# Integrating System Safety into Forward Deployed Theater Operations

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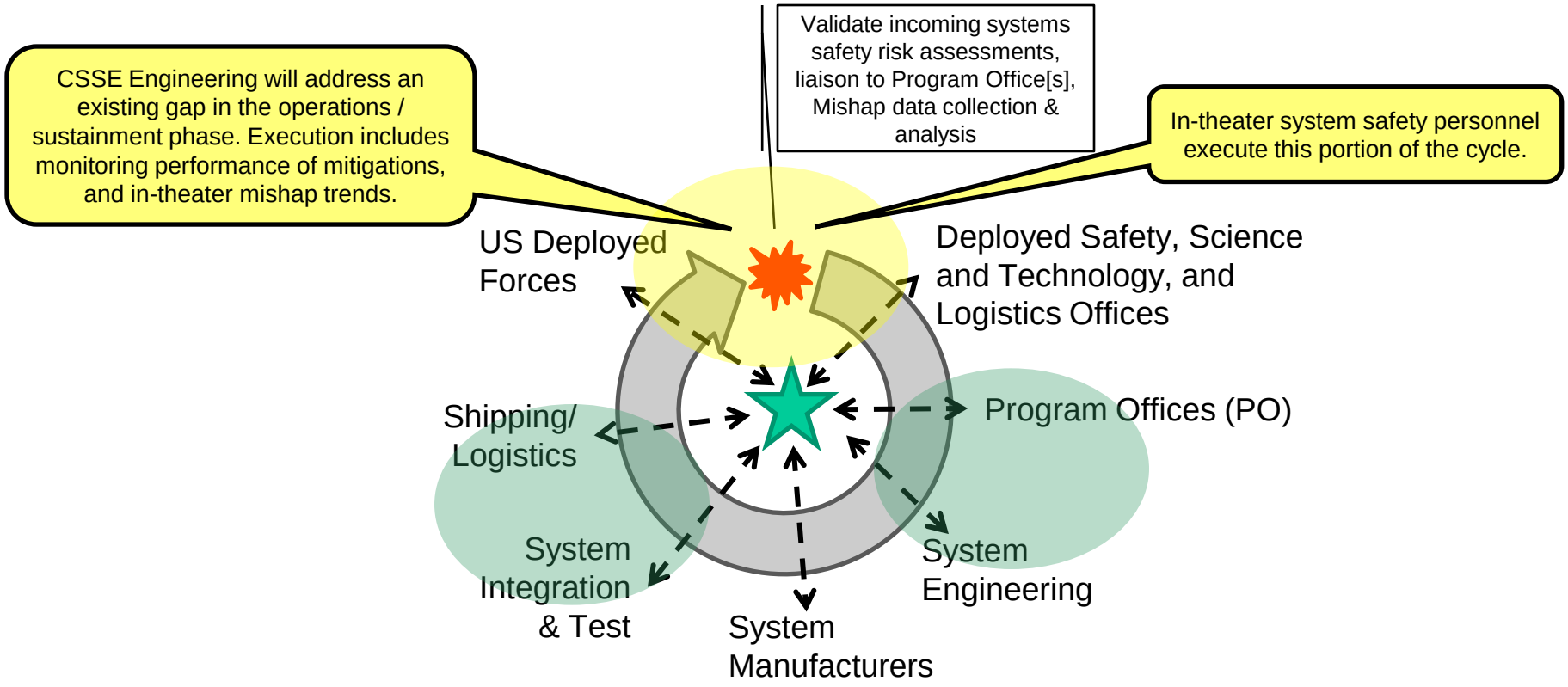
# Impacting Readiness with In-Theater Combat System Safety Engineer



# Safety Functional Areas at USFOR-A

- Aviation Safety
- Ground Safety
  - Tactical/Operational
  - Garrison
- Explosives Safety
- *Range Safety*
- **System Safety**

**System Safety Engineering**

Application of scientific and engineering principles, criteria, and techniques to identify and eliminate, or mitigate, safety hazards and manage the residual risk in system designs.

Typical safety functional areas for deployed staffs, with the addition of **System Safety**

# USFOR-A Safety Mission

- Promote, Sustain, and Enhance the Force by providing a safe and healthy environment for Soldiers, civilian employees, and contractors.
- Foster a culture where Safety and Occupational Health (SOH) are enablers of Service Member readiness and quality of life.
- Train, develop, and deliver leading edge safety services to USFOR-A Soldiers, civilian employees, and contractors.

# Enhanced System Safety Mission

- Enhance safety of the Warfighter through proactive system safety engineering assessments of new or incoming weapons and systems
- Conduct post-mishap assessments of weapons and systems to develop, or input into, engineering solutions
- Respond to DoD / CAE System Safety Authority's concerns for safety of systems of interest

# Combatant System Safety Staffing

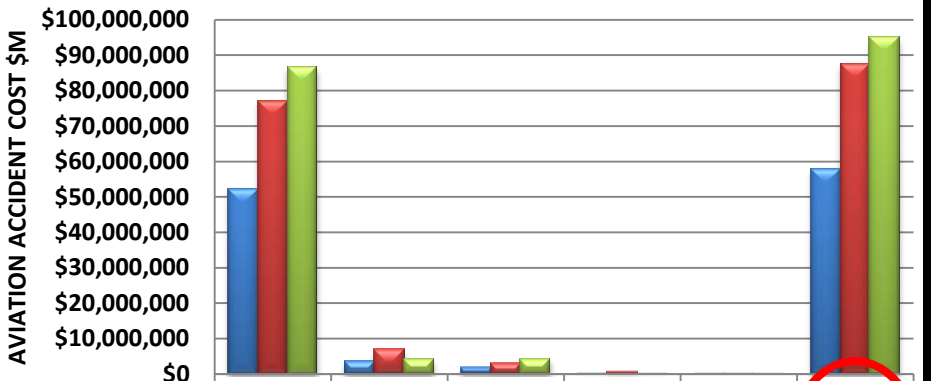
- USFOR-A Operation Enduring Freedom (OEF)
  - Personnel
    - Ms. Peggy Rogers, FY 13;
    - Mr. Mike Demmick, FY 12;
    - Dr. Tom English, FY 11
- Limited geographic COCOM CSSE's Worldwide at this time
    - USSOCOM has established a full-time SSE position
    - FORSCOM has a SSE representative providing Reach-back to OEF in absence of full time SSE's at USFOR-A

# Address the Life-Cycle Gap of JTF System Safety Engineering

- Present State of Affairs in Theater
  - Minimal field evidence of PEO / PM safety risk acceptance (Required per DoDI 5000.02 and MIL-STD-882E)
  - Limited analytical information for developing a Theater-based safety recommendation to the User
  - Urgent Needs Program(s) further exasperates Warfighter safety
  - Timeline between receipt of new systems and user concurrence with safety risk mitigations is very short
  - System safety expertise/capability needs better organizational positioning
  - No provisions for system safety reach-back to expert resources/support
  - Data and metric rich – Not being utilized
  - System Safety Engineering not synced with Service Safety Centers
  - System Safety Engineering only ad hoc participant in Accident Investigation Boards

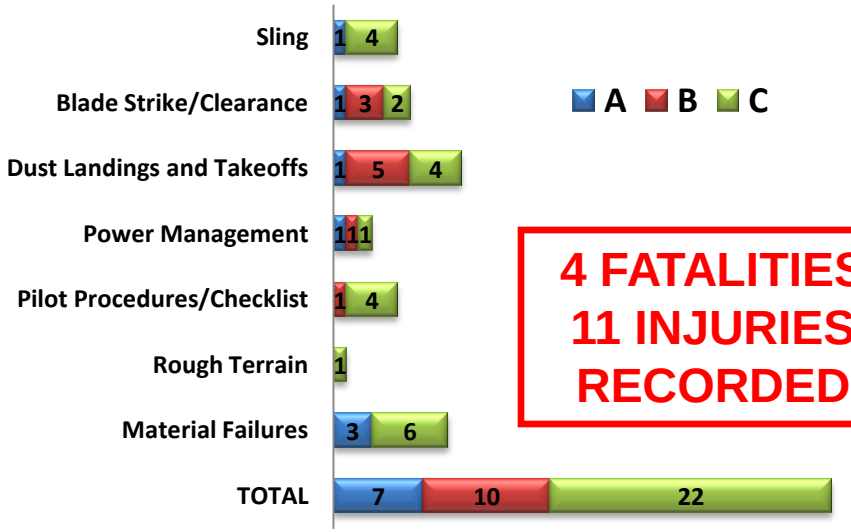
# AVIATION ACCIDENTS BY FY, COST, CLASS, & CATEGORY

## AVIATION ACCIDENT TRENDS BY COST FY-11



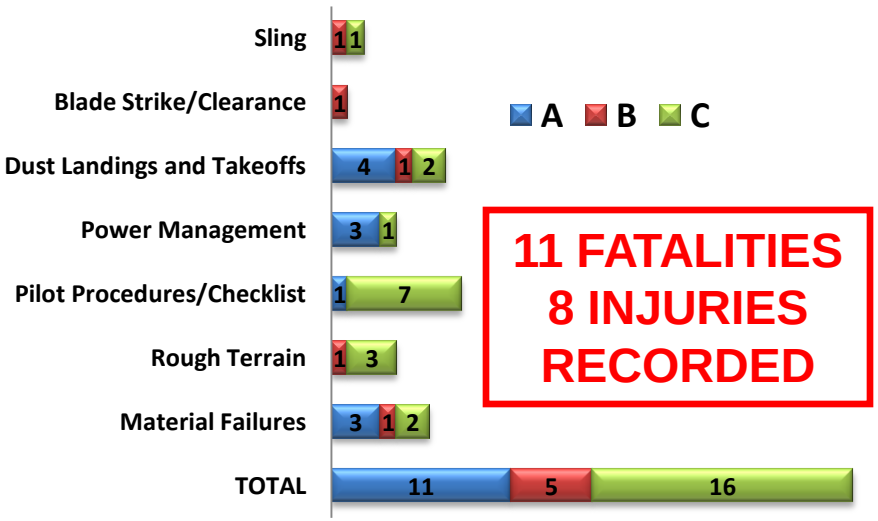

| | A | B | C | D | E | TOTAL |
|---|---|---|---|---|---|---|
| FY-09 | $52,101, | $3,718,7 | $1,837,9 | $136,963 | $11,726 | $57,806, |
| FY-10 | $76,864, | $6,798,1 | $3,076,1 | $596,516 | $12,003 | $87,347, |
| FY-11 | $86,484, | $4,154,0 | $4,224,0 | $140,800 | $1,440 | $95,004, |

## ACCIDENTS BY CLASS & CATEGORY FY-09



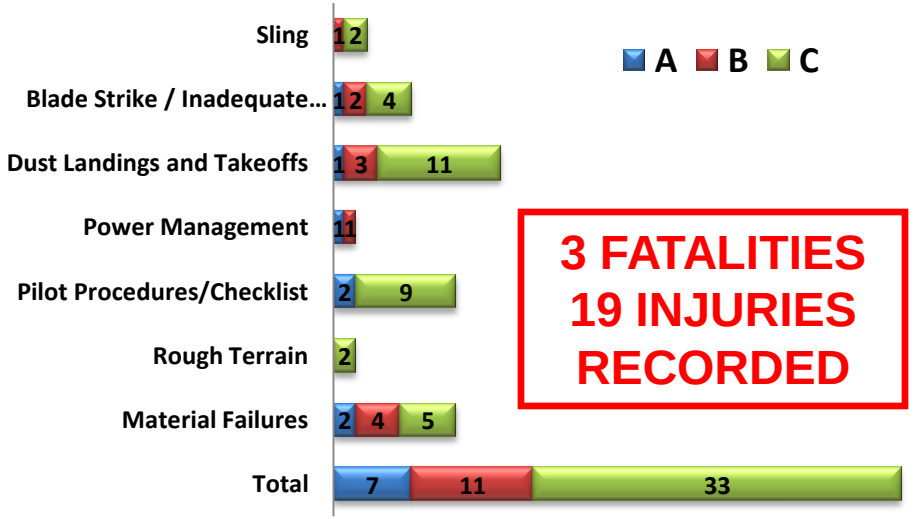

**4 FATALITIES**
**11 INJURIES**
**RECORDED**

## ACCIDENTS BY CLASS & CATEGORY FY-10




**11 FATALITIES**
**8 INJURIES**
**RECORDED**

## ACCIDENTS BY CLASS & CATEGORY FY-11




**3 FATALITIES**
**19 INJURIES**
**RECORDED**

NOTE: STATS FROM USFOR-A-SAFETY & RMIS DATA

# CSSE Future / Vision

- System Safety Manager Role
  - Monitor mishaps, conduct root cause assessments, and archive information
    - Assess Safety mishaps and accident trends
    - Staffed safety risk acceptance memorandums for Fielding Decisions by GO
    - Analyze use of systems, and safety design changes
      - Reduce mishaps & improve availability, reliability, and sustainability
    - Provide feedback loop to Acquisition PM with system metrics, etc.
    - Communicate design safety issues with weapon system Life Cycle Managers
  - Supports liaison, as needed for:
    - Service Program Managers
    - DON DASN System Safety Manager
    - DoD Service System Safety offices
    - DASD (SE) Joint Weapons System Safety Authority

USFOR-A SSE proven working model
for all forward deployed staffs

# CSSE Future / Vision (cont'd)

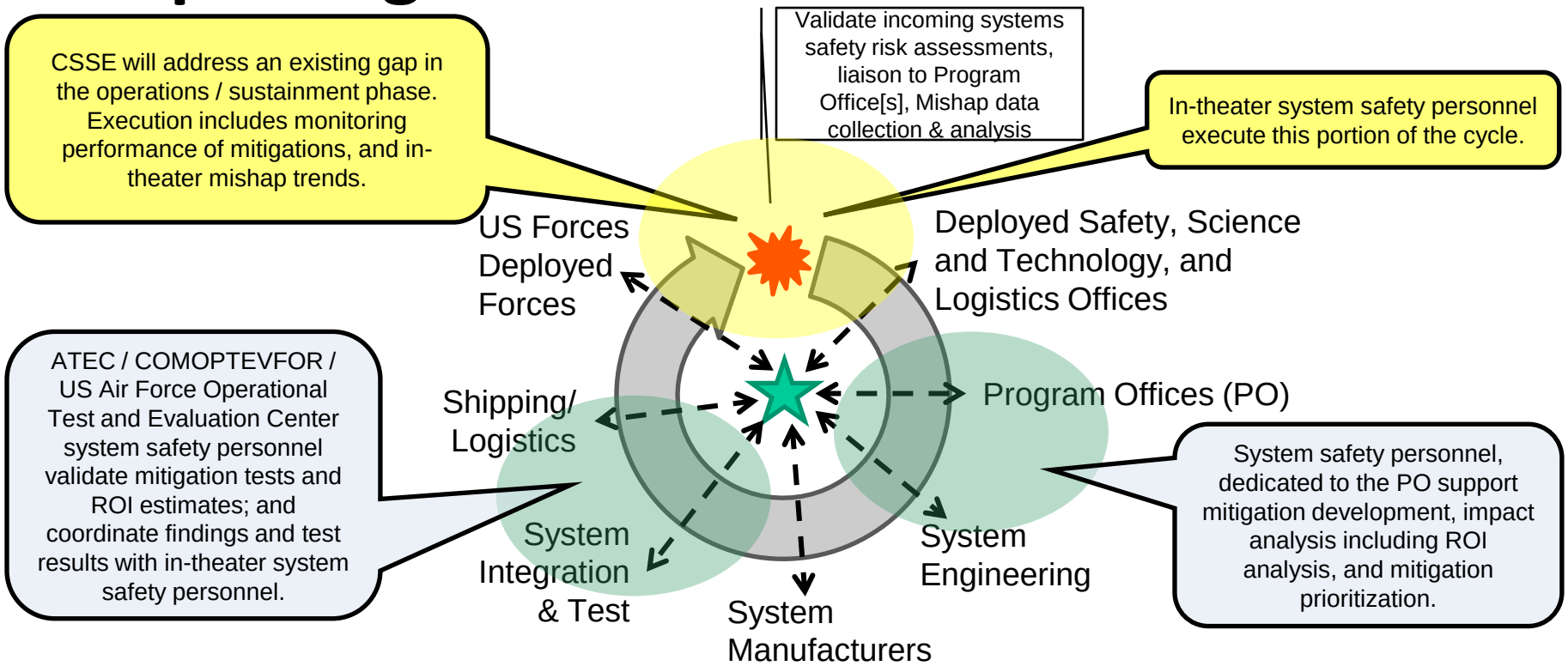
- Senior SSE Coordinator / Manager:
  - Location- Pentagon, possibly the JS (J3, J4, or J8)
  - Oversight / Coordination of all CSSE's at COCOM's
  - Policy development; Guidance; Briefings; etc.
  - Integrate with FORSCOM / CFFC / Air Combat Command & Service[s] Safety Organizations
  - Monitor combat-related mishap data to prioritize allocation of safety technology insertion
    - Synchronize safety with other priority areas e.g. survivability, reliability, etc.
- CSSE at each geographic COCOM
  - Monitor Theater mishaps for trends
  - Travel to mishap sites, gather real-time SA, and interview Users at time of mishap
  - Analyze weapons or systems involved in mishap
  - Provide safety engineering input to GO's risk concurrence decision
  - Member of pertinent AIB's for that COCOM

# CSSE Future End State

- Collect the right data - applicable to system engineering design trends
  - Data collected must be utilized for input to design changes
  - Data collection utilized for more accurate safety risk assessments
- Program Offices utilize embedded CSSE to support design corrections and risk quantifications
  - Formal feedback process required between CSSE and PO design teams
- Pertinent Safety technical data criteria to support fielding acceptance decisions
- Availability of system safety reach-back for JTF decision makers
- System Safety fully synced with Services Safety Centers
- System Safety Engineering participation on Accident Investigation Boards

# CSSE Future Vision

# Impacting Readiness with In-Theater CSSE




- Efficacy of the cycle:
  - Depends on IT tools to capture, track and leverage data.
  - Depends on the reporting hierarchy of the various safety personnel executing the cycle.
- Personnel to execute the cycle will/may:
  - Comprise an adjustment of the activities of existing personnel.
  - Requires augmenting existing deployed theater staff with SSE expertise.

# Questions?