Distributed Test Operations:
Lessons Learned from Geographically Separated Control Rooms

Matthew Bond
AFSEO
Eglin AFB, FL

Arlene McKee
96 RNCS
Eglin AFB, FL
Overview

- What/Why
  - Framing the Issue
  - What is the Benefit
  - Development: Where are We At / Going

- How
  - Establishing Eglin – Edwards Link
  - Challenges
  - Lessons Learned
  - Future Considerations
Framing the Issue

AFTC – Strategic Goal # 1
Unite the geographically-separated testing sites around the country into “One Enterprise Team”

• Air Force Test Center (AFTC)
  • Recapitalize existing resources across the test enterprise
  • Utilize engineering expertise regardless of location
  • Reduce duplication of test efforts & assets

• Distributed Test Operations (DTO)
  • Take advantage of personnel, facilities and resources
Potential Scope

Edwards AFB
- Aircraft EMD Specialty
- 5th gen flight test

Eglin AFB
- Weapon focus
- 4th gen integration
- AFSEO
What is the Benefit

**AFSEO Support at Edwards**
- 2+ days of travel per DE
- TDY costs
  - (Hotel, Per diem, Cars)
- Engineers not at desk
  - (Travel days & Flights)
- Potential for mission cancellations
  - (Maintenance, Weather)

**Utilizing IRDS**
- No time lost for CANX
- Can train 10+ personnel
- Cancellations
  - Personnel can return to work
  - Resources can be reallocated
- Costs:
  - Complete mission: ~$2k
  - Canceled mission: ~$1k
  - Non-schedule: ~$50
**Development: Where are We At / Going**

- **Initial Approach – Non-Interference**
  - System Development, Proof of Concept
  - Remote Control Room Demonstration
  - Observing Missions in Real-Time
  - AFSEO Training

- **The Next Step – Remote Mission Execution**
  - F-16 Flutter Test: Acft Ops @ Edwards / Control Room @ Eglin
  - Not Truly a “DTO” Event

- **The Endgame – Multiple Active Control Rooms**
  - True DTO with Mission Personnel Active at Multiple Locations
Started off as a Proof-Of-Concept

Could Seek Eagle (SE) monitor missions remotely at Eglin?

- Mission support crew at Edwards
- TM database/display files
- Discipline Engineer monitoring at Edwards
- Team DE monitoring at Eglin
- Analyze Data
  - A/C TM Data and A/C TM Video
  - Weapon Data
- Listen/Talk on COMM nets
Eglin-Edwards Link

- **Equipment Requirements**
  - Utilized Telemetry Network processor
  - Utilized DREN nodes
  - MOA/ATO establish
  - Established Network Encryption
  - Identified specialize equipment
  - Various TM video decoding needs
    - Different A/C Instrumentation
    - Utilized same COMM system

- **Database and Displays:**
  - IRIG Standard – TMATS
  - IADS standard display system both ranges
  - Manually developed database attributes
DTO Mission Supported

- Seek Eagle Demonstrations – Streamed to Eglin
  - F16 – 17 Scheduled, 6 Completed
  - F35 - 44 Scheduled, 20 Completed
  - F22 – 14 Scheduled, 3 Completed

- Other DTO – Streamed to Edwards
  - F35 – 6 Scheduled, 4 Completed

- Raytheon support – Streamed to Tucson
  - Via SDREN → TM data only
Challenges Overview

• Execution Level
  • Control Room Operations
  • Control Room Training
  • Mission Briefing
  • Scheduling
  • Cancellations

• Enterprise Level
  • Who owns the test?
    • Aircraft OG?
    • Control Room OG?
  • Safety Process
  • AFTC vs TW Range Priority
  • Test Conduct Stds
Facilities and Control Rooms Challenges

- Facilities and Control Rooms Setup
  - Unique A/C instrumentation requirements
  - Differences in range SOP, Culture, and Language
  - Time Differences
  - Non Existent de-confliction process
  - Additional coordination of COMM line checks
  - Growing pains with COMM usage
  - Data line check coordination
  - Missions setup file changes
  - File transfer process
  - No non-TM – range maps
  - No additional video (non-TM)
  - Local and remote mission assets coordination
Facilities and Control Room Considerations

- Standardized equipment
- Standardized Display Software
- Standardized formats – PCM Definition
- Scheduling Business rules for DTO?
- DTO mission scheduling priority
- Establish link integrity in Mission Room
- Establish business rules for DTO mission support files
Execution Challenges (in the weeds)

- **Control Room Operations**
  - Remote vs. Split
  - Roles & Responsibilities
  - Human Factors
    - Team familiarization
    - Non-verbal comm
    - Phased approach
  - TC & DE Training (Trust)

- **Other Issues**
  - Mission Brief
  - Late Schedule Changes
  - Mission Cancellation
Enterprise Challenges & Considerations

- Test Approval Authority
  - Which org has final approval?
- Safety Approval
  - How many safety reviews do we need?
- Scheduling
  - “Center” Scheduling Enterprise
- Range to Range Priorities
- Financial
  - How do programs pay for all this?
  - Moving funds have been an issue
  - Need for a singular accounting system?

Who owns this test??
Operators?
Range?
Control?
What’s the path forward?

- **Short Term**
  - Continued training of AFSEO personnel on 5th gen test
  - Expanding AFTC knowledge of 5th gen test beyond Edwards
  - Utilization of IRDS for large test programs

- **Long Term**
  - Developing the one enterprise goal
  - AFTC Distributed CONOPs & Instructions
  - Easier multi-base testing
    - Scheduling Programs
    - Money Transfer
    - Training Qualifications
What’s the path forward?

• Leadership Emphasis for Edwards and Eglin DTO Support

• 96TW Long Range and Short Range Initiatives
  • Several 96 Test Wing initiatives currently being addressed for the integration of Edwards and Eglin DTO missions

• AFTC – DTO instruction/policy/SOP Initiatives

• AFTC – Center Scheduling system initiatives
Thanks for your support!

- 412th Test Wing
  - 412 RANS
  - 416 FLTS
  - 773 TS/ENFS
  - 411 FLTS
  - 461 FLTS

- 96th Test Wing
  - 96 RNCS
  - Air Force SEEK EAGLE Office
  - 40 FLTS

QUESTIONS?