Core Competencies of our fighter fleet not new

- **Air Superiority** – allows Freedom of Maneuver / Action for our forces while denying potential adversaries the same
- **Global Precision Attack** – hold any target at risk -- in the air, on the sea, or on the ground

Continuing cycle of new capability development to counter denied airspace, protect our forces and Nation

Threat Environment we are / will be faced with

- Advanced fighters with capabilities on par with our 4th Gen fleet
- Advanced Surface-to-Air Missile (SAM) systems -- better detection, greater range, increased lethality
- **Integrated Air Defense Systems** designed to deny access
- Proliferated world-wide, and *growing* in complexity / ability

Our AF must keep evolving to meet these challenges
## Air Force Generations of Key Fighter Aircraft

<table>
<thead>
<tr>
<th>Generation</th>
<th>Aircraft</th>
<th>US</th>
<th>Soviet</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.945-1955</td>
<td>• Turbojet Engines</td>
<td>F-86, MiG-15, MiG-19/21</td>
<td>F-86, F-84, F-80, FH-1, FJ, F-2H, F-3H, F-9F</td>
<td>P-80, F-84, F-86, F-88, F-100, F-101, F-102, F-104, F-105, F-106, MiG-15/17</td>
</tr>
<tr>
<td>1.960-1970</td>
<td>• Multi-Role</td>
<td>F-4E, MiG-29</td>
<td>F-111, F-4, F-5, MiG-23/25/27, Su-17/20/22</td>
<td>F-111, F-4, F-5, MiG-29/31, Su-27/30/33/35</td>
</tr>
<tr>
<td>1.970-2000</td>
<td>• Sophisticated Avionics • Improved Precision</td>
<td>F-15E, MiG-29</td>
<td>F-14, F-15A/C/E, F-16, F/A-18C/E/F, F-117</td>
<td>F-14, F-15A/C/E, F-16, F/A-18C/E/F, F-117</td>
</tr>
<tr>
<td>2000+</td>
<td>• Fully Integrated Avionics &amp; Sensors • Greater Speed &amp; Maneuverability • All-Aspect, Day/Night Low- Observable (F-22) • Network Centric</td>
<td>F-35A</td>
<td>PAK-FA, F-35A/B/C</td>
<td>J-20</td>
</tr>
</tbody>
</table>

**Operational**
- US: F-22A
- Russia: PAK-FA
- China: J-20

**Development**
- US: F-35A/B/C
- Russia: PAK-FA
- China: J-20
Key Attributes of 5th Gen Fighters

Stealth
- Minimize susceptibility to SAMs
- Engage air threats before detection

Maneuverability
- Survive SAM engagements
- Maintain parity / dominate Air-to-Air and Air-to-Ground engagements

Multi-Role
- Air-to-Air and Air-to-Ground
- Aircraft “exclusive domains” defined by areas of optimized performance and unique capabilities

Fused Sensors & Avionics
- Synergistic integration of information

5th Gen Fighters provide Air Superiority and Global Precision Attack against today’s -- and tomorrow’s -- air and ground threats
Prevent Hollow Force

Hollow Force

Readiness

Modernization

Future Viability

Force Structure

Strategy Mismatch

Modernization – Force Structure

Future Viability – Strategy Mismatch
Why Stealth?

- Surface Threats to 4<sup>th</sup> Gen
  - Minimize exposure & susceptibility to advanced SAMs

- Air Threats to Current Capabilities
  - Legacy and 5<sup>th</sup> Gen vs. Su-30
    - Su-30 on par with F-15/F-16/F-18
    - 5<sup>th</sup> Gen fighters superior to Su-30
  - Legacy fighter – Engaged in war of attrition

- 5<sup>th</sup> Gen provides 1st shot opportunity

Allows us to Hold enemy targets at risk, Gives us First Look, First Shot, First Kill advantage
5th Generation Fusion

4th Gen – Little to no interaction between sensors

vs.

5th Gen – Sensors collaborate displaying fused information

Legacy

F-22 & F-35

Tactical Situation Display

EW

RADAR
Mission Domains

Air-to-Air

- Obtain and Maintain Access
- Counter Advanced Air Threats

F-22
- Optimized for Air Dominance
- Uncompromised A/A performance

F-35
- Multi-Role Design
  - Strategic and Tactical SEAD / DEAD
  - Offensive and Defensive Counter Air
  - Strategic Attack / Interdiction
  - Close Air Support

Air-to-Ground

- Persistent Force
- More Flexibility for Air-to-Ground Missions
F-22

- Unmatched speed, altitude, and maneuverability
- Gain and maintain Air Superiority

F-35A (USAF)

- Multi-spectral sensors and flexible Air-to-Ground payload
- Lethal and precise Global Attack

<table>
<thead>
<tr>
<th></th>
<th>F-22</th>
<th>F-35A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrefueled</td>
<td>540 NM</td>
<td>590 NM</td>
</tr>
<tr>
<td>Sub-Sonic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combat Radius</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>1.5 Mach (2.0 Dash)</td>
<td>0.95 Mach (1.6 Dash)</td>
</tr>
<tr>
<td>Speed</td>
<td>Employment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50,000’+</td>
<td>35,000’+</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>70,000 lbs</td>
<td>40,000 lbs</td>
</tr>
<tr>
<td>Thrust</td>
<td>18,030 lbs</td>
<td>18,480 lbs</td>
</tr>
<tr>
<td>Fuel</td>
<td>A/A + A/G Internal</td>
<td>A/G + A/A Internal</td>
</tr>
<tr>
<td></td>
<td>Only</td>
<td>External</td>
</tr>
<tr>
<td>Weapons</td>
<td></td>
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</tbody>
</table>

Planned mix of enabling and complementary capabilities to support the National Military Strategy
Multi-Role Weapons Comparison

Internal (Combat Only)

- AIM-9X
- AIM-120
- SDB
- 1K JDAM

Gun: 20 mm
480 rounds

External

- AIM-9X
- AIM-120
- SDB
- 2K JDAM
- GBU-12

Gun: 25 mm
182 rounds (CTOL)
Block 3F Certified Weapons

Note: F-35 designed with 6 external hard-points
The F-22’s ability to rapidly accelerate, supercruise, fly higher, and internally carry twice the air-to-air ordnance of an F-35A optimizes the F-22 in the air-to-air role.
F-35 Optimized for Global Precision Attack

With its multi-spectral active, passive & IR sensors, and increased payload, the F-35 is more capable in AG role.
Complementary mix of 5th Gen Fighter capabilities required for 21st century threats

F-22 delivers “Air Superiority”
- Production complete; forward deployed today
- Modernization plan to increase lethality & survivability

F-35 delivers “Global Precision Attack”
- Still in development, initial first few fielded
- Delivers Joint and Coalition capabilities

Synergy – both leverage other’s technology
- Common domain provides flexible, lethal and survivable force

Critical mass of both required

F-22A and F-35A ensure Joint Air Superiority and Global Precision Attack for the Joint Force – today and tomorrow