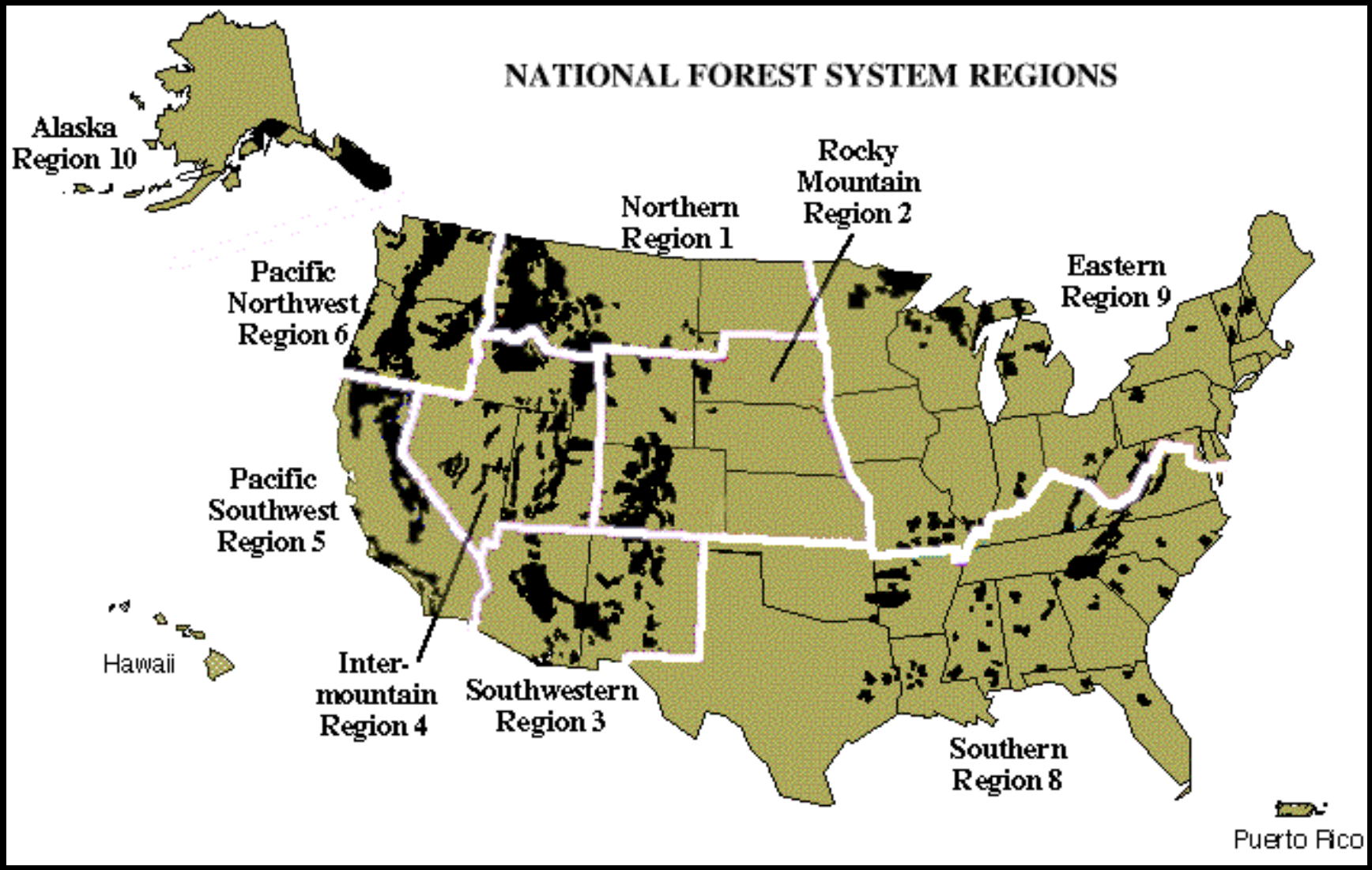
Introduction to USFS Remote Sensing Aircraft

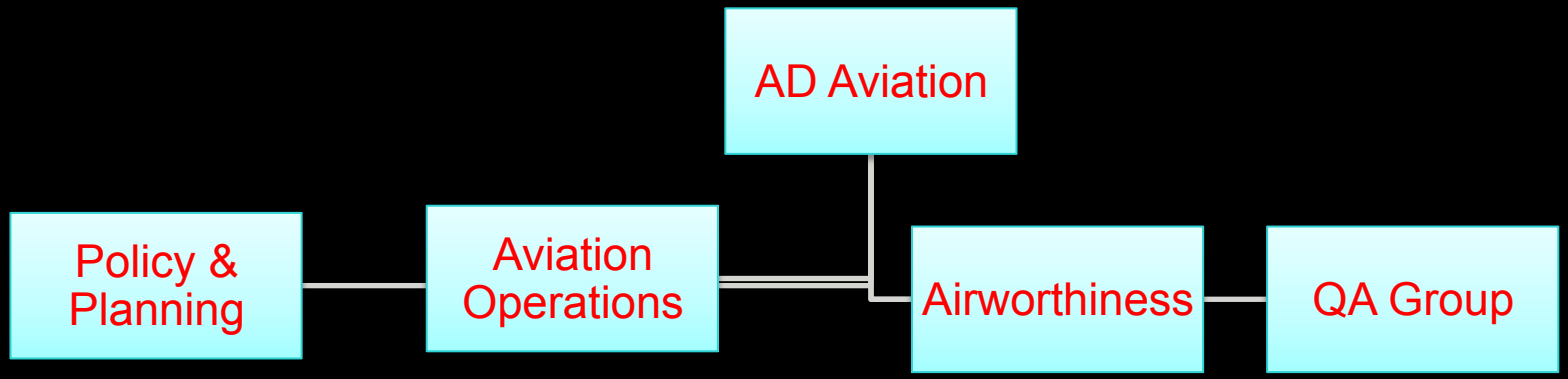
Presentation to the Spring 2011
ICCAGRA Meeting 5/10/11

US Forest Service Organization



FS Aviation Organization

- Art Hinaman is the Asst. Director Aviation
- All FS aviation is under this AD area.



Introduction

- Owns and operates 27 aircraft and helicopters
- Contracts with over 800 aircraft and helicopters annually
- Missions Include:
  - Fire surveillance
  - Aerial reconnaissance
  - Air Attack
  - Delivery of smokejumpers
  - Firefighter and cargo transport
  - Aerial delivery of retardant and water
  - Natural Resource Management
  - Research

FireWatch

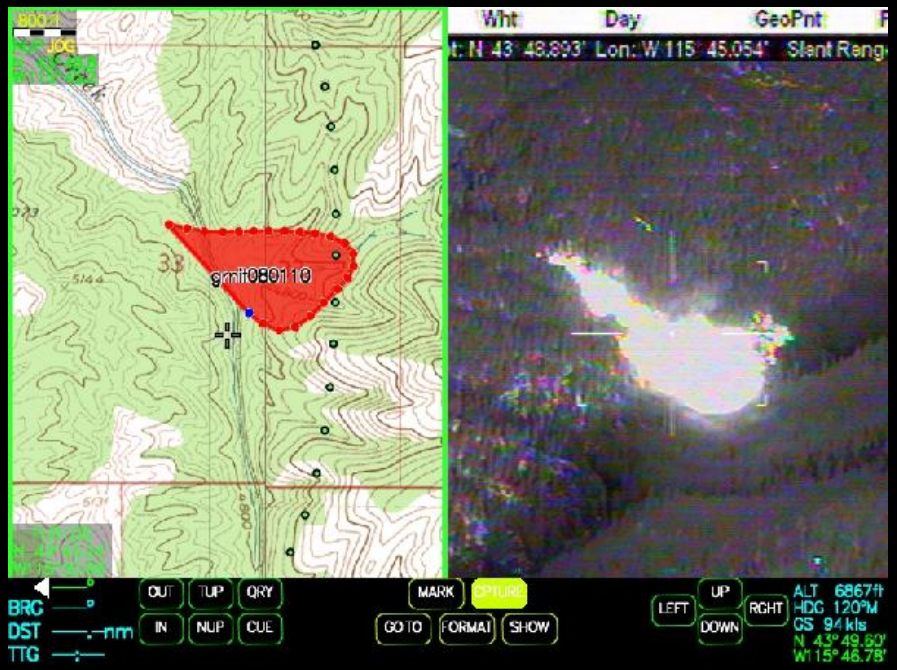
Flight Rate - $2200.00 per hour
Support Vehicles (2) $0.40 per mile
Contact Stan Kubota skubota@fs.fed.us

- Surplus AH-1 Cobra attack helicopters
  - Two in operation
  - Extensive refit for Air Attack and Mapping operations
- Microwave and sat phone transmission of data
  - Microwave for live video feed to data van at ICP
- ROVER units for live data feed to line personnel

Sensors

- **FLIR Star Safire III**
  - 3-5 µm band (Mid-IR)
  - Video is standard daylight (EO)
  - Laser rangefinder
  - Avalex mapping program
- **Max – Viz**
  - Fixed 8-12 µm (LWIR)
  - Pilot situational awareness
- **Available Compartment for Additional Sensors**
  - Located under cockpit
  - Capacity 400-450 lbs, 75 lbs per sq. ft.

FireWatch Imagery/Products



EO/IR Video Clips

Output from Avalex can in ingested by ArcMap to create PDF maps, Kmz files

N149Z Specifications

Flight Rate - $1040 per hour
Contact Clair Mendenhall
cmmendenhall@fs.fed.us

King Air 200

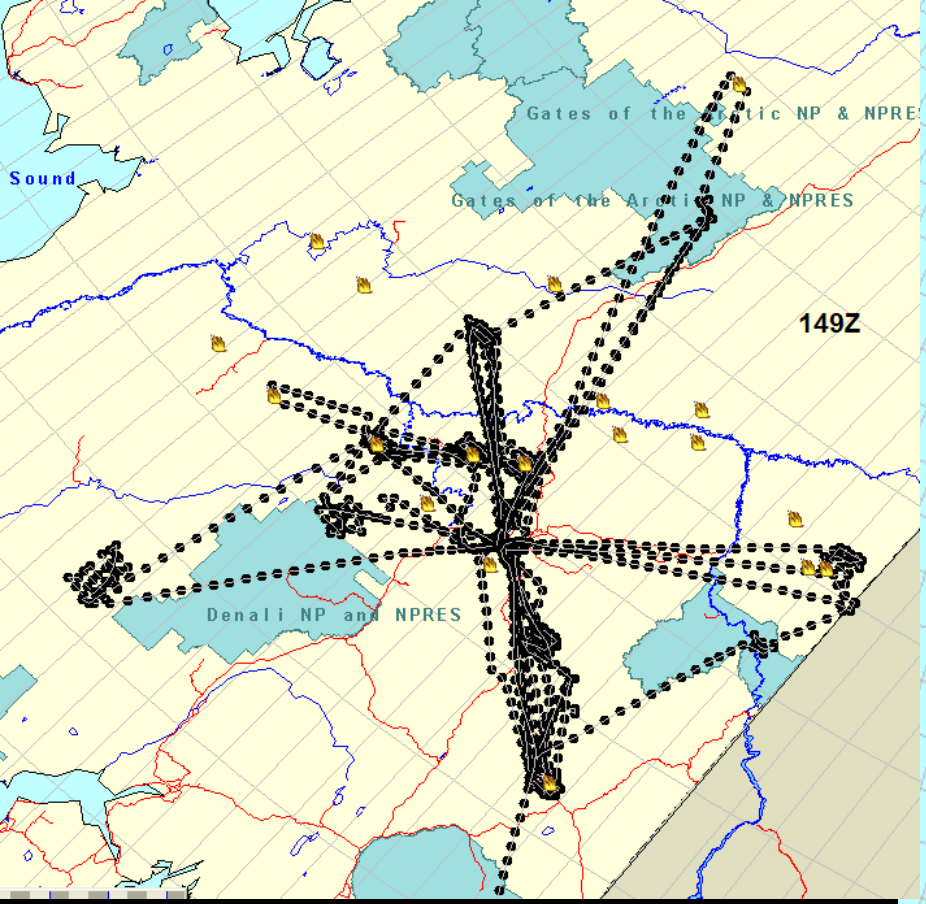
Primary Mission – Infrared Fire Mapping (April – October)

AirCell Datalink

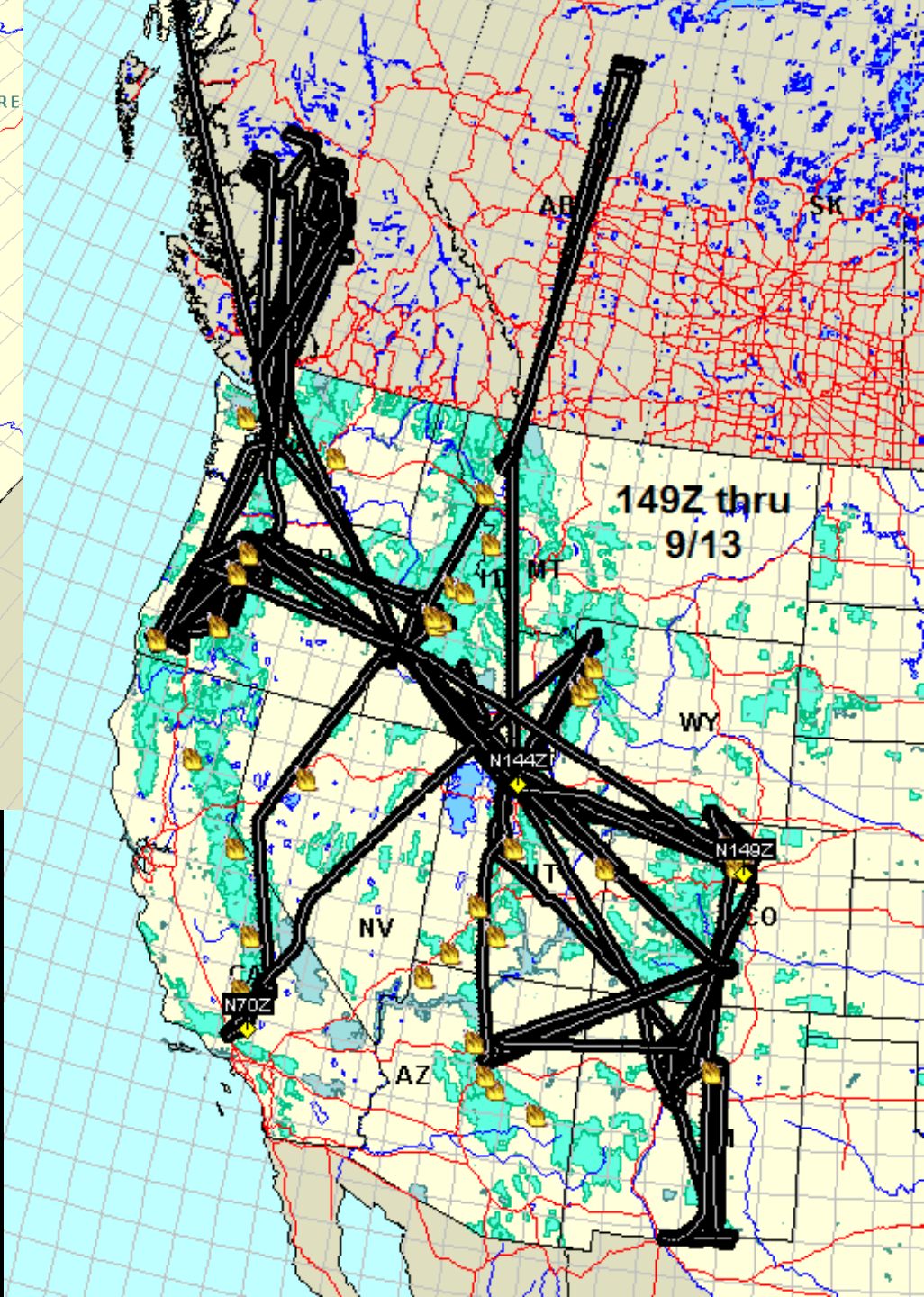
Average 204 Kbs downlink
Continuous coverage CONUS at 10,000 AGL

Sensor Pod

Removable sensor pod with 12 in wide by 8 in wide sensor hole open to atmosphere
12 x12 access hatch allows aircraft to remain pressurized



N149Z
2010 flights
thru 9/13/10



N144Z Specifications

Flight Rate - $1760 per hour
Contact Clair Mendenhall
cmmendenhall@fs.fed.us

Cessna Citation Bravo

- Primary Mission – Infrared Fire Mapping (April – October)

AirCell Datalink

- Average 204 Kbs downlink
- Continuous coverage CONUS at 10,000 AGL

Sensor Bay

- Port Side blister
- Opening 18 in long 15 wide
- Sensor bay 24 in long 17 wide

PHOENIX System Installation – N144Z

Pod and Remote IRIN Support: One IRIN, Multiple Fires

Interpreter(s) located at RO, SO, RD, hotel, home

Phoenix data in WinZip archive

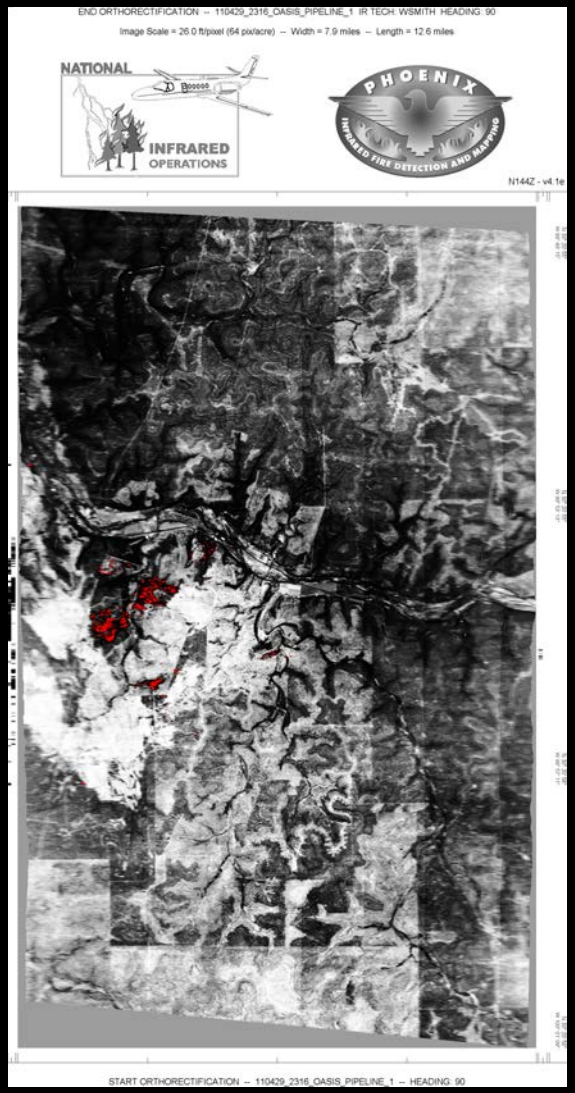
Phoenix data in WinZip archive

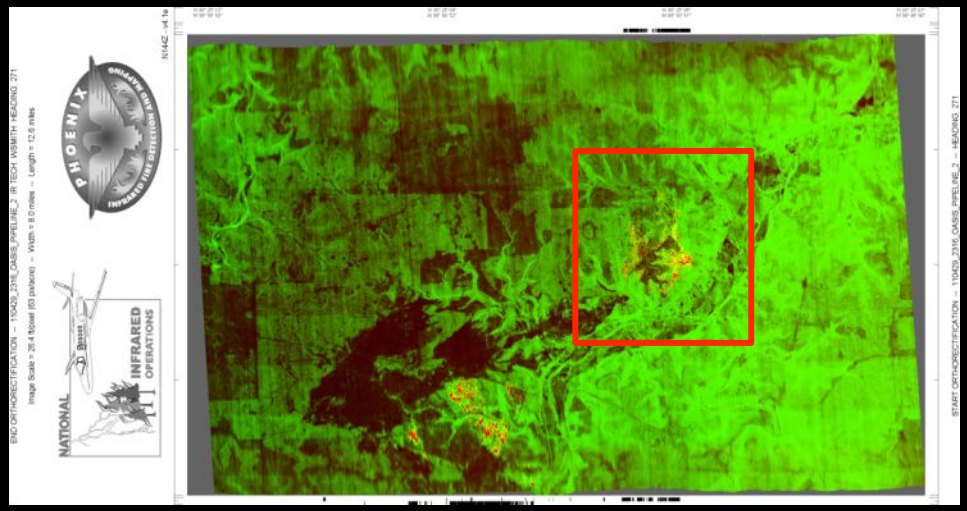
Shapefiles, PDFs in WinZip archive

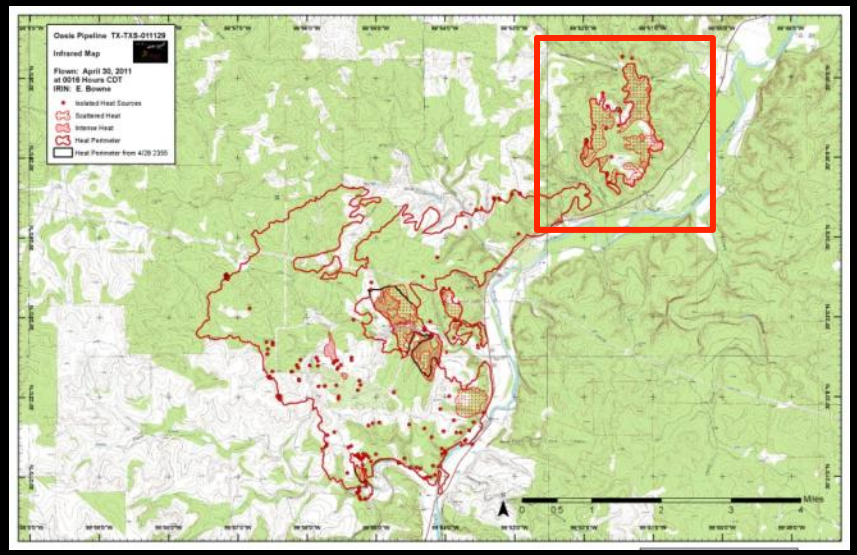
ftp.nifc.gov/ NIROPS

ftp.nifc.gov/ Incident Spec Data/ IR

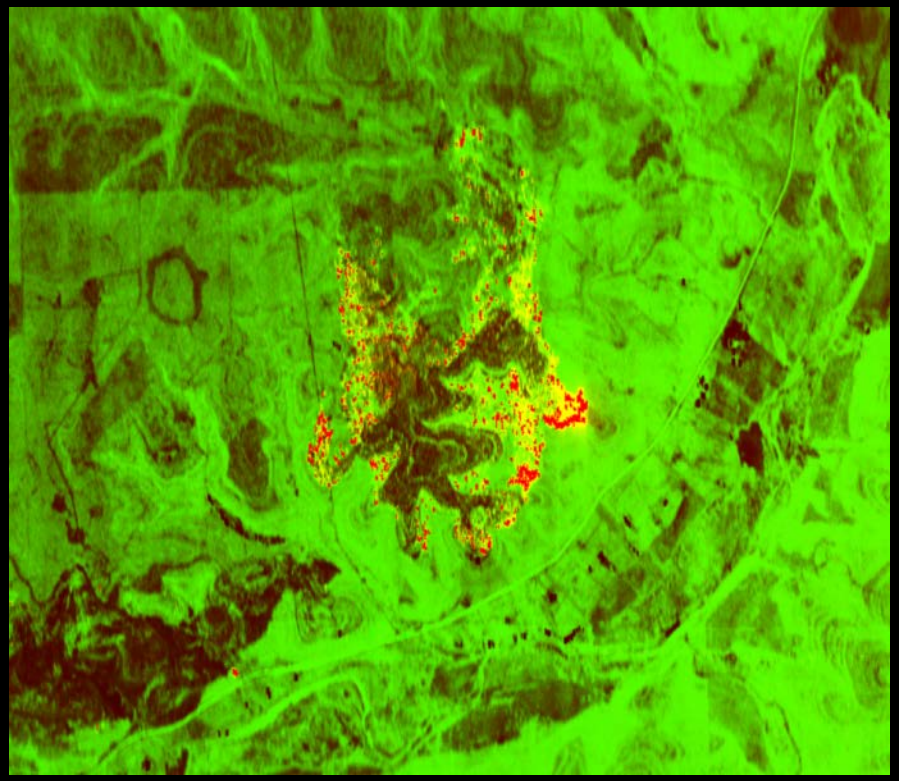
Phoenix Imagery/Products

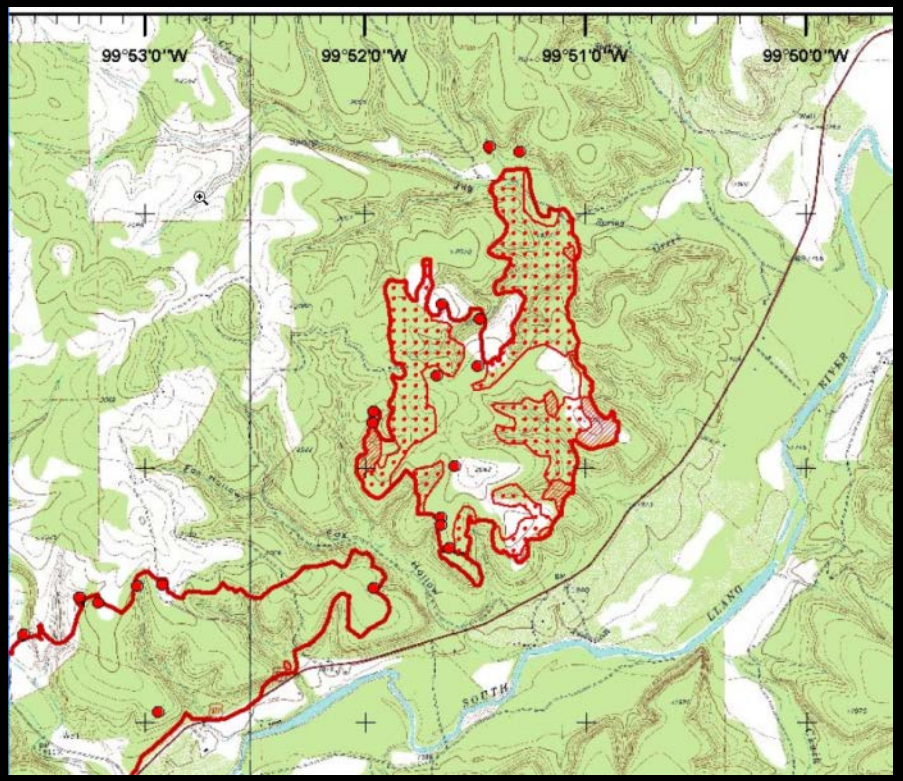






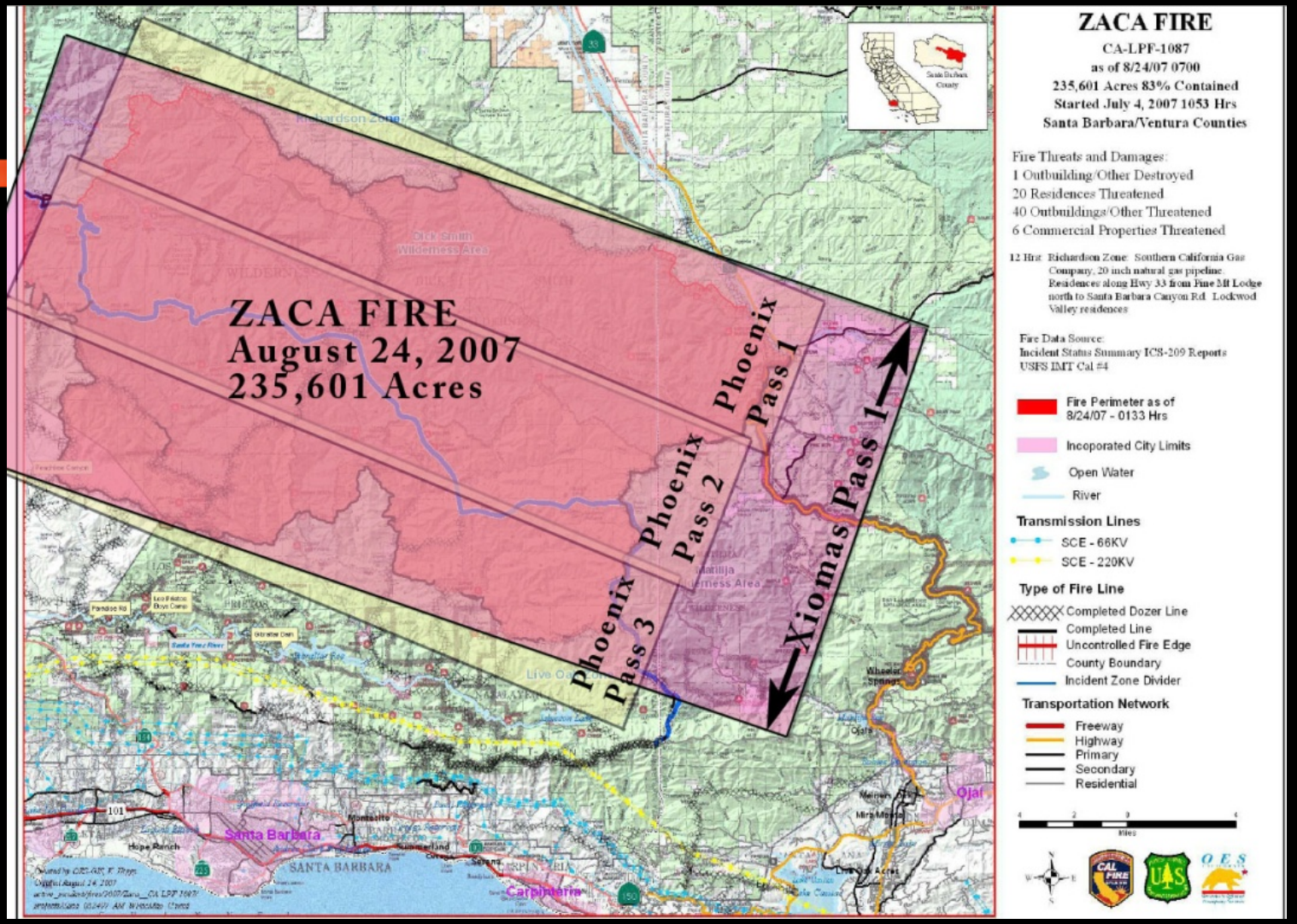
Phoenix Imagery Details





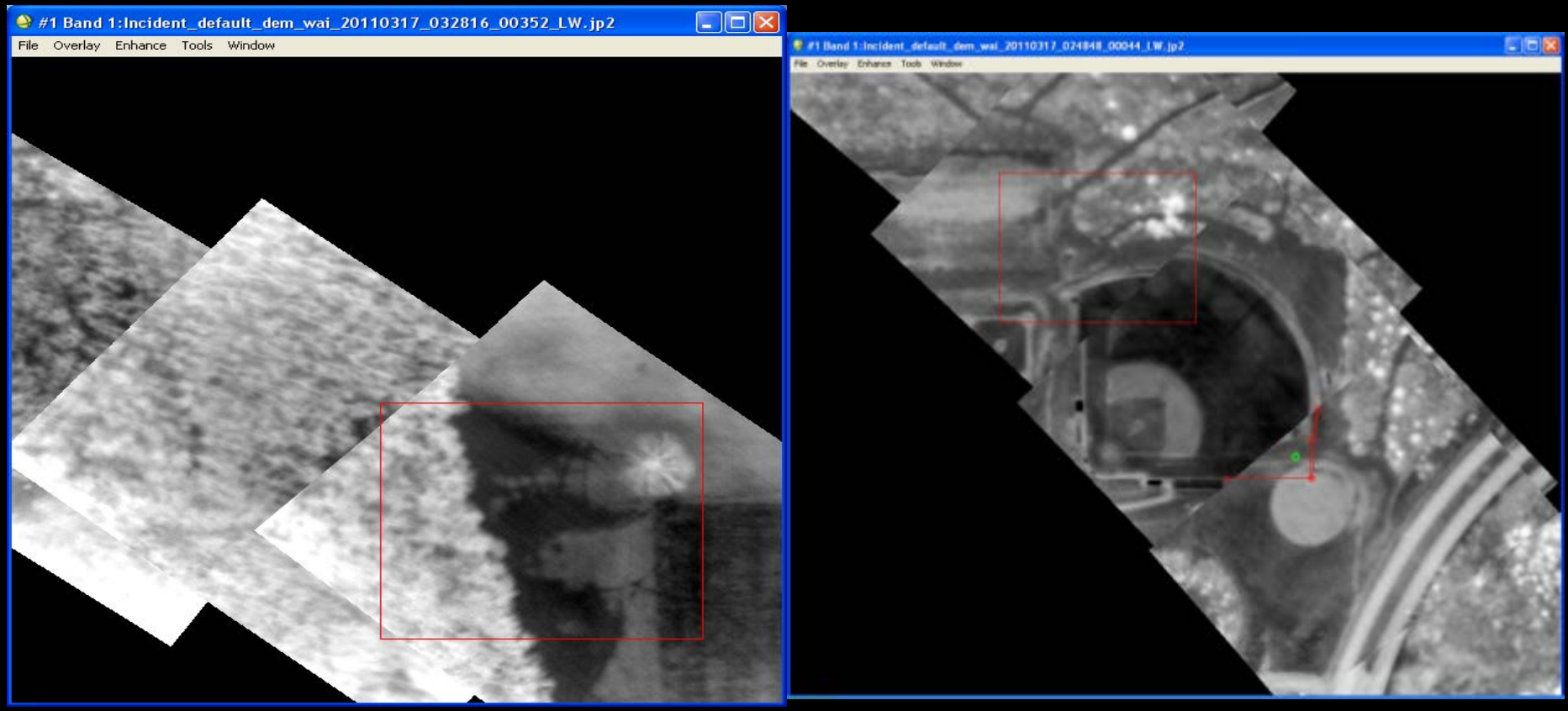
Shapefiles are used to create Kmz files, detailed interpreter logs are also delivered.

Goal is to reduce operational costs by a factor of 2X to 3X by increasing coverage rate and decreasing flight time



Coverage of the current Phoenix system operated by the U.S. Forest Service National Infrared Operations group. The Phoenix system has a 120 degree field of view and covers a swath approximately 6 miles wide from 10,000 feet. At this altitude the Phoenix system has a 12.5 foot pixel at nadir. The proposed Xiomas system will have a 12.5 foot pixel from 42,500 feet and approximately a 16 mile swath width resulting in a 3X increase in coverage.

Xiomas WAI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N182Z Modification

DHS/USDA/DOI Cooperation

Questions?