

# AGI USER EXCHANGE

EAST • WEST 2006

## GMD Flight Test Operations FTG-02

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BOEING TEST & EVALUATION

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# STK in GMD - Background

- Recognition by Test and Evaluation team of need to find a way to clearly explain real-time Integrated Flight Test Operations to our customer.
- Subsequent realization by management that our complex architecture could be better explained through scenario visualization.
- Decision was made to use STK to satisfy these visualization requirements.
- Later discovered the need for video post-processing to enhance the STK AVI video and to generate a complete deliverable product on popular media types.

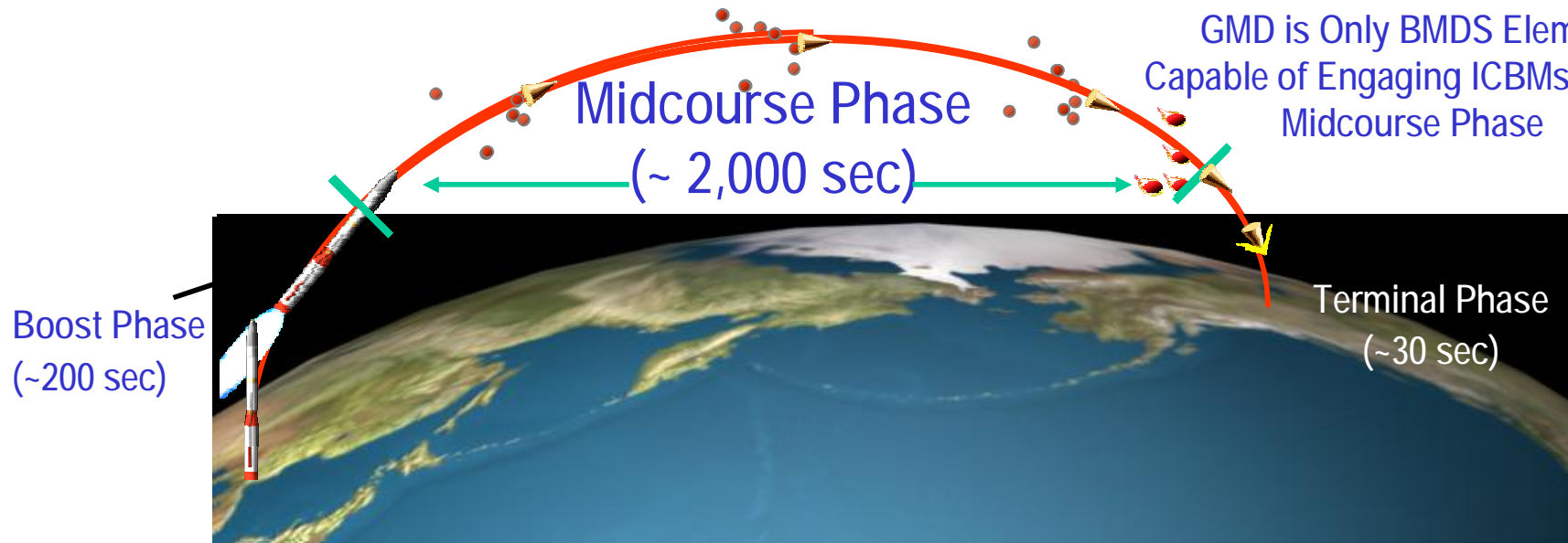
# Challenge – Software/Hardware

- STK Software –Advanced VO, PRO, CAT, Chains, Connect, Coverage, MMT, FOTE and FOTE-Advanced, and Terrain.
- Hardware – Dual 3.6-GHz ZEON PC, Dual 21-inch Samsung Flat Panels, NVIDIA Quadro FX-4400 video card w/ 524 MB RAM, SATA and SCSI hard drive disk arrays.
- Video Processing – DPS Velocity nonlinear editor w/ DPS Quattrus PCI card; DPS breakout box; VHS, S-VHS, and BetaCam SP video recorders; Sony DVD±R drive, Mackie mixer, and Sony studio monitor.
- Additional Software – MATLAB, Photoshop, Illustrator, Thumbs Plus, SnagIt, Premiere, DVDIt!, SmartSound and LightWave.

# Phases of a Nominal Ballistic Missile Flight

## GMD = Ground-based Midcourse Defense

GMD is Only BMDS Element Capable of Engaging ICBMs During Midcourse Phase



*Boost Phase*

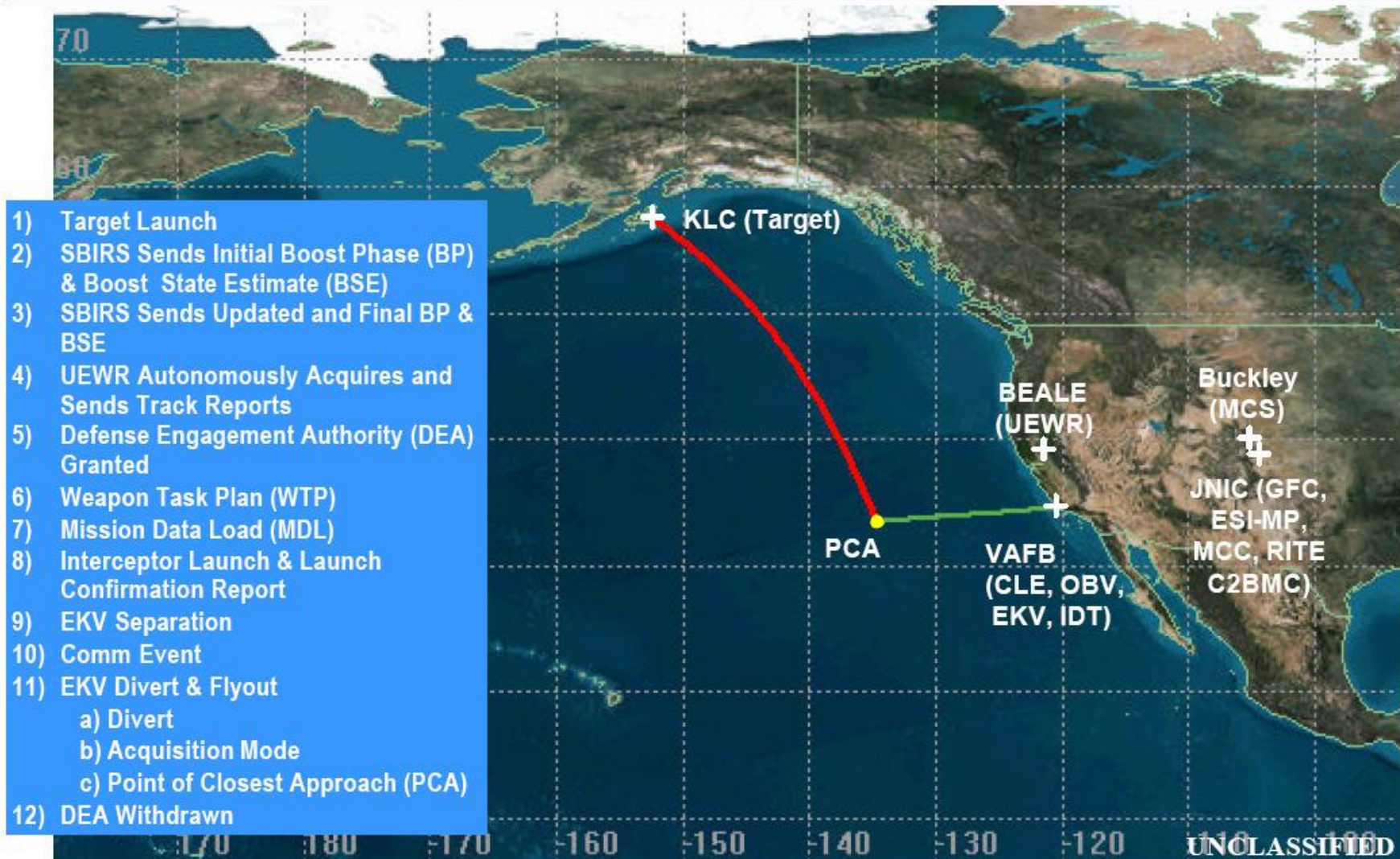
*Midcourse Phase*

*Terminal Phase*

- Booster Burnout to Threat Reentry Into Atmosphere, Regardless of Range
- Threat Detected / Tracked by Heat Signature and / or Radar Signature



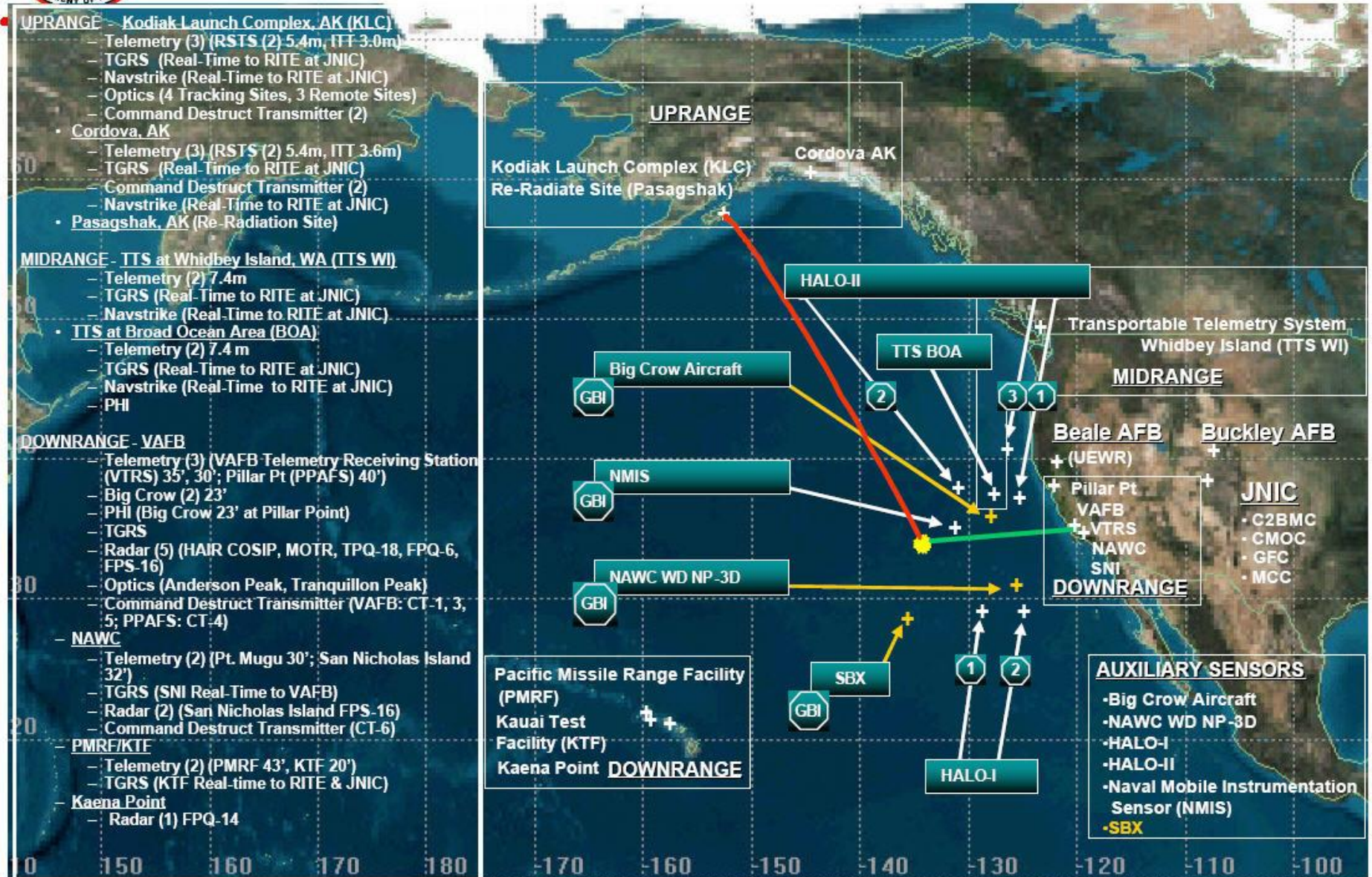
# FTG-02 Mission Overview





# FTG-02 Configuration

## Test Resource Range & Instrumentation Requirements



# STK in GMD – A Sequential Process - 1

- Understand the mission
- Create/update the scenario
  - Ephemeris files
  - Object models
  - Photomaps
- Develop scenario variants
  - Radars, telemetry, and communications on/off
  - Ocean/water world
  - Space sensors
- Use Camera Control
- Capture AVI vignettes

# STK in GMD – A Sequential Process - 2

- Array STK AVI vignettes in DPS Velocity nonlinear editor
  - Add appropriate video footage
  - Add voiceover clips
  - Add background music to match the scene
- Render, render, render...
- Prepare distribution media
  - Create AVI or WMV files for CDR
  - Create MPG2 file for DVD
  - Copy to video tape
- Distribute to VTC centers and other program customers

# STK in GMD – Video

- Show video:

***FTG-02***

# STK in GMD - Conclusion

- Questions?

Satellite Tool Kit has proven to be a very flexible analytical and visualization tool that can be readily adapted to meet management needs on a quick reaction basis.

# Contact

- For additional information:

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