

# Lead Free Solder Summit

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ACI - Philadelphia PA

## Air Force Program Status on Lead Free Solder



**U.S. AIR FORCE**

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# Air Force Program Status on LFS

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- Purpose
  - To share “the state of affairs” regarding LFS in the AF community
  - Or, “The World According to Tim”

# Outline

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- Big Picture Perspective
- History
- Risk To AF Programs
- Current Events
- Future Activities
- Conclusion



# Big Picture Perspective

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- USAF
  - Air Combat Command (ACC)
  - Air Mobility Command (AMC)
  - Air Education and Training Command (AETC)
  - Air Force Space Command (AFSPC)
  - Air Force Special Operations Command (AFSOC)
  - Air Force Reserve Command (AFRC)
  - Air Force Material Command (AFMC)
    - HQ AFMC Staff
    - Air Logistics Centers (ALCs) (AF Depot repair done here!)
      - OO-ALC, OC-ALC & WR-ALC
    - Field Operating Agencies
    - Laboratory
    - Specialized Centers
    - Test Centers
    - Mission Areas
    - **Product Centers**



# Big Picture Perspective

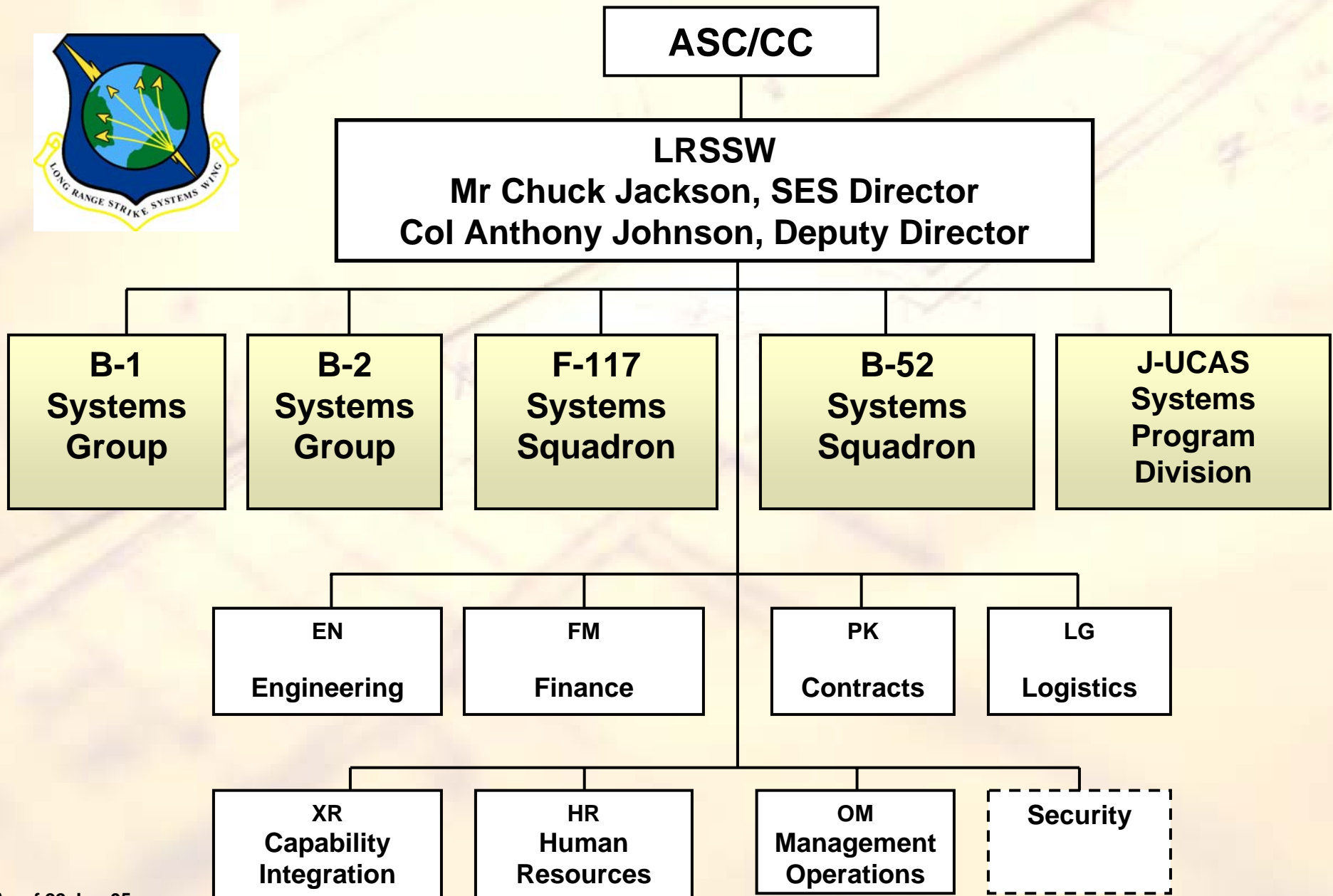
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- **Product Centers**

- Space and Missile Systems Center (SMC)
- Electronic Systems Center (ESC)
- **Aeronautical Systems Center (ASC)**
  - » Located at Wright-Patterson AFB, Ohio
  - » Responsible for Development & Acquisition of Air Force Weapon Systems
  - » Recently Reorganized from System Program Offices (SPOs) to Wing/Group/Squadrons



# Long Range Strike Systems Wing (LRSSW)



# History

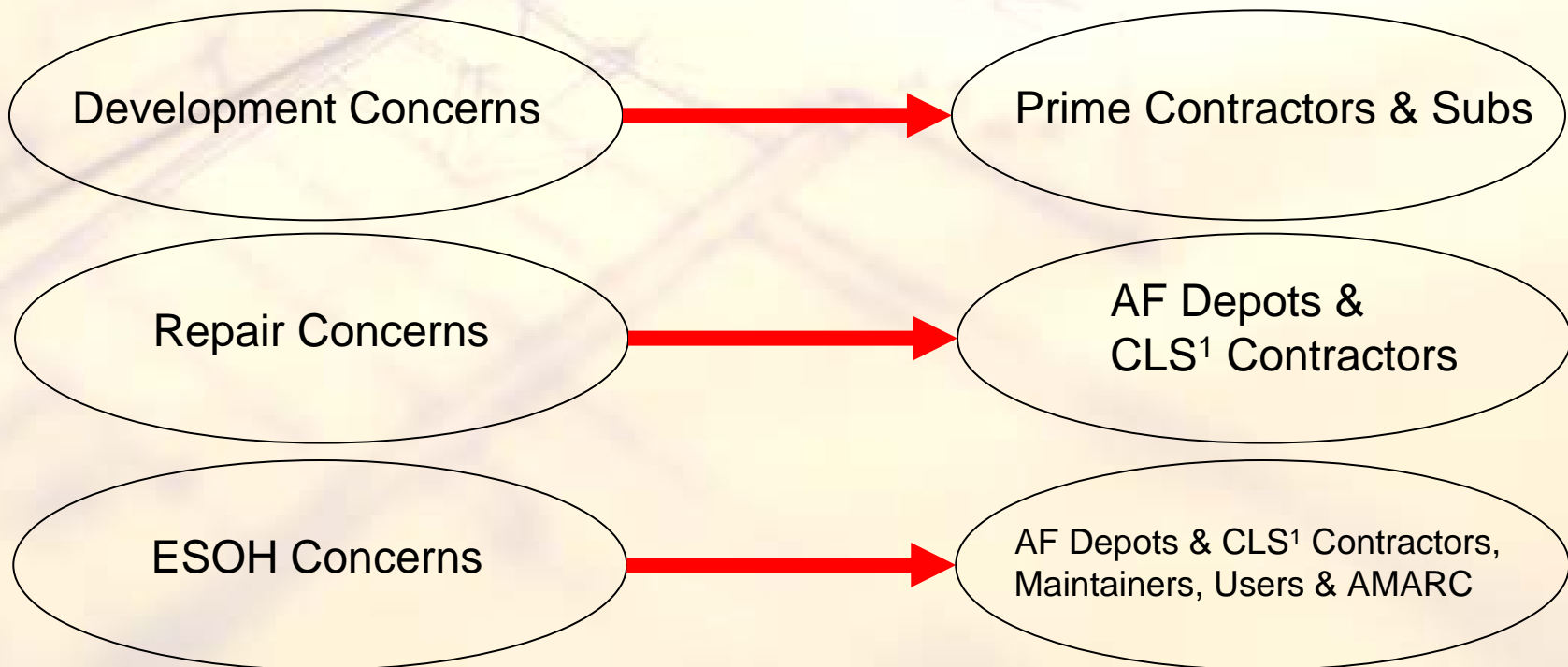
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- How did Tim get involved with LFS?
  - JTP Review (JG-PP project) by ASC programs in Spring 03
  - Fall 04 JG-PP Meeting at Harris, Melbourne FL
  - Telecons
  - Mar 05 JG-PP Program Review at ACI in Philadelphia
  - July 05 LFS Summit at ACI

# Risk To AF Programs

- LFS parts “showing up” in new developments & new modifications
- Repair of “known and unknown” LFS parts

**RISK AREAS**



<sup>1</sup> Contractor Logistic Support

# Risk To AF Programs

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- Depot & CLS Repair
  - LFS Alternatives not qualified (to anything!)
  - LFS Alternatives not compatible with Leaded Solders
  - Component Finishes can be Lead Free
  - Configuration Control
    - Leaded vs. Lead Free circuit cards
    - Not all Manufacturers marking components and/or boards
  - Logistics
    - Operating Temperature (of soldering devices)
    - Flux (new consumable item?)
    - Training
    - Equipment (solder tips)
    - QA inspections
    - Technical Orders (T.O.s) Revisions

# Current Events

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- Within the LRSSW
  - Informational Briefing to Technical Leaders of B-1, B-2, F-117, J-UCAS & B-52 SOJ
    - Variety of reactions
      - B-2 Northrop Grumman folks unaware of the LFS issue prior to brief in Fall 04, participating in Telecons since then
      - B-1 Boeing waiting for direction from Air Force
      - B-1 Manufacturing Involvement
        - » Modification Programs have been queried
        - » Concern about LF Components
          - Radar (NG) identified LF components
      - F-117 Safety person now participating in Telecons

# Current Events

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- Other Wings/Groups/Squadrons at ASC
  - Fighter Attack Systems Wing
    - F-16 System Group
      - LM Aero not currently advocating a transition to LFS
      - LM Aero fully engaged with JG-PP LFS Project and AIA preparation of standards for transition to LFS
      - Completion of LFS activities may result in LM Aero transition to LFS
      - Continuing to monitor and will participate, as appropriate, in LFS activities
    - F-15 System Group
      - Initiated the USAF Lead Free Solder Airworthiness Advisory
      - Currently not promoting the use of lead-free solder
      - Attempting to initiate a study of depots to discover whether or not there really is LFS in maintenance stream
    - F-35 System Program Office (JSF)
      - Contractual language established & being used
      - Guidance Document for Vendors
      - See F-16 System Group comments above!

# Current Events

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- Mobility Systems Wing
  - C-17 System Group
    - Boeing (C-17) working issue
  - C-5 & C-130 System Group
    - LM Aero actively working
- Propulsion System Squadron
  - Issue being discussed at PEWGs w/ Boeing
- Special Operations Forces Systems Group
  - Boeing (CV-22) actively monitoring risk

# Current Events

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## – Training Aircraft System Group

- Engineering/Manufacturing/Logistics review of JTP in Mar 03
- Active member of JG-PP initiative
- May 05 update & Airworthiness Advisory review to TASG Leadership

## – F/A-22 System Program Office

- Awaiting AIA Specs
- Aware of JSF contractual language
- LM Aero to allow LFS components if they meet specs
- LM Aero (F/A-22) fully engaged

# Current Events

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- Airworthiness Advisory from ASC/EN
  - Summary:
    - Lead-free solder considered a flight safety issue
    - Move to Pb-free can create manufacturing and operational complications
    - Mention of Joint Council on Aging Aircraft project
  - Issued May 05 to ASC Technical Leadership chain
  - Drafted by Capt Drew Clewett (F-15 Env Mgr)
  - Raised Awareness of the issue

# Future Activities

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- “*Endeavor to Persevere*”
- “Wait and see” attitude appears to be changing
- Depots must be engaged
- JG-PP LFS project participation
- AIA Involvement
  - Contracting & Supply Issues of LFS

# Conclusion

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- ASC awareness of LFS issues increased since Fall 04
- AF Contractors and Subs more aware and taking action to be prepared
- Depot Repair risks remains a concern

# Questions

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