



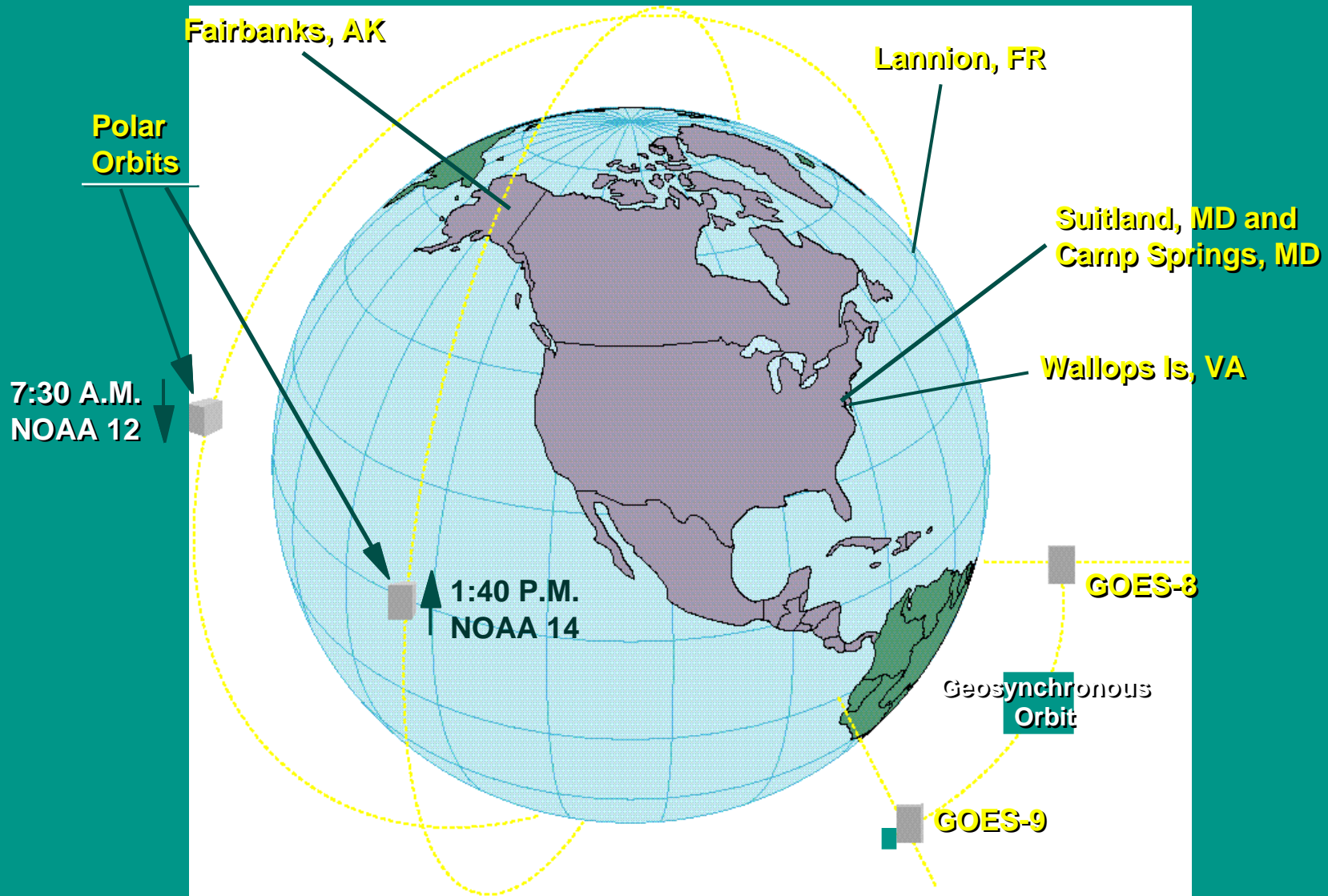
# **Experience with NOAA Weather Satellite Systems**

**George S. Hechtman**

**February 26 1997**



# NESDIS Weather Satellite System



# Overview of Mitretek NESDIS Support

	GOES Computer Systems	Polar Computer Systems	RF Systems
1986	◆ GOES I-M Project Plan		
1987	◆ Telemetry & Command SOW	◆ Ground System Requirements	
1988		◆ Ground System Project Plan	◆ Polar Command Antenna SOW
1989	◆ Ground Systems Testing	◆ Telemetry and Command SOW	◆ Transmitter SOWs ◆ NESDIS Grounding Standard
1991	◆ Prelaunch Integration Test	◆ NOAA OPQ Study	◆ CDA Risk Assessment
1992	◆ Postlaunch Test Planning	◆ Dual S/C Acquisition	◆ GOES & Meteosat Receiver SOW
1993	◆ GOES Launch from SOCC Upgrades	◆ S/C Scheduler SOW Plan	
1994	◆	◆ Convergence Studies	◆ Polar RF Upgrades
1995	◆ Ground System Upgrades	◆ Interim DMSP Telemetry and Command SOW	◆ Polar RF Monitor & Control SOW
1996		◆ Engineering Network Prototyping	◆ Polar RF Implementation
1997		◆ Polar Program Planning ◆ NOAA-K Launch Readiness	◆ GOES & Polar RF Implementation

# Development of Ground System Upgrade Approach

- ◆ Participation in numerous upgrades to NESDIS ground systems
  - Polar Satellite Telemetry and Command System
  - Polar Product Processing System
  - GOES I-M Ground Systems
  - GOES Product Processing Systems
  
- ◆ Conclusion of Mitretek Ground System Automation Study
  - Intelsat
  - Inmarsat
  - NASA Hubble Space Telescope Vision 2000



# Recommended Ground System Upgrade Approaches

- ◆ Perform ground system upgrades with stable on-orbit spacecraft configuration
  - Hardware upgrades
  - Software maintenance
  - Operational enhancements
  
- ◆ Perform *minimal and compatible* ground system upgrades prior to launch of a modified spacecraft
  
- ◆ Employ comprehensive system engineering approach when new spacecraft require new ground systems or major modifications to existing ground systems

Preferred order



# Verification of Ground System Upgrade

- ◆ **No spacecraft modifications**
  - Test upgrade in parallel with existing operational system
    - ◆ Independent of existing subsystem
    - ◆ Backup or augmentation of existing system function
    - ◆ Primary operations with replaced function as backup
    - ◆ Decommission of replaced function
  
- ◆ **Spacecraft modifications**
  - Perform extensive prelaunch spacecraft to ground system interface testing
  - Ground system simulation of spacecraft modifications

# Ground System Engineering Approaches for New Spacecraft

- ◆ Make use of heritage ground systems
  - Ground systems for existing spacecraft
  - Ground systems associated with similar spacecraft
- ◆ Incorporate new operational ground system hardware and software into satellite automated test equipment
- ◆ Perform extensive prelaunch ground system to spacecraft functional and operational integration testing
- ◆ Perform ground system testing with spacecraft simulators
  - Existing spacecraft simulator
  - New spacecraft simulator

Preferred order

