

Siege Summary Part II: The First 10 Days

Friday, June 20

The Lightning Storm

Fire activity was typical for California most of the day on June 20, 2008. The weather forecast predicted strong high-pressure over the southwest desert which produced seasonal warm and dry conditions for inland areas and a southwest flow which brought cool and humid conditions along the coast.

The Trabing Fire started that afternoon north of Watsonville, in Santa Cruz County, when a vehicle's exhaust system ignited a series of fires along a $\frac{3}{4}$ mile stretch of road. Those fires spread rapidly into a large eucalyptus grove and merged into a single fire which threatened hundreds of structures and forced the evacuation of about 2,000 people and 220 horses and other livestock. There were also two ongoing, large wildland fires burning: the Clover Fire and the Indians Fire. While the response to these fires was a sizeable resource commitment, numerous interagency wildland firefighting resources remained available for new initial attack fires.

By late afternoon and evening, thunderstorm cells and dry lightning strikes moved in along the coast from Big Sur, north to Humboldt County. As early reports started to accumulate, the magnitude of the lightning event and resulting fire situation revealed itself; the 2008 June Fire Siege was under way.

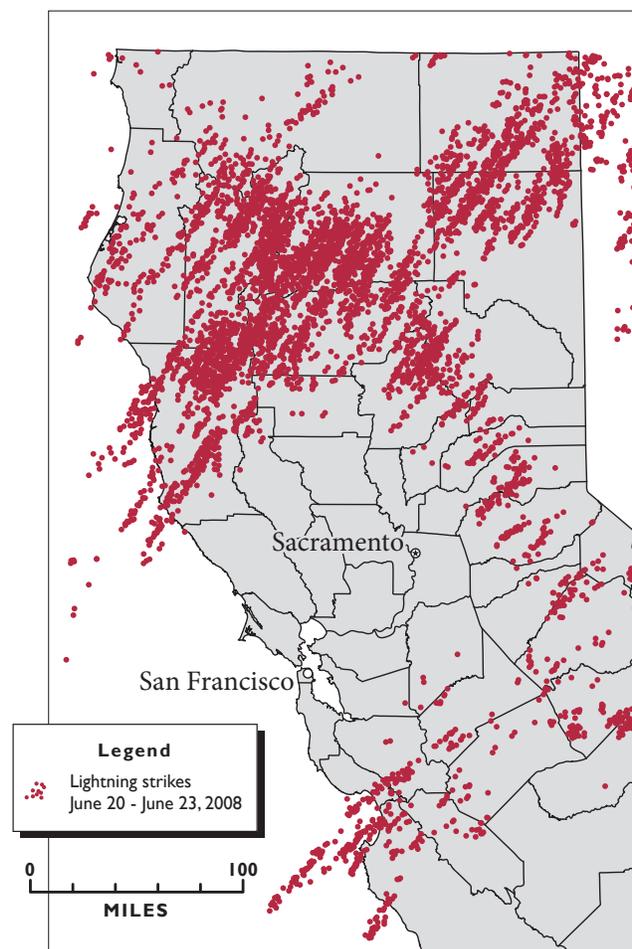
By midnight on Friday, suppression efforts were initiated on 14 fires in Southwestern Mendocino County between Boonville and Point Arena. Dispatch centers received reports of scattered lightning fires

along the coast. Further inland, the Six Rivers and Shasta-Trinity National Forests had reported several new fires from lightning.

Saturday, June 21

Lightning Activity Increased

Around 2 a.m. on Saturday, June 21st, the lightning activity increased with hundreds of downstrikes in Mendocino, Humboldt, and Trinity counties. A low pressure trough moved through Northern California on Saturday, intensified the lightning activity, swept north and east, and brought heavy concentrations of lightning





As early reports started to accumulate, the magnitude of the fire situation revealed itself.

strikes to Butte, Tehama, Shasta, and Lassen counties. Other counties also experienced lightning strikes and fires, but the center of the storm hovered over Mendocino, Trinity, Shasta, Tehama, Plumas, and Butte counties for most of the day. More than 5000 lightning strikes were recorded in the Northern California area during a 33-hour period.

Within a very short time period, lightning activity started a huge number of fires, and created competition for the state's interagency wildland fire protection resources. With many more fires than locally available fire-fighting resources, many fires remained unstaffed. Having committed all available resources to fires, many wildland fire stations were temporarily unstaffed or staffed by local volunteer fire departments and districts. During the siege, the federal and state fire agencies experienced severe resource drawdown. CAL FIRE staffed-up reserved and camp engines, formed additional hand crews composed of local firefighters and relied on local government and private dozers for initial attack. Out-of-state engines were brought into California to augment initial attack or support ongoing incidents.



Prioritization of fires became a vital part of allocating limited resources.

The Governor ordered the California National Guard to mobilize six helicopters, one RC-26 imaging aircraft, and two C-130 aircraft with Modular Airborne Fire Fighting Systems (MAFFS).

The Northern California Geographic Area Multi-Agency Coordinating (NorCal MAC) Group was activated. At the first meeting in Redding, they were confronted with hundreds of wildfires burning in conditions more typical of August than June. They quickly prioritized the fire situation by Administrative Unit.

Sunday, June 22

Creating Order Out of Chaos

On Sunday morning, the weather forecast called for hot and very dry conditions following the passage of the trough, with scattered thunderstorms possible over the Southern California mountains and deserts. Over 600 additional lightning fires were reported, with Butte, Mendocino, Shasta, Plumas, and Trinity counties hardest hit. Early reports revealed numerous, uncontained and unstaffed fires.

THE PARADISE FIRE

Humboldt and Del Norte Counties aren't known for wildfires. The cool moist climate with summer coastal fog allows for little of the fire activity characterizing summer in other parts of the state. Wildfire is mostly limited to the fall, when fuel moisture is lowest after the long, dry summer. This year the late winter and spring months were dry. The dry lightning storm on the night of June 20, 2008 ignited scores of fires across hundreds of square miles of remote and rugged terrain.

Most of the fires were extinguished within the first two days, but five persisted as significant threats: the High, Larabee, Redcrest, Lone Pine, and Paradise. The most perilous of those was the Paradise Incident, named for its location on Paradise Ridge in the King's Range. It threatened the coastal community of Shelter Cove.

First on the scene was the Briceland Volunteer Fire Department. As other fires drained fire suppression resources, the Paradise Incident was in the capable hands of the volunteers well beyond its initial attack phase. Diana Totten of Beginnings Volunteer Fire Department remained the Paradise Incident Commander for many days after ignition. Chief Totten had a good plan, and with her department's knowledge of the area and outstanding dedication, they moderated the spread of the fire. As other fires in the region were quelled and more resources became available OES engine companies, conservation camp crews and air resources were redeployed to Shelter Cove. The Paradise Incident was contained at 1,000 acres. The community of Shelter Cove was left unharmed. It was a success story of local government supporting the state and national fire fighting efforts.

In all, it was an effort above and beyond the call of duty. Many unsung heroes emerged from the 2008 June Fire Siege after a highly unusual early summer storm.

“...a success story of local government supporting state and federal fire fighting efforts.”

MENDOCINO'S LOGISTICAL CHALLENGE

CAL FIRE's Mendocino Unit encompasses 3,509 square miles of mountainous, timbered terrain, stretching from the Pacific Ocean to the crest of the Coast Range, at 6,954 feet. It is a big chunk of country that CAL FIRE covers with ten fire stations, two conservation camps, and an Air Attack Base.

On June 20th, lightning started fires along the southwest coast near Pt. Arena. CAL FIRE staffed all 14 known fires with firefighters. New downstrikes started early the next morning, and continued through the next day which ignited fires across the county. Saturday afternoon 60 fires were mapped, but at least as many were unmapped and the lightning continued. Sunday afternoon over 120 fires burned in steep, rugged, timber country along the coast and inland. Many were unstaffed, as all available forces were committed. A CAL FIRE Incident Command Team was ordered and set up at the fairgrounds in Ukiah.

To cover the large area, six branches were created, each with its own Incident Base. Priority was given to the south coast timber fires. The incident base was not established until Wednesday, because a big music festival was using the only facility in the area suitable for this operation, the Anderson Valley fairgrounds. Eventually, the base grew to support a large number of agency and contract firefighters, and 200 National Guard troops.

An incident base at the Fort Bragg Forest Fire Station/Jackson State Demonstration Forest headquarters covers the north coast fires. Since timber companies were taking action on fires on their properties, this base remained small, using existing facilities.

At Laytonville, logistics were more difficult. Limited facilities could not support the hundreds of firefighters for several weeks. A fire camp was set up in a pasture across the highway from the Laytonville Forest Fire Station, but water and phone lines were on the wrong side of the highway. Pipe and telephone lines were laid alongside U.S. 101 to a culvert, under the highway, and into the rapidly developing tent city.

Covelo is also a small town, lacking facilities to support large numbers of firefighters. The Covelo Forest Fire Station is an old style CAL FIRE station, with large barracks, mess hall capacity, and a big restaurant-size cooking range. A Ukiah restaurateur with a reputation for catering large events provided hot meals.

The Ukiah fairground incident base had adequate facilities to support the Incident Command Team, plus the Ukiah and Willits branches of the fire operations. They were the "point of distribution" for everything that it would take to keep fire operations going countywide for several weeks. Crews from the California Conservation Corps ran Supply Units at the Booneville and Laytonville bases, dispensing everything from drinking water to sleeping bags. Each operational period, "circuit riders" distributed everything from the Incident Action Plan, news releases and maps for community bulletin boards to hose, fusees, and MREs.

This effort was sustained for six weeks, until all of the 129 fires were contained after burning 53,300 acres.

*“with no outside help immediately available,
it is time to do some creative thinking”*



Despite the great number of starts, fire fighters were having a lot of success containing fires.

California was divided into two geographic areas, splitting the workload during multiple incidents. There were three Multi-Agency Coordination MAC groups in California: Northern California geographic area MAC or NorCal MAC, Southern California geographic area MAC or SoCal MAC and a statewide MAC referred to as CalMAC. The MACS, consisting of regional chief officers (USFS, DOI, CALFIRE, County and OES) were established to prioritize incidents and manage resource allocations for their respective geographic areas.

The NorCal MAC quickly implemented procedures to prioritize incidents on 20 different units. Given the large number of fires, several fires were grouped into complexes to facilitate priority setting.

The prioritization of incidents is based on the following:

- ▶ Life threatening situations
- ▶ Real property threatened
- ▶ High damage potential (infrastructure, natural and cultural resources)



Limited fire fighting resources left some fires unstaffed.

- ▶ Incident complexity (multiple jurisdictions, potential for growth, current political situation, potential for more incidents)

Fire-fighting resources were allocated to the administrative units for dispatch to the priority fires within a complex. NorCal scored and ranked individual large fires and complexes daily until August 20.

Monday, June 23

Evacuations and Life Threat

The fires had a major impact on local communities, regional transportation corridors, and power infrastructure. Evacuations were ordered for multiple fires near residential areas in Solano, Napa, Shasta, Trinity, Lassen, Mendocino and Butte Counties. A spot fire on the slope below the town of Paradise in the Butte Complex generated an order for 125 fire engines to protect threatened structures. Fires in the Lime Complex, in Trinity County, destroyed the USFS Limesyke Fire Lookout, had the potential to surround entire communities (Hyampom, Hayfork, Platina and Harrison Gulch) and affected thousands of residents.



Fire-fighting resources were dispatched to the priority fires within the complexes.

The fires closed major routes from the Central Valley to Eastern California including State Routes 299 East, 44 and 70. The Lime Complex threatened SR 3 and 36 in Trinity County and had the potential to sever all ingress/egress on the county road to Hyampom.

In Shasta County major transmission lines in Burney were threatened, and approximately 4000 Pacific Gas and Electric customers in the Shingletown area were without power. The Butte complex threatened the South Feather Water and Power Transmission lines.

Governor Schwarzenegger received a briefing on the statewide firefighting efforts at the base camp of the Wild Fire burning in Napa-Solano Counties. The California National Guard assets, requested on Saturday, were deployed. The Governor declared a state of emergency in Monterey County and Trinity County for the numerous fires, including the Basin Complex and Lime Complex.



The hundreds of active fires required fire managers to constantly reassess priorities.

Tuesday, June 24

Early Successes

Despite the great number of starts, severe burning conditions and limited resources, fire fighters contained more than 500 fires. Some original fire-starts merged together and created larger fires. NorCal MAC reported 26 large uncontained fires or complexes (approximately 400 total active fires) and SoCal MAC prioritized 6 large uncontained fires.

Wednesday, June 25

Governor and CalMAC

Another success was achieved when the Wild Fire was declared contained at 4,089 acres.

The Governor received briefings for the Butte Complex in Chico and the Basin Complex in Monterey County. He requested additional helicopters from Oregon, Arizona and Washington to assist fire-fighting efforts.

In response to the statewide competition for firefighting resources, the California Multi-Agency Coordination (CalMAC) group was activated in Sacramento.

FUEL TREATMENTS MAKE A DIFFERENCE DURING THE SIEGE

Fuel treatments completed in 1999, 2005 and 2007 at Whiskeytown National Recreation Area (NRA) were tested during the 2008 Fire Siege and played an important role in suppressing the Motion Fire, the Moon Complex and other fires near Whiskeytown Lake.

Multiple fires were started by lightning in this area on June 21. One fire smoldered overnight, raced uphill and reached the Shasta Divide Prescribed Burn Fuelbreak in Whiskeytown NRA, which essentially stopped the forward spread, while the north flank of the fire ran into old control lines that had been used to burn brush piles. A handcrew and fire staff from Whiskeytown were able to anchor and flank this fire using the old control lines to stop the spread on the north flank and tie the head of the fire into the Shasta Divide Prescribed Burn Fuelbreak, which limited this fire to just 3 acres.

The Motion Fire started near Shasta Dam and entered Whiskeytown NRA in mid-July. The fire threatened the town of Old Shasta, and several homes and park offices in Whiskeytown where evacuations were in place. Whiskeytown NRA's efforts, over the years, to reduce hazardous fuels proved successful, saving park offices due to lower fire intensities in the treated areas around structures. Firefighters used the treated areas to make stands and conduct safe burnout operations. Burnout operations from Highway 299 west to the Whiskey Creek area checked the fire's spread. They were successful partly due to fuel treatments completed in 1999 and the Sunshine prescribed burn completed in 2001. The 2007 Whiskey Creek roadside shaded fuelbreak also proved instrumental in holding the Motion Fire at Whiskey Creek Road.

The Moon Complex started on CAL FIRE protected land in the Rainbow Lake / North Fork of Cottonwood Creek in western Shasta County about 2 miles from Whiskeytown NRA. Fire spreading north, eventually merged with the Mary Fire of the Whiskeytown Complex. The fire reached the boundary of the 2005 Queen Mary Prescribed Burn and spread into BLM land near Shoemaker Bally along County Line Road which borders Trinity County. The Queen Mary fuelbreaks and access roads were used to access and check the westward spread of the Mary Fire, while the west and south Queen Mary fuelbreaks were used as firebreaks that stopped the spread of the Moon Complex. The fire tried to spread into the old 2005 Queen Mary burn, but the fuel was too sparse to support any spot fires. CAL FIRE and Federal crews were able to secure the fire along the old fuelbreaks which were improved and then burned out through back firing operations. The fuelbreaks were utilized for access and potential escape routes. Some were further strengthened with bull dozers. Overall, the fuelbreaks greatly increased the success of the fire suppression effort.

In conclusion, the work on fuel breaks, the fuel reduction along roads, and the prescribed burns completed before the 2008 Fire Siege significantly reduced fire intensity and increased the success of fire suppression efforts near Whiskeytown Lake.

“Pre-existing fuel treatments greatly increase the success of suppression efforts.”

RESPONSES TO SMOKE IMPACTS

The 2008 June Fire Siege produced a widespread siege of smoke, with the greatest impact on communities located in places where topography traps smoke particles. Hayfork in Trinity County and Covelo in Mendocino County are examples of places where smoke impacts were severe. Poor air quality prompted deployment of mobile monitoring systems, frequent air quality advisories, and a formal Hoopa Valley Tribal Council request to the Humboldt County Board of Supervisors to declare a state of emergency based on the public health threat from prolonged smoke exposure.

Responding to the smoke impacts, the Hoopa Valley Tribe declared a local state of emergency, activating an incident management organization. By mid-July, the K'ima:w Medical Center had seen 133 patients for smoke related health problems; 100 people were relocated to reduce further smoke inhalation, and HEPA air filters were purchased for residents with severe respiratory conditions. The Tribe set up clean air facilities at the community center gym and the senior nutrition center. Some residents who were experiencing respiratory difficulty during that year's siege, had pre-existing conditions attributed to smoke exposure during the 1999 Megram Fire. The Centers for Disease Control and Prevention, studied the effects of smoke exposure on Hoopa residents in 1999. K'ima:w Medical Center Director Eva Smith points out that there is no research on the long-term or cumulative effects of smoke exposure over time. Both the Hoopa Valley Tribe and Yurok Tribe were included in the President's emergency declaration [June 16, amended September 28, 2009], which allowed reimbursement for emergency response costs.

The 2008 fire siege kept many Air Quality Districts and public health agencies busy monitoring and anticipating smoke impacts and responding to air quality concerns. The district kept residents informed of current and projected smoke levels, which allowed them to take appropriate actions to protect themselves.

Combined particulate emissions from fires affecting the Monterey Unified Air Quality Pollution Control District were estimated to be over 20,000 tons, with peak daily emissions near 1,000 tons (10 times that from non-wildfire sources). The District issued 31 public health smoke advisories, responded to citizen phone calls, and targeted reverse calls to impacted areas. In Shasta County, 20 days of unhealthy air quality were recorded during July at a monitoring station in Anderson (10 unhealthy for sensitive groups, seven unhealthy for all, three very unhealthy for all).

Siskiyou County reported adverse air quality for Fort Jones, Happy Camp, Weed and Yreka. Happy Camp had 16 days exceeding the air quality standard in July and 17 days in August. Weed was the least impacted location monitored in the county, with seven days exceeding the air quality standard in July, and three in August.

Prevailing winds in Mendocino County "pooled" the smoke from large fires into the Ukiah, Redwood, and Potter Valleys.

As the heavy smoke persisted for many days, it created unhealthy conditions over a large area with potential for long-term impacts. The greatest health risk was posed to the young, old, and those with pre-existing respiratory conditions. Smoke impacts during this siege emphasize the need for improved air quality monitoring and community strategies to better prepare us for when fires return to burn for many days again.

"...there is no research on the long-term or cumulative effects of smoke exposure..."

They convened for the first time in over 9 years when the state Preparedness Level reached the maximum of 5. CalMAC reviewed the Northern and Southern MAC group priorities, established statewide priorities, and approved resource allocations. CalMAC established procedures regarding sharing and use of critical resources, work-rest cycles and documentation requirements for incident management team requests. They were the communication point with National MAC for requesting national, active military and out-of-country resources. They continued to set priorities for the state until August 9th.

Thursday, June 26

Weather and Social Impacts

Adding to the growing list, Governor Schwarzenegger declared a state of emergency for Mendocino and Shasta Counties.

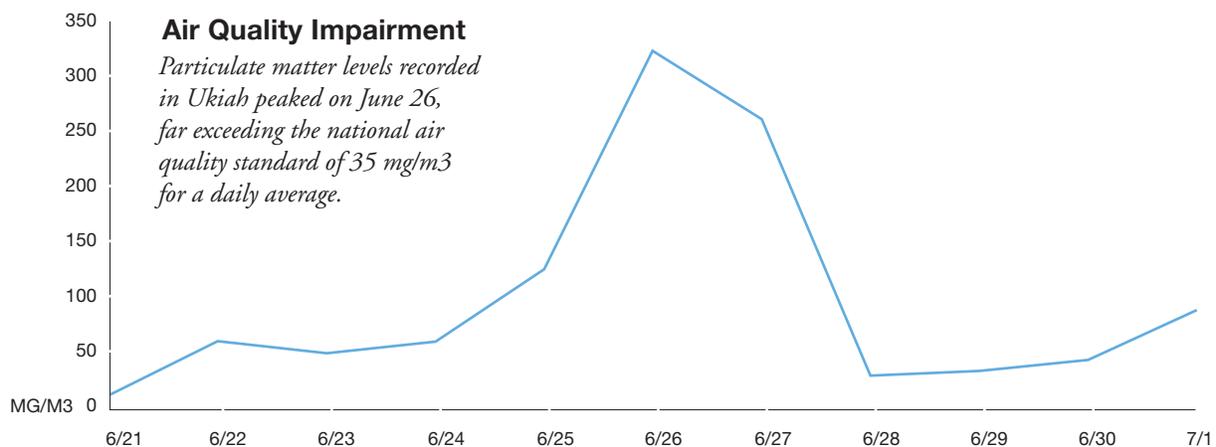
Air quality was impaired over a wide area throughout the siege, which put asthmatics and smoke-sensitive populations at risk and created unhealthy conditions for all. Air quality districts closely monitored airborne particulate matter levels and issued public health advisories in response to the heavy smoke concentrations.

An upper-level ridge strengthened the inversion over Central California, which trapped smoke close to the ground and prevented dispersion into the atmosphere. Air quality impacts occurred in areas many miles from the fires. Smoke impacts also impaired visibility, which limited the use of firefighting aircraft.

For administrative reasons, the Blue Fire was incorporated into the Ukonom Complex.

The power and communication infrastructure continued to be threatened by multiple complexes. The Nor-Cal fiber-optic main was threatened by the Mendocino Complex fires. The Western Area Power Authority power lines, extending from Canada to Mexico, were threatened by the Whiskeytown Complex, and the Shasta Dam power generating system were threatened by the Motion Fire in the Shasta Complex. The Shasta Dam power generating facility is a major supplier of energy to the Central Valley Project with 500 KV power lines. Power generation and transmission remained threatened in the Feather River Canyon by the Canyon and Butte Complexes.

Fire-fighting resources on the Whiskeytown Complex secured commercial communication towers used by



television, radio, and numerous public and private agencies and companies for two-way radio communications in the greater Redding area from potential damage.

Impacts to natural resources increased. The following chart depicts the estimated merchantable commercial timber by CAL FIRE Unit that was destroyed by the conclusion of the fire Siege. This does not include regeneration.

Friday, June 27 – Monday, June 30
Weather, Governor’s Briefing, and Presidential Declaration

Fire activity increased Friday morning with a significant north wind blowing down the Sacramento Valley. It cleared out smoke which allowed air tankers to operate effectively on several fires.

Governor Schwarzenegger and Interior Secretary Kempthorn visited Whiskeytown National Recreation Area and received briefings on the firefighting efforts statewide and on the Whiskeytown Complex.

Saturday began with a prediction for more thunderstorm activity and a Red Flag Warning in effect for dry lightning during the next 3 days. In anticipation of additional lightning storms forecast for the weekend, the Governor directed OES, CNG and CAL FIRE to utilize all resources and prepare for additional fires. He directed CAL FIRE to run a centralized staging area at the Madera County Fairgrounds. This ensured that resources throughout the state would be mobilized quickly and be ready for deployment if new fires emerge.

Governor Schwarzenegger sent a request to President George W. Bush for federal assistance, including air and ground firefighting resources. On Saturday, June 28, President Bush signed a federal disaster declaration which authorized federal assistance and fiscal support for Butte, Mendocino, Monterey, Santa Clara, Santa Cruz, Shasta and Trinity Counties. This declaration was later amended on September 16 to include the Hoopa Valley Tribe and the Yurok Tribe. Evacuation operations and sheltering of displaced people continued for the counties of Butte, Mendocino, Monterey, Santa Clara, Santa Cruz, Shasta and Trinity.

Timber Loss (Private Timber Lands)

Complex	Loss
BTU	150 million board feet: Douglas-fir, and Ponderosa Pine, white fir (Butte and Plumas Counties)
LMU	6 million board feet: (Lassen, Modoc, Plumas Counties) saw log salvage – PP, D-fir, white fir
HUU	3 million board feet: (Humboldt, Del Norte County) – Douglas fir
SHU	80 million board feet: (Trinity and Shasta County) – Douglas fir, Ponderosa Pine
MEU	104 million board feet: Redwood, Douglas-fir and Ponderosa Pine (Mendocino County)

IKHANA UHV

The Ikhana Unmanned Aerial Vehicle (UAV) is a Predator-B type, unmanned, aerial vehicle adapted by The National Aeronautics and Space Administration for civilian missions. The name Ikhana was derived from a Native American Choctaw word meaning intelligent or aware. Built by General Atomics Aeronautical Systems, Inc., the remotely-piloted reconnaissance aircraft is operated by NASA's Dryden Flight Research Center at Edwards Air Force Base, California. The aircraft has a wingspan of 66 feet and is 36 feet long. It can carry over 2,000 pounds of remote sensing instrumentation and work at altitudes up to ~45,000 feet. The NASA Ikhana has 24-hour / 4000-mile mission capabilities.

NASA missions assigned to the Ikhana UAV system include: gathering scientific measurements and data to better understand and model our environment, improving the intelligence capabilities of unmanned aircraft to perform advanced missions, and demonstrating technologies that enable new aeronautics capabilities.

The wildfire imaging instrumentation and software capabilities provided on the Ikhana were developed at NASA-Ames Research Center, Moffett Field, California. The Autonomous Modular Sensor (AMS) – Wildfire is a multispectral (visible, infrared and thermal) instrument. It collects critical fire-related data and is capable of real-time distribution of geo-rectified imagery and hot spot detections to the ground over a satellite communications link. Since wildland fires often occur in rugged, remote terrain and last for long periods of time, fire managers need a system that can provide real/near-real time geo-rectified, enhanced imagery of fires for an extended period.

The Ikhana system includes a mobile ground control system and satellite communications system to control the aircraft from the ground and communicate and distribute data from the on-board sensor systems. The pilot team, controlling the Ikhana from the Ground Control Station (GCS) is located at the NASA Dryden Flight Research Center. The GCS is portable, but the system has not been deployed to alternative operation locations, although plans are underway to develop that capability in the near future. The AMS-Wildfire-acquire fire imagery and hot-spot detection data is geo-rectified onboard the Ikhana and distribute it to servers at NASA Ames, where the data is then made available immediately through the Internet to wildfire Incident Command Posts or to regional coordination centers where imagery analysts can use the information to support fire managers with accurate, current assessments of fire perimeter growth. The information can be immediately visualized in standard GIS packages or web-enabled mapping tools, such as GoogleEarth. The Ikhana AMS-Wildfire information, delivered within 10-15 minutes of collection, can greatly improve the situational awareness of fire managers trying to suppress wildfires in terrain that is often hidden in smoke.

The NASA Ikhana flew four sorties during the 2008 June Fire Siege. The Ikhana UAV (NASA/Dryden photo), with the AMS-Wildfire sensor pod located under the wing of the aircraft.



The IKHANA Unmanned Arial Vehicle

“STEELHEAD” BOAT RESPONSE

On June 21st, the Basin Complex was started by two lightning strikes. The Basin Fire started in the Ventana Wilderness in the near Bear Basin and the Gallery Fire near the coast of Big Sur, just uphill from the South Coast Gallery on Highway 1. They eventually joined together in the Big Sur River drainage, burning approximately 175,000 acres.

Steep terrain and transmitter locations limited radio communications over the 30 mile long incident that ranged from sea level to over 3,000 feet elevation. Several days into the Basin incident, the Communications Unit Leader was had problems getting the incident repeaters to provide radio coverage on State Highway 1 at the coast. CAL FIRE, USFS, OES, and the California Department of Fish and Game (CDFG) worked together to have the CDFG boat, “Steelhead” to act as a floating portable repeater site. The Steelhead came to Monterey for staffing and to have the repeater installed.

The crew moved the Steelhead into position and was on station for the entire shift for most of the next several days. However, the seas off the coast of Big Sur were unpredictable and the Steelhead could not get on station on a couple of days and was on station for abbreviated shifts on a couple of other days.

While the Steelhead was on station off of Pfeiffer Rock, they were able to provide good communications to the coastal area as had been anticipated. However, in the end, the unreliable nature of the boat based repeater caused the land-based firefighters to not trust the system enough to use it regularly.

Though the system did not ultimately work completely, the idea to use the boat was innovative. The efforts of the USFS, CAL FIRE, OES, and CDFG to get the boat on station are instances of interagency cooperation at its best. It is interesting to note that, during the 1977 Marble Cone Fire in the same area, a portable repeater was placed on a Coast Guard boat that was big enough to maintain station off of Point Sur.



California Department of Fish and Game P/B STEELHEAD assigned to the North Coast Enforcement District, Monterey. Home port: Moss Landing, Skipper: Lt. Bob Puccinelli, Crew: 3-4 inc. skipper, LOA: 58'



Smoke induced haze seen above California on June 27.

A thunder cell over the Corral Fire in Lassen County collapsed with peak wind gusts of 50 MPH. This caused rapid fire-spread, frequent spotting and the loss of established fire control lines. Resources were forced to disengage and retreat to safety zones as a precautionary measure.

On the Basin Fire, Highway 1 remained closed south of the community of Big Sur. Business and commerce continued within the community. There was concern that a predicted wind shift would increase acreage to the north and west which would affect the east side of Big Sur. The Oliver Fire caused unhealthy air quality affecting people in 4 counties.

Following the lightning, strong winds were predicted for all fire areas with the potential to increase fire activity. As the winds materialized Sunday, the smoke was pushed out of the valley, which allowed air tankers to resume operations. Fire intensity increased with



Fire and smoke forced the closure of several highways during the siege.

significant runs and spot fires. The North Mountain Fire in the Sierra Nevada expanded, and threatened a gathering of children at Camp Mather. Fire-fighting resources from the Siskiyou Complex assisted with 5 initial attack fires that started with lightning on the Klamath National Forest.

On the Butte Complex, the Oak Flat powerhouse on the Feather River went offline due to burned poles on a primary transmission line.

Despite the adverse weather conditions, the Walker Fire was contained at 19,504 acres.

The Governor proclaimed a state of emergency in Plumas County (12,000 acres burned) and in Kern County (2,500 acres burned).

REMOTE SENSING OPERATIONS ENHANCE SITUATIONAL AWARENESS



Remote sensing (RS) includes any method of acquiring imagery or geographic data from a distance. Designated teams of remote sensing technical specialists were activated during the Siege. The goals for the North OPS Remote Sensing Operations Team were to:

- ▶ Establish incident command team Situation Unit Leader contacts, and provide assistance and education to the SITLs to determine and streamline their RS needs.
- ▶ Closely monitor the region and national priority fires or complexes in order to triage the deployment of RS assets to as many incidents as possible.
- ▶ Maintain adequate RS assets to meet the incident needs throughout the day and night.
- ▶ Utilize available RS assets that could effectively meet incident needs within reasonable time frames.
- ▶ Deploy assets that collect imagery from altitudes above established temporary flight restrictions. This increases the safety factor and reduces the confusion of sharing assets between numerous fires.

The first resources ordered were infrared (IR) flights filled by National Infrared Operations Program (NIROPS) for a flight over the entire Northern California GACC to communicate the scope and magnitude of the lightning fires. Requests for IR quickly escalated and incident IR requests soon overwhelmed the available flight time of the two USFS NIROPS aircraft. Additional interpreters, coordinators, a military remote sensing technical specialist and GIS support were requested to support the incident requests.

The Remote Sensing Team was offered several military assets including Fire Hawk, Eagle Vision Systems satellite imagery, the U2 reconnaissance aircraft, and the Global Hawk unmanned aerial vehicle (UAV). Fire Hawk can usually fly one or two fires per day and provide GIS shape files containing the fire perimeter.

Fire Hawk, the California National Guard RC-26 (full motion video (FMV) surveillance aircraft) and Eagle Vision were the main military assets that provided data during the fire siege.

USFS Pacific Southwest Research Station Fire-Mapper was used to fly fires in the SoCal GACC. Fire-Mapper used a thermal imaging radiometer to map fire progress and intensity. It had sufficient sensitivity to be useful in terrain mapping, disaster management, and natural resource monitoring.

The effectiveness of multiple IR flights over an incident during Wildland Urban Interface threat conditions was tested to show the progression of the fire. One IR aircraft was able to down link, the collected data within 15 minutes of shooting the images and provide immediate data on the fire situation. Digital interpretation of the imagery on board the aircraft produced GIS data of heat areas prior to down linking the data, which provided immediate benefit to incident staff.

The RC-26 platform was used to provide real-time infrared and FMV imagery to Operations and Planning staff working on the fires. The IR video was down linked and ported to the internet and to portable receivers at the incident bases where it could be viewed live by incident staff.

The imagery provided by Eagle Vision Systems was used during and after the fires to validate NIROPS data, derive the current fire perimeter for fires that IR aircraft were unable to fly, and in post fire rehabilitation efforts.

Remote Sensing can not replace the human intelligence network on fires, but they can provide a big picture perspective that can make the job of incident staff safer and more effective. The information can provide the critical decision support required during difficult incidents.

“(Firemapper) has sufficient sensitivity to be useful in terrain mapping, disaster management...”

*By July 1, 1,459 fires
spanned across 435,894
acres of land.*

