

OPERATIONS:

Strategic Application of Resources

During the Columbia Shuttle Recovery, 20 member search teams were assigned to Divisions with the task of searching for shuttle debris within two nautical miles from the centerline of the Columbia flight path. Search and rescue experts were assigned with each of the strike teams to assist the searchers in effectively using the search grid system. This statistically designed grid search consisted of 100% coverage of an area with at least a 75% probability of detection target. Technical specialists begin the process by physically identifying the grid to be searched on the ground after which they identified and contacted landowners to receive permission to search on their land. These specialists then identified the necessary access routes to the grid site. The grid method is conducted by searchers lining up next to each other and walking in a line covering the area directly in front of them. Recovery and decontamination teams were also assigned to each Division* and were then called upon as debris was located. Because of the potential toxic and pyrotechnic material component of the debris, these Environmental Protection Agency (EPA) contractors would then identify and recover the items that were then catalogued for NASA evaluation.

Lesson Learned: A unique and specialized all risk assignment requires the extensive dynamic and strategic preplanning in the search areas before search and recovery resources could be assigned. It was imperative that the technical specialists projected resource needs days ahead of search and recovery team assignments to facilitate pre-search contact of private land owners, determining access routes, and laying out the search grids. Any glitch in the preplanning process altered how and where resources could be deployed.

**Use of ICS terminology of “Divisions” for this incident was incorrect and should have instead been identified as “Groups” because the mission was functional, not geographical in scope. The various teams were performing their specific functions in different geographical areas each day. Components of each division were not assigned, mapped, or tracked as they would be in a wildfire incident by physical location, but by the group or type of skill resource they provided and their deployment availability to the recovery efforts.*

Aircraft Manifesting Using Digital Scales

On a 2003 all-risk incident, the manifesting and loading process at a county airport took two to three hours per chartered jet aircraft flight. The operation employed the traditional methods for manifesting crews, which required a minimum of five staff in the “manifest room”, the bus parking zone, and on the airport ramp to handle scales, tabulate the manifest, and direct crews. The staff weighed crew personnel individually, using a sliding beam “doctor’s scale” and weighed each individual unit of cargo with a hanging compression scale. Every weight then had to be tallied manually and summed up on the Passenger

Manifest. This process required approximately 10 minutes to process 20 passengers (or 5 crews per hour.)

To improve both the efficiency and safety of this large-scale air operation, the Incident Management Team decided to rent two digital platform scales from a local source. One portable platform scale had a 2'x 2' platform and a 500 lb. capacity. A second platform scale had a 5'x 5' platform and a 5000 lb. capacity.

A company representative delivered and set up both scales. The large, 5000 lb. capacity scale was powered by 120 volt electrical service, and because it weighed over 800 lbs., it required six people to offload it and move it into the building. Six "C" cell batteries powered the smaller scale, which is mounted on wheels for easier transport. Rental costs for both units totaled about \$52.00 per day.

Air Support personnel expressed a greater preference for these digital scales over the older technology beam and compression scales and immediately began benefiting from them by being able to process personnel more quickly at a rate of up to seven crews per hour. At the same time, these digital scales reduced the need from five to three aviation support personnel in the "manifest room." A shortcoming with these rental scales was neither instrument could sum individual measurements to aggregate total crew weights, so manifesting still required manual calculation. However, since each crew requires a manifest listing individual weights, manual calculation was unavoidable. Neither rental scale had printing capabilities.

Lesson Learned: During large-scale airport mobilization and demobilization, digital platform scales are an effective and efficient means of processing and manifesting personnel. The scale with the 5' x 5' platform was larger than needed for personal gear and cargo, and was difficult to set up due to its weight. Digital scales are also available in 3' x 3' platform sizes and can be programmed for various weight capacities. A 2' x 2' personnel scale and 3' x 3' cargo/personal gear scale should satisfy most requirements. For more specific information on digital scales, do a search for "digital platform scales" on the Internet.

Mobile Spike Camps

A 2003 Montana wildfire constantly tested the Air Operations Branch and the Logistics Section during each operational period. Since ground transportation to the fire took several hours, the IMT had crews and supplies flown into six low impact spike camps located around the fire at approximately 1½-mile intervals. As resources completed sections of line, the spike camps were cleaned up and then relocated about every two days to meet upcoming operational objectives.

Lessons Learned: 1) To minimize exposure of personnel to helicopter operations, the crews walked out about three miles to a drop point from where they were driven back to base camp, having completed their multiple day

assignments based out of the spike camps. Flying time and associated risks were cut in half for all the line personnel by using a flying in and hiking out procedure. 2) To facilitate smooth spike camp operations, a Receiving and Distribution Manager (RCDM) was ordered to work out of the main helibase. The RCDM coordinated orders of all cargo going to the six spike camps. By stationing the RCDM at the helibase it facilitated getting the cargo orders to the right place at the right time.

Use of Mark-3 Pumps

Crews and line overhead should be made aware that the Great Basin Cache at NIFC states all Mark-3 Pumps can use the same gas/oil mixtures. The pumps built before the early 1970's were originally specified to use a 16:1 gas/oil mixture while all pumps made since then require a 24:1 ratio. The Cache at NIFC related that pumps manufactured before the early 1970's can be run on the 24:1 ratio. On a Type 3 incident during the 2002 fire season, both generations of pumps were utilized. This resulted in confusion among crewmembers over which was the proper gas/oil mixture to use. Using the wrong gas/oil mixture ratios can impede operations and potentially damage a pump. According to the Cache, all Mark-3 Pumps should now have the 24:1 ratio boldly stenciled on the pump. As a point of information, premixed gas/oil supplied to Alaskan incidents is mixed to a 40:1 ratio. The Alaska Cache has found this mix to be very effective based on 10 years of use and it simplifies logistics for all 2-cycle machinery (chainsaws and pumps) to use the same ratio. For more specifics on operating Mark-3 pumps click on: <http://www.wildfire-equipment.com/Mark-3.html>.

Specialized Firefighting Vehicle

After the 2000 fire season in Montana, a rough terrain firefighting vehicle was developed that has been particularly effective in steep and rugged terrain. This vehicle has a 60% down hill capacity and 45% uphill capacity. The Proteus has been used during the last two fire seasons both to construct line as well as mop up in areas that lack engine access. Some Incident Management Teams (IMT) report they find this type of vehicle is most effective as part of a task force with a handcrew during the mop up phase of an incident. It is an 8 wheel drive vehicle with a 3000-gallon tank and a 100 gpm @ 100 psi pump combined with live hose reel with 250 feet of 1-inch hose. The water tank can accept refilling by conventional means as well as helicopter aerial delivery.

Unique Suppression Tool

Incident commanders and operations personnel should be alert to unorthodox equipment that may be used as aids in suppression in some geographic areas. Four-inch standpipes capable of being charged to 600 PSI and normally used to make snow at a ski area delivered large volumes of water on a wildland fire in California. This tactic was a significant aid in the containment of one flank of this fire.

Large Spot Fire Threats

On a recent wildland fire in the canyon country of Colorado, airtanker support was instrumental in containing a 50-acre spot fire in a vertical canyon threatening nearby residences. The initial Wildland Fire Situation Analysis (WFSA) had prohibited aerial retardant use due to a nearby river but the agency administrator saw the need to make a change in the WFSA when fire behavior predictions threatened this subdivision. Two medium helicopters delivered water during the day and an airtanker laid a retardant line to help hold the spot fire overnight. The combination of these air resources worked to hold the continuous fuels preventing the fire from making a run up the canyon walls toward the structures. The fine performance of all the aircraft pilots in containing this large spot fire was acknowledged by the IMT at the end of the incident.

Using Local Expertise

Local resources can have excellent knowledge of the local fire behavior, including unique wind patterns and local fuel conditions. Incorporating their knowledge of these factors into the strategy can have a significant impact on containing the fire. It is important to identify who these local resources are as soon as possible and use their expertise during all phases of the incident.

Fire Behavior in Drought Stricken Forests

Fire behavior analysts have observed some very unusual fire behavior this season. In Southwestern Utah, a fire recently burned through aspen stands between 6,500-10,900 feet at extreme rates of spread. Warning: Aspen stands **MUST NOT** be used as safety zones due to these severe drought conditions. Do not be deceived because the forest looks green.

Prepared by:
Wildland Fire Lessons Learned Center
2003