



F-16 System Program Office

Modernizing SEAD for the 21st Century

Lt Col R. Matt Russell
F-16 Test Pilot
Chief of F-16 Flight Test
United States Air Force

Pound for Pound, Best Fighter Around!

UNCLASSIFIED Distro List A



Overview



F-16 System Program Office

- Introduction
- SEAD Mission
- History and Legacy
- SEAD Today
- 4th Gen SEAD Limitations
- 4th Gen SEAD Modernization
- SEAD Support Modernization
- Questions



Fighter of Choice!



Introduction



F-16 System Program Office

USAF Fleet:

- 900+ Aircraft
- 2 core OFPs
- 7 Blocks
- 80+ Configurations
- Last major modernization 2005



Fighter of Choice!



Introduction



F-16 System Program Office

Global Fleet:

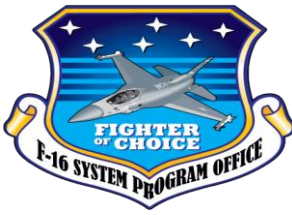
- 1900+ Aircraft
- 3 Core OFPs
- 26 Countries
- 5 Blocks
- 20+ Configurations
- V-Config



Fighter of Choice!



SEAD Mission



F-16 System Program Office

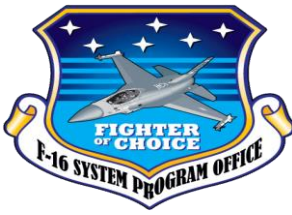
Suppression of **E**nemy **A**ir **D**efenses = SEAD

“Historically, air superiority has proven to be a prerequisite to success for an operation/campaign because it prevents enemy air and missile threats from interfering with operations of friendly air, land, maritime, space, and special operations forces, assuring freedom of action and movement.”

JP 3-01, 2012, I-2



SEAD Mission



F-16 System Program Office

Destructive:

- Destruction of target system/personnel
 - Cumulative effects
 - Big demand on assets



Disruptive:

- Temporarily deny, degrade, deceive, delay or neutralize enemy surface AD systems
 - Can be accomplished passively or actively

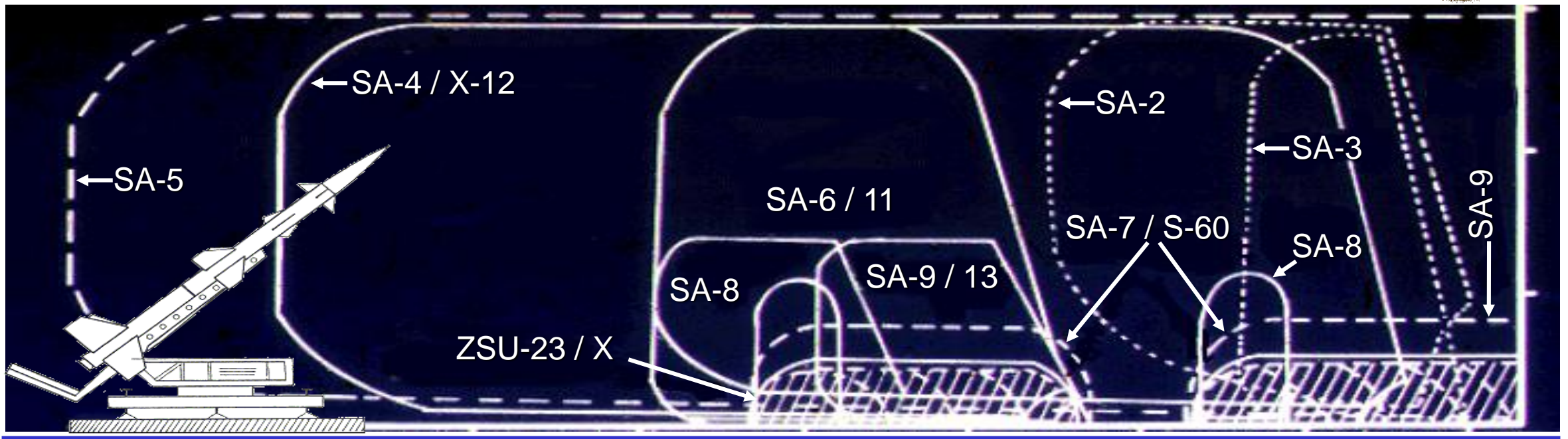
Fighter of Choice!



SEAD History and Legacy



F-16 System Program Office



Fighter of Choice!



SEAD History and Legacy



F-16 System Program Office



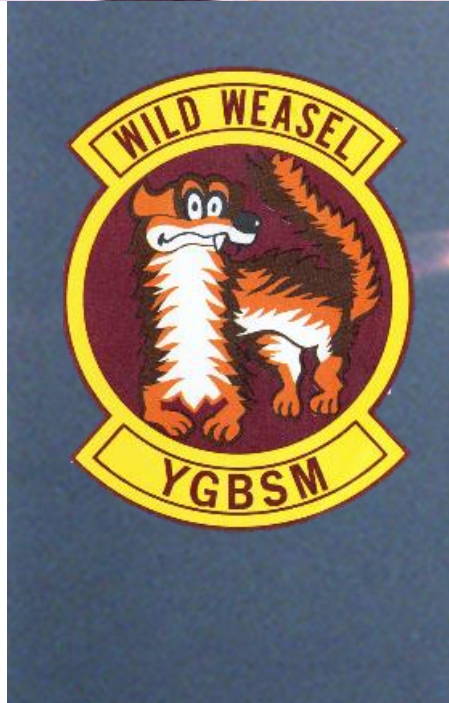
Fighter of Choice!



SEAD History and Legacy



F-16 System Program Office



Fighter of Choice!



Fighter SEAD Today



F-16 System Program Office

- Primary Fighter SEAD Platforms
 - F-35 (NATO)
 - F-16 (US, ROK, Greece)
 - F-18 (US, Spain)
 - Tornado (UK, GDR, Italia)



Fighter of Choice!



Fighter SEAD Today



F-16 System Program Office



Fighter of Choice!



Air Defense Threats Today



F-16 System Program Office

- **Digital-Age ADS**
 - **Highly integrated**
 - **Long-range/High Alt**
 - **Wide band**
 - **Highly agile**
 - **Passive detection**
 - **Passive targeting**
 - **Directed Energy**
 - **Mobile!**





Fighter SEAD Today – 5th Gen Fighters



F-16 System Program Office

- L.O. – Shrinks threat rings
 - Expensive, limits weapons, obsolete?
- AESA RADAR
 - SAR Map
- Precision Locating
- Distributed Aperture
- Stand-off weapons
- Decoys
- Deception/Jamming
- Directed Energy



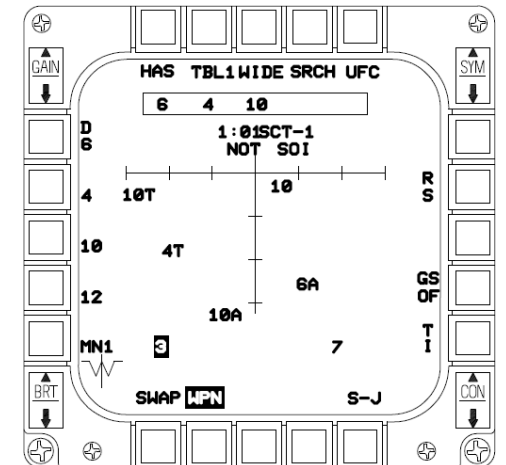
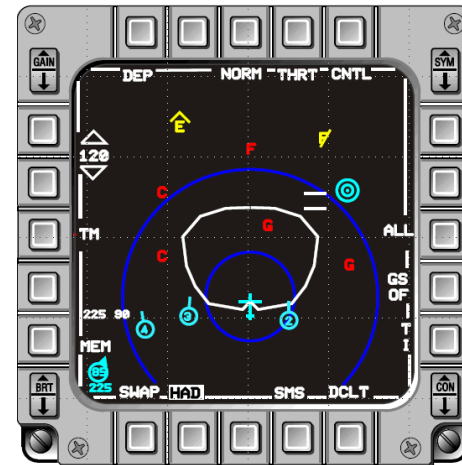
Fighter of Choice!



4th Generation Fighter SEAD



F-16 System Program Office



Fighter of Choice!



4th Generation Fighter SEAD



F-16 System Program Office

- Multi-Role
 - A-A / A-G
- All Weather
 - AESA/SAR Map
- Day/Night
 - HTS/ATP



Fighter of Choice!



4th Gen Fighter SEAD Loadouts



F-16 System Program Office

- Air-to-Air
 - AIM-120: Active radar guidance
 - AIM 9X: High off-boresight IR guided missile
 - M61 Gun: 20mm six-barrel Gatling Cannon
- Air-to-Ground
 - AGM-88: HARM
 - GBU-38/31: JDAM
 - GBU-39: SDB
 - GBU-53: SDB-II
 - GBU-54: Laser JDAM
 - GBU-10/12: PAVEWAY II
 - GBU-24: PAVEWAY III
 - AGM-158: JASSM
 - ADM-160: MALD/J



Fighter of Choice!



4th Gen Fighter SEAD Modernization



F-16 System Program Office

- Digital architecture (Max Data Flow)
 - Ethernet/Fiber
- Precision Locating/Targeting
 - RF Sniffers/All-Weather Imaging/Recognition/Locating – At Range
 - AESA RADAR
 - SAR Map
 - Wide-Band Agility
 - RF-ID
- HD Displays
- Digital EW Suite / MWS – Directed Energy
- Stand-off weapons w/ Big Range and Multi-Mode Guidance
- Decoys/J
- Directed Energy – Offense and Defense
- Comm/DL to Interface w/ 5th Gen – Imagery/Video

Fighter of Choice!



SEAD Modernization



F-16 System Program Office

Cyber

- Net-centric warfare – capability/vulnerability
- Attack requires detailed architectural intel

Frequency Management

- Saturated spectrum – deconflict
- Sat/RADAR/Comm/DL/Jam/IADS
- Digital agility – wide-spectrum!



Fighter of Choice!



Program Office



QUESTIONS?