



Office of Space Launch Program Overview for California Space Authority

**Col Mick Hatch
27 March 2003**



Agenda

- **Office of Space Launch Mission**
- Organization
- Programs
- Manifest
- Launch in Transition



OSL Mission

- **Single NRO interface for all launch activities**
 - **NRO Mission Director has clear responsibility, accountability, authority for NRO missions from inception through launch**
 - **Provides independent Mission Assurance Team reviews for launch vehicles**
 - **Provides centralized control for launch vehicle hardware, launch services, integration, and operations**
 - **Integral part of NRO “Cradle-to-Grave” philosophy for all mission areas**
 - **Principal external interface with industry, AF, NASA**
 - **NRO satellite program offices have “one stop shopping” for launch support**
- **NRO launch model validated by Space Launch Broad Area Review**
- **Work jointly with Air Force Space Command and NASA for Mission Success**



GATEWAY

FOR FREEDOM'S

SENTINEL IN SPACE!



SUCCESSFULLY DELIVER EVERY NRO SATELLITE
ON ORBIT ON TIME!



*"WHAT YOU WANT, WHERE YOU WANT IT,
WHEN YOU WANT IT!"*



OSL Priorities

- **Successful extended fly-out of legacy systems**
 - Transition Titan fly-out effort to NRO contract 1 October 2003
- **Successful transition to EELV**
 - Preparing next two EELV acquisitions
 - First NRO EELV mission is from Vandenberg in April 2004
 - New satellite, new booster, new launch complex, new satellite processing facility
- **Transition from government facility to commercial facility for satellite processing at Vandenberg**

Mission Success!

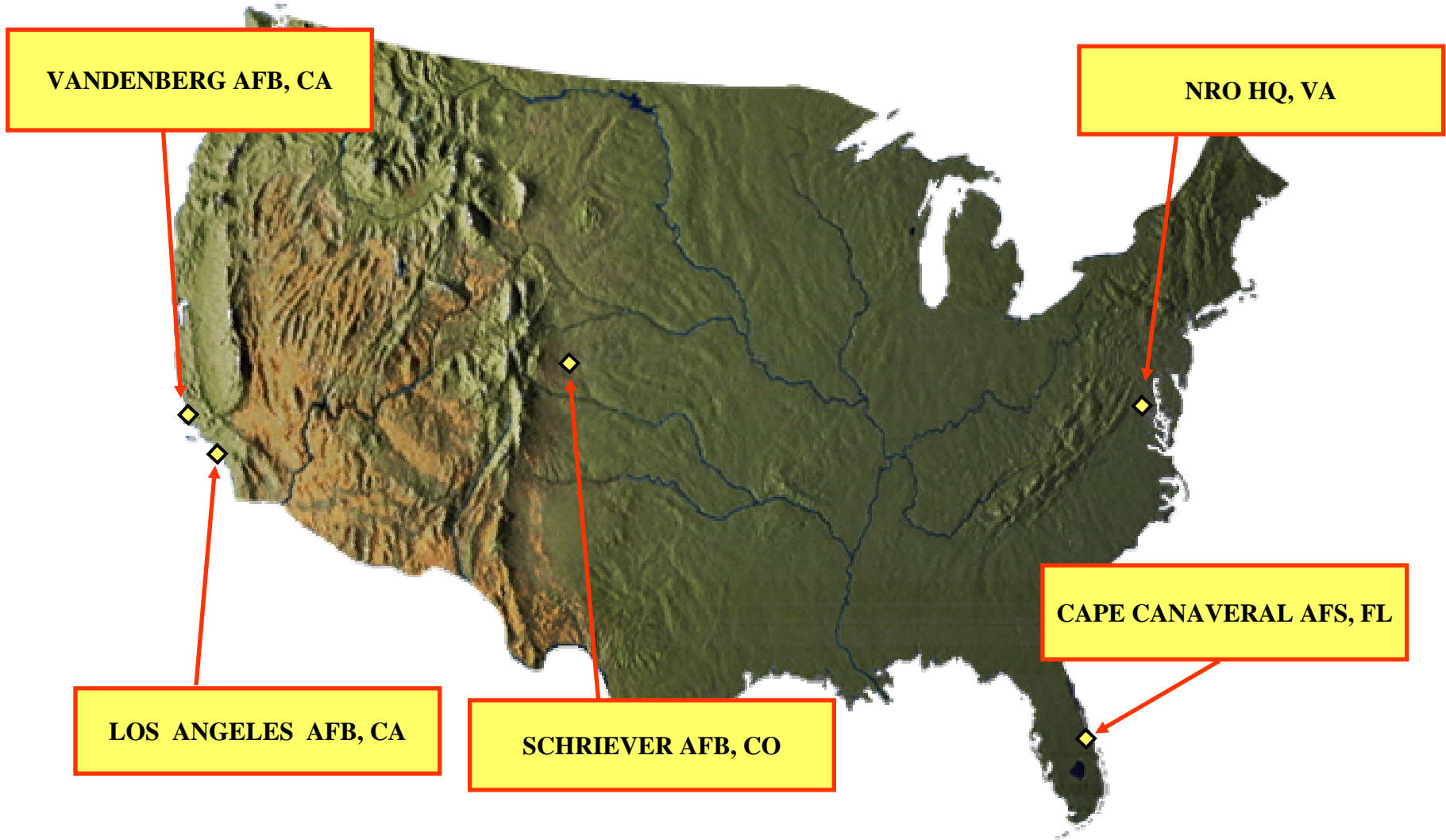


Agenda

- Office of Space Launch Mission
- **Organization**
- Programs
- Manifest
- Launch in Transition

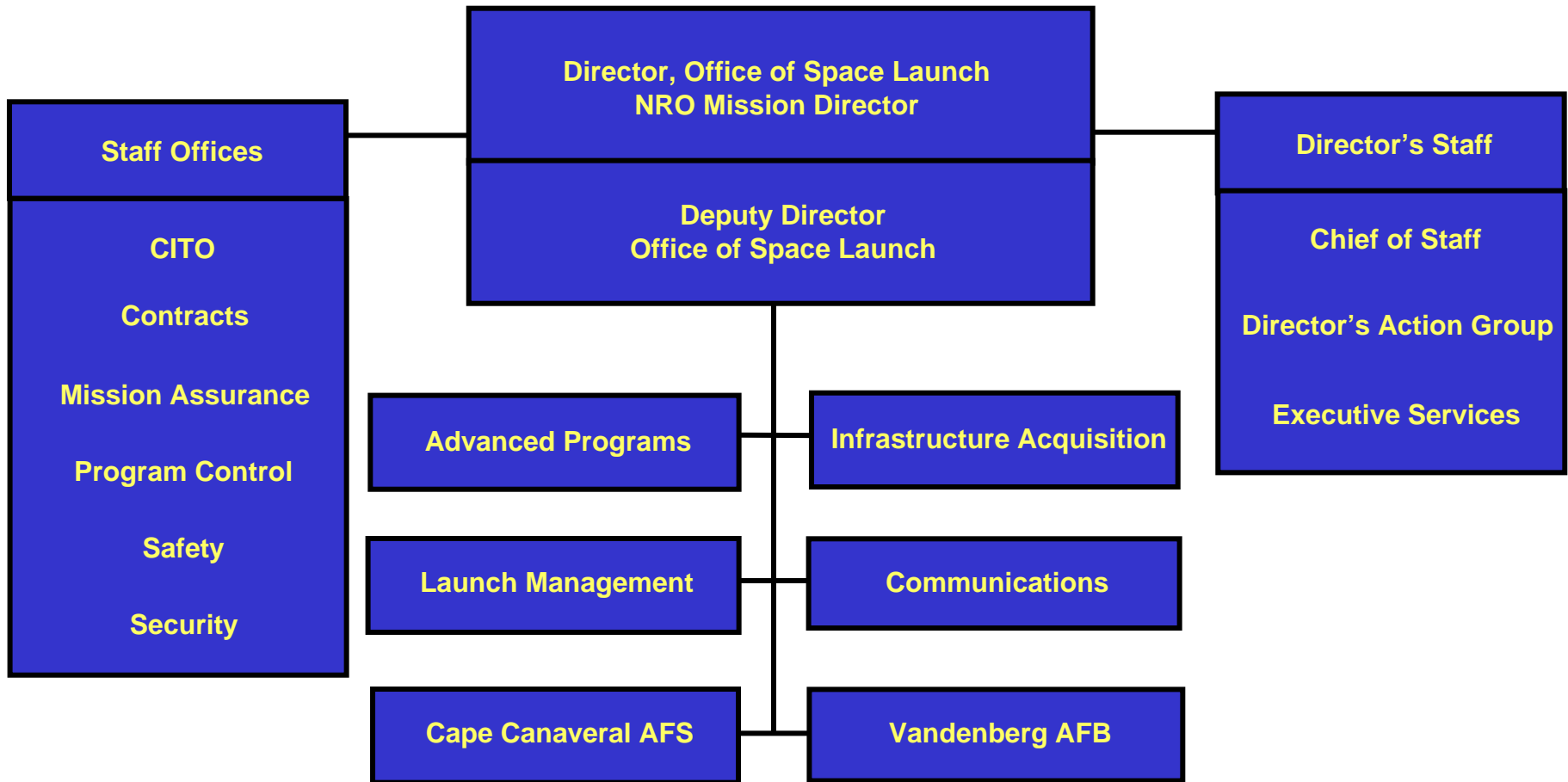


OSL Operating Locations



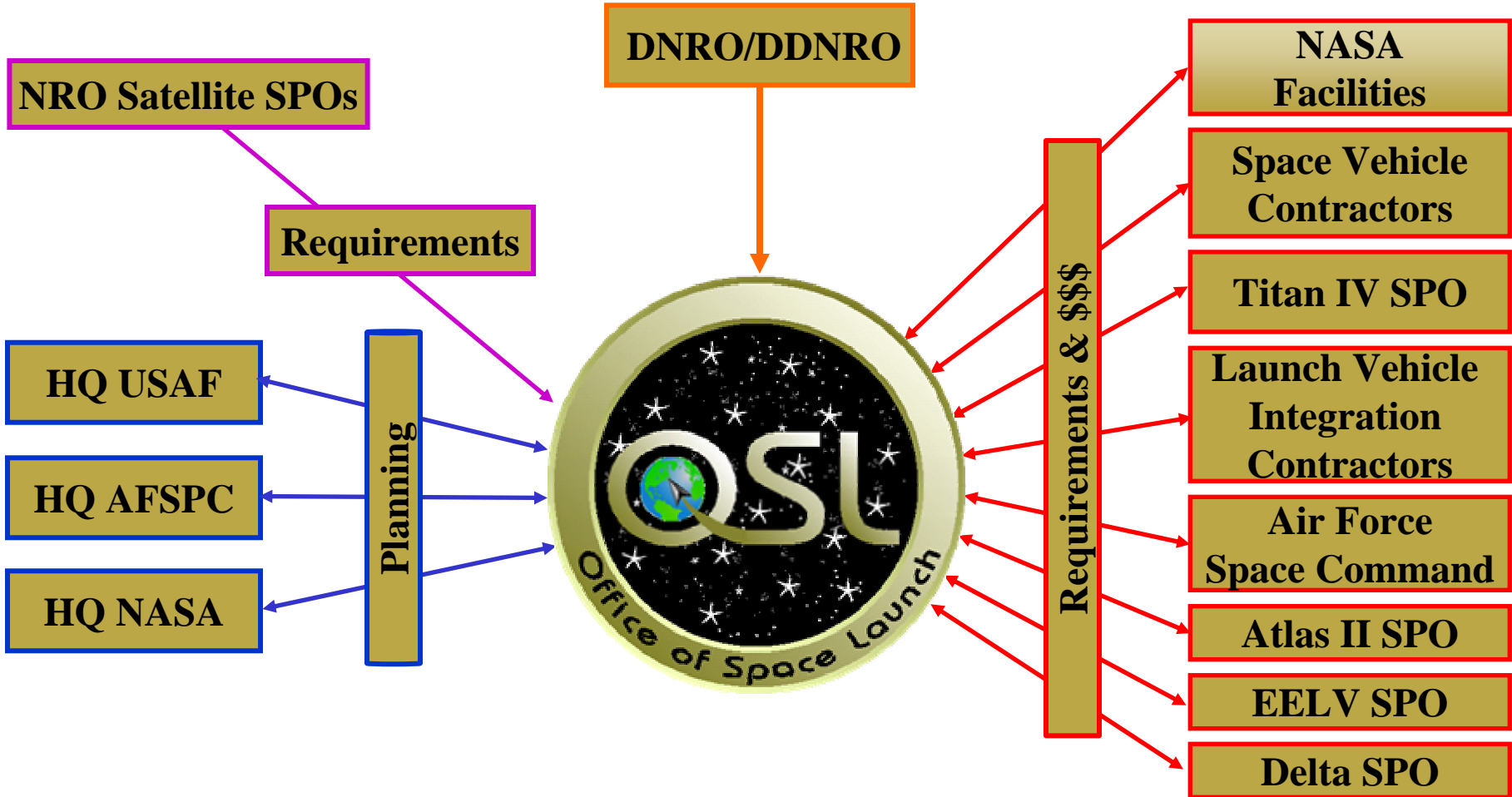


OSL Organization





OSL Interfaces





Agenda

- Office of Space Launch Mission
- Organization
- **Programs**
- Manifest
- Launch in Transition



Titan IV



- **Current heavy lift capability for National Security Payloads**
- **Configuration:**
 - **Core:** Lockheed Martin
 - **Centaur:** Lockheed Martin
 - **Solid Rocket Motor:** Alliant
 - **Payload Fairing:** McDonnell Douglas (Boeing)
 - **Liquid Rocket Engine:** Aerojet
- **Capability (weight to orbit)**
 - **Centaur to GEO** 12,700
 - **Centaur to HEO** 14,500
 - **NUS to LEO Polar** 38,800



Titan IV



- **Facilities:**
 - Cape Canaveral: SLC-40
 - Vandenberg: SLC-4 East
- **Flown To Date**
 - 30 of 34 successful launches
- **2 AF Missions Remaining**
- **3 NRO Missions Remaining**

Atlas IIAS



- **Current medium lift capability**
 - Supports both government and commercial requirements
- **Configuration:**
 - **Core:** Lockheed Martin
 - **Centaur:** Lockheed Martin
 - **Payload Fairing:** Lockheed Martin
 - **Booster Engine:** Rocketdyne
- **Capability (weight to orbit)**
 - **Centaur to LEO:** 19,000
 - **Centaur to LEO Polar:** 15,900
 - **Centaur to GTO:** 8,150



Atlas IIAS



- **Facilities:**
 - Cape Canaveral: SLC-36A
 - Vandenberg: SLC-3E
- **NRO Flown To Date: Four**
- **NRO Remaining: One**
- **Contract Status:**
 - Atlas IIAS follow-on buy is on contract
 - Includes production, storage, launch processing, launch site support and logistics

Atlas IIIB



- **Transitional medium lift capability**
 - Supports both government and commercial requirements
- **Configuration**
 - **Core:** Lockheed Martin
 - **Centaur:** Lockheed Martin
 - **Payload Fairing:** Lockheed Martin
 - **Booster Engine:** Energomash
- **Capability (weight to orbit)**
 - **Centaur to LEO:** 23,630
 - **Centaur to LEO Polar:** N/A
 - **Centaur to GTO:** 9,920
- **Facilities:**
 - Cape Canaveral: SLC-36B
- **NRO Flown To Date: None**
- **NRO Remaining: Two**



Delta II



- **Configuration: (7925)**
 - Stage 1: Rocketdyne
 - Stage 2: Aerojet
 - Stage 3: STAR 48 Boeing/Thiokol
 - 9 GEM Solid Rocket Boosters
- **Capability (weight to orbit):**
 - GTO: 4,120
 - Final orbit achieved by S/V propulsion
- **Facilities:**
 - Cape Canaveral: SLC-17
 - Vandenberg: SLC-2W
- **Contract structure:**
 - Commercial launch service acquired through SMC/CL



Evolved Expendable Launch Vehicle (EELV)



- **Next Generation Family of Launch Vehicles**
 - Provide a medium and heavy space launch capability
 - Support government and commercial requirements
 - Reduce cost for assured access to space
 - Improve operability and capability
 - Standard Interface

- **USAF awarded two Development Agreements**
 - The Boeing Company (Delta IV)
 - Lockheed Martin Corporation (Atlas V)



- **Initial Launch Service contracts awarded for 28 missions**
 - Boeing awarded 21 missions (18 AF, 3 NRO)
 - Lockheed Martin awarded 7 missions (6 AF, 1 NRO)
- **Purchasing a launch service, not specific hardware**



Evolved Expendable Launch Vehicle (EELV)



- **Facilities**

- **Cape Canaveral**
 - SLC-37 (Delta IV)
 - SLC-41 (Atlas V)
- **Vandenberg**
 - SLC-6 (Delta IV)

- **Schedule**

- **Delta IV**
 - ✓ First Flight MLV – November 2002
 - ✓ First Government Mission – 10 Mar 2003 (DSCS)
 - First Flight HLV – September (TBD) 2003
 - First NRO Mission – April 2004
- **Atlas V**
 - ✓ First Flight MLV – August 2002
 - First NRO Mission – October 2006





Agenda

- Office of Space Launch Mission
- Organization
- Programs
- **Manifest**
- Launch in Transition

NRO Working Manifest 2003 - 2006

Launch Pad	CY2003												CY2004												CY2005												CY2006																				
	1st			2nd			3rd			4th			1st			2nd			3rd			4th			1st																																
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M																		
SLC-40 Titan IV				 MSTAR-6 B-35 6 Apr 03 <i>Note 1</i>			 NROL-19 B-38 15 Sep 03 <i>Note 2</i>			 DSP-22 B-39 10 Feb 04			 NROL-16 B-30 1 Oct 04																																												
SLC-36 Atlas III/III	 Asia Sat 10 Apr 03			 Super Bird C 3 Sep 03 <i>Note 2</i>			 UHF/FO 7 Oct 03			 NROL-23 MLV-15 16 Jun 04 <i>Note 5</i>			 Loral 10 Sep 04			 NROL-1 15 Aug 05																																									
SLC-41 Atlas V	 Hellas Sat Commercial 12 May 03			 Rainbow Commercial 10 Jul 03			 Inmarsat 15 May 04			 WBGF-2 15 Dec 04																																															
SLC-37 Delta IV	 DSCS 10 Mar 03			 DSCS 1 Jul 03			 HLV Demo 23 Sep 03 <i>Note 4</i>			 WBGF TBD			 NROL-26 23 Sep 04 <i>Note 4</i>			 DSP-23 16 Feb 05			 WBGF-3 Jun 05																																						
SLC-4E Titan IV													 NROL-20 B-26 Feb 05 <i>Note 6</i>																																												
SLC-4W Titan II	 Coriolis G-4 6 Jan 03			 DMSP-16 G-9 10 Jul 03																																																					
SLC-3E Atlas II				 NROL-18 MLV-14 16 Jun 03 <i>Note 3</i>																																																					
SLC-6 Delta IV	 <i>Note 7</i>			 NROL-22 17 Mar 04			 DMSP-17 NET 30 Jun 04			 DMSP-18 15 May 05			 NROL-28 15 Oct 05																																												
OTHER													 NROL-25 15 May 05 <i>Note 7</i>			 NET 30 Sep 05			 NROL-21 Oct 05			 NROL-30 Oct 05																																			

LEGEND

Launch Dates

Bold: Range or CLSRB approved date
Plain: Working date
Italic: Proposed date
 All dates based on Zulu launch times.

■ Type II Launch Window of Opportunity
 □ Launch Operations Contract Period of Performance Expend
 ■ Negotiated Period of Performance Extension
 □ Period of Performance Extension Dates

As Of:
24 Mar 03



Agenda

- Office of Space Launch Mission
- Organization
- Programs
- Manifest
- **Launch in Transition**

Launch in Transition

Legacy Era



Legacy Launch Vehicles

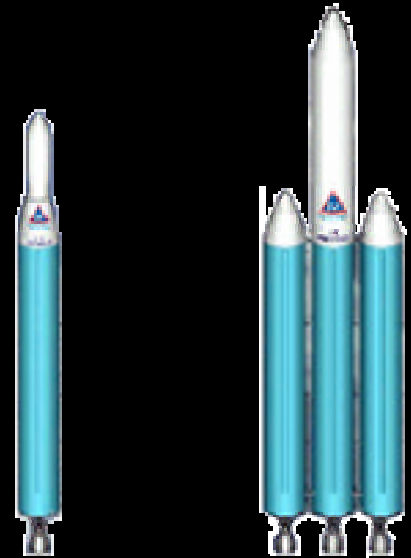
- Atlas
- Titan

High Cost
Commercial Leverage
Measurable Risk

Goals:

- Lower Cost
- Reduce Time on Pad
- Improve Business Practices
- Leverage
 - Commercial
 - DoD

EELV Transition Era



New family of boosters

- Evolved Expendable Launch Vehicles (EELV)

Lower Cost
Commercial Leverage
Measurable Risk



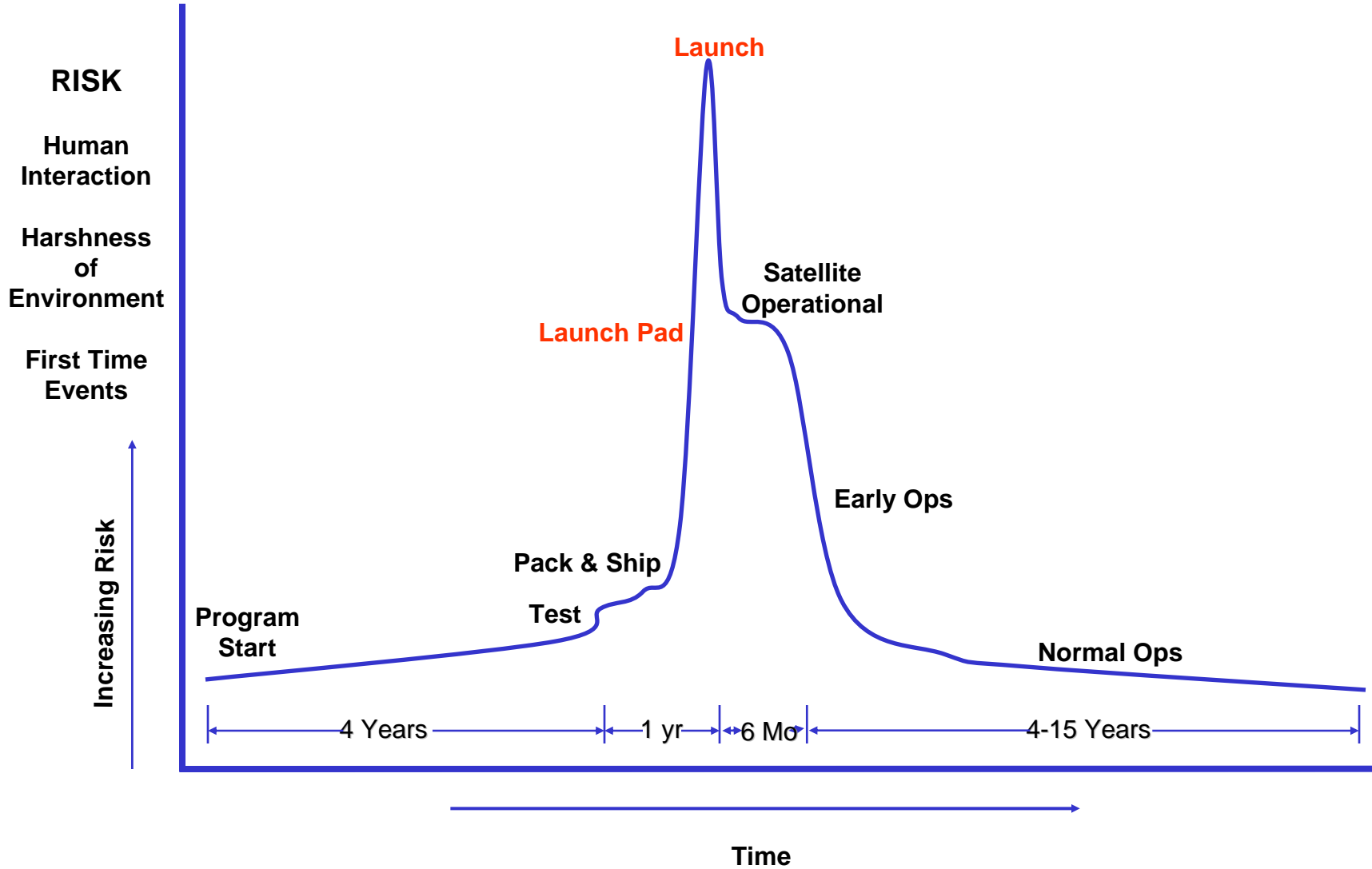
Launch in Transition – Challenges

- **Near term heavy dependence on legacy launch systems**
 - Extended flyout of Titan IV due to satellite program delays
 - Aging Titan launch base infrastructure
- **EELV transition**
 - Government is the primary EELV customer, including many “firsts”
 - Foreign technology dependency
 - New main engine engine development
 - Sole source dependence
 - West Coast, heavy lift, upper stage engine
 - Risk
 - Higher for last legacy flights, first EELV flights
 - Aggressive mission assurance program in place for legacy and EELV



Risk to Mission Success

(Notional Data)





This is Rocket Science !