



ASTRO

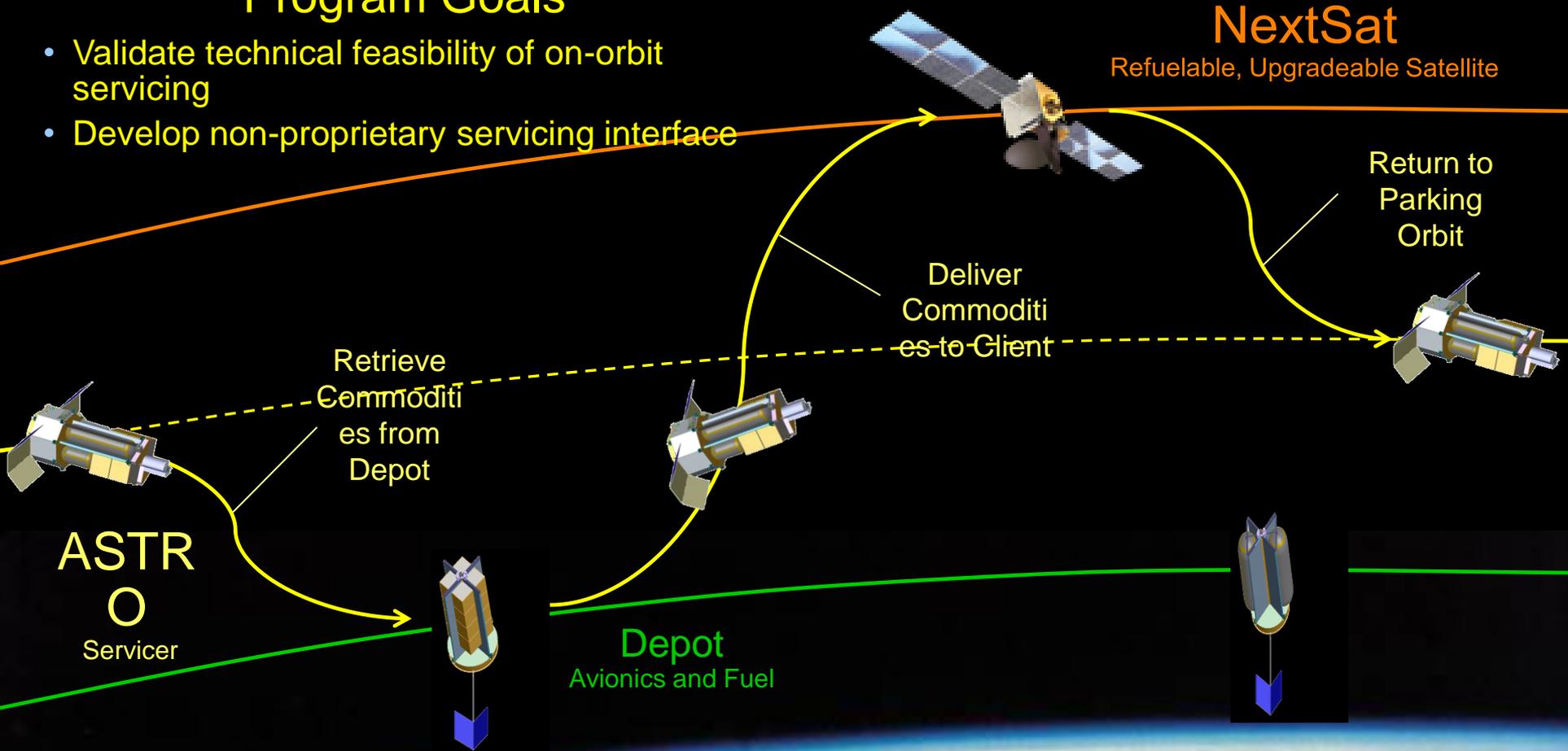
NextSat

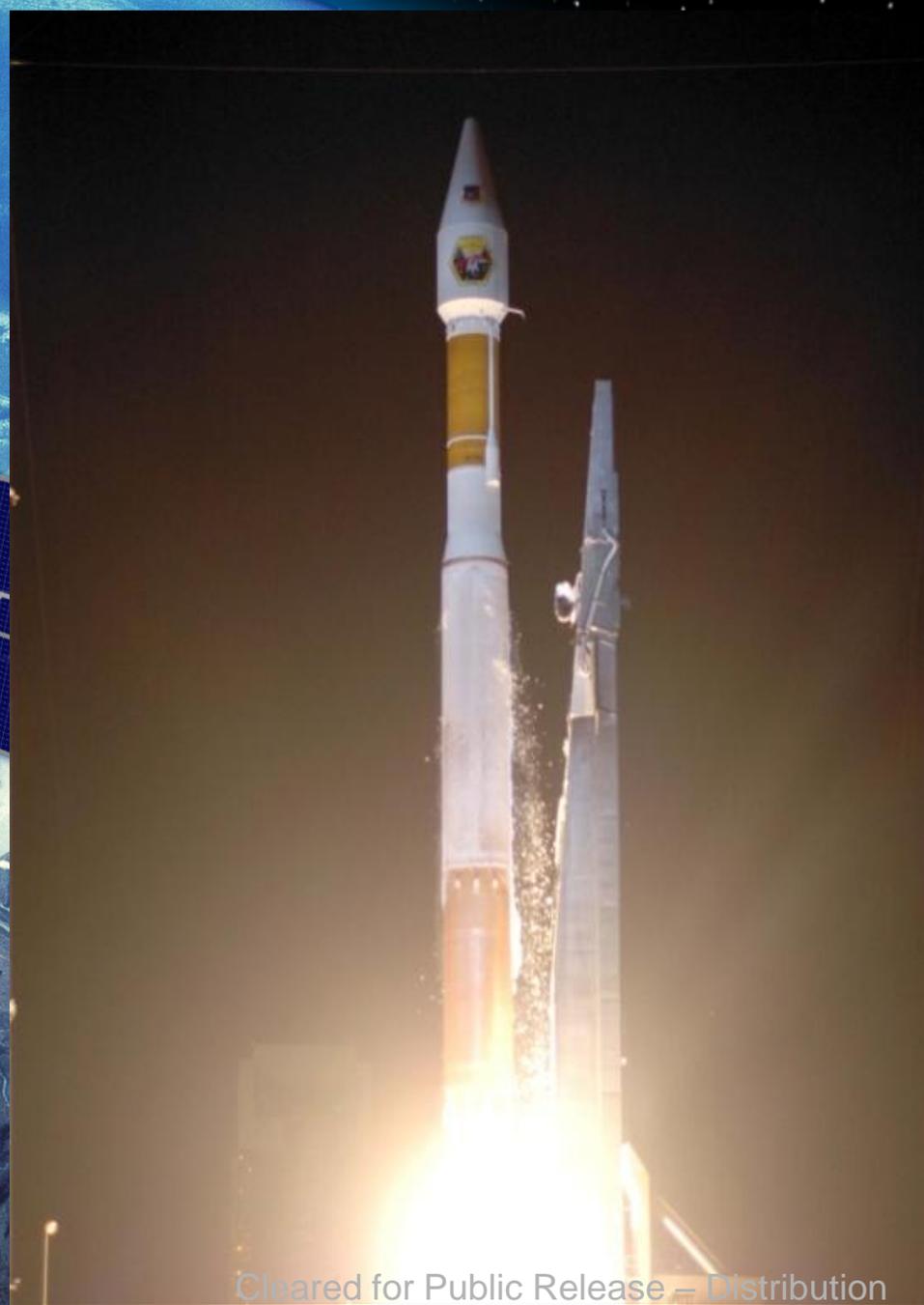
On-Orbit Servicing System CONOPS

Architecture to Support Operations in Space

Program Goals

- Validate technical feasibility of on-orbit servicing
- Develop non-proprietary servicing interface





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Orbital Express Demonstration Timeline (136 days)

4. Scenario 1: Grapple NextSat, eject separation ring, recapture and perform additional propellant and ORU transfers (15 days)

3. Scenario 0: Perform propellant and orbital replacement unit transfers while mated (17 days)

NextSat (Client)
ASTRO (Servicer)
2. ASTRO and NextSat Activation and Checkout (14 days)

492 km circular, 46° inclination LEO

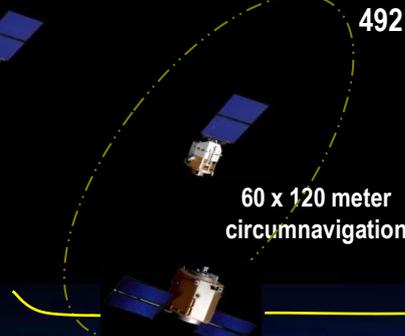
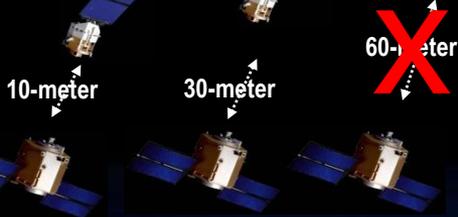
Up to 7 kilometers

7. Decommissioning or Extended Demonstration with Air Force Space Command

5. Scenarios 2-5: Release NextSat, Perform Critical Proximity Operations

6. Scenarios 6-8: Long-Range Rendezvous, Proximity Operations, and Capture with ORU and Propellant Transfers (18 days)

1. Ascent to LEO (Atlas V 401) 8 Mar 07



Boeing Huntington Beach ESR (Engineering Support Room)

AFSCN (COOK)

AFSCN (PIKE)

RDT&E Support Center (RSC)—ASTRO and NextSat mission operations

White Sands (TDRSS Up/Downlink)

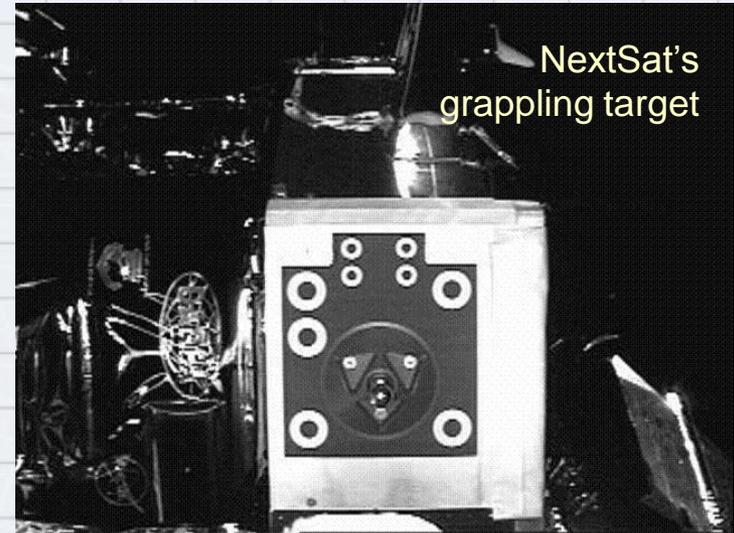
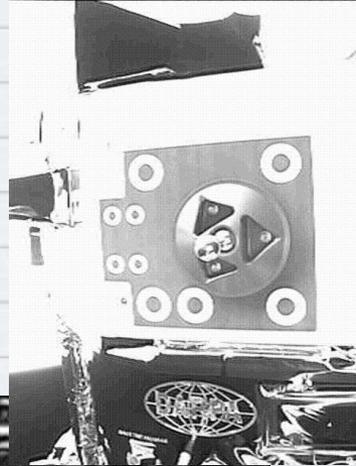
Boeing Houston RSR (Rendezvous Support Room)

AFSCN (BOSS)

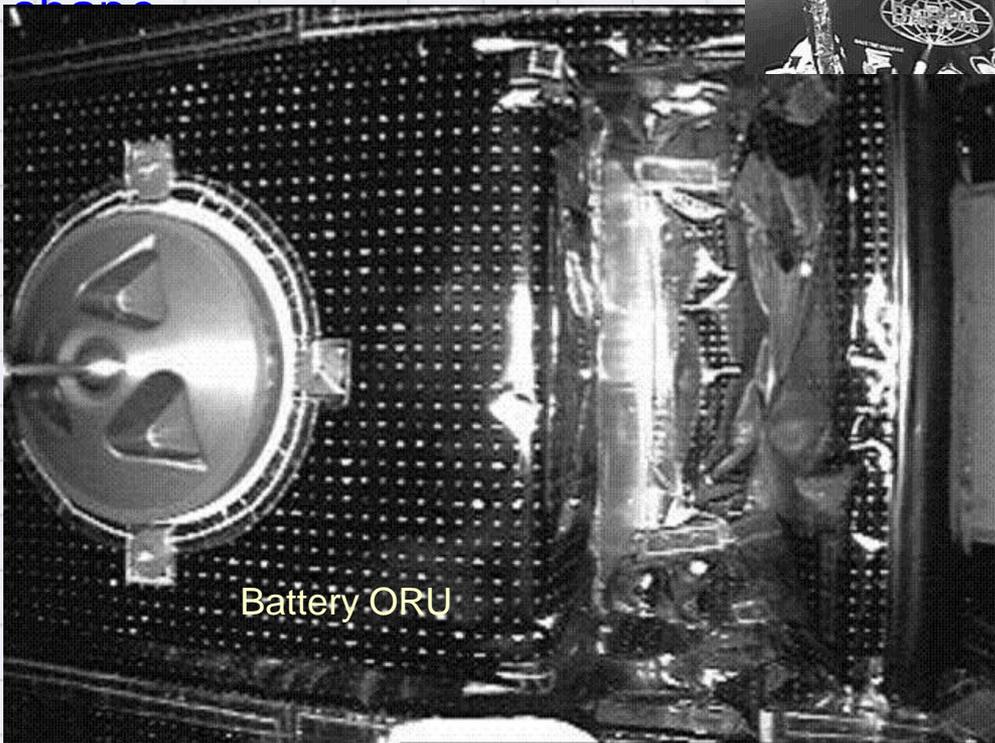
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Results of Global Survey

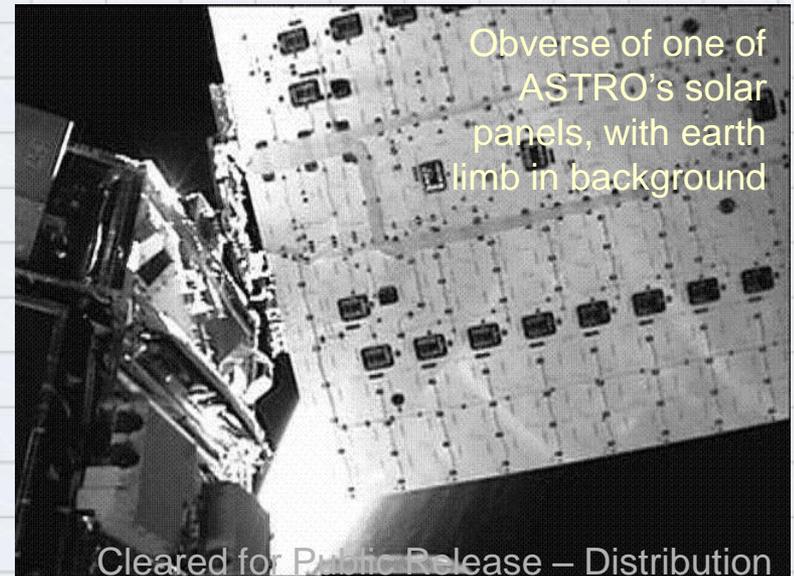
- Arm camera shot 1,660 photos over 54-minute period
- Single command executed arm global survey script
- Assembled video indicated both vehicles were in good shape



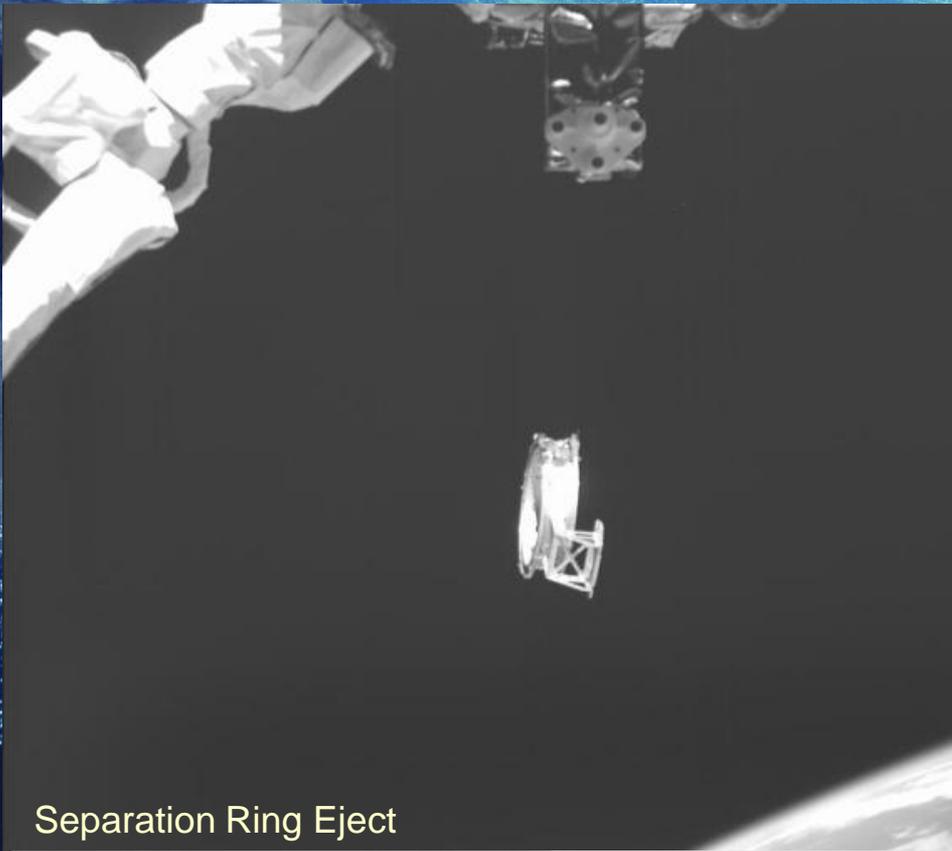
NextSat's grappling target



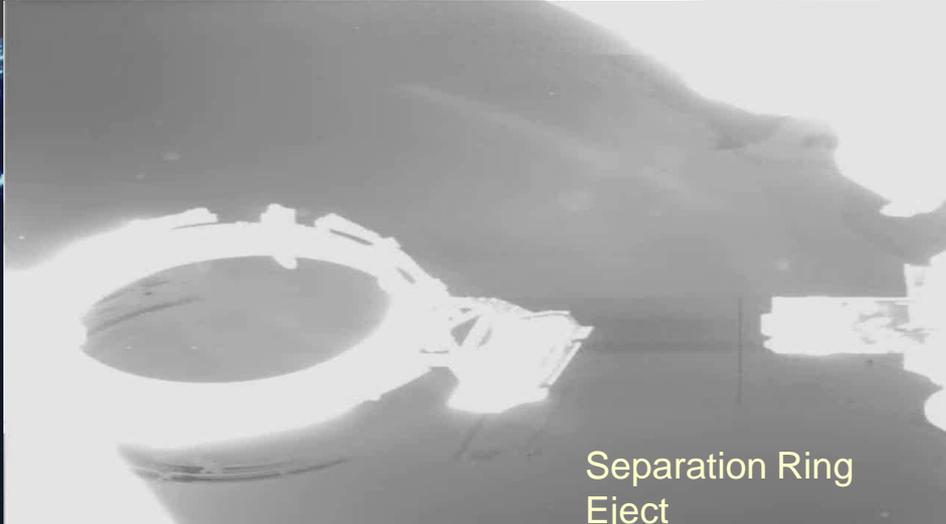
Battery ORU



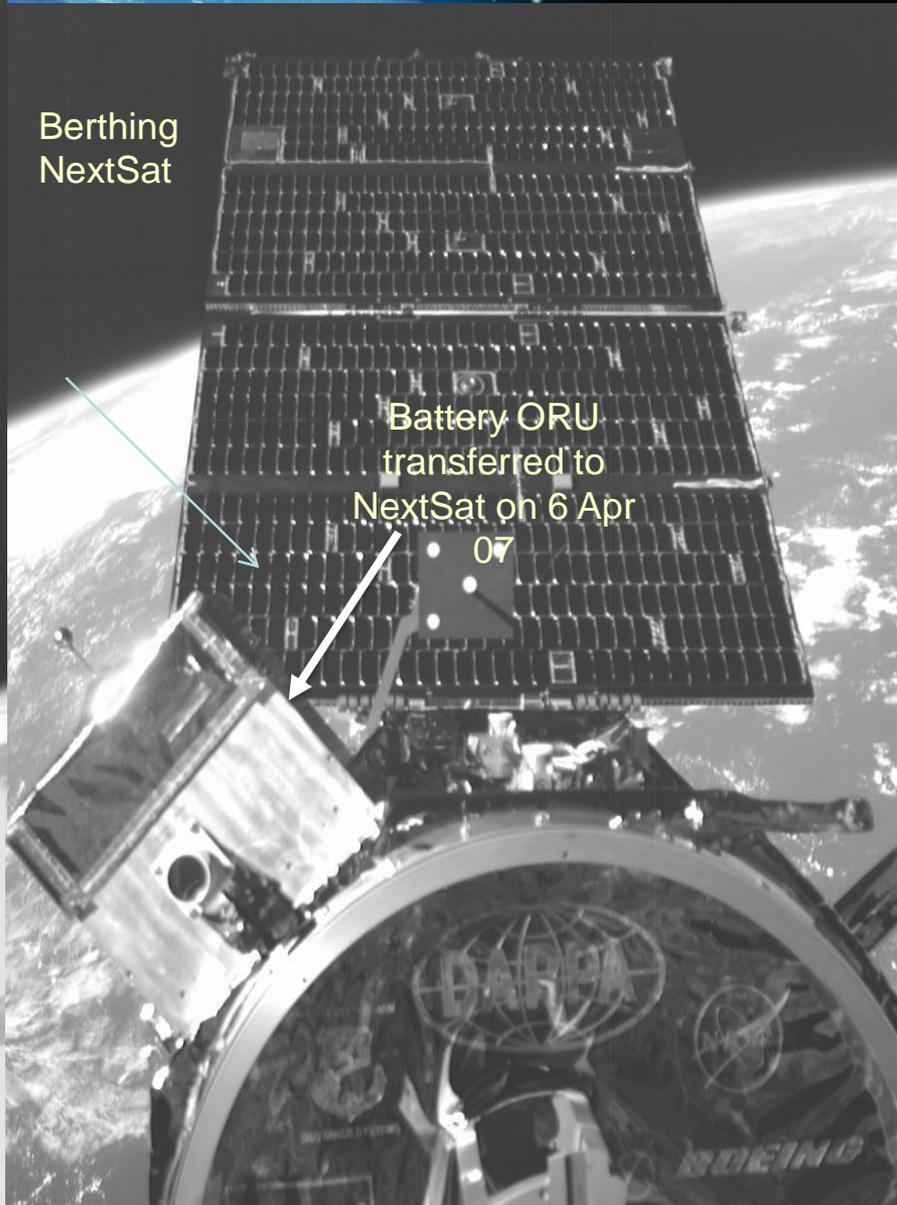
Obverse of one of ASTRO's solar panels, with earth limb in background



Separation Ring Eject

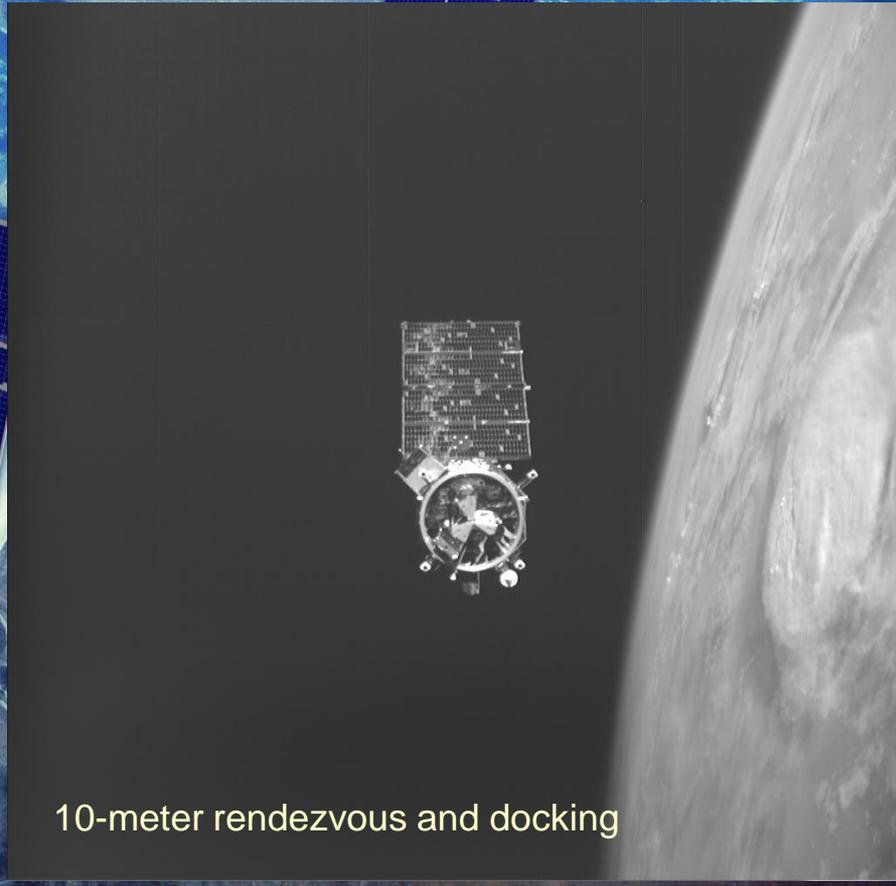


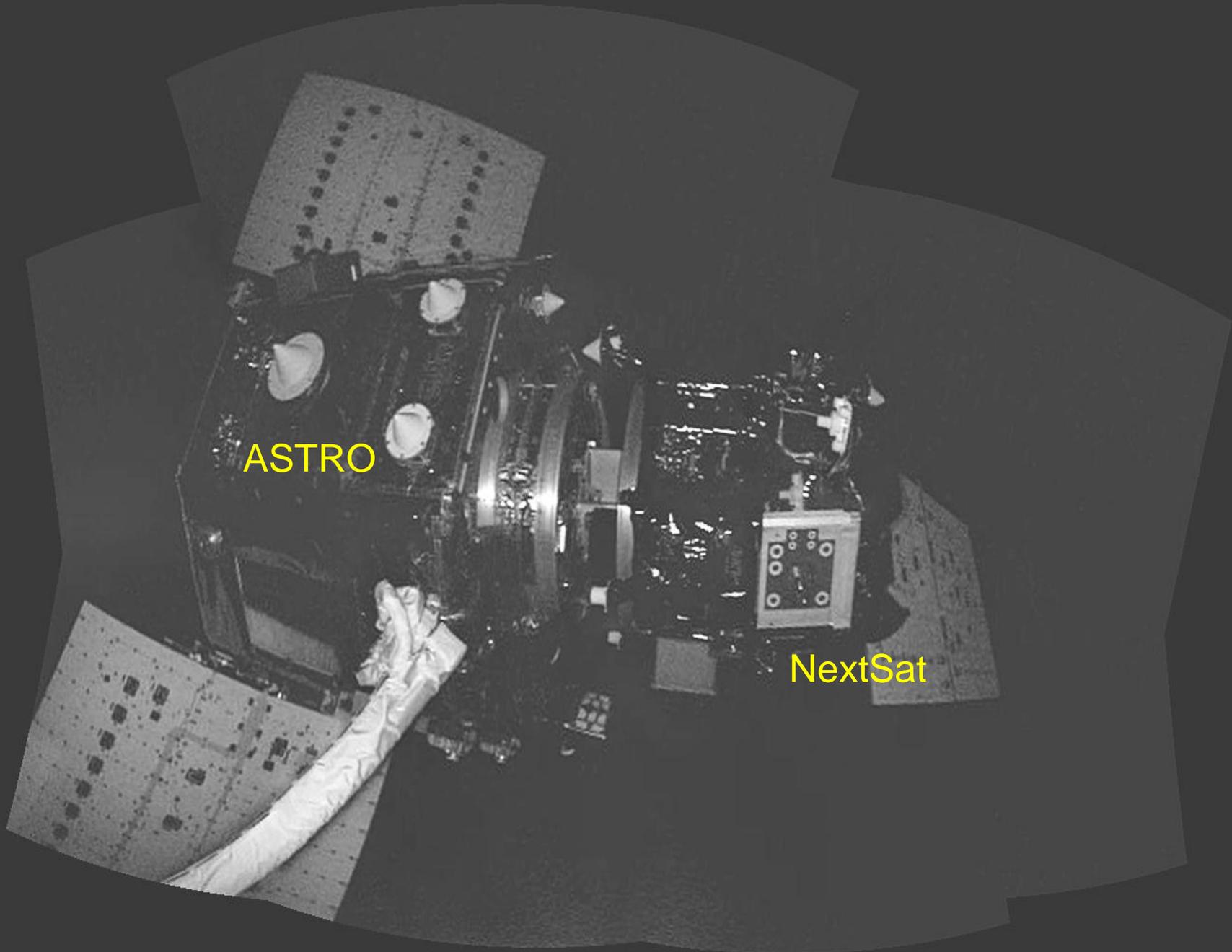
Separation Ring Eject



Berthing NextSat

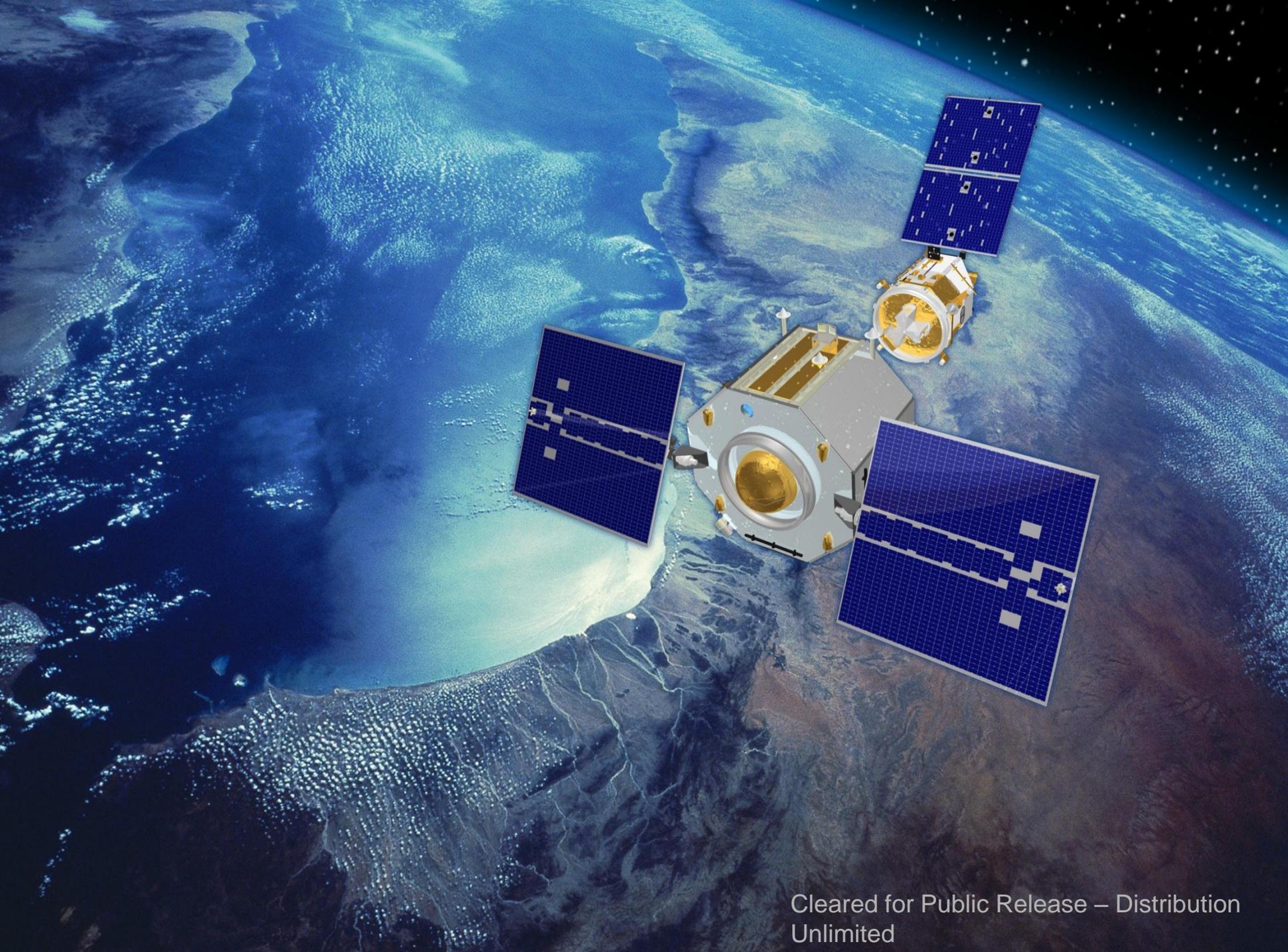
Battery ORU transferred to NextSat on 6 Apr 07





ASTRO

NextSat



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