Alaska Wildland Fires 2004

Wildland Fire Lessons Learned Center
Information Collection Collection Team Report

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This Lessons Learned report was prepared by Benchmark Research & Safety, Inc., with the input of federal fire agency employees assisting the Wildland Fire Lessons Learned Center. Benchmark provides human factors and safety-related products and services to government agencies nationwide. Under the direction of Dr. Curt Braun, Benchmark has provided the US Forest Service and other agencies with creative and effective training, management tools and expertise since 1994.

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Executive Summary

In July, 2004, a four-person Lessons Learned Center information collection team spent two weeks interviewing various members of the wildland fire community throughout the Alaskan Interior. Those interviewed were asked to share what they had learned, so that others might benefit from their experiences. This report is a compilation and synthesis of these interviews.

Themes of the Lessons Learned

Although we spoke to people with widely varying backgrounds, some common themes emerged. The eight themes are not mutually exclusive topics—they cover related and sometimes even overlapping topics—as indicated in the diagram. The main ideas of each theme are described briefly below. The majority of this report is divided into sections that develop each of these themes more completely.

The Alaska Fire Plan. Fire management options are based on the suppression designation for the area: Critical, Full, Modified, and Limited. The unplanned status of some lands was problematic. Available resources were not always commensurate with Critical suppression status. Applying the plan’s principles became tricky when Critical or Full designations were side-by-side with Limited.

Wildland Fire Use and Incident Management. This was the first year Alaska received and utilized Fire Use Management Teams (FUMTs). On these suppression assignments, FUMTs found they had to be vigilant to keep within their skill and comfort levels, and to order additional resources with enough lead time. Teams used a combination of tactics when traditional indirect methods and "mineral soil" firelines were not practical.

Although the Alaska Fire Plan does not officially call out fire use designations, some US Fish & Wildlife Service (FWS) and National Park Service (NPS) units in Alaska have approved fire management plans where this is an acceptable management alternative for those fires ignited by lightning. The Alaska Fire Plan’s Limited and Modified suppression designations are a good fit with many of the principles, management team structure, and operational tactics of wildland fire use. Revising the Alaska Fire Plan to incorporate fire use would allow the FUMTs to analyze and apply appropriate management techniques on a case-by-case basis.

Fire Weather, Behavior and Terrain. This section provides an overview of the Alaska wildland fire work environment: fuels & fire behavior, high relative humidity (RH), lack of safety zones and lookouts, shallow-root/snag hazards, bears and red-carded sharpshooters, Alaska’s use of the Canadian Forest Fire Danger Rating System (CFFDRS), the Alaska briefing, and the Handy Dandy field guide.

Urban Interface In Alaska. The Alaska firefighting infrastructure was more geared toward fighting remote fires with aircraft than for this season’s extreme fires in populated areas, where there were few engines, evacuation plans were not fully developed, and dispatch was severely challenged. Joint information center operations worked well. IMTs used “temporary delays” to support the local desire to keep roads open. IMT transitions were handled professionally and smoothly, benefiting everyone.
The Local Way. This section describes IMT issues unique to Alaska, including food boxes, 72-hour turnaround time for requests, procurement issues, and lack of standing agreements or contracting officers. Lessons from the Alaska cache system included the popularity of sprinkler kits, custom-made quick-deploy hose bags, and well-stocked medical kits. IMTs shared tips for working with local residents and tribal groups.

24-hour Daylight and Other Crew Issues. The long daylight and lack of much fire recovery time made for long operating hours. This affected operations and support functions in several ways: more air operations, longer burning periods, fatigue, and inadequate sleep. Medical units dealt more with dietary issues than with Alaska's legendary mosquitoes. Seasoned veterans shared their career lessons regarding camp size limits, crew management, and crew safety.

Remoteness, Air Operations, and Finding the Fire. Remoteness meant that aircraft were critical not only for suppression but for transportation of personnel and supplies as well. Air traffic required extensive coordination. Aircraft were not usually dedicated to an incident unless it was extremely remote. The lack of air tankers led to some difficulties and workarounds with scooper aircraft and single engine air tankers (SEATs). Huge distances, smoke, and limited aircraft meant that many IMTs waited days to get good intelligence on their fires. Communications, logistics, and medical units faced unique challenges in remote settings.

Training. Training continually comes up as a need when we ask about lessons learned. The Alaska Fire Specialist training program was described by some as a successful model for reducing the time to develop people in multiple positions. A local agency office described a customized “engine academy” workshop that worked well. Many expressed concerns about the shortage of trained personnel in all positions.

Index to Lessons Learned by ICS Function

Each section in the rest of the report includes a summary table of the lessons learned and the Incident Command System (ICS) functions most appropriate to each lesson. The table below shows the page numbers on which the summaries are found.

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1. Introduction

Collection Plan Scope

Objective

On July 9, 2004, the Wildland Fire Lessons Learned Center sent an information collection team to Fairbanks, Alaska. The four-person team spent the next two weeks interviewing various members of the wildland fire community throughout the Alaskan Interior. This report is the result of these interviews. Views expressed reflect the opinions of those interviewed, and are not necessarily the views of the Lessons Learned Center.

The team asked people to share their lessons learned (successes and challenges) so that others can learn from their experiences. It is important to point out that people shared their experiences voluntarily. The information collection team was not focused on inspecting problems or evaluating weaknesses. Challenges described herein reflect the fact that lessons can be learned both from successes and from challenges.

The purpose of the Lessons Learned Center is to improve safe work performance through organizational learning, focusing on what and why versus who. Consequently, all interviewee names have been omitted. The Lessons Learned Center – and future information collection teams – will only be successful if the wildland fire community embraces this what, not who approach toward becoming a learning organization.

Team Composition

The information collection team members included team leader Dave Christenson (Assistant Center Manager, Lessons Learned Center), Kim Round (US Forest Service, Colorado), Wendell Welch (BLM NIFC, Distance Learning Unit), and Elise Lind (Benchmark Research & Safety, Inc.).

Focus Areas

The team members asked a range of questions that included:

Type 1 and Type 2 incidents

- Successful tactics, techniques, or procedures
- Most significant lesson regarding firefighting or managing fire in Alaska
- Biggest challenge faced on the current incident
- Lessons regarding safety, operations, planning, or logistics
- How fire behavior affected strategy or decisions on the incident
- Ordering Fire Use Management Teams (FUMTs) in this role
- Recommendations for improving training
- Unresolved issues, and recommended resolutions
Wildland Fire Use incidents

All of the above, plus:

- How the Fire Use Management Team (FUMT) was organized
- How the Maximum Manageable Area (MMA) was developed
- Typical strategy
- Tactics used when an incident moves beyond the FUMT scope or capacity
- Recommendations for preparing for fire use in Alaska
- Agency administrator methods for deciding to order FUMT, preparing for FUMT, and expectation of the FUMT
- Agency lessons learned regarding team organization, developing MMA, in-briefings, operations, etc.

Positions Interviewed

During the two weeks, the team interviewed 129 people representing at least five different city, county, state and federal agencies and private citizens. Interviews were held at the Alaska Interagency Coordination Center and at five fire complexes.

Teams Interviewed:

- Alaska Interagency Coordination Center: Dispatch, Cache, Joint Information Center (JIC)
- IMT1 from lower 48
- IMT2 from Alaska
- IMT2 from lower 48
- FUMTs from lower 48 (two teams)

Positions Interviewed:

Agency Administrators:
- Alaska Department of Natural Resources: Check-in Status Recorder
- BLM/Alaska Fire Service: Communications Unit Leader
- National Park Service: Communications Technical Specialist
- Alaska Dept. of Forestry: Computer Technical Specialist (CTSP)
- Alaska Satellite Facility Deputy Director: CTSP Trainee
- Alaska Satellite Facility Technical Specialist: Demob Unit Leader
- Alaska Forestry Suppression Operations Supervisor: Lead Dispatcher
- Air Attack pilot (2): Division Supervisor (DIVS)
- Air Attack Supervisor: DIVS Trainee
- Airbase Radio Operator: Documentation Unit Leader
- Aircraft Cargo Specialist: Duty Officer
- Air Ops Branch Director: Expanded Dispatch Personnel
- Air Ops Dispatcher: Facilities Unit Leader
- Air Ops Section Chief: Fire Behavior Analyst (FBAN)
- Air Support Group Supervisor: Finance Section Chief
Many of these interviewees took the time to give detailed accounts of their vast experience in wildland fire. Not all of these details could be included in this report, but common lesson-learned themes emerged. The themes are described briefly in the Introduction, and are explained more fully in the body of the report. Each section contains a narrative summary of the experiences, a list of lessons learned, the ICS position(s) for which a lesson is probably most appropriate, and a list of other related resources available.
2. The Alaska Fire Plan

Overview

Fire management options are based on the fire suppression designations defined in the Alaska Fire Plan: Critical, Full, Modified, and Limited. Public awareness of these designations is not consistent, and the unplanned status of some lands can be problematic. Alaska uses a different Wildland Fire Sitation Analysis (WFSA) process. IMTs used “point defense” strategies to cover huge areas with limited resources. Application can become tricky when Critical and Limited designations are side-by-side.

Background

Wildland fire in Alaska is managed by multiple state and federal agencies, as shown in the graphic below.

The Alaska Interagency Wildland Fire Management Plan places all land in the state into one of four management options: Critical, Full, Modified, and Limited. These designations are described below.1

Critical: This option gives the highest priority to suppression action on wildland fires that threaten human life, inhabited property, or designated physical developments and structures designated as National Historic Landmarks. These wildland fires are given priority over all others and receive immediate and aggressive suppression efforts.

Full: This option was established for the protection of uninhabited private property, designated cultural and historical sites, and other high-value natural resource areas.

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1 Critical, Full, Modified, and Limited descriptions are taken from “Understanding Fire Management Options,” a publication based on the Alaska Interagency Wildland Fire Management Plan. Reprinted in Appendix A.
that don’t involve protection of human life and inhabited property such as commercial timber stands. Aggressive suppression action is taken, subject to the availability of resources. These wildfires receive priority after Critical fires.

**Modified:** This option is intended to be the most flexible to land managers and owners. It provides more protection during the time of season when fire danger is typically highest and there is greater probability of growth. Modified options have an established evaluation date for determining when to convert from initial attack to non-initial attack. The intent is to balance acres burned with suppression costs and accomplish land and resource management objectives.

**Limited:** This least-aggressive option applies to areas where the cost of suppression may exceed the value of resources to be protected, where suppression may be more damaging than the wildfire or where fire is beneficial to the fire dependent ecosystem. Limited fires receive the lowest priority for resources. Wildfires in this option will be allowed to burn under the influence of natural forces within predetermined areas while continuing protection of human life and site-specific values.

In areas where land managers and owners did not participate in the fire management planning process, those blocks of land were designated as Unplanned.

Boundary lines of fire management zones sometimes have a Critical or Full suppression on one side and Limited on the other side. See Appendix B for a detailed map of the different management options. Some of the people interviewed expressed concern that the Alaska Fire Plan needs to provide a better transition, or buffer, between lands with Full and Limited management side-by-side. Often it is all the same ecosystem, so it might be better to transition from Full > Modified > Limited.

**Lessons Learned**

"The problem is when there are fingers of Full protection surrounded by Limited."

*Incident Commander*

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**“Point Defense”**

**Tactics**

In order to support the “fingers” of Full protection surrounded by Limited, the majority of the IMTs adopted a strategy of structure protection and spot suppression, what one IC called “point defense.” The tactics included protecting structures with hoses, pumps, and sprinklers, and doing suppression by checking rather than control or containment. The philosophy is more like *where can we stop it*, rather than, *how can we stop it where it is*.

Fire in Alaska is often in remote, unroaded areas. Alaskan agencies tend to order small IMTs because of the cost to support these people in remote areas, and they demand multitasking from their IMT members. Although the complexity analysis of these fires makes them Type I, the point defense tactics and the logistical/support concerns make it more like a Type II. Another lesson expressed by a Branch Director was that, “we need to get away from the mindset that structure protection requires structural engines.” Many fires in Alaska lack the road systems required for engine support. Many of the roads in Alaska do not support Type I engines. Some IMTs succeeded by combining the use of Type 3, 4, and 6 engines with the sprinkler kits described in section 6 (page 32) for structure protection.
Individuals on IMTs from outside Alaska should be aware that the Alaska Incident Status Summary (ICS 209) requires additional information beyond what is usually required: Number of acres threatened, Agency jurisdiction, and level of fire suppression (Alaska Fire Plan designation).

**Locating Structures**

“Even most of the locals don’t know where everything is… and that’s how they like it.”

*Incident Commander, on finding structures in the woods*

One major challenge to the strategy of structure protection was the lack of local knowledge of those structure locations. The general land office did not have an accurate inventory. Prioritizing structure protection areas involved several tactics:

- Driving along highway corridors looking for driveways (not always easy to find).
- Asking locals in public meetings to come up and draw structures on the fire maps.
- Checking remote structures for defensible space.

Decisions about protecting individual structures were sometimes difficult. The IMTs were most successful when they used local liaisons to guide firefighters on what they were or were not supposed to protect. As one IC put it, “The places may be ‘rubble piles’ as the administrator describes them, but when there’s people living there it’s hard to say we won't protect it.” Having an agency person onsite was considered crucial.

“Many cabins are ‘trespass cabins’ that were built illegally. Risk lives to protect ruins? There are hundreds of ‘cultural sites’ that are miner’s cabins over 50 years old and in ruins, yet require full protection… It often costs $40,000 with smoke jumpers to protect a recreation cabin valued at $4,000. Some trespass cabins are as crude as people living under a blue tarp. A trespass fish camp next to an unused [native] allotment ended up costing $70,000 to protect this year.”

*Agency Administrator*

**Public Awareness**

The IMTs interviewed felt that much of the Alaskan public is unaware of the protection levels designated in the Alaska Fire Plan. Many people express the opinion that Alaskans value self-reliance, and this may have contributed to the apparent lack of public involvement in the Alaska Fire Plan. Overcoming this meant more public involvement as the fires were burning.

The lack of awareness led to a mismatch in goals for suppressing the active fire, particularly for lands with Unplanned status. The Alaska Fire Plan is focused on protecting structure values and other high-value areas on a case-by-case basis. As several interviewees told us, many local people felt their entire areas should receive full suppression. Opinions differed on the extent to which these private landowners were invited to participate, or chose to participate, in the planning process.

Agency personnel interviewed felt that Fire Managers needs to be more proactive, by working with property
owners for buy-in on protection levels before the fire starts. Many felt that Alaska needs to revisit
the fire plan and work harder to promote public involvement in the process. They recognized that
fuels pre-treatment by the local landowners and occupants would yield a huge level of protection,
as well as improve understanding of wildland fire risk to property and livelihood. It is likely that,
after the 2004 extreme fire season, more Alaskans will take interest in their local fire protection
planning.

**Wildland Fire Situation Analysis (WFSA) Challenges**

Alaska uses a different WFSA process than the one used in the lower 48. One Alaska Regional
Fire Management Officer (FMO), who was also acting as a Type 2 IC, described the Alaska-only
WFSA as being reduced to resource analysis, alternatives, fire situation, decision criteria, &
financial limit. Although the Alaska IC felt it was a useful planning tool, some who were unfamiliar
with it felt that having an Alaska-specific process led to delays and confusion in preparing these
documents, because of the learning curve required for those who were called in to assist from the
lower 48.

The Alaska Fire Plan states that the suppression organization, in conjunction with the affected
land manager/owner(s), will determine the appropriate suppression response through the WFSA
process. However, IMTs reported that in practicality this process had not typically been followed.
One felt that the local agency administrators and line officers needed more training in WFSA
process and the necessary involvement from the local level when dealing with long duration
wildland fires. The Alaska Regional FMO said that, as IC, he leans on the Delegation of Authority
as a reference. He carries a checklist based on this, entitled “Incident Command Evaluation
Checklist” (reprinted by permission in Appendix C).

One IMT interviewed felt that the Alaska WFSA unduly limited the fire suppression responses.
According to an individual knowledgeable about the development of the Alaska Fire Plan,
flexibility in response is a critical element in the plan. A land manager can request a higher level
of suppression response such as requesting initial attack of a fire in the Limited Management
Option. If a fire is near a boundary or potentially threatens a management option of higher
protection standard the area/zone FMO contacts the land manager(s) and may take suppression
actions. The plan allows the area/zone FMO to take action if the threat is imminent even if the
land manager(s) cannot be contacted. The area/zone FMO and land manager(s) can agree to a
reduced suppression response based upon circumstances such as firefighter safety, fire
behavior, fire size and location, and resource availability. It appears, therefore, that the intent of
the Alaska Fire Plan was not clearly spelled out in the Alaska WFSA process.

Another IMT noted that the Alaska WFSA required a full-feature version of Adobe® Acrobat to fill
it out or make changes. Since the IMT didn’t have the software, they ended up doing it on paper
and catching up later when they obtained the software.
### Lesson Summary – The Alaska Fire Plan

| Every protected area in Alaska has a predetermined suppression designation (Critical, Full, Moderate, or Limited) in the Alaska Interagency Wildland Fire Management Plan (AIWFMP). There are some privately held lands with Unplanned status. | All |
| Alaska tends to order small IMTs to minimize the cost of supporting people in remote areas. | Agency Administrators, Incident Command |
| To respond to the huge fires with limited resources, most IMTs adopted a “point defense” strategy of structure protection and spot suppression, rather than containment. | Incident Command, Operations, Planning |
| In remote areas in Alaska, there are few accurate maps of structure locations. IMTs used several methods, including asking at public meetings for people to draw structures on a large fire map. | Agency Administrators, Operations |
| Local agency liaisons were crucial in determining which structures qualified for protection under the Alaska Fire Plan. | Agency Administrators, Operations |
| Alaska uses a reduced WFSA process -- resource analysis, alternatives, fire situation, decision criteria, & financial limit. Familiarity with the WFSA process by local agency administrators and line officers varied across the region. IMTs reported that the Alaska WFSA required the full version of Adobe® Acrobat, not just the reader. | Incident Command, Planning, Agency Administrators |
| The ICS 209 for state of Alaska requires information about the number of acres threatened, the agency jurisdiction, and the suppression designation from the Alaska Fire Plan. | Planning |

### Other Resources

- Alaska Interagency Wildland Fire Management Plan, online at [http://fire.ak.blm.gov](http://fire.ak.blm.gov) or at [http://www.dnr.state.ak.us/forestry/pdfs/98AIFMP.pdf](http://www.dnr.state.ak.us/forestry/pdfs/98AIFMP.pdf)

Summary of the Critical, Full, Modified, and Limited definitions are reprinted in Appendix A. For more information about management options in a particular area, contact the local land manager.

Example IC checklist based on delegation of authority, obtained from an Alaska FMO (and Type 2 IC). Reprinted in Appendix C, by permission.
3. Wildland Fire Use and Incident Management

Overview

This was the first year Alaska received and used Fire Use Management Teams (FUMTs). On these suppression assignments, FUMTs found they had to be vigilant to keep within their skill and comfort levels, and to order additional resources with enough lead time. FUMTs used a combination of tactics when traditional indirect methods and “mineral soil” firelines were not practical.

Although the Alaska Fire Plan does not officially call out fire use designations, some FWS and NPS units in Alaska have approved fire management plans where this is an acceptable management alternative for those fires ignited by lightning. The Alaska Fire Plan’s Limited and Modified suppression designations are a good fit with many of the principles, management team structure, and operational tactics of wildland fire use. Revising the Alaska Fire Plan to incorporate fire use would allow FUMTs to analyze and apply appropriate management techniques on a case-by-case basis.

“Alaska is a perfect application for fire use. Here we have the capability to look at the incident over the long haul, and make strategic decisions based on that analysis.”

Fire Behavior Analyst

Background

Wildland fire use, as described in the Interagency Fire Use Module Field Guide, is the management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas. Fire use involves flexibility, and the product FUMTs provide is a long term assessment of the fire’s potential behavior. This involves having a core, small team come in to analyze the situation with a fire use monitoring approach, create management action points, then take the appropriate management actions when those points are reached. The FUMT organization expands as needed to staff a specific area of emphasis, to obtain an appropriate mixture of suppression and the introduction of fire into the ecosystem.

Lessons Learned

Agency Perspective

This year was the first time an Alaska agency received a Fire Use Management Team (FUMT). One agency administrator told us the reason for requesting the FUMT started with the fact that Type III IMTs were overtaxed and not available for assignment, while Type II IMTs consisting of 40-60 people are considered too big. The Alaska agency that requested the FUMT for their incident did not consider it to be a fire use effort; the choice was based on the size of the team and the impact to the local community. At one FUMT-run complex we visited, only one out of 16 fires was Fire Use; the rest required the FUMT to do limited suppression.

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2 Source: Interagency Fire Use Module Field Guide version 03.07.01 (2003). Appendix D.
Resistance to using FUMTs is still a prevalent concern, but the agency administrators who worked with FUMTs this year had positive responses to the teams’ skills, their self-sufficiency, and the fit with local fire management objectives. One agency administrator pointed out that the remote structural protection specialists on the fire use modules are “a great sell with the locals.”

Another agency administrator was concerned that because the Alaska Fire Plan does not include fire use designations, it was unclear how often they should be applied, especially in an extreme fire season. There is a need for the Alaska Fire Plan to make more use of fire use designations as they are used in the lower 48, so they can take more advantage of FUMT principles. Fire use principles would make the suppression designations more subject to case-by-case analysis by fire scientists. In the words of one FUMT IC, “…Letting a fire be managed for two months can be pretty expensive. Even without mitigations in the field the costs of management can be high. Alaska needs to figure out the values of its resources in order to weigh the resource benefits from managed fire, the cost of doing fire use management, and the cost of doing suppression fire management. It is a bit unusual for a FUMT to be here, but the different levels of fire protection in Alaska allow this to happen.”

Some FWS and NPS land managers have unit-specific Fire Management Plans that supersede the Alaska Fire Plan and include Wildland Fire Use as an option, but this is not consistent across the state.

Preparing for a FUMT

The consensus was that preparing for a FUMT is no different than preparing for any other IMT. One regional FMO described the needs, “A FUMT requires a little more information, and more frequently, in order to fully function. Accurate location of the fire and an accurate fuels picture supports the fire behavior specialist to predict. There must be a good list of things to protect, and a GIS person readily available to provide the team with detailed maps.” Most IMTs would probably request the same support. Another FUMT member added that the agency needs to look at how big the fire may possibly get, who might be impacted, and when the season-ending event might occur, and be prepared to have the appropriate resources standing by when the fire reaches a certain trigger point.

Fire Use Management Team Perspective

Terminology

FUMTs ran into a number of misconceptions about their charter, many stemming from confusion over the terminology.
Some FUMTs encountered cooperators who assumed they were going to simply put out the suppression fires and monitor the fire use fires. Others assumed that they would simply monitor all the fires. The FUMTs found it necessary to continually emphasize that they were looking at the fire objectives and determining what the appropriate management response ought to be. A FUMT Ops Section Chief stated that he just kept emphasizing appropriate management response (given objectives, values, and resource availability) and trying to get folks to think past what type of fire it was, or what type of incident management team was managing it.

One FUMT IC suggested that rather than categorizing fire at its two extremes -- Fire Use versus Suppression -- we call it all Fire Management. Suppress aggressively when required, but if it is determined that fire use is desired then the team can manage the fire and not just “let it burn.” The key is that in both cases the FUMT is managing the fire. Another Type 2 IC put it this way: “The name and function [of FUMT] should be looked at. Fire is fire. If a Type 2 IMT is used in a fire use role, they do not have to bring all positions. However, if the effort turns into suppression then the team will need to order the positions filled.”

**Tactics**

To achieve an agency’s Fire Management Plan goals, the FUMT can pull the fire to spread into areas where fire is needed to improve the condition of the land. One FUMT FBAN described his method this way: “We need to get people out on fires for them to understand when we can move from us beating the fire out to the fire beating itself out. We need to take it where we know we can beat it....” As an FBAN, he found success by getting field observers (FOBS) oriented and out with DIVS in multiple divisions.

One FUMT member felt that Alaska’s use of FUMT short teams was a good test of the use of such short teams versus Type I or II long teams. He felt the short teams compared well, but must be able to recognize when they need to add (and release) additional positions. Another interviewee described this as a watch-out situation for FUMTs and managers, saying it is critical for FUMTs to be able to ramp up as the operational tempo dictates.

Another FUMT Plans Chief said that it was crucial to pre-order additional positions based upon the anticipated assignment -- especially because of the delay in filling resource orders. Due to the remoteness of the fires and the extraordinary level of activity managed through the Alaska Interagency Coordination Center, resources sometimes took several days to arrive. (See more in the section entitled, “Extensive Urban Interface Involvement.”)
### Lesson Summary – Wildland Fire Use and Incident Management

<table>
<thead>
<tr>
<th>The Alaska Fire Plan should incorporate wildland fire use designations officially, allowing them to take more complete advantage of the FUMT options. (Draft language currently exists.)</th>
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<tbody>
<tr>
<td>On every assignment, FUMTs must be ready to educate the cooperators and the public about the Fire Use Management Team concept and what specialties they bring. Emphasis should be on their ability to apply the appropriate methods to manage their resources.</td>
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<tr>
<td>FUMTs were a good fit for the Alaska way of managing fire, given their team size and range of skills.</td>
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<tr>
<td>“Fire use” terms tend to confuse the issue of applying the appropriate management response to a fire. Many suggest using “fire management” instead, regardless of whether it is fire use or suppression.</td>
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<tr>
<td>FUMTs needed to be very aware of when critical thresholds indicated that more positions needed to be filled, especially since getting new resources required long lead times in Alaska.</td>
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### Other Resources

- Interagency Fire Use Module Field Guide. The introduction to this guide is reprinted in Appendix D.
- The Interagency Fire Use Management Team web site at [http://www.fireuse.org/](http://www.fireuse.org/)
4. Fire Weather, Behavior, and Terrain

Overview

This section provides an overview of the Alaska wildland fire work environment: fuels & fire behavior, high relative humidity (RH), lack of safety zones and lookouts, shallow-root/snag hazards, bears and red-carded sharpshooters, Alaska’s use of the Canadian Forest Fire Danger Rating System (CFFDRS), the Alaska briefing, and the Handy Dandy field guide.

“The trigger points they describe in the Alaska briefing are right on. We’ve seen it happen exactly like that – 40% RH and 10 mph winds and the fire picks right up.”

Safety Officer

Background

Fuels

From a safety standpoint, black spruce is the problem fuel type in the Alaskan Interior. The stands are thick, visibility is poor, and there are few safety zones. As one firefighter observed, “People from the lower 48 need to know about the terrain here. The moss is lumpy and the trees are close together creating a jungle type of vegetation that is very hard to move through. The time to hike in or out needs to be adjusted. Escape Routes are slower and natural Safety Zones are few. Navigation using reference points is difficult once you get into [the forest] because you can’t see out.”

Black spruce tends to burn incompletely, leaving lots of green in the black and increasing the chance of reburning. One Operations Section Chief observed that doing burnouts was slow going, since the black did not fully burn. The shallow root systems of the black spruce forest also increased the risk of falling snags.

Finally, dozer lines are not encouraged because of the permafrost layer under the surface of the forest floor. Once exposed, the permafrost melts and gets extremely muddy. Rehab is nearly impossible after a dozer line is constructed.

Fire Weather

Alaska Predictive Services consists of fire weather, fire behavior/danger and intelligence functions. Currently there is a fire weather program manager in addition to the intelligence positions. Unlike most of the other Predictive Services in the lower 48, Alaska does not have a wildland fire analyst for the fire behavior and fire danger functions. During peak fire season, fire behavior analysts detailers assist with these functions.
Alaska uses numerous Remote Automated Weather Stations (RAWS) that are owned by various land managers and receive varying levels of attention and service. According to one FBAN, most stations also lack a quality dataset of historical observations, and where they exist, they are usually inadequate in length to capture the kind of season experienced in 2004. This FBAN expressed the need for the following changes:

- Establish a defined period of record in a given geographic area for all stations that support management decisions in that area.
- Store the data archive where it can be accessed by anyone supporting operations in that area.
- Assign a single individual to coordinate a feedback loop of known errors and fixes. For example, where stations have existed on a single site under different names and catalogues, review station catalogue and historical observation records and identify where datasets can be combined. (Note: The office of the Alaska Predictive Services Fire Weather Program Manager should be the point of contact for this feedback.)
- Develop a graphical display of the Canadian Forest Fire Danger Rating System for all stations in the system. The CFFDRS works well, and a graphical display would help portray historical information; the value of a number is often lost, but the trend can be dramatic. Consider using ROMAN and its display of weather observations as a model.

**Fire Danger Rating**

Alaska uses the Canadian Forest Fire Danger Rating System (CFFDRS) rather than the National Fire Danger Rating System used in the lower 48. The CFFDRS simply requires weather from RAWS, and does not require state-of-the-art weather. The system is based on moisture codes for the fuel and the duff layers, and indices of drought, initial spread, and vegetation build up. The key break points and interpretations are shown below.³

<table>
<thead>
<tr>
<th>Fire Danger</th>
<th>Fine Fuels Moisture Code</th>
<th>Duff Moisture Code</th>
<th>Drought Code</th>
<th>Initial Spread Index</th>
<th>Buildup Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0-80</td>
<td>0-70</td>
<td>&lt;150</td>
<td>0-2</td>
<td>30-70</td>
</tr>
<tr>
<td>Moderate</td>
<td>81-86</td>
<td>70-80</td>
<td>150-350</td>
<td>2-5</td>
<td>70-80</td>
</tr>
<tr>
<td>High</td>
<td>87-90</td>
<td>80-90</td>
<td>350-400</td>
<td>5-10</td>
<td>80-90</td>
</tr>
<tr>
<td>Extreme</td>
<td>90+</td>
<td>90+</td>
<td>400+</td>
<td>10+</td>
<td>90+</td>
</tr>
</tbody>
</table>

Drought Code Interpretations:

- <300: Mop-up relatively straight-forward
- 300-500: Mop-up difficult and extensive mop-up of edges required.
- >500: Dry mop-up not possible; wet mop-up difficult. Extensive patrolling necessary.

*Hint:* Stick your hand in the duff. If it’s dry all the way down, mop-up will be difficult.

**Relative Humidity**

Critical RH levels are high compared with most places in the lower 48 (with the possible exception of Florida). For example, one Operations Section Chief compared the burning he saw at 30-40% RH in Alaska to burning he would see at only 15-20% RH in the Rocky Mountains.

³ Taken from The CFFDRS for Dummies handout, obtained at one of the Alaska ICPs and reprinted in full in Appendix E.
Also, night-time RH recovery was not as dramatic as firefighters from the lower 48 might expect, due to the 24-hour daylight.

Critical Relative Humidities:

- >40% - burnout operations difficult, results in dirty burn
- 35-25% - good consumption of surface fuels with few control problems
- <25% - control of burn difficult and escaped fires likely

Lessons Learned

“It just continues to surprise us on this incident. This is one of those years when the hardwoods don’t work… At the same time, it’s not that dry. A mile ahead of the fire it’s still wet out there. It can be pouring rain, and then after a few days of drying it gets back up and running again.”

Planning Section Chief

The 2004 fire season was unusual in the number of dry days, high temperatures, and fires near people and structures (see next section on the urban interface). The extremities observed by one IMT included:

- Fuels were so dry and the heat in the fires was so persistent that fires were backing into the wind.
- Plume dominated events were common, and columns were collapsing randomly.
- Even with greater than 50% RH, fires were burning aggressively under the smoke.

One IC noted that the fire does not go out even after a rain that would be a season-ending event in the lower 48.

Operations

Indirect methods of building fire line proved problematic for a number of reasons. Most operations personnel found that due to the extreme conditions and lack of good anchors, they could not use just indirect attack; they also had to conduct burning operations around communities. The strategy deemed most successful by one IMT was to take advantage of the plentiful water and pump/hose equipment in Alaska. A typical fire line construction consisted of cutting the trees and brush down to the litter layer about 10’ – 15’ wide, then wetting the line, followed by burning out from the line.

Although RH levels did not recover dramatically at night, it was better than daytime RH, and the light level allowed for firefighting operations to be conducted at night. One Operations Section Chief described their strategy: “Night Shift has better RH and the light [in Alaska] is sufficient at this time of the year to eliminate most of the usual nighttime concerns experienced in the lower 48. So we are able to provide 24-hour combo coverage in special places where it’s actually safer to fight fire at night. You still need a core work force during peak daytime burn periods, especially doing structure protection, so you can’t just fight fire at night.”

Multiple IMTs mentioned that Alaska FBANs were a critical need, due to their familiarity with the CFFDRS system and the uniqueness of Alaska fuels and fire behavior. However, in this extreme year, Alaska crews were stretched thin, and there were not enough Alaska FBANs to go everywhere they were needed. One Operations Section Chief mentioned that he was able to
compensate by consulting the local FMO, describing the specific conditions he was seeing, and asking the FMO for advice about the feasibility of doing a back burn, for example.

**Transport Over Rough Terrain**

One IMT had success in using small unit support vehicles (SUSVs) to transport personnel to work assignments. These military vehicles consist of two tracked, enclosed cars connected by an articulated hitch that allows the cars to maneuver independently. All four tracks are powered. The SUSV is all-terrain and amphibious.

The IMT used SUSVs to get crews from drop points to the fireline, often over unroaded terrain or previously-constructed fire line. The SUSVs improved travel in and out of the remote areas and reduced the risk of injuries due to rough walking conditions. Having them as a back-up for extraction also was a big success. The important lessons in using the SUSV safely include:

- Personnel must receive a SUSV passenger safety briefing prior to boarding.
- Personnel are required to wear seat belts when riding in an SUSV. Limit the number of personnel transported to the number of seat belts available.
- Wear hard hats while being transported.
- Do not transport equipment in the passenger compartments.
- Use a spotter, standing outside the vehicle, to assist the driver in backing operations.

**Wildlife**

Bears are a concern for Alaska firefighters, especially those in spike camps. The Alaska Interagency Coordination Center dispatches red-card certified shooters for problem animals. One fire complex near Fort Yukon had 11 people armed with shotguns to protect the camps and crew. Most important was to have spike camps comprised of large groups of multiple crews (100-200 people), since bears are less likely to invade a large camp.

This IMT also suggested that IMTs get a local person to be the base camp manager (BCMG), and to have this person design and set up the initial camp and instruct crews as well as subsequent BCMGs in techniques to avoid wildlife problems. A Logistics Section Chief stated, “Think about where you put facilities and what you put into your tent. Teach people about bear behavior before you come and then refresh their memories.”

**The Alaska Briefing**

Alaska requires all firefighting resources to be processed through the Alaska Interagency Coordination Center (AICC) in Fairbanks. Because all resources start from this common point, the AICC is able to offer all resources an Alaska Fire Service (AFS) briefing that covers the unique features of Alaskan fuels, fire behavior, CFFDRS, air operations, and some logistical considerations. Every attendee receives a copy of the “Handy Dandy” Alaska Fire Suppression Field Handbook and (if appropriate) the Alaska Emergency Firefighter Type 2 Crew Management Guide, which describes Alaska’s unique work shift and administrative requirements.
Operations personnel considered the Handy Dandy handbook a valuable tool. This booklet contains interagency information on everything from warehouse supply forms to crew hiring procedures to cabin protection tips. One IMT suggested that the 520 curriculum be revised to include a summary of the Handy Dandy and tips for using it.

Most personnel from the lower 48 felt that the briefing was worthwhile, even “fantastic” in the words of one IC. However, the briefing is geared toward the traditional outback fires – deep in the Alaska Interior without roads and heavily dependent on aircraft, even for getting crews to the fire. One of the lessons learned from this fire season was that Alaska can encounter urban-interface fires just like any other, more populous place in the US. The IMTs in these fire situations felt that the briefing was not relevant to their experience in Alaska. In addition, some felt that the briefing’s presentation, which took anywhere from 1½ to 3 hours to deliver, could have been more efficient. Currently, it is offered only twice a day, so many wait for hours before hearing it. An entire Type I IMT with 60 people waited ten hours to receive the briefing.

Suggestions for revising the AFS briefing included:

- Make it more up to date. (Note -- AFS is already planning an update.)
- Include relevant issues for roaded-area fires, such as the availability of rental vehicles, engines, and other equipment.
- Create a unit for IMTs regarding policy, food, commissary, backcountry logistics, and other crew issues faced by support personnel.
- Combine the “Handy-Dandy”, Alaska Emergency Firefighter Type 2 Crew Management Guide, and the “Alaska Supplement to the National Fire Equipment System Catalog” into a single package.
- Consider automating or offering alternative delivery methods (video, Internet). This way, the briefing could be delivered more frequently each day, especially during a busy time when newly arrived resources need it.
**Lesson Summary – Fire Weather, Behavior & Terrain**

<table>
<thead>
<tr>
<th>The Alaskan interior terrain consists of dense black spruce forest and heavy moss over permafrost. This terrain offers poor visibility, few safety zones, and difficult hiking conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The fuels burn hot at relatively high RH. Rain is not a fire-ending event, since the fire will hide under the moss and pick up again when the top layer dries out.</td>
</tr>
<tr>
<td>Given the lack of safety zones and good anchor points in the terrain, some crews found they were most successful using a combination of wet lines and backburning operations.</td>
</tr>
<tr>
<td>Alaska IMT members were invaluable for their assistance in interpreting danger levels – Alaska uses the Canadian fire danger rating system – and for helping avoid wildlife dangers in camp.</td>
</tr>
<tr>
<td>Military small unit support vehicles (SUSVs) were very effective in transporting crews to remote fire line assignments over rough terrain.</td>
</tr>
<tr>
<td>The AICC will dispatch red-carded sharpshooters to deal with problem animals in fire camp.</td>
</tr>
<tr>
<td>The AFS briefing is a good overview of Alaska’s unique fuels and fire behavior, but the briefing is offered on a limited basis and is not geared toward road-accessible fires. Suggested improvements included more information about team-management issues, and automating the delivery (e.g., videotape).</td>
</tr>
</tbody>
</table>

**Applicable ICS Functions**

| Operations, Safety, Planning |
| Planning (FBAN), Operations |
| Operations, Safety |
| Planning (FBAN), Logistics |
| Logistics (Ground support), Operations |
| Area Coordination Center, Incident Command |

**Other Resources**

- Alaska Fire Service Orientation Guide (available from the AFS)
- Alaska Fire Service web site: [http://fire.ak.blm.gov](http://fire.ak.blm.gov)
5. Urban Interface In Alaska

Overview

The Alaska firefighting infrastructure was more geared toward fighting remote fires with aircraft than for this season’s extreme fires in populated areas, where there were few engines, evacuation plans were not fully developed, and dispatch was severely challenged. Joint information center operations worked well. IMTs used “temporary delays” to support the local desire to keep roads open. IMT transitions were handled professionally and smoothly, benefiting everyone.

"That [burn area], that’s bigger than most states… An eighth of the forest in that area has burned in a couple of weeks. It’s a historic event. We’ll live with the consequences for years."

Professor Glenn Juday, Univ. of Alaska - Fairbanks, quoted in the Fairbanks News-Miner 7/18/04


Background

It is not unusual for Alaska to experience hundreds of fires in a season. However, according to the managing Information Officer at the AICC Joint Information Center (JIC), this fire season was unusual because:

- The weather and fuel conditions made for larger, more complex fires. The statewide total on August 23, 2004 was 5.48 million acres burned. On that date, the Taylor complex near Tok had burned 1.2 million acres, and the Central complex near Fairbanks had burned 427,000 acres. Several other fires in the state were 300,000 acres or greater.
- Smoke hung heavily over the population centers of Fairbanks and Tok, generating larger-than-normal call volumes from both residents and tourists. Because of the unprecedented call volumes, the AICC established a JIC at the Alaska Fire Service site.
- Many of the largest fires were in road-accessible areas. The fire services, well-equipped to fight fire with aircraft in un-roaded areas, struggled to find enough engines for support.
- Many of the backcounty fires also involved extensive wildland-urban interface issues, like dealing with native allotments containing numerous structures, villages, small community developments, and critical infrastructures.
- Canadian resources were unavailable to assist, due to their own intense fire activity across the border. At least one fire burned into Alaska requiring allotment protection.

Local government responsibility for fire planning varies depending on the fire location. In and around the major cities, there are boroughs – counterparts to counties in the lower 48. However, the boroughs are not staffed at the level of most county governments in the lower 48, and there
are no enforcement agents analogous to the role of a county sheriff. Outside of the major cities, the rest of the state lands are the responsibility of the State Division of Forestry. State troopers are responsible for evacuations, but there are a small number of troopers covering a huge territory across the state.

Many of the remote communities affected by fire this season are accessible by just one two-lane highway, or gravel road, into and out of town. These communities are often dependent on summer tourist dollars for a large portion of their economy, so they are extremely hesitant to close the highway, even with fire burning nearby.

Lessons Learned

Local Readiness

“Alaska tends to have the attitude that, ‘We will deal with stuff as it comes our way.’”

_Incident Commander_

Many IMTs coming in to provide structure protection found no defensible space established and no real evacuation plan. Firefighters sent out to find and prepare structures commonly found hazardous materials on the private properties, “mostly unknown substances and private ordnance” as one firefighter put it.

Some suggested that the Alaska Fire Plan should assess and prioritize remote villages to improve defensible space before a fire crops up nearby. Crews spent considerable time on basic defensible space preparation that could have been completed prior to the fire season. IMTs felt that pre-season preparation could not only have saved money, but could have freed up suppression resources to take more appropriate fire management response. One IC said, “We have spent more than $8 million defending these villages from fire, but less than $2 million would have been needed to create or improve defensible space earlier.”

One local public health official suggested that the Local Emergency Planning Committee should update the community’s plan while the wildfires are fresh in people’s memories. She suggested that local planners investigate the availability of Homeland Security funding, since her local Emergency Medical Services received funding this way. Alaska Public Health has a very useful web-based resource called “First Class” that has a section on wildland fire support. (It is under the Division of Homeland Security and Emergency Management.) The State Forestry representatives in her area did not have access into this system, but she felt it would benefit everyone to get them tied in. Finally, she suggested the following requirements for preparing for wildland fire:

- Emergency evacuation checklist, including evacuation locations for horses, livestock, sled dog teams.
- Services for the vulnerable (special needs, elderly, children), including availability of child care services for when parents are stressed out and trying to prepare to evacuate.
- Processes to get fire equipment contractors signed up and get their equipment pre-inspected and approved long before incidents start.
- A process for informing public utilities of impending evacuations, because infrastructure gets overwhelmed (e.g., evacuation phone-call trees overwhelm the phone lines).
Evacuations

Evacuation planning was inadequate, even non-existent in some remote communities. The state FIO continued to emphasize the responsibility of individual communities to establish evacuation plans, but IMTs were often called on to fill in the gaps. One Type II IMT in a remote area created a simple evacuation plan for the community of Central, AK, based on the standard population protection guidelines (reprinted in Appendix H of this report). The IMT handed out this plan at every public meeting. They dealt with the lack of enforcement by describing what would happen in the lower 48 with a sheriff involved, and then telling the crowd, “We don’t have a sheriff, but we know you guys are smart enough to do this anyway.” The IC felt that IMTs from the lower 48 coming to Alaska should be prepared to help formulate a plan when they arrive.

The lack of preplanning sometimes made for unclear responsibilities when an evacuation took place. When an agency requested their help in communicating an evacuation order, FIOs from a Type II IMT initially tried to help but felt it interfered with their ability to perform the work the IMT needed to get done. The lesson learned here was to be firm about their role in carrying out the Delegation of Authority, then help the local agency try to find other resources to carry out the evacuation order.

Protecting the public

While many of the fires were in roaded areas, the accessibility was still limited to a single, long stretch of road into what was often an historic mining village. These villages were tourist destinations, and the village economies relied heavily on tourism. Multiple IMTs were challenged by the extreme pressure to keep highways open, even when they felt closure was warranted due to zero visibility. They found a successful alternative using “temporary delays,” while pilot vehicles guided the public vehicles at multiple points over long distances. The quote below describes the technique used at one fire complex:

“Successes on this fire included the response to protect the public on the road in zero visibility. For example, the coordination and communication it took to egress 70+ motor homes through 100 miles of burning forests keying on critical turnouts and timed movement through zero visibility conditions created by heavy smoke. The sign on the road says Road Open --- Active Forest Fire Next 100 Miles --- Conditions Are Marginal. The firefighter tells the senior citizen in the 65 foot motor home, ‘Keep the air on internal circulation only and all lights including flashers on. Only one at a time through this section. Keeping moving. Your rig should be through the worst of this section in about 10 minutes. Another crew is waiting for you on the other side of this wall of smoke. There are going to be several places like this.’”

Radio Operator, describing operations on the Taylor Highway

Joint Information Center (JIC)

The Joint Information Center was set up in the Alaska Fire Service location inside Fort Wainwright Army Base in Fairbanks. The staff at the JIC included local representatives who provided valuable personal relationships with local officials and media. The JIC staff also included some who had worked in the JIC at San Bernardino during the Southern California firestorm in 2003, and they applied lessons learned from that experience. In particular, they suggested that the JIC maintain a philosophy of “the buck stops here,” making every effort to be the last, best point of contact for concerned residents. This meant making the extra effort to track down legitimate answers to questions, even if that required calling residents back with the answer.
Some expressed concern that having the JIC on a military base made it more challenging to disseminate information. Civilians are required to stop and register themselves and their vehicles before getting on base, so casual drop-in visits to the JIC were less likely. According to the JIC manager, “Just getting in and out of the base can cause delays.”

The incident FIOs interviewed felt that their relationship with the JIC worked best when they established a single point of contact in the JIC, so they could keep just one person updated and be able to use a name in making requests. This goes both ways, so it works best to identify a fire person to be the single contact for the JIC requests as well.

Finally, several FIOs said they would like to see more standardized forms for Information personnel. One Type I IMT put together a CD of the forms they use, to distribute to others on request. Others suggested the idea of standard web-site templates that do not require a web programmer, and of centralized hosting service so sites don’t disappear when the IMT leaves the incident.

**Dispatch**

In extreme fire seasons such as this one, many new recruits were called in to staff the dispatch center. Many of these dispatch employees had little experience with the Resource Ordering Status system (ROSS), which is only in its second year of use nationally. In addition, some of the outlying state agency offices are not using ROSS yet so their orders had to be processed manually. Given the overall inexperience with ROSS and the usual technology problems, processing orders was often slow. For example, one IMT resources unit shut down taking new resource orders one evening in order to get caught up doing the electronic ordering in ROSS for the orders they had already received.

I-Suite applications consist of the Incident Resource Status System (IRSS), Incident Cost Accounting and Reporting System (ICARS), Incident Time System (ITS) and the Incident Action Plan. According to one Finance Section Chief on an Alaska IMT, there is some resistance to using I-Suite in Alaska. Some of this may be resistance but incident management personnel need to be able to perform the I-Suite applications manually since Alaska has so many fires in remote locations where there is no power. There are still very few people with I-Suite qualifications in Alaska. I-Suite training was put on in the state in 2004 and will be taught again in 2005.

**Transitions**

Transitions required during an intense fire season like this one can often be problematic. All of the fire professionals interviewed gave glowing reports of well-managed transitions. Tips for success included:

- Designating a Command & General Staff (C&GS) person on the outgoing IMT to be a “transition officer,” to facilitate the transfer and tie up loose ends.
- Sending a roster of the incoming IMT to the IC of the outgoing IMT, so that the outgoing IMT can suggest requesting resources to fill gaps in the roster if needed.
- The outgoing IMT conducting an After Action Review (AAR) to self-critique, and then inviting the incoming IMT to hear about the tactics, techniques or procedures to be sustained or improved upon based on the AAR.
- Using GPS to mark the locations of pumps & equipment left behind for the incoming IMT.
<table>
<thead>
<tr>
<th>Lesson Summary – Urban Interface in Alaska</th>
<th>Applicable ICS Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because of the lack of preparation by local residents, firefighters spent a lot of time creating defensible space around residences with the fires raging nearby. It would have been far less expensive to do this preparation in advance.</td>
<td>Agency Administrators, Operations, Safety</td>
</tr>
<tr>
<td>IMTs should be prepared for situations in which there is no established evacuation plan. Approaches included:</td>
<td>Incident Command, Planning, Agency Administrators</td>
</tr>
<tr>
<td>1. Be prepared to help formulate a basic evacuation plan. A copy of the plan created for the Central, AK and Circle, AK communities by one IMT is reprinted in Appendix H (by permission).</td>
<td>Information</td>
</tr>
<tr>
<td>2. Prepare a statement outlining the responsibilities the IMT is prepared to take – how you are used to working with an agency – and discuss this with the agency at the beginning of the assignment.</td>
<td>Dispatch</td>
</tr>
<tr>
<td>Joint Information Center FIOs and Incident FIOs should establish a single point of contact on both sides, to facilitate good communication in both directions.</td>
<td>Incident Command</td>
</tr>
<tr>
<td>Processing dispatch orders for the State of Alaska required a different system than the orders from the Federal agencies. Dispatch was significantly challenged as a result. A better overall training program may have benefited the many new dispatch trainees.</td>
<td>Incident Command</td>
</tr>
<tr>
<td>IMT transitions went smoothly, and usually attributed to a good exchange of information between the two IMTs: designating a transition officer, faxing a team roster in advance, leaving detailed locations of outlying equipment, and inviting the new IMT to learn from the outgoing IMT’s After Action Review results.</td>
<td>Incident Command</td>
</tr>
<tr>
<td>Following the standards -- “Agency Administrator’s Briefing to Incident Management Team” and the “Local Incident Commander Briefing” (Appendix 11 of the Interagency Standards for Fire and Fire Aviation Operations 2004) -- made for better transitions and delegations.</td>
<td>Incident Command, Agency Administrator</td>
</tr>
</tbody>
</table>

### Other Resources


CDC Fact Sheet: “Health Threat from Wildfire Smoke,” available online at [http://www.bt.cdc.gov/firesafety/wildfires/index.asp](http://www.bt.cdc.gov/firesafety/wildfires/index.asp) and reprinted in Appendix E.

Public education tools specific to Alaska:

- **FIREWISE Alaska**, a publication of the Alaska Wildland Fire Coordinating Group

I-Suite information available online at [http://www.fs.fed.us/r6/fire/i-suite/](http://www.fs.fed.us/r6/fire/i-suite/)


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Wildland Fire Lessons Learned Center Information Collection Team Report from Alaska, July 2004

page 29
6. The Local Way

Overview

Describes IMT issues unique to Alaska, including food boxes, 72-hour turnaround time for requests, procurement issues, and lack of standing agreements or contracting officers. Lessons from the Alaska cache system included the popularity of sprinkler kits, custom-made quick-deploy hose bags, and well-stocked medical kits. IMTs shared tips for working with local residents and tribal groups.

Incident Management

“Come to Alaska prepared with everything you will need during the fire. If you don’t bring it with you, you may just have to do without it.”

Computer Technical Specialist

Incident management teams from the lower 48 expressed many lessons learned about the unique way things were done in Alaska. This section describes experiences in finding resources and running a fire camp. (Note -- crew and aircraft policies are described in later sections.)

Logistics

Logistics personnel agreed that Alaska requires more logistical planning and creativity than the lower 48. IMTs must do more preplanning to figure out how much they can realistically bring in to base camp. Once onsite, they must decide what they can live without and what they must find alternatives for. This is crucial when it is an issue of correcting problems, since in the case of unroaded fires it will take days – an average of 72 hours in the case of one IMT – to get anything more.

One example of creative resourcing was the use of car batteries to power repeater stations. One Type I IMT Logistics Section Chief said that while the car batteries do not last long under the kind of heavy use a Type I incident generates, the batteries worked well and allowed them to function until their repeater battery order arrived.

IMT members from all different support functions said that the surest method for success was to “bring it with you.” IMTs either waited for several days or went without supplies such as digital cameras, thumb drives, portable AM/FM radios, photocopier paper, toner, and printer cartridges.

In this year of urban interface fires in Alaska, many of the camps we visited were accessible by road. However, all the IMTs agreed that a team coming to Alaska must be prepared for remote, spike-camp-style accommodations for all. This means bringing full personal protective equipment (PPE) and a tent, even for the support positions who might be used to other conditions in the lower 48.
The most-discussed aspect that made Alaska fire camps unique was the **fresh food box**. Because of the remoteness of most camps, food caterers are rarely used — there was only one caterer in the state during the two weeks the Lessons Learned information collection team was in Alaska. Instead, the Alaska Cache fills orders for fresh food boxes. Lessons learned included:

- It takes three days to fill a fresh food box order. In the meantime, you get a supply of freeze-dried meals (MREs). Order the food boxes on your first day in camp, because every day of delay is another day of eating MREs.
- Each order contains two boxes; one with staples and one requiring refrigeration. One fresh food box order feeds 4 people for three days. There is no list of food box contents in the Handy Dandy, but IMTs suggested that there should be.
- Food boxes work best if the camp is located in an area where permafrost is prevalent enough that the boxes can be stored in a shallow hole dug into the ground. One IMT discovered that after several years of drought conditions, the permafrost layer was too low to cool the boxes effectively. Without permafrost to keep them cold, the food boxes were not convenient enough — the group would have preferred MREs.
- Alaska crews are accustomed to cooking their own meals, or using some portion of the food box contents to barter with local villagers for fresh fish. Crews need to be given enough time to prepare their meals.
- With people coming into camp on different days, IMTs had to figure out a fair arrangement, so that new people ate their three days’ worth of MREs until the food boxes arrived, and those who had been in camp longer got the fresh food to which they were entitled. One IMT discussed issuing color-coded tags to keep track. Others suggested that an Alaska Logistics liaison from the AFS Cache would have been very helpful in managing the food box issue, and Alaska IMTs tend to assign one person to deal with the food boxes.
- Some IMTs found it cost-effective to hire a cook for all overhead personnel on the incident.
- In areas with restaurants nearby, the IMT sometimes chose to give firefighters food vouchers to eat at local restaurants. This was usually less expensive than ordering fresh food boxes, supported the local economies that were losing tourist customers due to the fires, and offered the firefighters a better choice in meals. It also alleviated the need for hiring cooks for crews and IMT, or providing firefighters sufficient time each day to prepare their own meals.

*Finding and Paying for Resources*

Because of the travel distances, lead times, and general scarcity of resources during the 2004 season, IMTs were encouraged by the AICC to fill their resource needs locally if possible. Locally purchased services included drivers, cooks, gas station, showers, restaurants for meals, four-wheel ATVs, boats, dozers, and more. At one public meeting we attended, the IC requested local four-wheeler ATVs, and a resident volunteered a fixed-wing aircraft with the appropriate qualifications.
The Finance and Logistics personnel interviewed felt that the ability to hire and rent locally was a great benefit. They noted that having a federal agency checkbook was a requirement in the more remote towns and villages in Alaska where credit cards are not accepted. There is also an Alaska-specific Emergency Equipment Rental Agreement (available online at http://www.dnr.state.ak.us/forestry/equipment.htm.)

Some IMT Finance Section Chiefs expressed concern about the lack of cooperative agreements in place when they arrived on their fire assignments, and the lack of contracts officers or procurement personnel available to create or even review new agreements. In one case it caused delays in getting people paid because the interagency cooperative agreements were not in place. Finance personnel were often required to draft their own agreements. Finance Section Chiefs encouraged local IMTs to have all contracts reviewed by a contracting officer with fire procurement training. Several felt that an Incident Business Advisor was a critical need on any IMT incident in Alaska – especially once a complex developed with more than two or three fires.

Another lesson learned for lower 48 IMTs was that many state offices have not used ROSS in the past. When the 2004 fire season heated up, they needed ROSS coaches to come in from the lower 48. The finance and dispatch personnel interviewed in one agency office encouraged the state to come up with a way to fund ROSS coaches to work with these groups before an emergency happens.

Finally, Finance personnel from the lower 48 commented on the large amount of commissary purchasing done in Alaska. The standard kit contains socks, cigarettes, and chew, and occasionally toothbrushes, boot laces and a bandana. Emergency commissary contains boots or rain gear only.

The Alaska Fire Service Cache

The Alaska Fire Service Cache is part of the Alaska Interagency Cache System. The interagency cache system allows the fire services to draw on a substantial supply before needing to order from any other national cache (which requires a minimum of 4 days). In our interviews with the cache director and others, we heard many reports about the popularity of the specialty kits designed by and used in the Alaska system. Examples include:

- **Sprinkler system kits.** These kits consisted of a small pump, hose, and sprinklers with poles for elevating. Many of the most remote places in the Alaska forests have plentiful water, and sprinkler kits have been a successful tactic for remote structure protection. Crews set up a kit around the structure, fed the pump from a nearby lake or river, and then let it run until the fire danger was past. The cache has had to increase their stock of pumps by about 25%, partly in response to the increasing number of structures needing protection, and the fact that the sprinkler setup usually ties up that set of equipment for the duration of the fire.

- **Solar-powered bear fence.** The cache kit included a solar-powered electric fence that has proven to be very effective bear deterrent for backcountry spike camps.

- **Quick-deploy hose bag packs.** The cache has designed its own hose bag based on recommendations from smokejumpers, with a small opening on the bottom to pull hose from during a hose-lay. The wearable bag was very popular with crews who used it, since it made packing hose kits easier.

- **Extensive medical kits.** Medical Unit Leaders expressed approval for the well-stocked medical kits put together in the Alaska cache. Some of the less-common items included a burn litter set complete with sterile sheets, a pediatric kit, a physician’s desk reference, detailed charts, and a hammer for erecting the medical tents.
A challenge one IMT ran into was their inability to get a water purification system from the supply cache. They were told that the water would need to be tested and meet a minimum standard before it could be consumed, and they did not have the supplies to do this. They also expressed frustration that the water cubitainers could be used only once, and refilling was not allowed. The logistics of transporting large quantities of filled cubes by helicopter and boat was difficult, considering their weight and the need to transport food and all other resources by air as well.

Another IMT expressed the need for fire services to investigate and develop more ways to utilize solar power for charging batteries for repeaters, base stations and other battery-powered equipment used on long duration fires. The cost of logistical support to resupply remote sites is greatly increased because of the need to support using aircraft, and self-sustaining alternatives would help reduce overall costs in these cases.

Local Culture

“People ask me, ‘How do you feel about the fire? Aren’t you happy to see fire money come into your village to support the economy here?’ This is not the kind of economy I’d like to see. Fire income is short-term. The damage to our natural resources is long-term.”

Tribal Chief

As with fire assignments throughout the US, and especially the remote Western US, it was very important for IMTs to contact local people in leadership positions. The local people need to know the IMT’s plans, and the IMT needs to understand local concerns and issues. Alaskan natives and the teams working with them on fire assignments shared many of the lessons learned this season – some unique to Alaska, and some just reinforcements to lessons learned in other places with local cultures.

Local Tribes

Incident commanders and agency administrators needed to address local cultural concerns at the in-briefing or earliest possible opportunity. The agency in-briefing needed to address the responsibilities of the IMT with respect to the tribal council, the tribes’ pressing needs, and the tribal contact or coordinator. The IMTs interviewed suggested that teams have liaison officers (from the agency or local government) on several levels, with the following three at minimum:

- The actual Liaison Officer, to work with the IC as part of the command staff, to work with Information, and to be able to activate local procedures.
- A Plans/Intelligence IMT member on the general staff who is experienced with Alaska state and AFS.
- A Logistics/Air Operations IMT member experienced with Alaska state and AFS. One IMT Plans Section Chief felt that Air Operations should be closely tied into Logistics in Alaska circumstances.

One village chief said that it was imperative that if IMTs wanted or expected local Alaskan tribes to help, the IMTs should initiate the request for help. According to this chief, tribes feel it is impolite to offer their help unless the IMTs ask. (This works both ways: some native crews felt that others should not enter their camp until invited in.) The important lesson was for the IMT to take the initiative and, after identifying the appropriate way to contact the tribe, go out and establish the relationship.

As one IMT learned, just showing up in the village and looking for help is not sufficient. This IMT sent one representative to a local village, and when the IMT member arrived he was immediately approached by a village resident who offered to help. Unfortunately, this resident was not a
member of the tribal council, and the fire personnel learned later that they were at risk of offending the council by not seeking them out first. The lesson learned: When arriving in a village, start by asking anyone you meet to help locate the appropriate village authority.

**Public meetings**

In the Alaska fire locations, a large percentage of residents had no electricity. They did usually have battery-powered radios, but even that was not consistent. For IMTs used to communicating via local television networks, this was an unusual challenge. The IMTs in Alaska found success in offering more public meetings, no matter how informal. The FIOs interviewed were very encouraged that some operations personnel were willing to take responsibility for positive interactions with the public and the media. FIOs encouraged more of this, and wanted to make information training a part of every firefighter’s curriculum, from crew boss on up.

One Type II IMT interviewed shared their method and agenda template, reprinted with permission in Appendix G. This team’s policy was to hold a public meeting on the first day after their arrival, or ASAP as scheduled with the agency during the in-briefing. They used a standard agenda and ran it like a briefing, with the FIO as facilitator but with presentations by the IC, FBAN, and Operations. They all wore their nomex, introduced themselves, and then conducted it like they would any camp briefing. They tried to hold these meetings every other day throughout their assignment. In Alaska, they used these meetings to collect structure information and announce requests for equipment rentals or other local assistance.
<table>
<thead>
<tr>
<th>Support functions should bring as many of their own supplies as possible, since it could take several days to get anything (especially technology products or supplies). This includes PPE and tents for everyone.</th>
<th>All</th>
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<tbody>
<tr>
<td>Be prepared to use the Alaska fresh food box orders rather than a caterer. Order the food boxes immediately to reduce the days spent eating MREs. Create a system for tracking when people in camp become eligible for the fresh food, and hire cooks or allow extra time for crews to cook their own. Get an Alaska Logistics liaison if possible.</td>
<td>Logistics</td>
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<tr>
<td>The AICC allowed IMTs to hire much-needed services and equipment locally, but this often put the burden on Finance personnel to create agreements to facilitate this. Many IMTs had no access to a contracting officer, and most felt that having an Incident Business Advisor was crucial.</td>
<td>Finance</td>
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<tr>
<td>The Alaska Fire Service cache supplied some custom kits that firefighters found helpful: solar-powered bear fences, sprinkler kits, quick-deploy hose packs, and extensive medical kits.</td>
<td>Logistics (Medical), Operations</td>
</tr>
<tr>
<td>IMTs needed to begin by requesting a liaison officer who could work with local tribes, then by requesting a meeting with the appropriate local leader. The Alaskan tribes felt it impolite to approach the IMTs, so it was imperative that the IMT take the initiative.</td>
<td>Incident Command, Agency Administrator</td>
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<tr>
<td>Public meetings were extremely important, given the lack of electricity and media infrastructure in the remote fire locations.</td>
<td>Information, Incident Command</td>
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Other Resources


Blank forms for Alaska Dept. of Forestry equipment-hiring agreements are available online at [http://www.dnr.state.ak.us/forestry/equipment.htm](http://www.dnr.state.ak.us/forestry/equipment.htm).

The Alaska Interagency Cache system catalog, including a complete list of the contents of the Fresh Food Boxes, is available online at [http://fire.ak.blm.gov/docs/akcache/catalog.pdf](http://fire.ak.blm.gov/docs/akcache/catalog.pdf).

Public meeting agenda template is reprinted in Appendix G, by permission from Central IMT.
7. 24-Hour Daylight and Other Crew Issues

Overview

The long daylight and lack of much fire recovery time made for long operating hours. This affected operations and support functions in several ways: more air operations, longer burning periods, fatigue, and inadequate sleep. Medical units dealt more with dietary issues than with Alaska’s legendary mosquitoes. Seasoned veterans shared their career lessons regarding camp size limits, crew management, and crew safety.

24-Hour Daylight

During the Lessons Learned information collection team visit, the average amount of daylight in the Alaskan Interior was 20 hours and 36 minutes. Even after the sunset hour, dusk conditions kept the air relatively warm, dry, and good for burning. The long days and long burning periods raised several issues for the crews and the people who supported them.

The long daylight hours impacted the crews in a number of ways. For crews from the lower 48, evenings could seem endless, and one IC described his frustration in convincing crews to get adequate sleep when their natural darkness cues were absent. The IC ended up hiring extra security to enforce quite hours.

For crews from Alaska, the light made it tempting to drive home after demobilization, regardless of their demob time. One Logistics Section Chief described a situation in which the demobilized crew member wanted to start a long drive home at 10 p.m. Their policy did not allow this, but the IMT suspected it might be happening anyway.

Longer burning periods also caused the Type I IMT Medical Unit to expand their hours to remain open later. They found it a challenge to make sure everyone on their unit got enough rest, given the long operating hours. This unit used split-shifts to ensure coverage, and the Unit Leader always slept in the medical tent in case he was needed in an emergency.

Other Crew Issues Unique to Alaska

The interagency Alaska Emergency Firefighter Type 2 Crew Management Guide describes a standard in-state crew structure comprised of 16 people including a crew boss, three squad bosses, and any number of trainees. Alaska keeps a list of 73 designated EFF crews around the state. Any village or community with at least 25 qualified firefighters and a 2500’ runway in good repair is eligible to be designated as an EFF crew source. Alaska crew fire duty assignments are typically 21 days.

Medical Unit Leaders indicated that the issues they encountered were more diet-related than anything else. Whether it was overhead personnel reacting to days of eating MREs, or native Alaskan crews reacting to the catered food from the lower 48, the diet and gastro-intestinal issues
were the most common complaint. For example, native diets in northern regions are very rich in fish, seal, and whale oil. The Medical Unit Leader was working with an Alaska Fire Medic team, and some of the team members had seen similar problems happen in previous camps. They suspected that the G-I complaints they were hearing about might be related to the difference in diet, and they had some success by providing fish-oil dietary supplements.

In a related lesson, this Medical Unit Leader, who was from the lower 48, had high praises for his Alaska Fire Medic team. He said these teams get more training than standard EMTs, and have local knowledge. He highly recommended that anyone coming up from the lower 48 get an Alaska Fire Medic team. He noted, “I'm amazed how much they can take care of, so we don't have to send so many people out.”

Although the Medical units did not report many problems with bug bites, another firefighter shared a tip for firefighters concerned about the legendary Alaskan mosquitoes: Bounce® dryer sheets make great mosquito/gnat repellent. Taping a dryer sheet around your ankles keeps mosquitoes from flying up your pant legs and biting around the top of your socks. This firefighter also recommended putting a dryer sheet under your hat to keep them away from your head.

Crew Management and Safety

When people were asked to share lessons they’ve learned over the years that might not be unique to Alaska, they shared a wide variety. One IC described how he had learned, over more than 20 years of experience, that he needed to limit his camp to somewhere between 10 to 14 crews. With more than 14 crews, the cultural and social problems increase, yet the productivity does not. So when he limited camp to 12 or 14 crews, he found productivity increased and harassments and other social issues decreased. Everything went more smoothly.

Other Command & General Staff members expressed the need for all crews to be more rigorous and accurate in reporting their shift tickets and unit logs. As one Finance Section Chief said, “Given the increased involvement of FEMA and other agencies, we need to know about the reasons for missed meals, for overtime... These documents are our basis for learning about what really happens out there, and being able to prove that we did what we intended.” One Type II IC said that he would like to see some additional emphasis placed on how to fill out unit logs in a way that is useful. He felt that people need some real-world tips for registering only what is significant, not registering everything or just the same old thing, rendering it meaningless. His example: “If you have contact with the public, we need to know. Don’t just say ‘continued to mop up’.”

Many of the lessons learned came from seasoned veterans, remembering what it was like to be in their first or second season. Their sage advice was often focused on safety and health. Examples:

- From a Medical Unit Leader: Most of what he saw could have been taken care of if firefighters ate well, kept hydrated, kept their boots laced up properly, and got good sleep.
- From an Incident Commander: Focus on adherence to the fundamentals. When you are new to firefighting, it is just fun and there is a feeling that a fire injury won’t ever happen to you. There is a need to understand that any fire can be dangerous beyond your ability to comprehend, and you need to pay attention to Lookout, Communication, Escape Routes, and Safety Zones (LCES), and to anchor and flank. If you can not do these fundamentals due to the fire situation, then you need to stand back and just watch it.
- From a Helibase Manager: Don’t be afraid to speak up. The pilots often think that they are nearly immortal -- Supermen. If they are going into a bad situation, don’t sit on your opinion. Step up and say something, especially if you feel it is dangerous.
From an Air Support Group Supervisor: There is an attitude in the community that safety is a right, and this attitude makes people complacent. People think that “someone will take care of me.” We need more emphasis on safety as personal responsibility.

From a Public Health Nurse: It would be good for the wildland fire community to look at coping with the needs people have to replace the adrenalin addiction once their fire assignment ends. Maybe the military could serve as a resource for training in how to re-enter society and family after the stress of a fire assignment. Public health (in Alaska and probably elsewhere) has access to satellite programs that they could offer to firefighters to deal with some of the mental health issues that arise.

Lesson Summary – 24-Hour Daylight & Other Crew Issues

<table>
<thead>
<tr>
<th>Applicable ICS Functions</th>
<th>Incidence Command, Safety, Planning, Operations</th>
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<tbody>
<tr>
<td>Extended hours affected the command, general staff, base camp, and spike camp staff when crews worked extended shifts. IMTs needed to plan ahead and be flexible with scheduling to have coverage and supervision.</td>
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<tr>
<td>Crews from the lower 48 needed extra reminders to get enough sleep in the 24-hour daylight. Extra security helped enforce the quiet hours.</td>
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<tr>
<td>On large fires, one IC found that having more than 14 crews increased problems without increasing productivity. He found the optimum balance between productivity and smoothly run camps peaks out at 12-14 crews maximum.</td>
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<tr>
<td>A medical unit highly recommended using an Alaska Fire Medic team on Alaskan assignments. The team found success using fish-oil dietary supplements to address the effects of fire camp diet on some native Alaska crews.</td>
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<tr>
<td>Bounce® dryer sheets worn around ankles and under a helmet effectively repelled mosquitoes.</td>
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<tr>
<td>Stay focused on fundamentals: LCES, hydration, rest. Do not assume you are safe or that someone else will keep you safe; take personal responsibility for your own safety.</td>
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Other Resources

8. Remoteness, Air Operations, and Finding the Fire

Overview

Remoteness meant that aircraft were critical not only for suppression but for transportation and supplies as well. Air traffic required extensive coordination. Aircraft were not usually dedicated to an incident unless it was extremely remote. The lack of air tankers led to some difficulties and workarounds with scooper aircraft and single engine air tankers (SEATs). Huge distances and limited aircraft meant that many IMTs waited days to get good intelligence on their fires. Communications, logistics, and medical units faced unique challenges in remote settings.

“We wanted a dedicated aircraft, but they don’t do that here…. You get in line and wait until your number comes up.”

Incident Commander

Air Operations

Most fires in Alaska happen in very remote areas where roads are few or nonexistent. Firefighters are very dependent on air operations for transporting personnel and cargo/supplies. When these remote fires get big, more and more aircraft are ordered, and managing so many aircraft for so many uses requires extensive coordination.

Air Traffic

Not only do the remote fires require more air operations, but they are often in places with heavy local air traffic as well. People in remote Alaska use small fixed-wing aircraft daily as their primary mode of transportation, and their local airstrips can be busy. At one remote fire, up to six helicopters were using the helibase at any time, and the helibase was right next to an airstrip used by local residents as well as firefighters. To coordinate all of the air traffic, they set up a temporary air traffic control tower between the two areas to control the airspace. The IMT considered it crucial to bring in a controller with appropriate training, certifications, skills and experience to turn an uncontrolled air base into a safely functioning operation in accordance with FAA rules. The IC also recommended that getting land agreements in place prior to arriving for air strips in remote village areas.

One IMT experienced a near-miss incident between two aircraft in smoke-filled skies. After attempting several fixes, the IMT determined that all the technological solutions in the world would not help unless the pilots agreed to talk to each other more. They also found that having two pilots per craft helped when trying to manage all of the activities and monitor multiple frequencies.
**Multi-tasking**

According to several of the helibase and agency representatives interviewed, it is common for helitack crews in Alaska to be used for multiple firefighting and support functions. For example, helicopter managers might be required to operate an ATV for delivery or unloading, or give crews safety briefings. Alaska crews consider themselves self-reliant, and crew members need to be red-card qualified for multiple functions (long line, short line, hover hookup, belly drag).

**Different Alaska and Federal Policies**

IMTs from the lower 48 were sometimes surprised to find that Alaska air resources are not assigned to one particular fire, but each air trip is assigned as requested based on priorities.

In addition, one helibase deck manager verified that Alaska (state) uses different standards than Federal agencies for crew size and weight limit. Alaska requires helicopters to have 2 crewmembers and 1 manager (unlike the Federal requirement of 5 and 1). And Alaska allows an exemption to the 390-pound reduction to the allowable aircraft weight limit. So helicopter managers need to keep track of the jurisdiction under which they are operating, to know whether they can obtain the exemption or not.

**Air tankers, Scoopers, and SEATs**

Air Operations personnel felt that the Federal air-tanker certification issue made for less cooperation amongst agencies. The Alaska state DNR had two air tankers that could not be used on Alaska Fire Service (BLM) lands. Firefighters on federal jurisdictions used CL215 aircraft (scoopers), and found they could be very useful once good dip sites were located. Working with local liaisons to identify these water sources was crucial to their success. Single-engine air tankers (SEATs) were considered useful for structure protection in the more urban areas, where distance between the fires and the reload area was not very great.

**Finding the fire**

“There was the ‘fog of uncertainty’ over the various commands [in our area], unable to fly reconnaissance and without accurate IR for days, and even weeks in our case...”

*Planning Section Chief*

The number and extremity of the fires in Alaska in 2004 placed a large burden on the area’s infrared operations and predictive services. The flights were prioritized each day, but with limited aircraft and poor flying conditions, even the highest priority fires did not get frequent updates. IMTs had to find alternatives to the aggressive measures they might have used with more accurate knowledge of the fire.

For example, more than one IMT faced this scenario: Structures were being threatened by a fast moving or large fire. The area of concern was smoked in and normal airborne sensors were not
able to operate due to smoke. Accurate information about the spot fire locations was not
available. One IC interviewed felt his only option was to put crews out in the blind searching for
spots, pulling them away from their structure-protection tasks to do so. Having IR would have
allowed them to send crews out sooner to the right places, using resources more efficiently and
possibly cutting response time and costs. The lesson from Alaska was two-fold: the firefighters
would have liked more consistent access to IR data – including a regular update about when IR
data would be available (e.g., in the daily IC conference call). However, lacking this data, they
were able to find alternatives such as using more field observers (FOBS).

One IC on a Type I incident was offered some near-real-time IR images of his fire area by the
Department of Defense. This IC was happy to get the images, but concerned that there was no
process for him to request them in the first place. He felt that, if the images are out there and the
military is offering, the firefighting agencies should be working with the military to facilitate this
process. The process for using other remote sensing sources for detection and mapping of fire
perimeters and hotspots needs to be documented and provided to all IMTs assigned in the
geographic area.

Several people interviewed spoke of alternative technologies that might be able to facilitate
suppression efforts, if a process could be developed to provide consistent access to those
technologies. Examples included:

- Wireless links allowing an IR flight recorder to download images to a laptop. One IMT was
  field testing the first of 20 new kits (15 for the field, 5 spares) using Bluetooth® wireless
technology. This allowed an aircraft within 100 miles to push an electronic image of each IR
  strip to a laptop set up to receive it automatically.

- New IR capabilities such as the Phoenix System that differentiates fire edge and hot spots. It
  also speeds up the image processing by geo-referencing the strips it captures automatically.

- Mapping capabilities such as Synthetic Aperture Radar (SAR). The detailed topography it
  generates could be beneficial in areas where streambeds change over the years due to
  flooding. Some may have shifted significantly over the decades and now are in completely
different positions than what is shown on the 50-year-old topographic maps still in use
throughout Alaska.

- Unmanned Aerial Vehicles (UAVs) being tested by the military could provide excellent long
  range, high resolution infrared imagery (either low or high altitude) and the potential for near-
  real-time download as well.

Other national remote sensing systems (e.g., Alaska Satellite Facility, Department of Defense)
indicated a willingness to participate in supporting suppression efforts, but there is no obvious
process to accept or request the data for use by fire management teams. Any agency wishing to
contribute with products from their remote sensors would need a single entry point to submit the
product for fire service. One idea was to have a GIS Coordinator at the GACC level, whose
responsibility would be to talk with product producers, evaluate their products, and identify
possible applications.

“I know it’s technically feasible to fix the lack of IR data. I don’t know why it isn’t better… I get the
sense that R&D hasn’t hired someone who’s interested in that.”

Incident Commander
Impact on Communications, Logistics, and Medical Units

Some of the Communications personnel found it hard to place repeaters given the huge distances and inability to get good information about the fire location. One Communications Unit Leader described the difficulty he faced in getting air support after aircraft were grounded for many days due to smoke. When the air finally cleared, he knew placing repeaters was low priority for aviation. His workaround was to get by with as few repeaters as possible. “When there are so many unknowns, and you aren’t even sure where the fire is, it’s better to have a dead spot you can warn others about than to put out repeaters you’ll probably never get back.”

One Communications crew found they could minimize repeaters by looking at the topography and finding natural barriers that would allow people in different areas to use the same TAC channel without conflicting. This IMT ended up using one TAC channel and three repeaters to cover 1.5 million acres.

Logistics in Alaska was a unique challenge given the huge distances, few roads, and not much infrastructure in many cases. For camps in unroaded areas, logistics became especially challenging when the smoke precluded the use of aircraft to transport personnel and supplies. One IMT found success using the following practices:

- Hire boats with experienced local operators to ferry people and supplies up and down the remote, sometimes treacherous Alaskan rivers.
- Assign almost-empty rescue boats to follow the convoys on the river, to pick up anything that falls overboard.
- Assign excess helicopter crews to do boat safety briefings.

Another Type II Logistics Section Chief shared an unusual lesson learned from a road-accessible fire. When he arrived to set up camp, he was going to order portable toilets based on the daily pumping service he usually gets. But then the agency person reminded him that the pumper gets $3 per mile, and the pump truck run is 125 miles each way from Fairbanks. At this rate, costs add up fast. The local person encouraged him to order as many units as a pump truck could service in a single run (around 25 units) regardless of need, then just wait until they were all full before ordering the pump run. The Logistics Chief estimated this saved their base camp thousands of dollars.

Medical units found it challenging to get enough qualified incident medical personnel. People coming from the lower 48 needed to get Alaska EMT certification, which required more documentation than just the red card and EMT as in many states. This unit was finally able to obtain reciprocity for all Washington-certified personnel and all Oregon-certified EMT’s. All were approved to work at their current home skill level, with the exception of the paramedics, who were certified at the EMT-III level only.

Finally, medical units had to deal with the reality that there were few local hospitals. According to one Incident Action Plan medical plan, there is no dedicated burn center in Alaska. The nearest burn center is in Seattle, WA (five hours away by air).
In Alaska, air resources are not usually assigned to one particular fire. Each trip request is filled based on priority.

The abundant use of aircraft and landing strips – for fire incidents and local residents -- made it imperative to set up a temporary control tower and order an experienced, certified controller.

IMTs would appreciate including IR prioritization information in the daily ICs conference call, so everyone understands who gets IR and who does not.

Without real-time information about where their fires were located, IMTs used more field observers and sometimes sent structure protection crews out to find spots. Those who were offered IR maps from other sources would like to see the agencies cooperate and generate a process for sharing this information more easily and consistently.

IMTs found some new technologies that showed potential for being useful in suppression efforts: Bluetooth-enabled IR downlinks, Phoenix system, UAVs. An area-level coordinator position would help IMTs take advantage of the wealth of technology that is available.

Communications over huge acreages might be simplified if you can identify natural topographic barriers, which can eliminate cross-talk even if crews are sharing a channel.

When IMTs had to shuttle personnel and supplies to remote camps by boat, they hired experienced local boat operators, had almost-empty “rescue boats” follow the convoys, and used excess aircraft personnel to deliver boat safety briefings.

Portable toilet companies charge $3/mile, so order portable toilets based on pumper truck capacity (not number of personnel) to reduce trips to camp.

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<tr>
<th>Other Resources</th>
<th>Applicable ICS Functions</th>
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<tr>
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<td>Incident Command, Air Operations</td>
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<td>Incident Command, Air Operations</td>
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<td>Logistics, Safety</td>
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<td>Logistics</td>
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9. Training

Overview

Training needs came up continually during the interviews. The Alaska Fire Specialist training program was described by some as a successful model for reducing the time to develop people in multiple positions. A local agency office described a customized “engine academy” workshop that worked well. Many expressed concerns about the shortage of trained personnel in all positions.

“I think the really good firefighters are the ones who are always looking to learn something.”
Air Support Group Supervisor

Successful training solutions

Interviews with a wide variety of positions produced several training ideas that might be adapted in other wildland fire locations.

The Alaska Fire Specialist training program (http://fire.ak.blm.gov/unique/docs/hiring/fsshire.asp) employs and trains 30-35 people to provide a pool of overhead for suppression, fuels reduction, and aviation management operations. The goal of the program is to get people trained and experienced and then move them into other positions so they have multiple qualifications. It provides opportunities for firefighters from local villages to get more training, and includes a helicopter crewmember development program.

One local Forestry office put together an engine crew workshop based on the Engine Academy and on ideas from a Lessons Learned Center Scratchline article (http://www.wildfirelessons.net/Scratchline/Scrln5_summer03.pdf). They adapted the curriculum to their own engines and their unit’s common problems. They had 25 people in the workshop for 4-5 days, with skill stations in topics like structure protection, engine management, communications, foam, driving, hose deployment, hose repair, and more. Students worked at 4-5 stations per day for 3 days, and then all stations on the last day. They had great success with this training process.

Many personnel considered task books to be a good mechanism for getting critical experience in a real setting. Those who were most successful in making this happen used these tactics:

- Identify slow periods to spend extra time with the trainee; prepare them to assist when things inevitably get busy again.
- Ask people who express interest in a position to get their task book faxed to the fire from their home unit, and get started on it immediately.
Make yourself available as a single resource, to get a variety of experience in different areas before joining an IMT.

Get involved in fuels mitigation or other projects in the off-season, so we keep people trained and interested. One Communications Unit Leader said that his assignment with a Burned Area Emergency Rehabilitation (BAER) team at Los Alamos was an excellent opportunity to learn because of the less intensive pace in which a rehab team operates.

**Needs and Challenges**

Although not unique to Alaska, training issues continue to rank high on the list when people are asked about their needs, challenges, or unresolved issues. In Alaska, shortages were identified in all of the following:

- Long-term fire behavior analysts (LTANs) to support FUMTs, IMTs, and Predictive Services. The IMTs considered LTANs to be critical for fires that cannot be controlled due to size, lack of resources, cost considerations, or management objectives. This situation describes the majority of fires managed in Alaska in 2004. Operations and Planning Section personnel also need to be briefed on what exactly LTANs can do, so that the LTAN’s knowledge is used advantageously in the IMT’s decision-making process.

- Alaska fire behavior analysts (FBANs), or those with Alaska fire experience, were another critical need due to the use of the Canadian fire danger rating system and the uniqueness of Alaska fuels and fire behavior.

- Operations personnel who can move into Planning. Planning section members expressed the need to create a better bridge between Operations and Plans, to get more qualified people into these planning positions. Field Observer is the bridge, but more Operations personnel need to be encouraged to cross that bridge. One Planning Section Chief also expressed concern about the lack of opportunities for women to become Plans or Operations Chiefs. This Plans Chief concluded, “Now with the retirement of many current IMT Section Chiefs and a five year lag in replacements, there may be a demand side to the equation that will begin to work in their favor.”

- Leaders who are effective at community relations and working with a diverse range of people.

- Technicians who can set up printers and plotters.

- Communications technicians.

- Supply Unit Leaders and Logistics personnel with knowledge of the Alaska way of doing business. Logistics personnel interviewed suggested that the AFS create logistics task books for folks who are assigned to fires in other capacities. In this way, the trainee gets the cross-training while on an incident, the IMTs get a better-developed infrastructure, and the local economy gets support.

- People who can play dual roles in structural and wildland urban interface fires. According to one Branch Director who worked in a structural department, the wildland fire community needs to treat structural departments as an investment: extend training opportunities, somehow account for the National Fire Academy training and experience they do have, and come up with a way to incorporate that into qualifying them in accordance with National Wildfire Coordinating Group (NWCG) standards. He also noted that structural firefighters need to get consistent wildland fire training, not just show up at the incident and see what might fit.

- Short IMTs, such as FUMTs, benefit immensely from having team members qualified in multiple ICS positions. This is especially valuable in Alaska, where additional resources often take 72 hours to arrive.
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<thead>
<tr>
<th>Applicable ICS Functions</th>
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The BLM/Alaska Fire Service conducts a Fire Specialist training program, which provides a pool of training developers and instructors in fire operations and aviation management. They employ and train 35 people each season in a variety of firefighter and overhead positions.

The task book concept was most successful when trainers took responsibility to seek out trainees during their slow times, or to get those trainees to have their task books faxed to fire camp. Trainees were most successful when they kept themselves available as single resources and sought out fuels projects and other non-emergency opportunities.

Structural firefighters need to be encouraged to develop their wildland skills, and the Federal agencies are in the best position to extend the opportunity. Ideas included finding a way to account for the National Fire Academy training and experience they do have, and coming up with a way to incorporate that into qualifying them in accordance with NWCG standards.

**Other Resources**

Details and current openings in the Alaska Fire Services *Fire Specialist* training program are available online at [http://fire.ak.blm.gov/unique/docs/hiring/fsshire.asp](http://fire.ak.blm.gov/unique/docs/hiring/fsshire.asp).

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Moose cow and calf crossing the Taylor Highway. Source: Steve Longacre