



# ***National RCS Test Facility***



***Developing, Fielding and Sustaining America's Aerospace Force***

***National RCS Test Facility (NRTF)***

***704 Test Group***

***Detachment 1***

***Lt Col Jeff "Hammer" Dennison***

***Commander***



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## ***NRTF Mission & Vision***



- **Mission:** The National Radar Cross Section (RCS) Test Facility (NRTF) securely provides our national defense partners with accurate, impartial, and timely:
  - RCS Measurements
  - Antenna Patterns
  - Comprehensive Data Products
  
- **Vision:** *Enable strategic access to contested airspace through test and evaluation leadership in RCS and antenna patterns—providing affordable knowledge for tomorrow's warfighter*

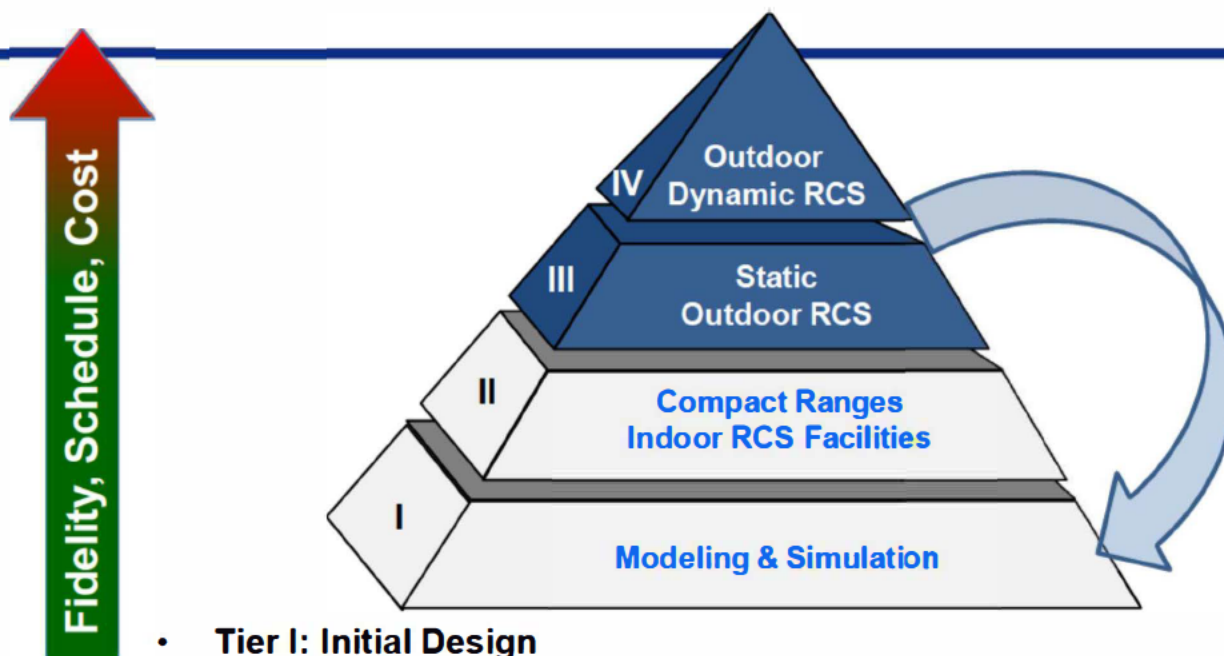
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## RCS Measurement Pyramid



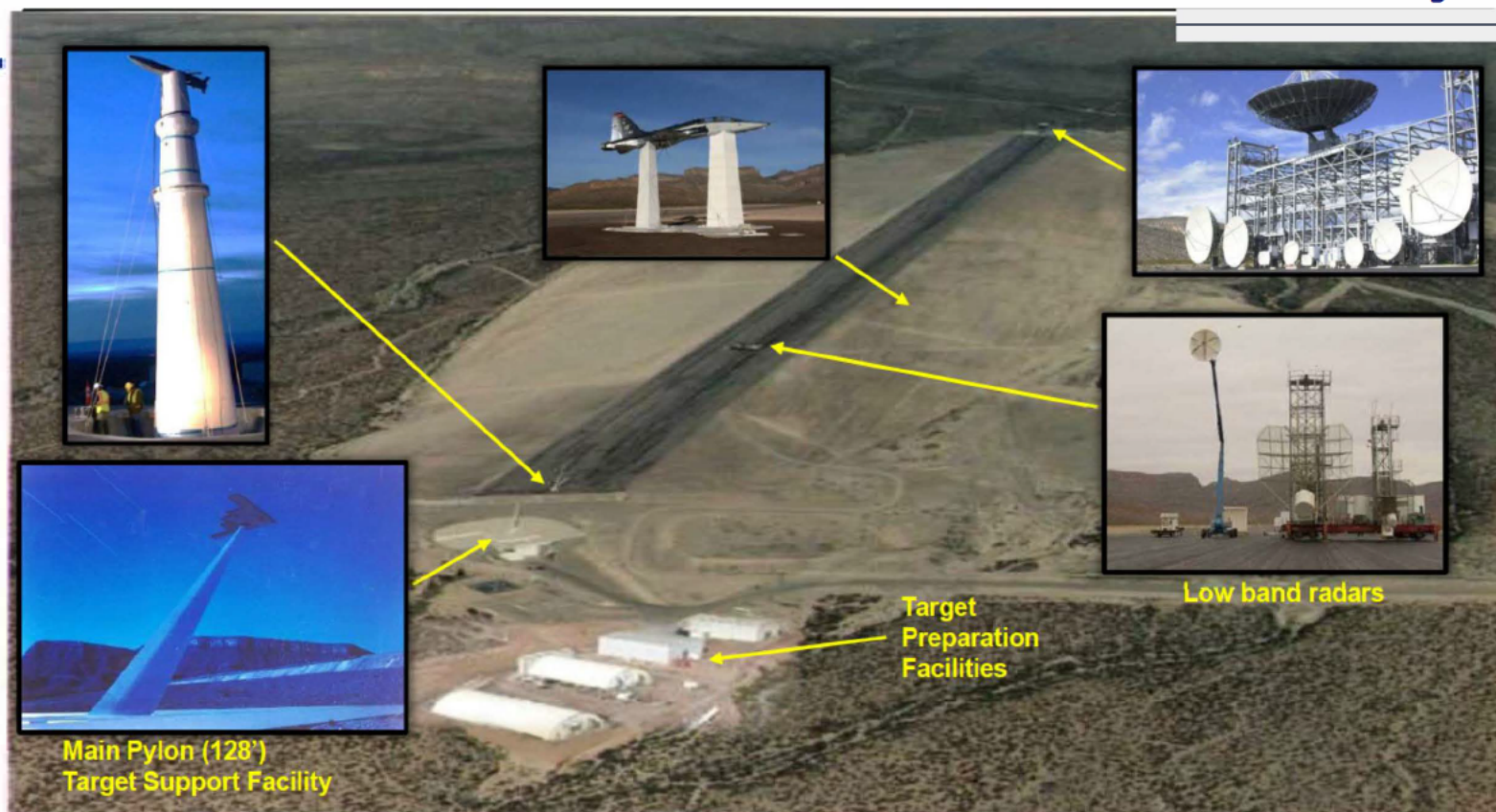
- Tier I: Initial Design
- Tier II: Material property tests, freq limits, small models, unlimited radar timeline ☐ fine details
- Tier III: Full-scale/large-scale, far field, all bands of interest, unlimited radar timeline ☐ fine details
- Tier IV: In flight (dynamic), most operationally representative but less fine details

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## RAMS Layout



**Note: while image depicts USAF customers, NRTF tests multi-domain and multi-service systems**

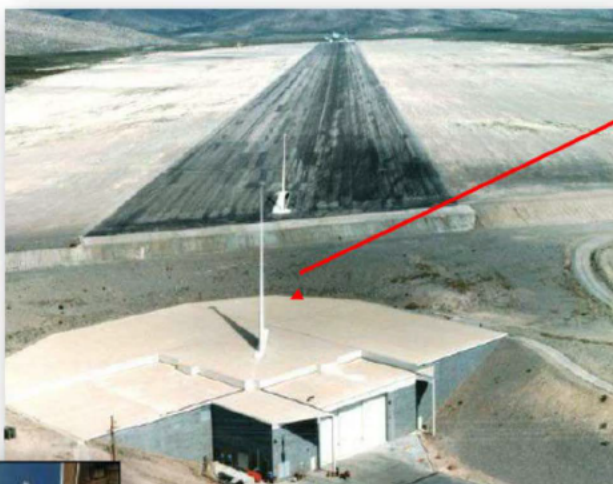
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## Main Pylon Target Mount

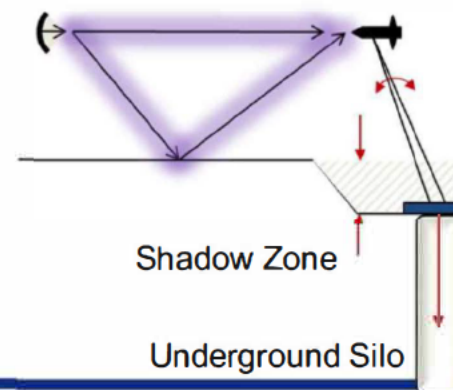


### Main Pylon

- 128 ft. retractable pylon,
- Typical 60 ft. target height (waterline)
- Rotator Configurations:
  - R26.5 - 11" dia., 1.5k lbs.
  - R50 - 22" dia., 3k lbs.
  - R76 - 33" dia., 6k lbs.
  - R/M140 - 60" dia., 21k lbs.



Penetrable  
Targets on the  
Pylon



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## Target Mount Pits 2 & 3



- Pit 2: 20' turntable, 360° Az, 20k lbs.
- Pit 3: 40' turntable, 360° Az, 60k lbs.
- Full scale flyable a/c, scaled models, and munitions
- Ground based vehicles (e.g. APCs)
- 0.2 to 0.6 deg/sec rotation, 0.007 deg accuracy



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# Radar Systems



## Agile RCS and Antenna Gain Measurements

Custom instrumentation radars 60 MHz – 18 GHz

- RVUMS: 60 to 600 MHz
- RCMS: 600 MHz to 18 GHz
- Full linear polarization (HH, HV, VH, VV)
- Narrowband (RCS) and wideband (imaging) waveforms available

RVUMS radar (VHF/UHF-band)  
60-600 MHz



Configurable RFMS mobile radar  
.06 - 18 GHz



RCMS radar (UHF to Ka-band)  
.6 – 18 GHz, 34 – 36 GHz



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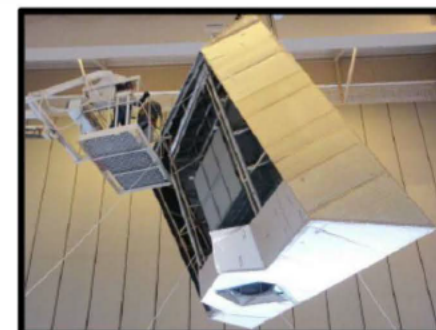
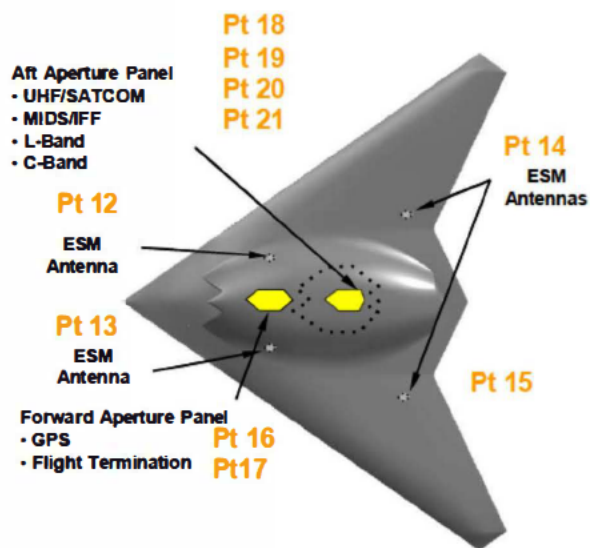




## Antenna Measurements



- Unique antenna measurement capability
  - Standalone and *in situ* antenna pattern/gain measurements
  - Standalone and *in situ* RCS measurements
  - 68 MHz to 18 GHz



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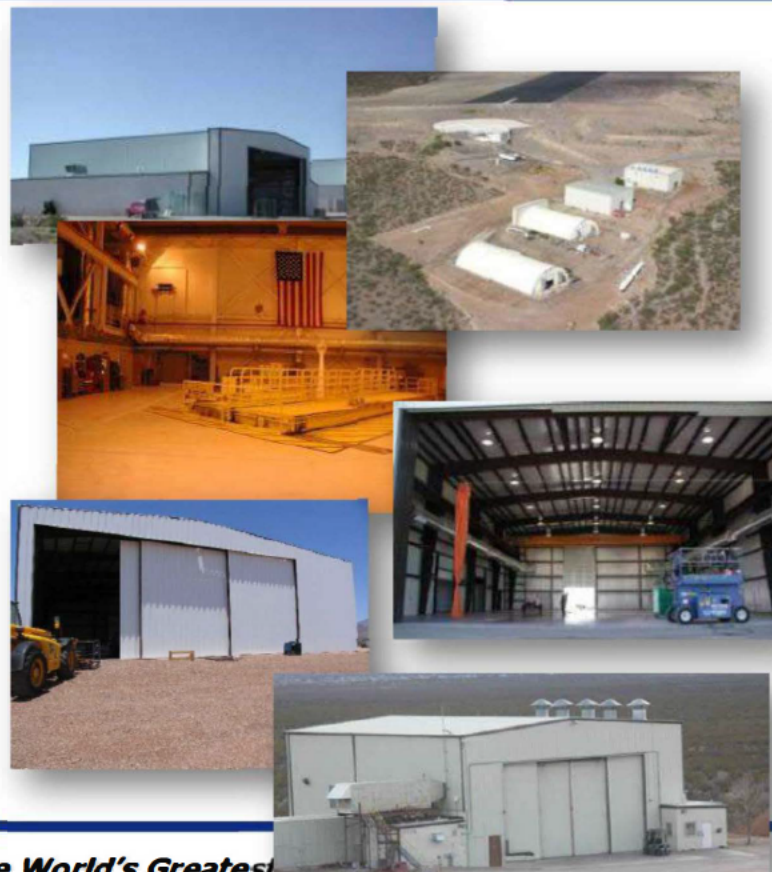




## Range User / Target Support



- Four target prep facilities
- Two paint shops
- Two target storage building
- Photo support
- Model Shop / Machine Shop
- Computer use for data processing
- TS/SAP secure data processing
- HAZMAT and HAZWASTE Mgmt
- Site physical security
- Safety oversight

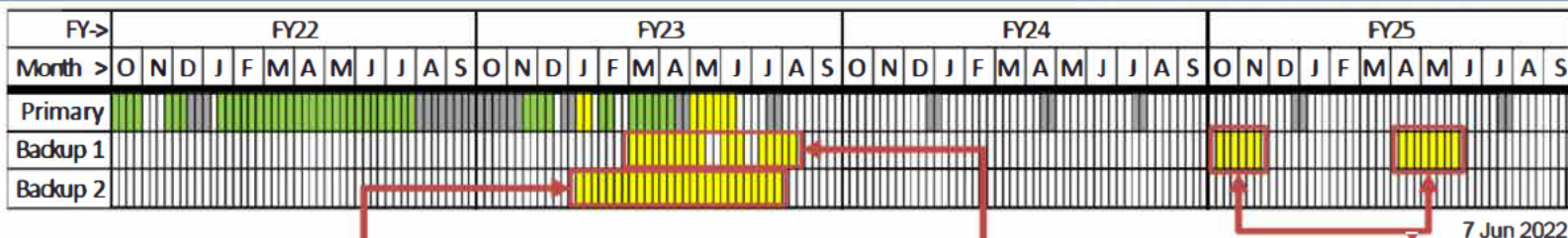


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# Static Test Schedule



## ACAT 1 POR

- 28-week test request placeholder
- Range priority
- LOA in final coordination
- Not consecutive, will be divided throughout FY23 & FY24

## Multiple Efforts

- **One-off Customers**
  - Secondary priority
- **“IRAD” Ktr-led test efforts**
  - Tertiary priority
  - Pending ACAT 1 POR schedule, will likely push into FY24

## New POR Request (Early Planning)

Largest demand signal in recent history. Anticipating full schedule though FY25.

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- **Rollup Timeline**
  - **Advanced RCS Metrology Radar (ARMR)**
  - **Low-VHF Array**
  - **Ka Upgrades (RVUMS) / Recap (RCMS)**
  - **Target Flip Facility**
  - **Test Engine RCS Development Stand**
  - **Dynamic RCS Measurement System (DRMS)**

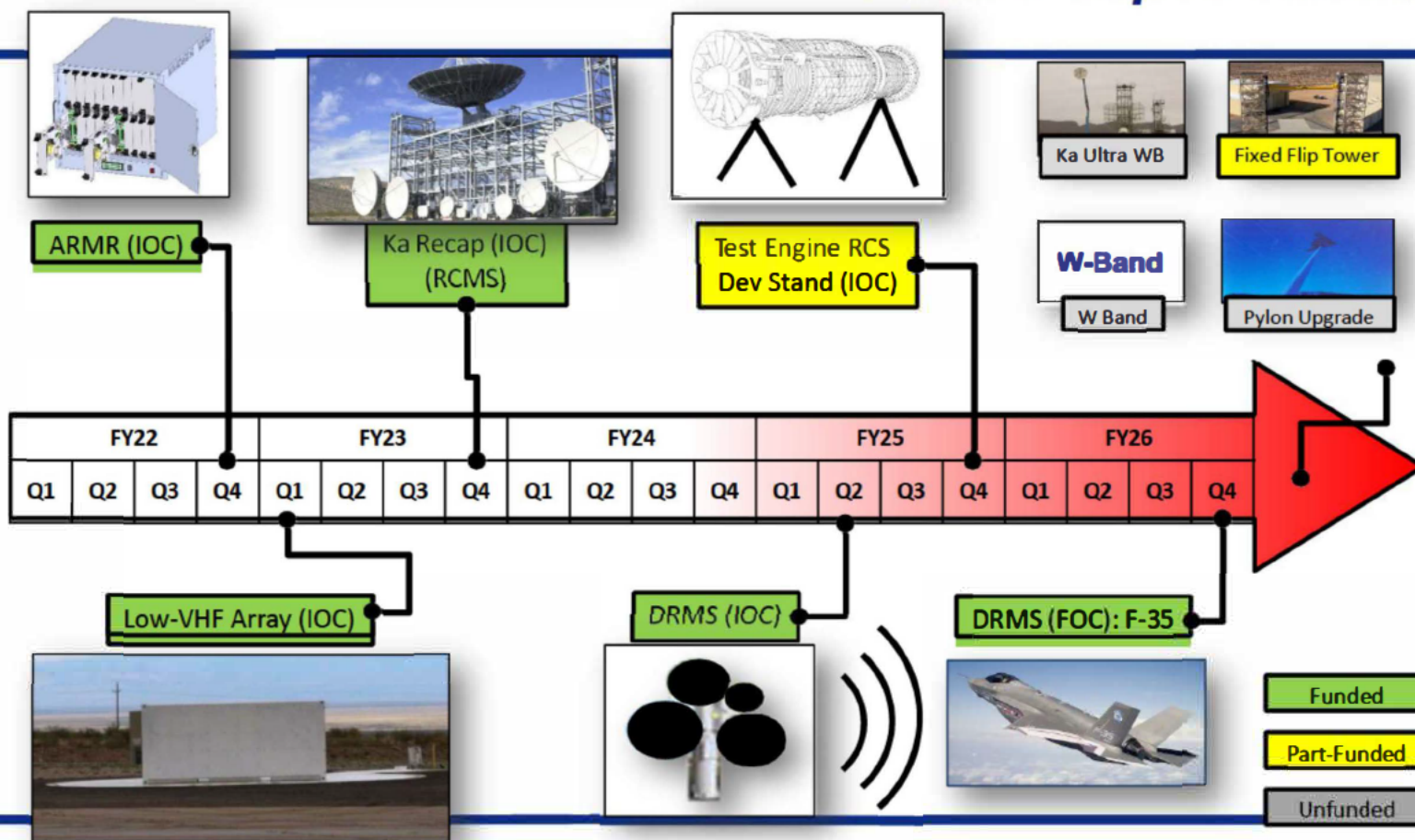
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## Future Capes Timeline



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Team NRTF: Making America Safer... One dB at a Time

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