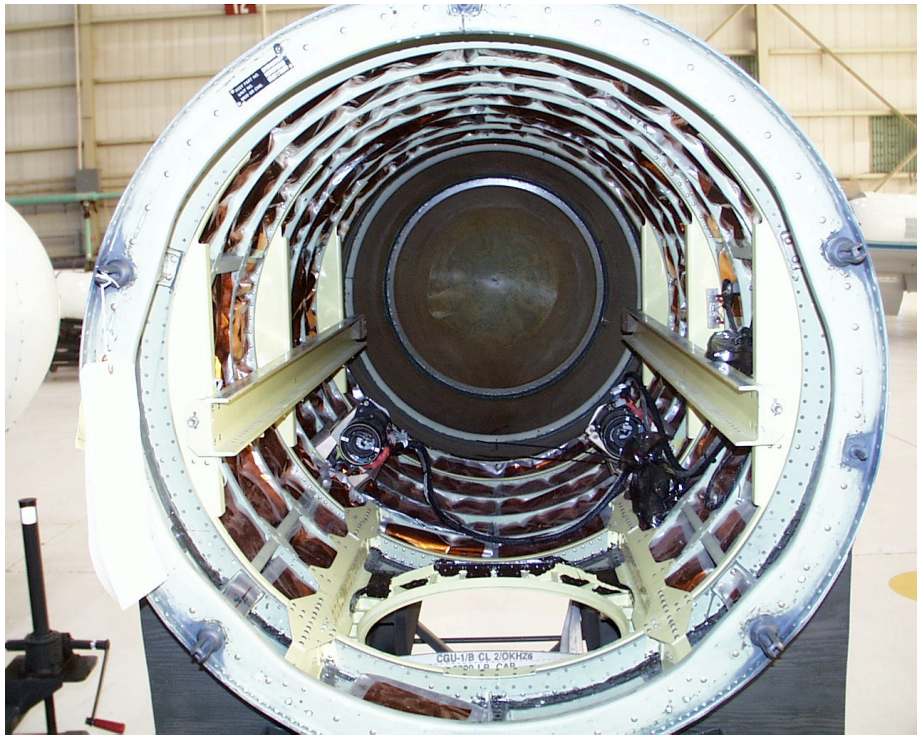


Inside Nose looking Forward

Fixed Nose Looking Aft



ER-2 Payload Areas: SuperPod Fore and Aftbody



Forebody inside looking forward

Aftbody side view

ER-2 Payload Areas: SuperPod Midbody

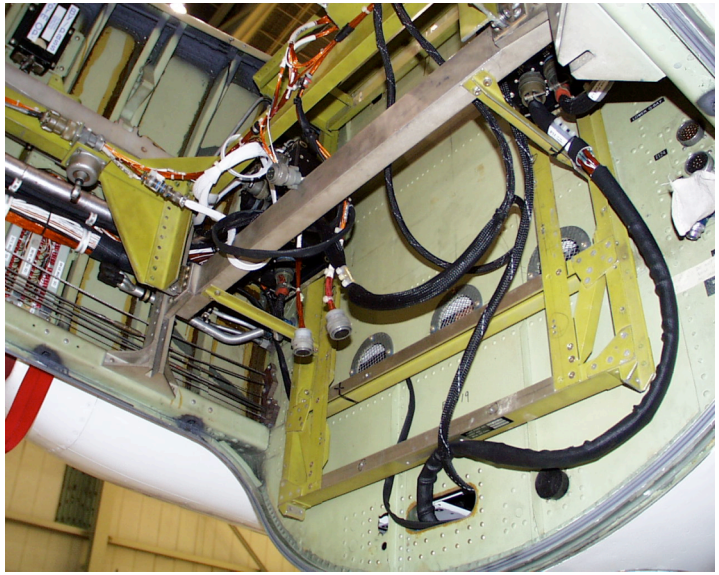
Forward Midbody looking Aft

Lower Midbody looking Up and Aft

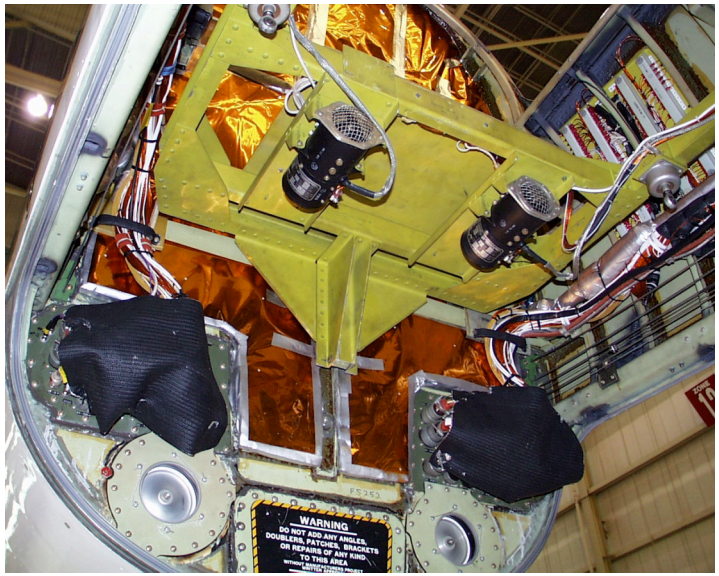
ER-2 Payload Areas: Q-Bay

Internal Q-Bay looking Up and Aft

Aft
Q-bay

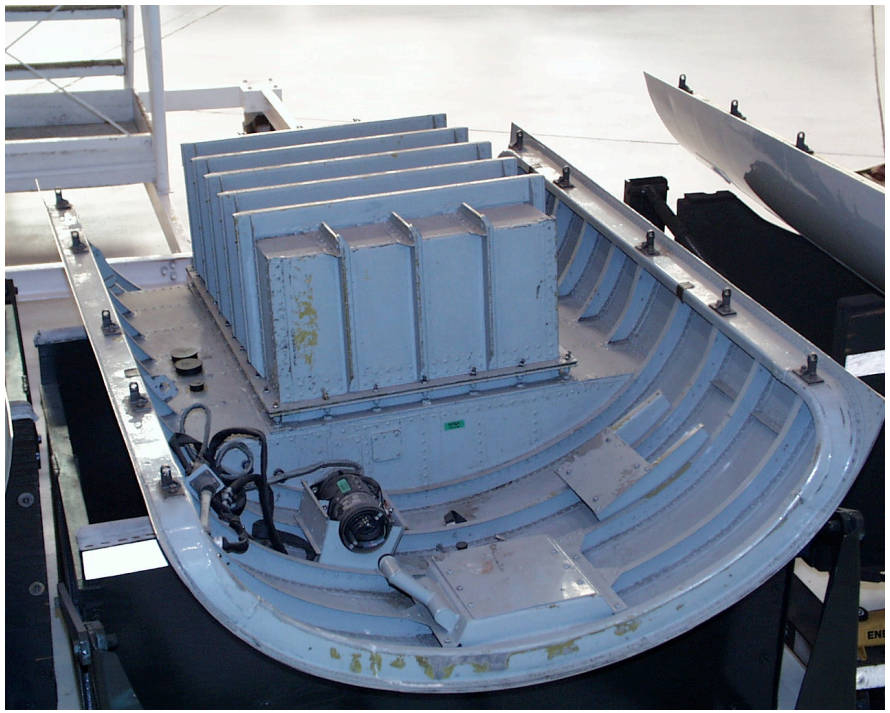


Forward
Q-Bay



ER-2 Payload Areas: Q-Bay Hatch Designs

Pressure Box Mount

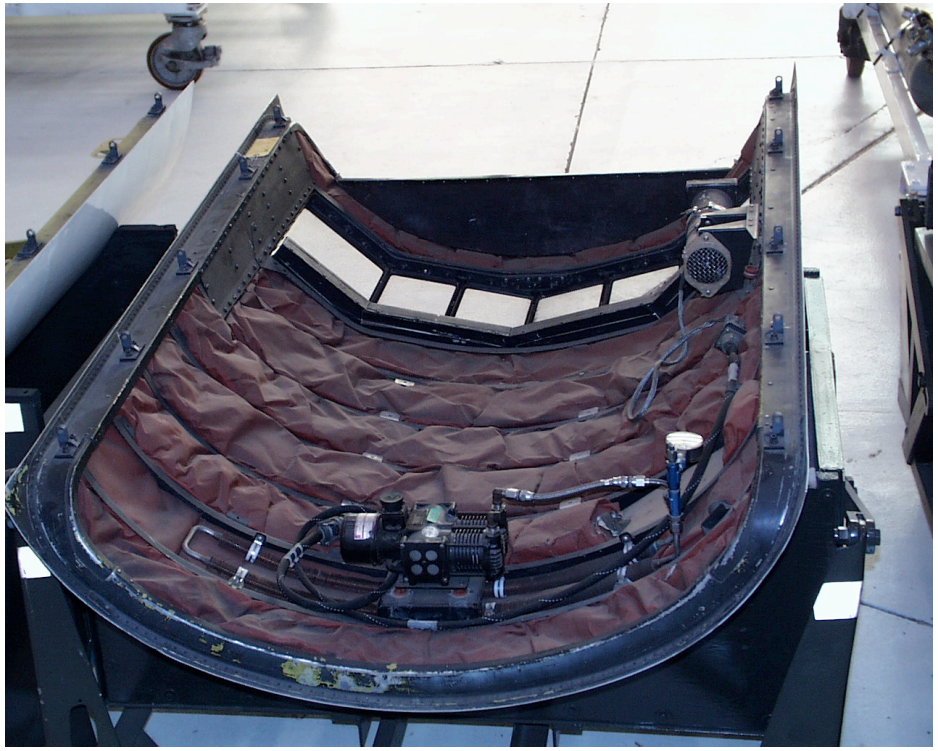


Dual Window Hatch

ER-2 Payload Areas: Q-Bay Hatch Designs

Open Port With Fairing

Panoramic Window Hatch



ER-2 Payload Areas: External Pods

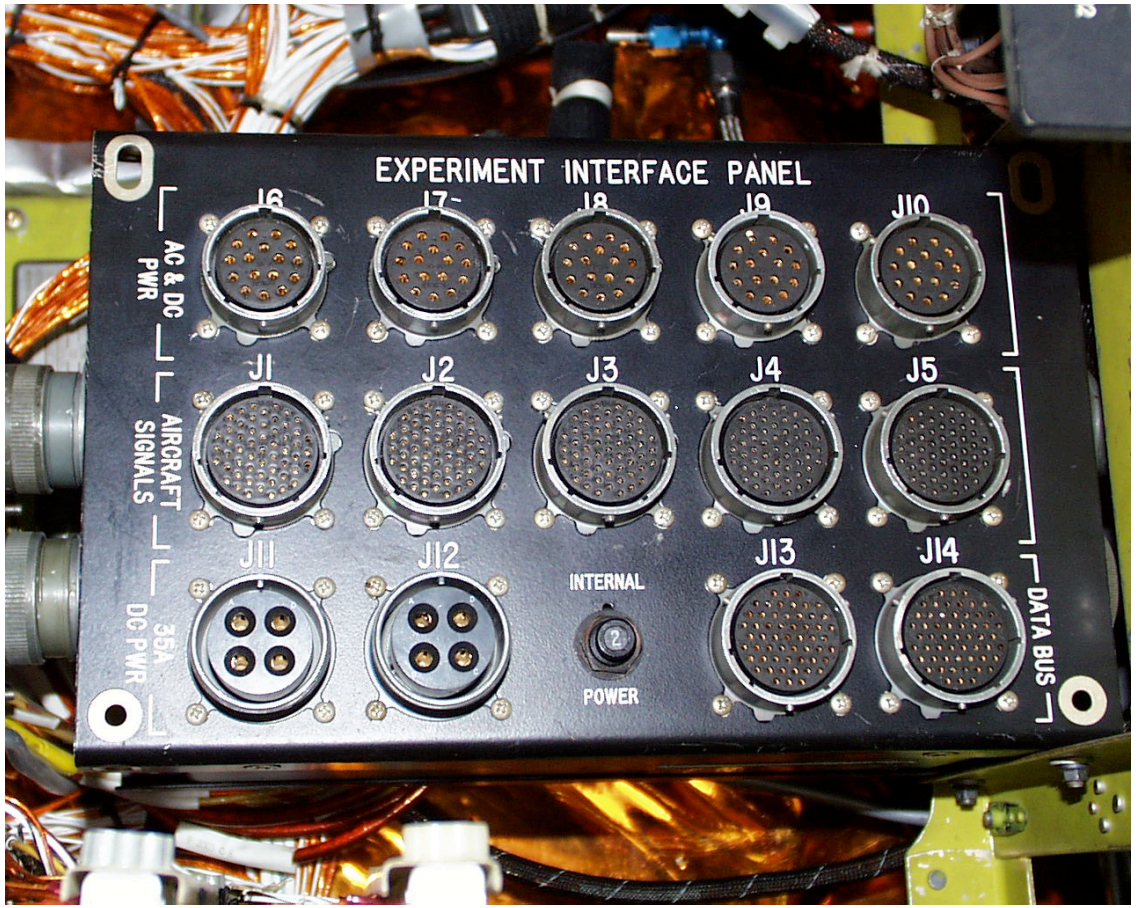
Centerline Pod

System 20 Pod

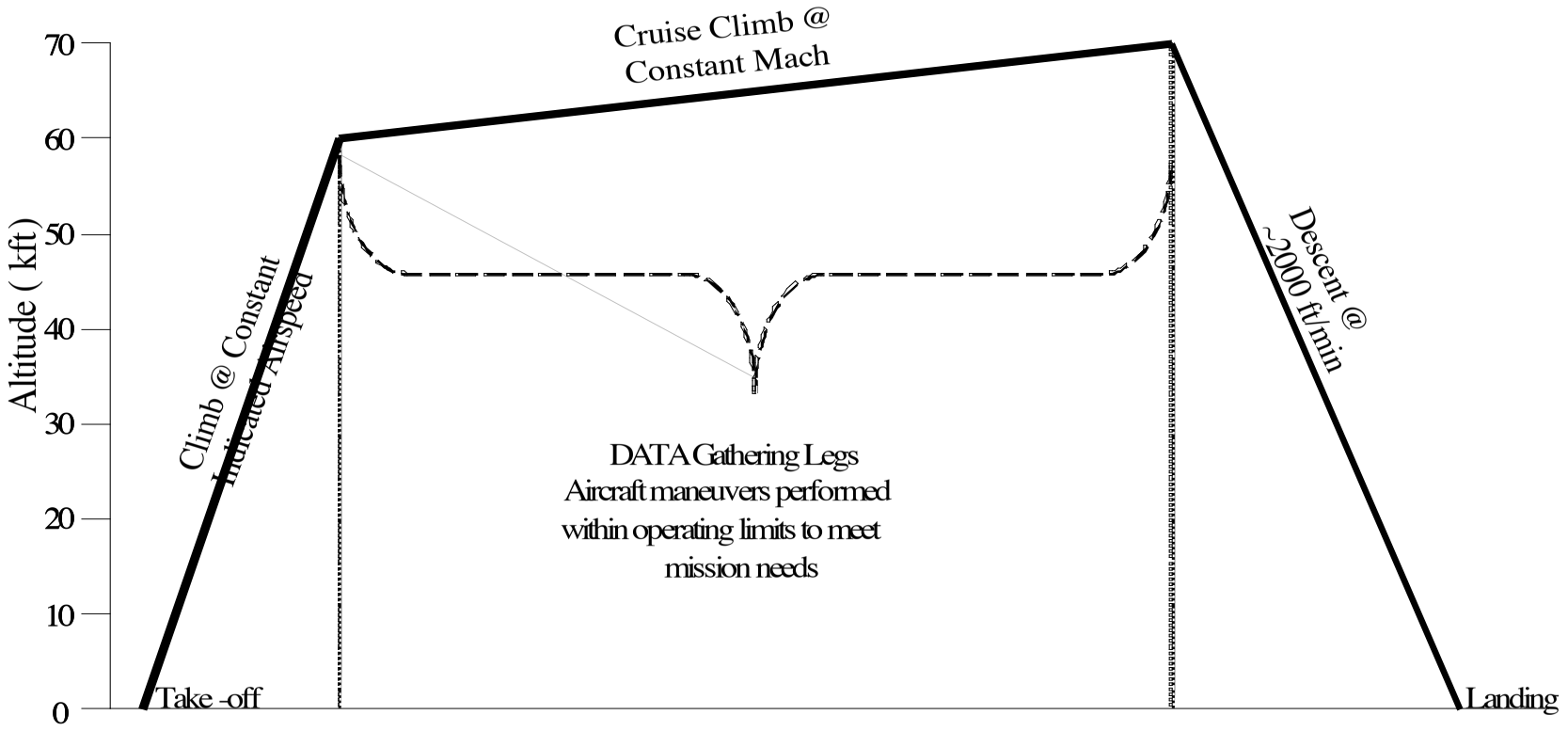
ER-2 Electrical/Control Interface

Experiment Control Panel

Experiment Interface Panel



ER-2 Typical Flight Profile



NASA ER-2: Flying Laboratory for Earth Science Studies and Remote Sensing

- ER-2 has successfully conducted campaigns of
  - Stratospheric and tropospheric chemistry
  - Land-use mapping
  - Disaster assessment
  - Pre-testing and calibration/validation of satellite sensors.
- ER-2 aircraft facility provides:
  - Cost-effective approach to high altitude flight-test/data collection
  - Mission planning and logistics
  - Sensor Integration and Upload
  - Experienced personnel
- Conduct missions in CONUS and foreign countries

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