Doug Shinn – 2008 National Infrared Summary

IR requests – all Geographic Areas

Placed to NICC	1,504	
Filled	1,055	70 %
Unable to Fill	249	17 %
Cancelled	200	13 %

Infrared By Geographic Area – 2008

	Filled	Cancel	UTF	Total
Western Great Basin	12	0	0	12
Northern Rockies	12	10	5	27
Eastern Great Basin	13	14	8	35
Rocky Mountain	26	12	6	44
Southwest	36	3	5	44
Southern	7	37	19	63
Southern California	85	20	25	130
Northwest	138	49	30	217
Northern California	726	104	102	932
TOTALS	1,055	249	200	1504

Infrared - California vs the rest

	Filled	Cancel	UTF	% Total Requests
California	811	127	124	70.6 %
CONUS	244	73	125	29.4 %

Mike Lohrey- Lassen Area command - A lot of fires were not manned because we had no resources to do intelligence.

Intelligence did not improve for 4-5 days at least because the priority for IR to detect the small fires was low and the inversions kept the team from flying.

Says we do a very poor job coordinating intelligence during extreme events and across jurisdictions. We need to fix this. Need info flow from one jurisdiction to the next. Minimized with the area command but there were extreme issues when Mike first arrived.

Given the direction we are going and new policy, teams are going to wildfire decision support analysis. FSPRO – Model takes localized weather info, historical weather, and predicts where fire is liable to be at a certain time. The model is supported by IR imagery. Here is a problem. If we have a situation like in NOC, multiple fires jurisdictions, or communities threatened. **How do we obtain sufficient intelligence to say we can leave a fire because it is not a threat.** The models have failed at times. Need info to improve the model. How we do this is unknown.

UAV – Feels real time information is critical where we have large fires and are going to actively control a portion of it, and leave other fires alone.

Shasta T Area Command – The daily updates were immediately put on maps for morning briefings. We made decisions on moving resources by seeing where the heat was which prevented two incidents from getting huge.

Infrared was critical for planning ahead. Catch and release pieces of line (line suppose to be secure but no resources there). Several times fire was detected blowing out portions of these lines with IR and was able to put resources on it.

Question: Given what was happening in NOC, what would we have done last year with our intelligence gathering if a couple of other GACCs had blown up.

Dan Johnson
1. Trigo Fire, New Mexico – Season started 4/19 and concluded in October.

2. 149Z King Air
> Flew 375.6 hours
> Total cost $422,550
> Hours not flown due to maintenance, less than 1%
> Hours not flown due to lack of flight crew less than 1%
> Mechanic went to Redding for repairs and inspections

3. 144Z Citation
> Flew 361.4 hours
> Lack flight crew, less than 1%
> Maintenance, less than 2%
> Scanner door was repaired. R4 Aviation is working on designing and installing a better door.

4. Combined aircraft flight hours – 737 hours

Future issues
1. Pilot staffing – Might have to bring another pilot in and delete contract.

Dan wants to include IRIN schedule and availability on his web site along with the pilot schedule. The pilot schedule can be viewed on this site:
http://fsweb.r4.fs.fed.us/unit/faa/aviation.htm

Dan wants an air cell down link.
Dan wants the NIROPs Operations Guide book updated and is posted on NIROPS website. Everyone needs to review and sign off after making changes.

Pilots were in contact with crews and the other plane. When scanner door broke the other plane took up the slack and flew all the fires.

Request from David Hicks if we can fly over the fire twice a day? Depends on crew time and weather issue.

Woody

1. Trying to fill Tom's position before next season. Techs considered air crew, have to follow same time limitations as pilots.

2. Woody's job is to install, run, and maintain equipment.

3. Had serious problems with equipment and scheduling this year.

4. June had orders to cover 20 Million acres of ground.

5. Want a real-time down link. Our system is digital so can do it. Would like suggestions from field on what you need.

6. How is equipment holding up? Well, the guts are up-dated yearly so most of the equipment is only a few years old. For IR, the line scanners are the best, highest accuracy, most calibrated.

7. What is status of a better delivery model? Don't know yet.

8. Is David Chamberlain working on anything? Dave is working on a method on breaking apart scans that contain multiple incidents and worked on it until the money ran out.

Paul Linse – fire imaging steering committee

1. Outcome of the aviation feasibility study and formed a group to study fire imaging.

Tim Chavez – CalFire

1. Diving headfirst into utilizing IR now. Now that scanner requests are on-line it is very easy to take advantage of it.

2. Structure at Redding (RDD) – Mike Wilson is a Captain in CALFIRE. He called Tim – it was chaos. NIROPS was there and Melinda showed up. NIROPS is self-sufficient and practiced so didn't have to baby-sit. A lot of people and equipment started showing up. We tried to control the equipment and made personal contact with all SITLs on 22 teams in NOC. Received priorities from CA head honchos and relayed to NIROPS. Contacted a lot of private resources, only 4 responded.

National Guard
Regular military
NIROPS
PSW research
FLIR

Melinda

Unified the command and kept to it. Everyone received same information from everyone. Set priorities state-wide as SO was given to RDD pod. We met Area commands and incident needs.

1. One-stop ordering and delivery and we had State start using the Federal facilities: FTP, NIROPS ordering, etc. Area commanders could look at imagery from different commands if they thought it was going to affect their fires.

2. Interpreter pod had 6-7 people. 3-4 qualified and the rest trainees. We had a pod lead who assigned incidents to an interpreter. We tried to overlap replacements so we could make contact with incidents twice daily. Regional coordinator was on day-shift so they could follow up and keep things running. Data was backed up in one place as soon as it came off the plane and the external server stayed there all the time. Interpreted data was also stored there.

3. Having a pod made information transfer and expertise transfer easy. 10 trainees qualified at RDD. Having the pod all together in a trailer helped keep the interpreters from being used as GIST.

4. Tools that helped: Huge spreadsheet plotted out what fire being flown by what resource for each day; White board displaying daily individual duties.

Tim – (continued) Things to improve:
1. National Infrared Coordinator should be a full-time position.
2. Had problems with file naming, locating files in ftp. Spent lot of time with data that was moved or misfiled.
3. Would like an estimation of when the imagery would be available posted on the scanner order.
4. The contractor day-time flights were great.
5. Downlink capability.
6. Want interpreters on the plane.
7. Distribution and dissemination needs to be improved. Suggested looking at NASA and PSW systems.
8. Would like vendors to do self-status on the IR website.
9. Since doing so much remote, set up teams on a rotation schedule so everyone knows who is available and have IRINs available immediately.
10. Could have people who are on-call who cannot do a full rotation but can do the first day or 2.

Everett – NICC CDE beta

1. Availability list already being produced.
2. Using Google Earth to show incidents. Great environment. Working on including aircraft locations. MODIS hot spots and weather can be turned on.
3. Google Earth wants to get into disaster relief. They have a camera with GPS and altitude data collection so can show buildings that are burned or not burned.

Jan Johnson

Firehawk – started in June – South 1 (VA) and Evans road (NC)
Lane 2 Fire, Prescott NF, AZ
As of 10/24: 7 incidents had at least one night of mapping support (individual fires). 30 days of support.

Everyone who received imagery was satisfied with the job.

On-line order system –
1. Updates in fy08 1) multiple scanner boxers per order; 2) Enter using coordinates or Google maps; 3) Select and print or archive multiple orders; 4) New server; 5) Increased the size of the comment field; 6) Edit UTFs; 7) Able to add vendors; 8) Google KML; 9) Simplified the form; don't need VOR for pilots.
2. Glitches 1)new server and software installed 6/1, unable to test; 2) number of bugs cropped up in NOC; 3) rounding error in code shifted longitude of box 1° west.
3. Updates for fy09; a) update the 'How to" guide; b) RDD pod wish list.

User Guide – current draft is now on NIROPS site. Wants to split user guide into 2 sections; 1) IR User Guide; 2) vendor list.

CALFIRE remote sensing Matrix – one-page guide for plans and OPS. Want to put it on NIROPS site. Tells plans all about the different types of imaging resources and what they can do (typing definitions and vendor list).

RFI – Posted on FedBizOps in May and was delayed due to FS access issues to site. Only 8 vendors responded. Jan wants to remove vendors who have been unresponsive through multiple years.

Sites for everyone's knowledge: ftp://ftp.nifc.gov/NIROPS/Documents
http://nirops.fs.fed.us

Tim Chavez – need to standardize the file structure and naming conventions for imagery.

Dave Calder – Dept of Homeland security ; Bill Walker – former U2 pilot; Lacie Lambert – Global Hawk pilot.

Global Hawk capabilities – uses a camera. Cannot see through clouds and since it is mid-wave IR cannot see through the smoke. Can see the ground or vegetation growing warmer up to the fire, once it hits 120° above background. Put the aircraft upwind of cloud and do a side look. Sensor is a framing camera. 640 X 480 IR detector. Creates a 7 X 10 mile matrix.

Trying to de-classify the imagery that it produces for fires and FEMA.
Navy has two planes on east coast that could fly east coast fires.

Global Hawk can fly up to 36 hours. Average mission is 22-24 hours.

Need to create pre-plan flights to different regions and file with the FAA so can take off with minimal time lag.

Ikhana wants to know how fast and/or how accurate do we want the imagery? This could vary by mission, but has to be clearly stated.

Do NOT have to have the exact coordinates when take off. Can reschedule in air. Lacey needs minimum 1 hr to re-schedule.   Can schedule day and night missions.

DGS (the image processors) are willing to deliver shape files (not their regular procedure). A DGS can handle 35 images/hr. If we need more, they will call in another DGS unit. Can process an image in 10-15 minutes to put on our system.

Create an approved pre-scripted mission (NIFC, NorthCom)
Do a test run

Jeff Obering - Kolob Air, Cedar City, UT

Jan's analysis

Typical swath width in NoCal was 2 miles.
Kolob downloads imagery to site in Cedar City where they ortho-rectify data. Then post that to GelTiff, Jpeg, and KML. IRIN puts strips together and then interprets.

Since the data is only partial ortho-rectified, Jan had to use geoprocess in Arcmap to fully rectify. Day-time imagery takes more interpretation than night imagery.

Had a scanning gap once in a steep river canyon. Jan thinks because of ortho-rectification.

Image quality not an issue
Requires more interpretation than Phoenix'
NAIP was essential for daytime imagery for final registration of imagery and the determination between hot rocks and fire

Small footprint. Twice as many strips as NIROPS

Small image footprint=multiple images=large boxes = lot of images to upload, ortho-rectify and mosaic

Also = multiple long strips to register and interpret

System as currently configured works more efficiently with smaller areas to be acquired

Kolob has purchased an Applanix system to integrate into their FireMapper system. Will make ortho-rectification process faster. Should produce strips that we don't have to ortho-rectify so makes equivalent to Phoenix.

Vince Ambrosia - NASA – Ikhana

$3,000/hr. in 2009 goes up to $10-15,000/hr

website   -   http:// geo.arc.nasa.gov/sge/WRAP

add network link to see flight in real time

http://sggate.arc.nasa.gov:9518/GoogleEarth/CDE.kml

Doug Campbell - Range and Bearing

What did we learn? How can we best apply it to build next generation Wildfire program.

Airborne Wildlife Intelligence System (AWIS)
Two complete Airborne Platform Resources.
 Available as shared resource with agreements through MARS, and NIFC.
 For Summer 08, had separate agreement with California.

Rapidly, Readily, Reliably, and Repeatable – The R4

Aircraft – PA-31 – Navajo – 350

44 missions on 10 fires complexes over 15 days

Total Image Area delivered = 6,400, 256 acres

Planning, Acquisition, and delivery is similar to NIROPS process

AWIS Operations is in Edmonton, Alberta

R and D in Victoria, BC

http://awis.sharefile.com is where all files are stored and up and running 24/7.
Automatically emails client when file is ready.

Aircell

Three sectors per cell tower up to six. Each tower is overlapping.

Equipment costs $125K, airtime costs $1,495/month unlimited time.

3.1 Mega bits per second form the ground to the aircraft.

1.8 mega bits from aircraft to ground.

Highly secure.

Benefits – fewer t/o and landings; late night drives to pickup data; less time wasted doing ftp downloads; data arriving at NIROPS web site earlier in the mission shift; less expensive than satellite based systems.

Disadvantages – San Diego fire wiped out a site, two weeks to rebuild the site.

Operational with American Airlines now with Delta, Air Canada, and Virgin America coming on soon.

Money dependent right now and might have before next summer.