National Infrared Operations

USDA Forest Service
Fire and Aviation Management
Infrared Missions for Fire Operations

FAM Operations has identified four mission areas IR is used:
1. Detection
2. Large Fire Mapping
3. Tactical Incident Awareness and Assessment
4. Dashboard

Each mission has different requirements/capabilities.
No “silver bullet” that can do all the missions
NIROPS

• NIROPS fulfills the Large Fire Mapping mission
  • Map 50-70 fires in one operational period
  • Nation-wide in scope
  • Provide pdf map, KMZ/KML, GIS-ready shapefiles, IRIN log

• NIROPS products and services are in high demand
• Demand is increasing
• 2 planes w/ AC3 surge: based on workload from the last decade
• Need ways to increase capacity
  • Increase role of vendor aircraft (manned and unmanned)
  • Sustain agency aircraft, sensors, and staffing
Efforts to Sustain NIROPS in 2019

2019 End Product Contract, July 2019 - July 2020 (Dec 2020 w/ 6 mos. Ext)
• Five vendors under BOA to provide surge capacity for NIROPS
• Deliverable: NIROPS map products to FTP site
• Manned aircraft w/ commercial step-stare EO/IR systems
• Assigned to “cluster” of fires in a 500 mile area
• Limited opportunity in 2019 to exercise all vendors

Other IR Contracts: R4 IR Mapping Contract (2016-2021)
• Used in GB for smaller timber fires (night) and desert fires (day time)
• Used as a “regional IR” platform (GACC ordered/assigned)
• Deliverables: NIROPS-like map products to FTP site
• Camera-ball system ~10,000 acres per hour
Sustaining NIROPS (Aircraft)

Short Term (2019-2020):
• 2019 evaluated vendor capability to provide NIROPS products
• End Product and CWN contracts
• Market research of current gen technology and software
• Evaluate aircraft and sensor capabilities
• National vs Regional ‘model’
• EPC vs EU
• Initiate process to acquire new aircraft

Longer Term (2020-2025):
• Maintain organic capability
• Aircraft modernization
  • Aircraft replacement schedule
  • N149Z replacement
  • N144Z?
• Sensor modernization
  • Re-engineer Phoenix –miniaturize, increase functionality, automate
    –or-
  • Convert to commercial system
• Future role of vendors (TBD)
NIROPS (Satellites)

National Systems:
• Firehawk –AC3 has been our go-to for surge capacity
• Analyst support is limiting factor
• Options?
  • Additional analysts from partner agencies
  • AC3 is considered surge, not primary
• Renew MOU for 2020-2025

Commercial / HDDS Systems:
• 2018-2019 evaluated use commercial imagery via HDDS sat systems for fire mapping
• Some commercial systems capable of providing hi-fidelity imagery
• Issues:
  • Limited coverage
  • Difficult to ‘task’ satellites
  • 12-24 hr latency
  • Requires additional post-processing
Sustaining NIROPS

• NIROPS has been the go-to asset for IR mapping and SA updates
• Emerging need for additional imagery (Tactical IAA):
  • IR to inform mop-up
  • Monitoring impingement of MAPS or trigger points
  • Spot fire detection in real-time
  • Provide over-watch of ground operations in reduced visibility or inversions
• Suspect 10% (or more) of NIROPS requests are to meet tactical needs
• Tactical IAA and NIROPS are different “missions” (some overlap)
• Different missions, different requirements/capabilities
• Fire Imaging Technologies Users Guide
  • Focus on selecting the ‘right tool for the job’
End State

NIROPS

- Sufficient capacity to meet demand
  - 2 Agency, 1 EU + AC3
  - Aircraft and sensor modernization
  - 1 EU contract in 2020 (90 days)
- Surge for peak year demands
  - EPC vendors, large UAS
- Standard products and access for end users
  - Same look and feel as NIROPS
  - Standard map products (shapefiles, KMZ/KML)
  - Easily retrieved and exploitable products

Other IAA missions

- Identify role and “best use”
- Evaluating other IAA platforms
- “Right tool for the job”
- Provide advice to end users
- Ordering mechanism
- In coordination with NIROPS
  - In addition to
  - In lieu of