

Air Force Reserve Command

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

19th Space Operations Squadron Brief to Institute of Navigation Rocky Mountain Chapter

Lt Col Damon S. Feltman

Commander

29 Jun 11





U.S. AIR FORCE

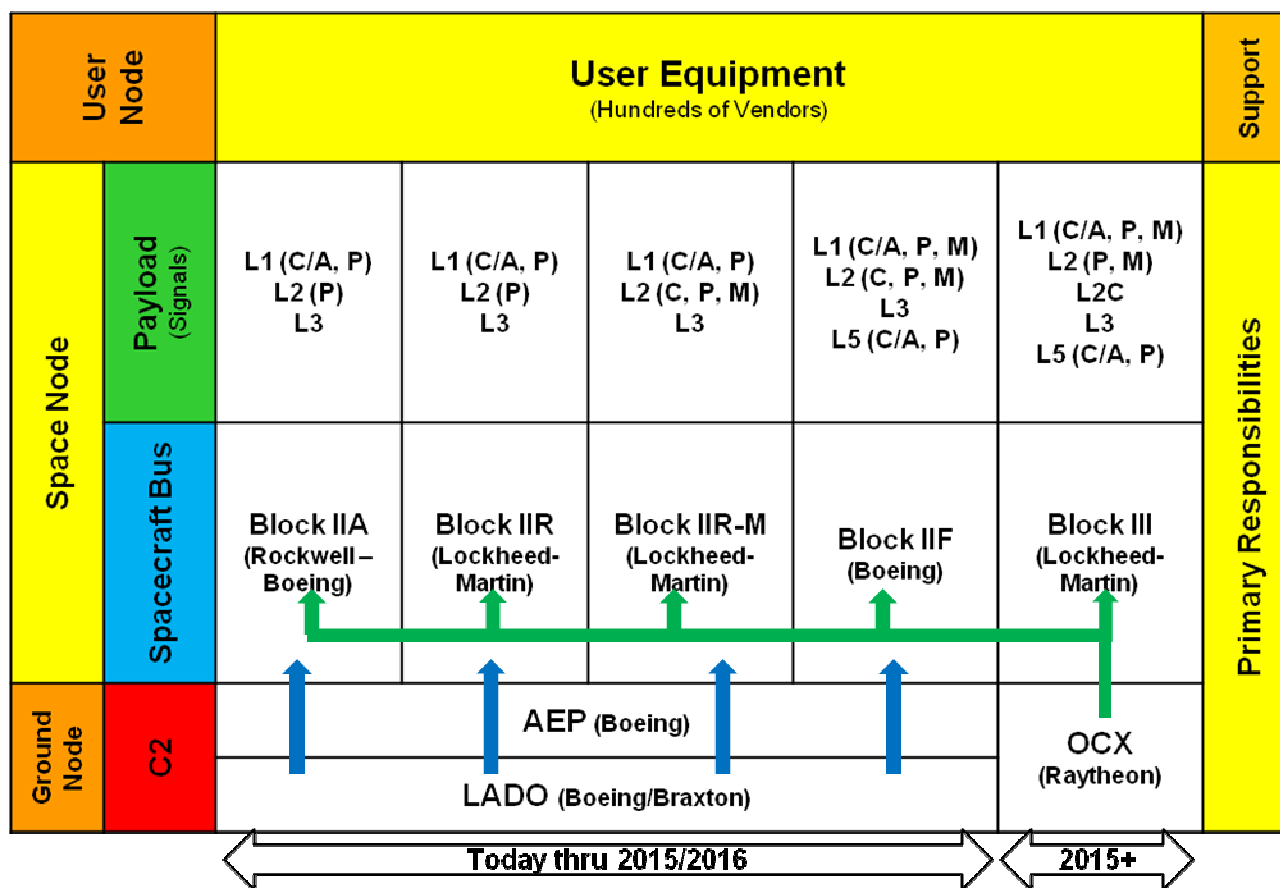
GPS Aviation Analogy



GPS is not one MDS; it is:

- Multiple aircraft (spacecraft bus) from different vendors, with
- Different pods (payload) for each aircraft type, and
- Different avionics (C2) depending on specific mission, and
- No Edwards or depot to test, deliver and fix

19 / 2 SOPS do it all!



GPS is a simple concept that requires extremely complex execution

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

Overview



- Organization, vital stats
- Role in GPS operations
- NAVWAR discussion



U.S. AIR FORCE

Organization & Vital Stats



- Associate to AFSPC's 2 SOPS; est. Oct 00
- 73 manpower authorizations, 30 FT/43 PT
- AFRC is critical component of GPS ops; 19 SOPS...
 - 41% of total DoD manpower authorized for ops
 - Officers have 4 – 7 yrs more experience in mission than RegAF
 - Enlisted have 2 – 4 yrs more experience in mission than RegAF

19 SOPS is the operational/strategic backstop, bedrock of operational knowledge of DoD's GPS operations capability

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

ADCON – OPDIR – OPCON



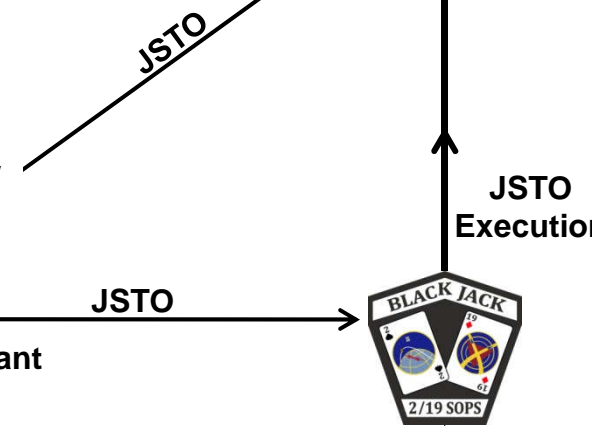
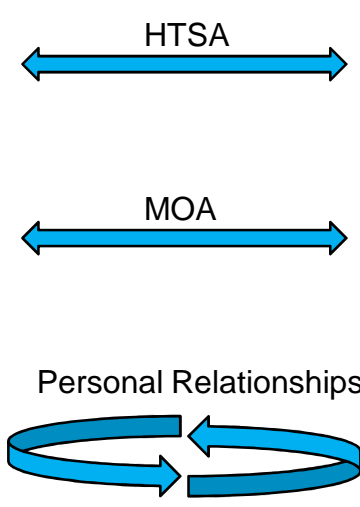
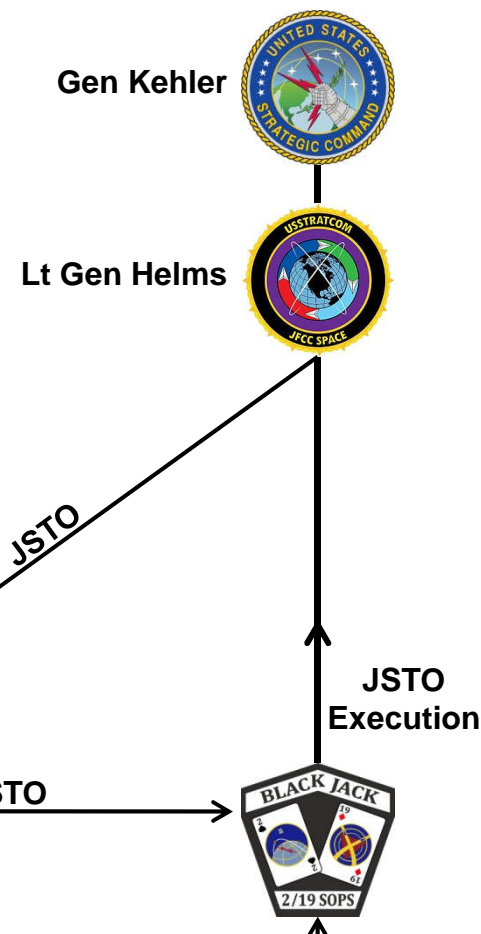
ADCON



“OPDIR”



OPCON



ADCON never leaves AFRC channels unless Full Mobilization occurs



U.S. AIR FORCE

19 SOPS Mission – Apr 00 AFSPC Memo



PEACETIME

WARTIME

- Form core of SMEs for new C2 system, Architecture Evolution Plan (first AEP & LADO, now OCX)
- Conduct training
- Take primary responsibility for launch/early-orbit, anomaly resolution and disposal operations (LADO) performed by 1 SOPS/7 SOPS
- Augment 2 SOPS in daily GPS operations
- Deploy to Alternate Master Control Station, as required
- Provide long-term experience and knowledge for several key satellite analysis functions (Navigation Warfare – NAVWAR)

Key mission tasks still relevant; means are constantly evolving



U.S. AIR FORCE

Role in GPS



May 2011 Crew Force Execution Summary	12 Month Average Actual Monthly Execution	12 Month Average 19 SOPS % of Mission Baseline Execution Requirement	12 Month Average 19 SOPS % of Actual Mission Execution Requirement
UTC – 1SPB2 (Day-to-Day Posture)			
SVOD	2.2	0	0
SVO	24.3	26%	23%
SSO	30.8	32%	27%
UTC – 1SPB2 (Launch Posture)			
SVOD	2.2	0	0
SVO	25.3	27%	24%
SSO	31.8	34%	28%
UTC – 1SPB3			
Mission Commander	4.2	5%	4%
Mission Chief	7.3	9%	7%
PSO	15.8	18%	13%
SVO	10.8	12%	10%
SSO	56.5	21%	19%
TOTAL	211.2		

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

Role in GPS



- **Full integration into GPS mission**
 - Certified in all crew positions
 - Navigation Warfare Officer initial cadre
 - User Support
- **GPS Modernization – major block upgrades**
 - FY10 thru FY ?? – field 12 GPS IIFs
 - FY11 thru FY16 – field OCX
 - FY14 and beyond – field 34 GPS IIIs**
- **GPS Modernization – “minor” block upgrades**
 - AEP and LADO software updates
 - Selective Availability and Anti-Spoof Module (SAASM)
 - Flex Power

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

Role in GPS



- **Launch and Disposal**
 - Majority of manpower for LEO ops
- **On-call support**
- **TTP development**
 - #1 AFSPC TIP for 2010– jamming/interference detection at GPS monitor stations
 - 2 TIPs in development – jamming/interference reporting across Link-16, BFT, FAA networks
 - Working w/AFTENCAP to solve materiel requirements

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

NAVWAR



Which of these quotes did Gen Schwartz actually state on 20 Jan 10?

Another widely-known dependence that creates an exploitable vulnerability is that of Air Superiority...It seems critical to me that the Joint force should reduce its dependence on Air Superiority, allowing it to ultimately become less vulnerable, yet equally precise, and more resilient.

Another widely-known dependence that creates an exploitable vulnerability is that of GPS...It seems critical to me that the Joint force should reduce its dependence on GPS-aided precision, navigation and timing, allowing it to ultimately become less vulnerable, yet equally precise, and more resilient.



U.S. AIR FORCE

NAVWAR



- No joint definition, STRATCOM working on CONOPS
- Current GPS NAVWAR scope centers mainly on SAASM/FlexPower capabilities
- Multiple joint capabilities exist; very little integrated planning and execution capability at joint, operational, tactical levels
- GPS is PNT foundation for US, therefore space mission area a logical center for NAVWAR expertise

Cross-domain NAVWAR planning and execution expertise must become core competency for space operators

U.S. Air Force, Same Flight... In Orbital Warfare



U.S. AIR FORCE

NAVWAR



- **19 SOPS/CC perspective**
 - **Worst Case: Reachback denied/degraded against determined foe**
 - **Must be able to pursue/exploit NAVWAR options w/o JSPOC, Mod 11**
 - **Must be able to pursue/exploit NAVWAR options with fwd, organic capabilities**
 - **Best Case: NAVWAR-smart people at critical locations (i.e., AOC, JSPOC, Mod 11) plan/execute integrated actions based on CDR requirements, tempo of conflict**



U.S. AIR FORCE

NAVWAR



- **19 SOPS/CC perspective – NAVWAR...**
 - ...is more than just GPS, but is GPS-centric
 - ...is not EW, but at times can rely heavily on EW principals
 - ...has offensive and defensive aspects
 - ...includes all GNSS, mechanical and cyber capabilities
 - ...relies heavily on cross-domain (space, cyber, air, etc.) solutions
 - ...inherently joint in nature
 - ...in most cases should be led by an Air Force space officer

“The provision, control and exploitation of position, navigation and timing systems, data and nodes, regardless of domain”

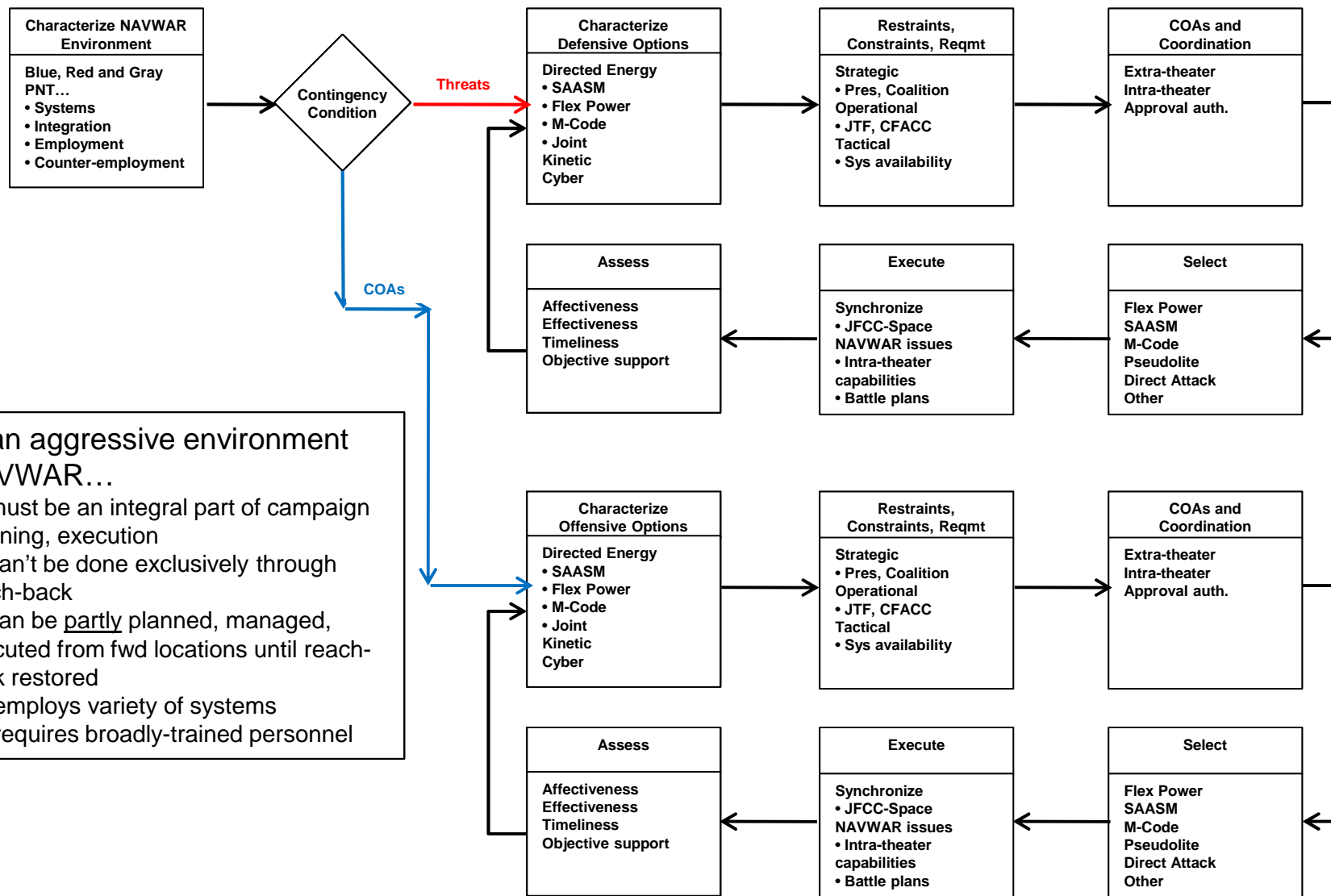
One Air Force, Same Fight... An Unrivaled Wingman



NAVWAR



U.S. AIR FORCE



In an aggressive environment NAVWAR...

- ...must be an integral part of campaign planning, execution
- ...can't be done exclusively through reach-back
- ...can be partly planned, managed, executed from fwd locations until reach-back restored
- ...employs variety of systems
- ...requires broadly-trained personnel

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

NAVWAR



- **New UTC: 1SPB6, NAVWAR Planning and Operations, 4-person team**
- **Provides operational and tactical expertise for planning and execution of integrated navigation warfare (NAVWAR) capabilities. Deploys to GPS Operations Center (GPSOC), Joint Space Operations Center (JSPOC), and/or theater, based on COCOM requirements. Maintains expert-level knowledge of GPS, its NAVWAR capabilities, associated C2 tasking processes and theater-support applications such as GIANT. Supports GPS system analysis. Supports planning, integration and exploitation of joint capabilities that effect or rely upon space-based position, navigation and timing (PNT) systems. Understands capabilities and vulnerabilities of augmentation systems such as Differential GPS (DGPS), Wide-Area Augmentation System (WAAS), TALON NAMATH, etc. Understands vulnerabilities associated with space-based PNT-enabled systems such as ordinance, weapon systems and networks. Understands capabilities and C2 architecture of non-US PNT systems such as Galileo, GLONASS and Beidou/COMPASS.**

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

Questions?



Non pro palma , tamen pro invicem
“Not for glory, but for each other”

Air Force Reserve Command

One Air Force, Same Fight... An Unrivaled Wingman



U.S. AIR FORCE

19th Space Operations Squadron Brief to Institute of Navigation Rocky Mountain Chapter

Lt Col Damon S. Feltman

Commander

29 Jun 11

