



NPOESS Status

Peter A. Wilczynski
Environmental Satellite Program Executive Office
Senior Strategic Plans & Policy Advisor

October 2006



How Did We Get There?

- Program experienced severe cost and schedule problems in the development of its sensor suite [VIIRS, CMIS]
 - Jan 05: the System Program Director announced delay in meeting NPOESS Preparatory Program (NPP) launch date
- 31 Jan 2005: NPOESS Tri Agency (DoD, NOAA, NASA) EXCOM directed IRT to look at NPP
 - 19 Aug: EXCOM receives results of NPP IRT, and then directed an IPA and OSD CAIG review of the entire NPOESS program
- 28 Sep 2005: SecAF notified Congress of PAUC threshold breach greater than 15% which triggered Nunn-McCurdy (N-M) breach notification
 - 22 Nov: IPA and OSD CAIG brief EXCOM of PAUC and APUC growth much greater than 25% (PAUC 82%, APUC 202%)
- 30 Nov 2005: the acting SPD signed a program deviation report, PAUC and APUC will be greater than 25%
- 23 Dec 2005: USecAF sent “reasonable cause letter” to USD(AT&L) of PUAC and APUC breaches greater than 25%
- 11 Jan 2006: SECAF notified Congress by letter of N-M certification breach



Nunn-McCurdy Summary

- Sep 05: **Notification of at least 15% cost breach**
- Jan 06: **Notification of at least 25% cost breach**
 - Jan – Jun 06: OSD led N-M certification process
 - 5 Jun 06: USD (AT&L) certified restructured program
- Certification Determination
 - NPOESS requirements validated by the JROC plus NASA and DOC
 - Initial system must perform to the same levels as DMSP / POES core sensors
 - System design flexible—enables spiral development to IORD capability
 - CAIG cost estimate executable
- Acquisition Decision Memorandum's Major Direction
 - Fund to CAIG estimate
 - Award fee approach consistent with new DoD / AF / DOC guidance
 - Maintain EXCOM approved management structure
 - Quarterly reviews with senior contractor management
 - Two Orbit Program Plan
 - De-manifest sensors—continue to fund integration
 - Terminate CMIS—compete Micro-wave imager with reduced requirements



PEO Organization*

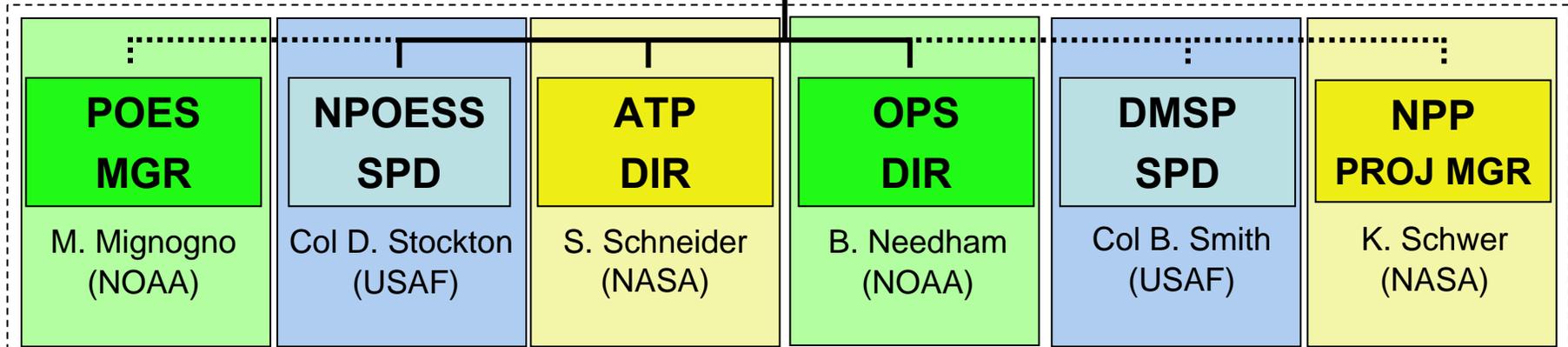
* As Approved by the EXCOM
on March 14, 2006

NPOESS EXCOM
Dr. M. Griffin - *Administrator of NASA*
Dr. R. Sega – *Under Secretary of the Air Force*
VADM (ret.) C. Lautenbacher – *Under Secretary of Commerce for Oceans and Atmosphere*

Environmental Satellites Program Executive Office (PEO)
Brig Gen S. Mashiko – PEO
 Deputy PEO (NOAA) - **Vacant**

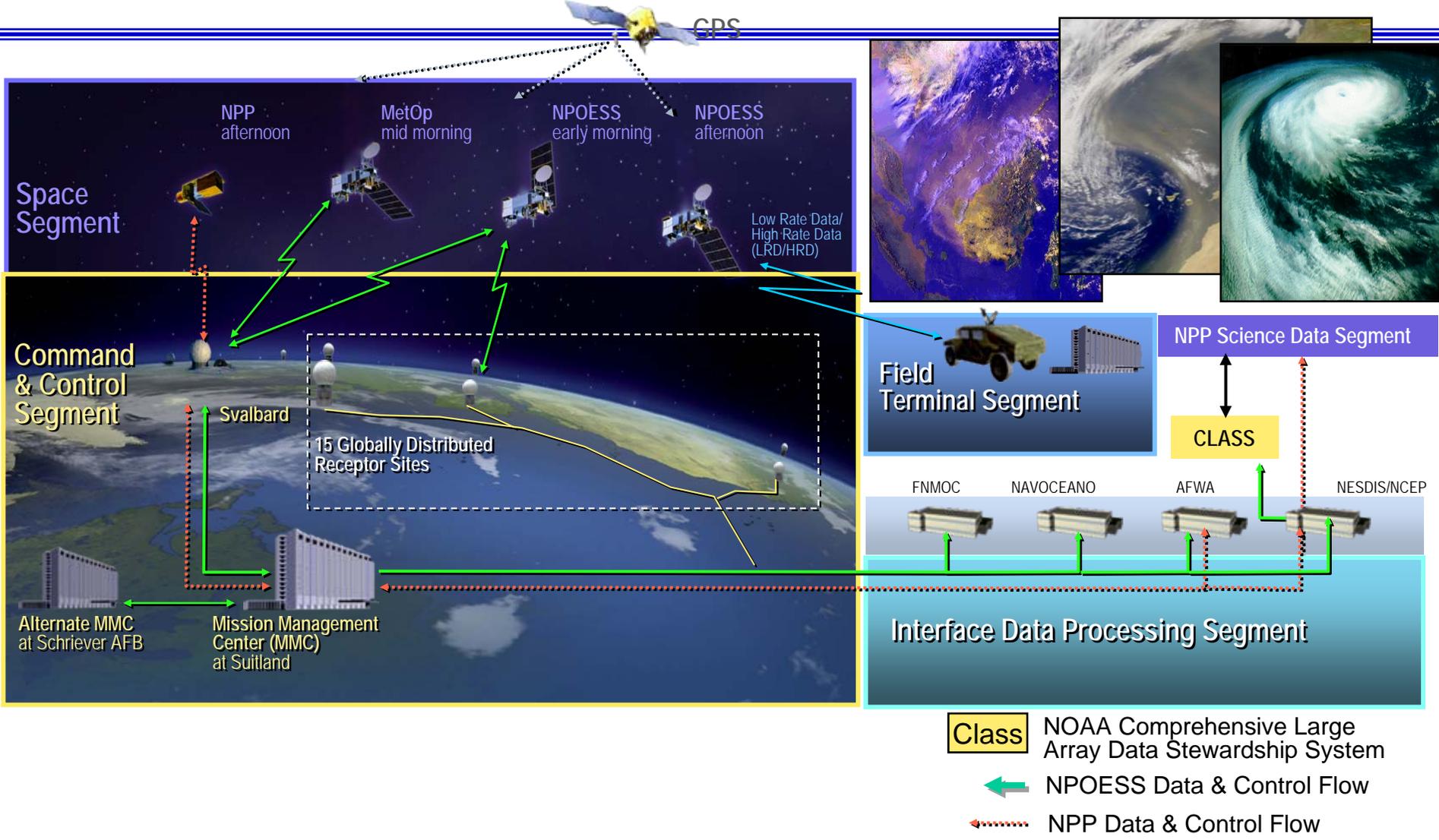
Senior Policy/Plans - P. Wilczynski (NOAA) Senior Policy/Plans - Vacant Chief Engineer - K. Anderson (NASA) Chief Scientist - Vacant Senior DoD - Maj T. Cole Senior NOAA - M. Tanner	Senior NASA - A. Carson Senior Budget Advisor - K. Gilmore Senior Tech. Advisor - M. Haas Senior Comm. Advisor - T. Bucher SUAG Rep - Lt Col M. Bonadonna
--	---

PEO Portfolio





Post NM NPOESS Top Level Architecture



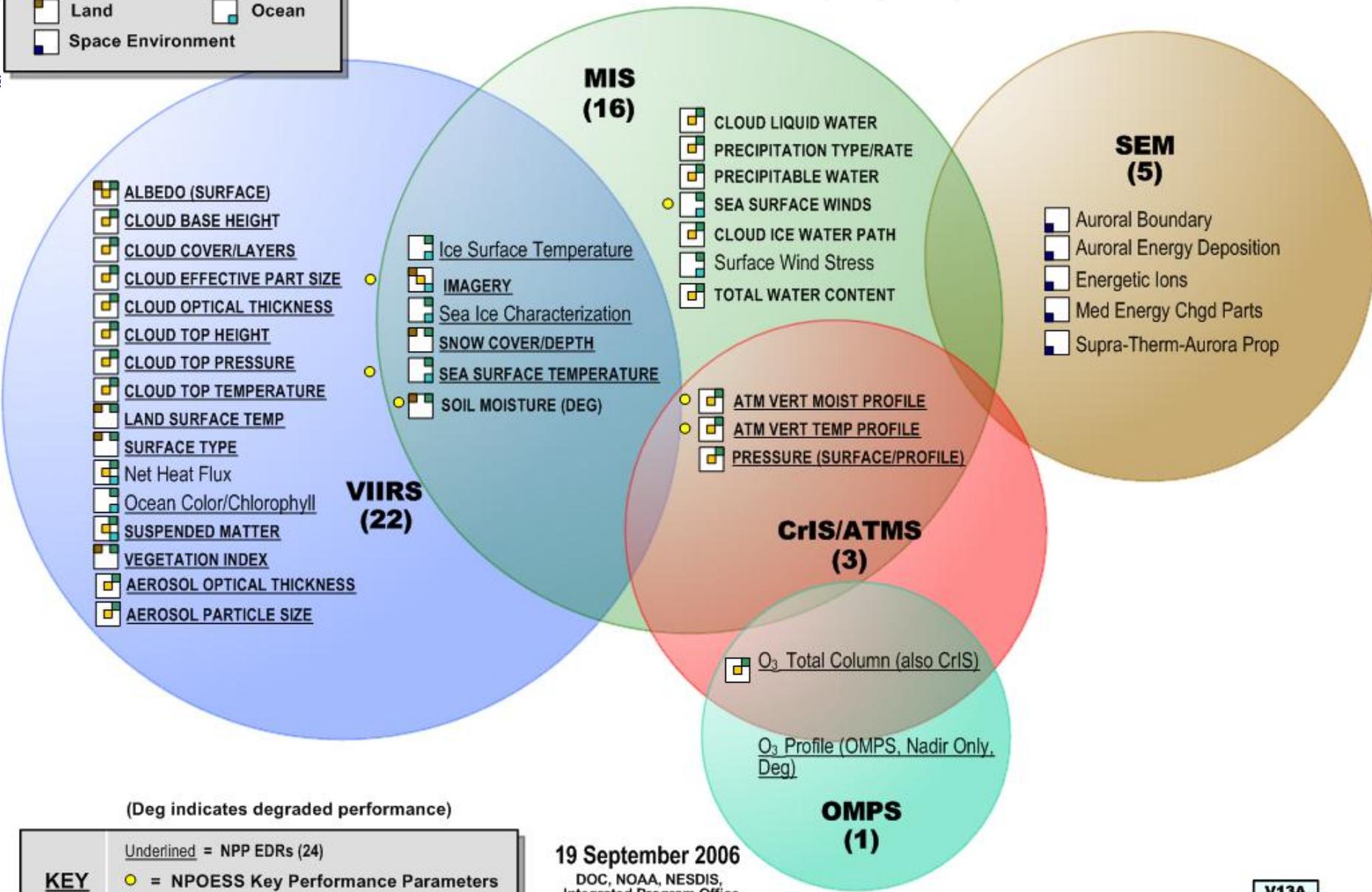
Global Connection— High Speed Network for Rapid Data Dissemination

NPOESS Certified Program - 38 EDRs

(2 Degraded)

MISSION AREAS

-  Atmosphere
-  Climate
-  Land
-  Ocean
-  Space Environment



(Deg indicates degraded performance)

KEY

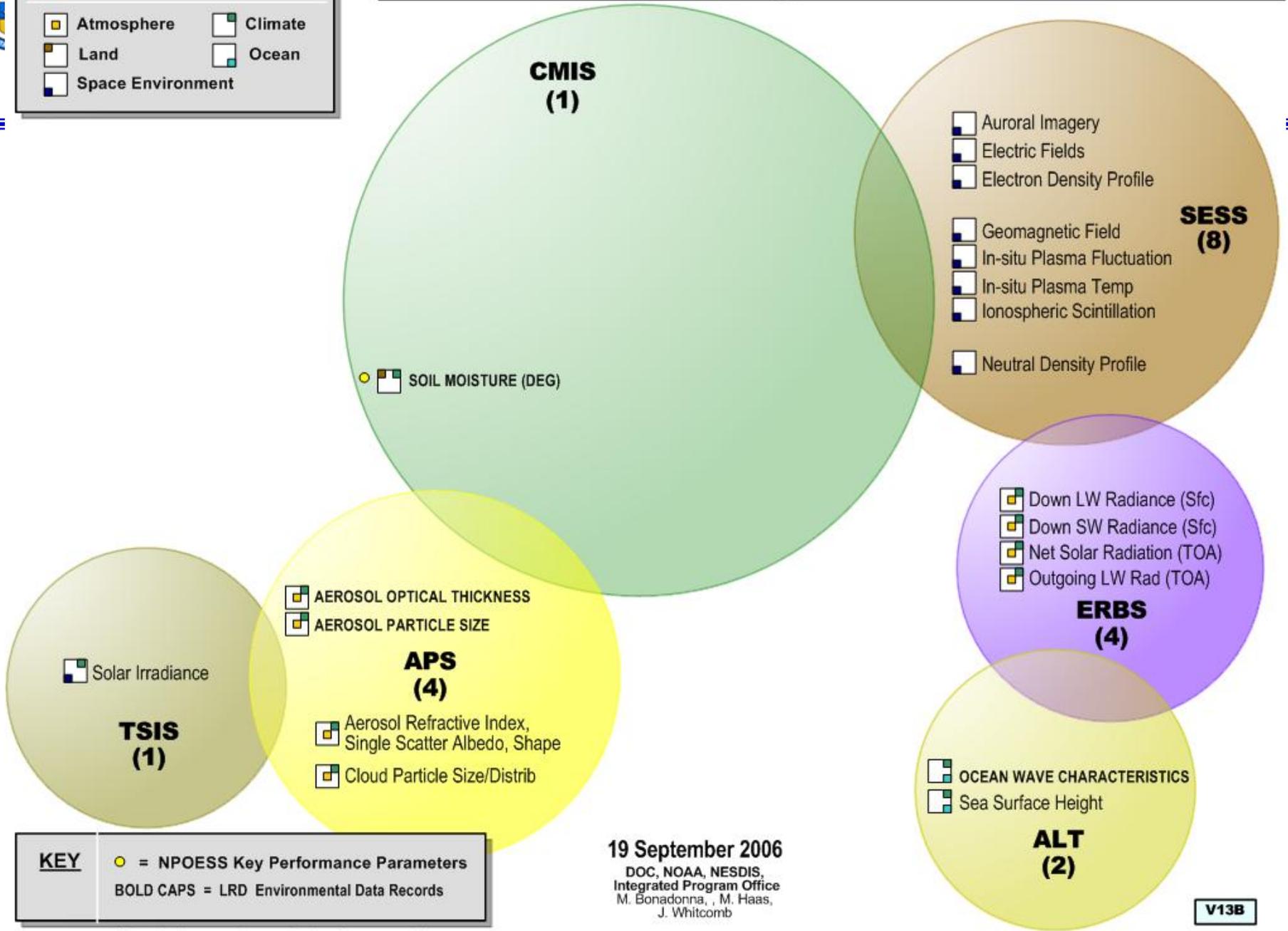
- Underlined = NPP EDRs (24)
-  = NPOESS Key Performance Parameters
- BOLD CAPS** = LRD Environmental Data Records

19 September 2006
 DOC, NOAA, NESDIS,
 Integrated Program Office
 M. Bonadonna, M. Haas,
 J. Whitcomb

NPOESS Certified Program – Demanifested EDRs

MISSION AREAS

-  Atmosphere
-  Land
-  Space Environment
-  Climate
-  Ocean



**CMIS
(1)**

  SOIL MOISTURE (DEG)

-  Auroral Imagery
-  Electric Fields
-  Electron Density Profile

**SESS
(8)**

-  Geomagnetic Field
-  In-situ Plasma Fluctuation
-  In-situ Plasma Temp
-  Ionospheric Scintillation
-  Neutral Density Profile

-  Down LW Radiance (Sfc)
-  Down SW Radiance (Sfc)
-  Net Solar Radiation (TOA)
-  Outgoing LW Rad (TOA)

**ERBS
(4)**

-  OCEAN WAVE CHARACTERISTICS
-  Sea Surface Height

**ALT
(2)**

-  AEROSOL OPTICAL THICKNESS
-  AEROSOL PARTICLE SIZE

**APS
(4)**

-  Aerosol Refractive Index, Single Scatter Albedo, Shape
-  Cloud Particle Size/Distrib

 Solar Irradiance

**TSIS
(1)**

KEY  = NPOESS Key Performance Parameters
BOLD CAPS = LRD Environmental Data Records

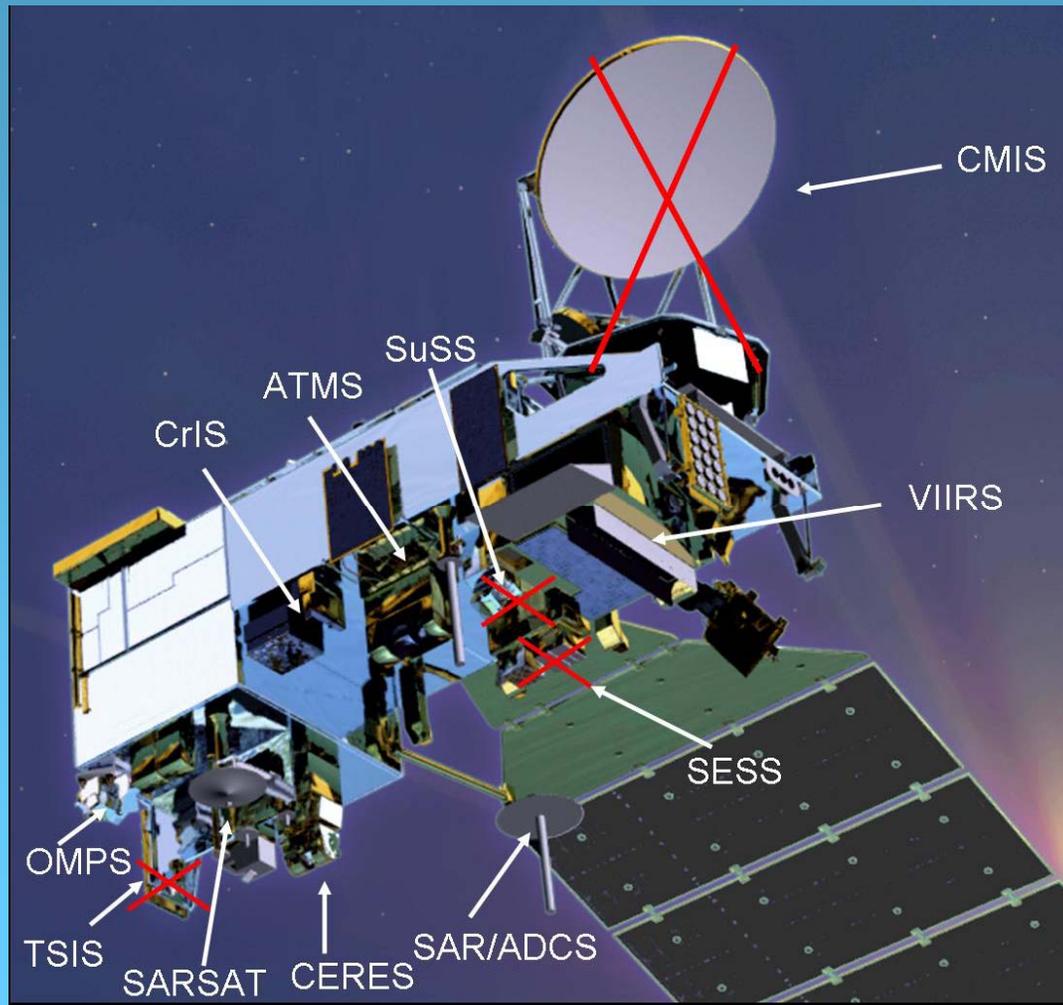
(Deg indicates degraded performance)

19 September 2006
 DOC, NOAA, NESDIS,
 Integrated Program Office
 M. Bonadonna, M. Haas,
 J. Whitcomb

V13B



NPOESS Satellite and Sensors



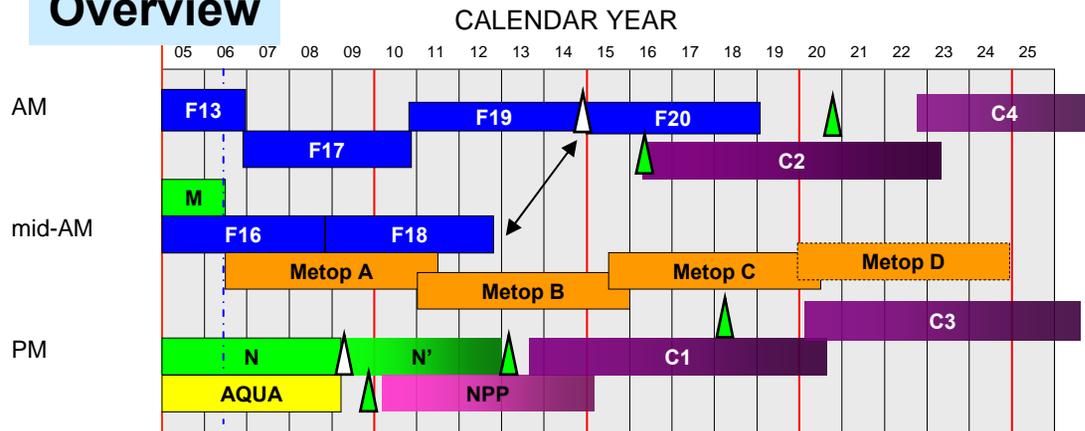
	PM	AM	NPP
VIIRS	X	X	X
CMIS	O	O	
MIS (Rep)	C-3	X	
CrIS	X	O	X
ATMS	X	O	X
OMPS	N		N
SESS	O	O	
SEM (Rep)	X		
ADCS	X	X	
SARSAT	X	X	
CERES	C-1		
ERBS	O		
TSIS		O	
ALT		O	
SuSS	O	O	

O = demanifested by Nunn McCurdy
N = Nadir sensor only
REP = Replaces



Certified NPOESS Program

Overview



End of Constellation Service Life:
2026+

Sensor Configuration

Core Sensors

- AM: VIIRS, Microwave Image/Sounder, SARSAT, ADCS
- PM: VIIRS, Microwave Imager/Sounder (C3), SARSAT, CrIS, ATMS, ADCS, CERES (C1), OMPS-Nadir, SEM, ACDS

GFE Sensors

APS, TSIS, OMPS-Limb, ERBS, Full SESS, SUSS, ALT

Description

- NPOESS bus sized to carry full sensor configuration
- Constellation of 2 EMD and 2 Production satellites
- Terminate CMIS; Compete new Microwave Imager/Sounder starting with C2
- NOAA/NASA forecasting models and selected climate continuity preserved
- Restructuring of NGST contract required; Renegotiation of NGST fee
- All secondary sensor integration planned and budgeted for
- DoD will lose day/night imagery in mid-AM for up to 8 years Gap duration contingent upon satellite performance
- Contractor and government management continuity preserved



Post Nunn McCurdy Sensors

Manifested

Satellite	NPP	C1	C2	C3	C4
Launch	Sep 2009	2013	2016	2020	2022
Nodal Time	1330	1330	0530	1330	0530
VIIRS	X	X	X	X	X
Microwave Imager/Sounder			X	X	X
CrIS	X	X		X	
ATMS	X	X		X	
OMPS Nadir	X	X		X	
SEM (MEPED and TED)		X		X	
CERES		X			
SARSAT		X	X	X	X
ADCS		X	X	X	X

Non-manifested (Integration only provided for specified orbit)

SESS (Aurora, TPS, SEM) NOTE: (SEM replaces MEPS, HEPS, LEPS)			X		X
Survivability Sensor		X	X	X	X
ERBS				X	
ALT			X		X
TSIS			X		X
OMPS Limb		X		X	
APS				X	



NPOESS Program Assessment

System Level	June	July	August	Comments
Cost	Yellow	Yellow	Green	CY06 IPP backbone tasks on schedule
Technical	Yellow	Yellow	Yellow	
Schedule	Yellow	Yellow	Yellow	
Space segment				
Spacecraft Bus	Green	Green	Green	
Environmental Instruments				
VIIRS	Red	Red	Red	EDU TVAC testing completed – 3 weeks of bench tests for anomaly investigations – data evaluation underway
CrIS	Yellow	Yellow	Yellow	Continuing electromagnetic interference testing, piece part investigations
OMPS	Yellow	Yellow	Yellow	Analysis of Nadir TVAC continues, boresight testing lessons learned underway
MIS	White	White	White	Initial acquisition strategy independent review complete.
Leveraged	Green	Green	Green	
Non-Environmental	Green	Green	Green	
Ground segment				
C3	Green	Green	Green	
IDPS	Yellow	Yellow	Green	Continuing IDPS latency improvement plan
FT	Green	Green	Green	
IPO Personnel	Yellow	Yellow	Yellow	IPO Staff key billets being advertised

Assessments apply to FY 2006 Plan only



NPOESS Program Risks

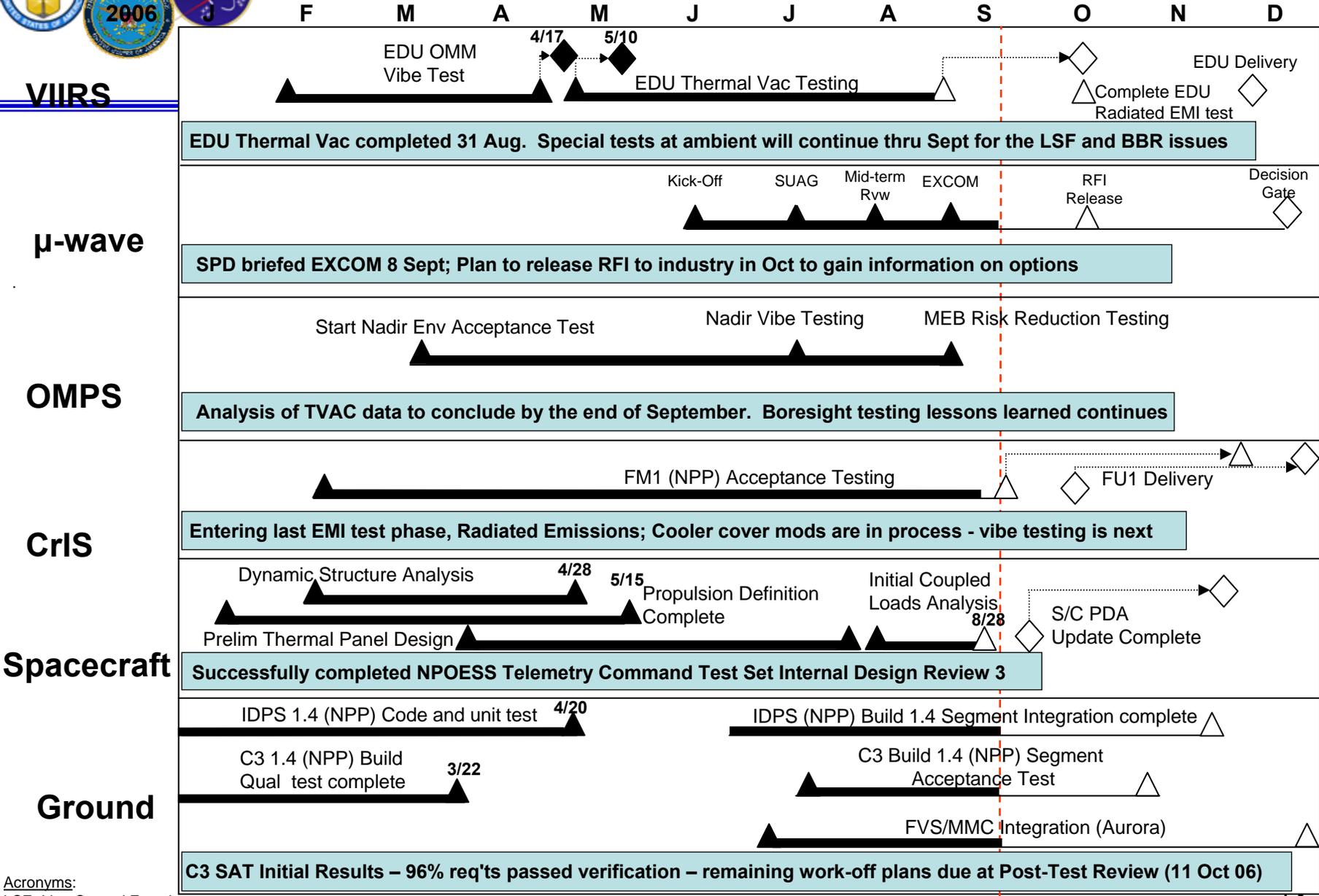
(All Program Level Risks will be Updated with 07 Replan dates at Sept RMB)

		Potential Severity of Consequence						
		3	5	7	9	10		
H				■ 24			Probability of Occurrence	
MH			■ 2, 15	■ 5, 21	■ 1			
M		■ 6	■ 3, 7, 14a, 19					
LM		■ 4, 11, 12, 16, 17, 20	■ 23					
L			■ 22					
		L	LM	M	MH	H		

1. VIIRS Delivery and Ease of Integration for NPP
2. Operational Algorithm Readiness
3. IDPS Readiness for NPP
4. CrIS Delivery and Ease of Integration for NPP
5. ~~Delivery and Integration of first CMIS instrument (Deleted)~~
6. Security Accreditation
7. Cal Val Readiness
11. NPP Mission Integration and Readiness Support
12. Software Development
- 14a. FTS
15. EDR Quality
16. Instrument and Payload Interface Development
17. Frequency Registration
19. Landing Rights
20. System Interoperability
21. OMPS Delivery for NPP
22. ~~FPGA Reliability Impact to NPP Delivery (Deleted)~~
23. EEMTB Development
24. Parts Obsolescence



FY 2006 NPOESS Key Dev Milestones as of 8 Sept 06



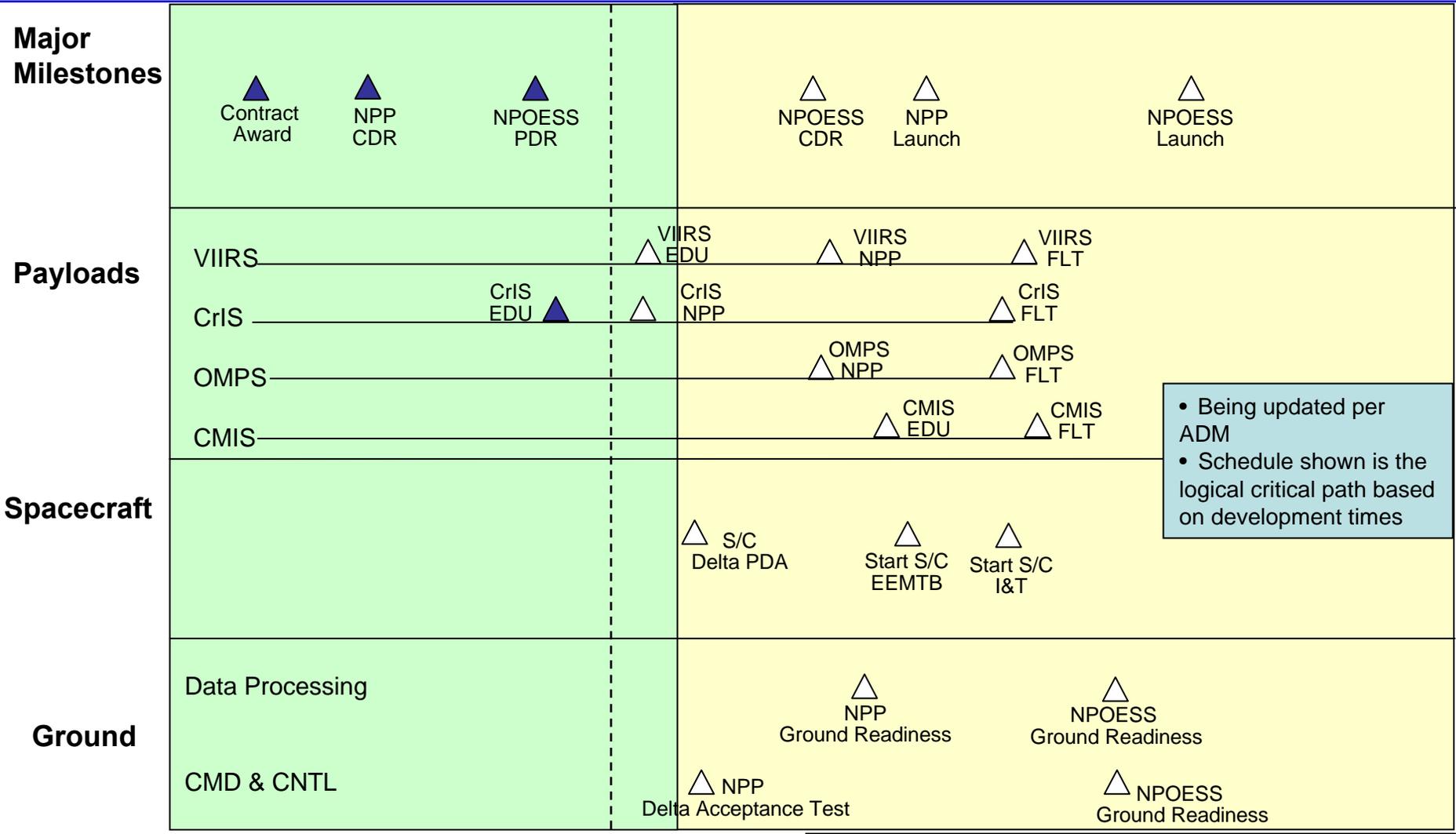
Acronyms:
 LSF- Line Spread Function
 BBR- Band-to-Band Registration
 SAT- Segment Acceptance Test
 RFI- Request for information

NPOESS FY06 plan is compliant with appropriated funds



NPOESS Program Schedule

CY 02 03 04 05 06 07 08 09 10 11 12 13 14 15



- Being updated per ADM
- Schedule shown is the logical critical path based on development times

Note: 1.) FYDP neutral funding assumed
2.) May require movement of funds within FYDP

Time Now



SafetyNet™ Status

	Site Location	Proposed Agreement Type	Install Date	Spectrum License Status	IPO Actions
Phase 1	Australia	Govt.	2010-2011	New Application Needed	Need letter from Aus DoD and from Australian BOM with NPOESS benefits. BOM letter in work. Checking with Aus DoD on status. Will need to work Implementation Plan via IA for Aus DoD and BOM
	Norway	KSAT Subcontract	2010-2011	License Approved	
	USA: AK	Commercial	2010-2011	In work	
	USA: FL	Commercial	2010-2011	In work	
Phase 2	Antarctica	NSF MOU	2010-2012	Complete	DOC ARB and State Dept clearance received. IPO signature on MOA received. FY06 funding at risk – investigating options with Program Control
	Brazil	Commercial	2010-2012	Application Submitted	
	India	Govt.	2010-2012	Application Submitted	Support ISRO meeting, when scheduled.
	New Zealand	Commercial	2010-2012	On hold	
	S Africa	Commercial	2010-2012	Application Approved	
Phase 3	Chile	Commercial	2014-2015	Application Ready for Filing	
	S Korea	Commercial	2014-2015	In work	IPO letter sent. No action requested.
	Spain	Commercial	2014-2015	In work	Need assistance from NOAA & NTIA frequency personnel in NASA ESA coordination issues. No IPO action requested.
	USA: AZ/CA	Commercial	2014-2015	In work	NESDIS FM working coordination issues with NASA White Sands; No action requested at this time
	USA: GU	Commercial	2014-2015	In work	
	USA: HI	TBD	2014-2015	In work	Multiple good candidate sites identified, all govt land. See next slide.



Summary

- A new program has emerged from Government mandated restructure
- 2007 program planning is almost complete
- 2008-2013 planning to be completed by October 2007
- NPP planned to be launched in Sept 2009