

**Rationale and Models
for Transition of Management
of Avalanche Rescues from
the Three Stage Model to the
Incident Command System**

Presented by:

Dale Atkins

and

Drew Davis

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By: Drew Davis and Dale Atkins

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Introduction

The first *organized* avalanche rescues likely took place when Hannibal's army crossed the Alps in late 218 BCE. Moving snow was reported to have dragged many soldiers in "abysses" and snow "falling rapidly from the high summits engulfed the living squadrons." Leaping forward 2000 years, even Napoleon's generals no doubt had to coordinate rescue efforts when "whole squadrons" were swept away in 1800. In World War I managed and coordinated rescues became a necessity when avalanches became effective weapons of war. The roots of organized rescue as performed today can be traced back to WWI veteran Christian Jost who in 1927 founded the Parsennendienst, a Swiss ski patrol above Davos.

The Parsennendienst developed a highly trained and professional two-part rescue response — Hasty Party and Main Party — that became the model for all avalanche rescue in both Europe and North America. By the 1950s the Parsennendienst had formulated and implemented search techniques, tactics, terminology, and leadership positions that are still used today. In 1968, based on rescue experiences in the United States and Europe, US Forest Service Snow Ranger Ron Perla introduced a three-stage approach as a "logical revision" of the classic two-stage rescue response.

Three-Stage Rescue

By the early 1970s Perla's three-stage plan had been adopted by the National Ski Patrol and mountain rescue teams, not just in the United States, but also by rescue teams abroad. Perla's approach neatly divided avalanche rescue into three sequential and functional stages with the following objectives:

- Stage 1 — to locate and uncover the victim in shortest possible time.
- Stage 2 — to provide first aid and evacuation
- Stage 3 — to provide support for prolonged operations

All speedy organized rescue efforts require developing a plan of action before the accident. The plan not only identifies what to do, but also who will perform the tasks. The key leadership roles are:

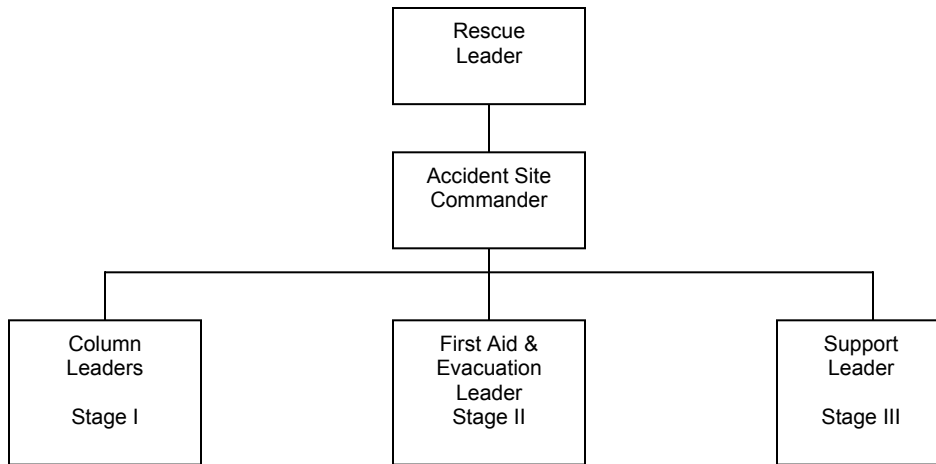


Figure 1. Three-Stage rescue plan and key leadership roles.

Rescue Leader: Overall coordinator. In addition to organizing the quick dispatch of rescuers and equipment, the Rescue Leader coordinates medical support, air support, law enforcement, and public relations. The Rescue Leader usually remains stationed at a headquarters location. For field operations the rescue leader appoints an Accident Site Commander.

Accident Site Commander: Goes to the accident site as quickly as possible and relieves whomever is temporarily in charge. The Accident Site Commander manages the SAR operation at the accident site.

Column Leaders: Are experienced rescuers who manage and lead field teams to the site. In addition, Column Leaders may also manage teams — like probe-line teams — at the site. Column Leaders answer to the Accident Site Commander.

Stage 1, Column 1 (aka Hasty Team): Is the first team to the accident site. The team's leader is temporarily in charge at the accident site until the Accident Site Commander relieves the individual.

Probe Line Leaders: Are experienced rescuers who are responsible to keep a team of rescuers probing quickly, continuously, and effectively. Probe Line Leaders are often but not always Column Leaders.

Specialists: Are highly trained rescuers with specific skills, e.g., rescue dog handler, RECCO operator, hazard evaluator, paramedic/doctor, etc. who are involved directly with the search effort.

Stage II Leader: Organizes the bulkier medical and evacuation equipment — not already carried by Stage I teams — needed to revive, stabilize, and evacuate the victim(s).

Stage II Team: Typically a special team of three to five rescuers with advanced medical skills (preferably at least one is a physician or paramedic) to provide care and to initiate the evacuation of the victim(s). The Stage II team is typically organized simultaneously along with Stage I teams; but usually departs a few minutes behind.

Stage III Leader: Organizes support for prolonged operations. The extent that Stage III is activated varies greatly depending upon the size of the accident, weather conditions, terrain problems, and the success of Stages I and II.

History of ICS

The Incident Command System (ICS) evolved from the US Forest Service Large Fire Organization (LFO) and the organizational management systems of fire departments. In a 12-day period during the 1970 fire season in California, 16 lives were lost, over 700 structures were destroyed and millions of dollars were expended. Post event analysis indicated, though responding agencies cooperated to the best of their ability, response problems were generally the result of inadequate management. There were areas of response management that could be improved. The FIRESCOPE project was initiated in 1972 in response to the deficiencies identified during the 1970 fire season.

The two major products produced by the FIRESCOPE organizations were the Incident Command System (ICS) and the Multi Agency Coordination System (MACS). Through out the late 1970s the development and testing of the ICS system continued in California. In 1980, the California Office of Emergency Services, Division of Forestry and Fire Protection, and partner agencies adopted ICS as the model for managing wildland fire. Additionally, the National Wildfire Coordinating Group (NWCG) evaluates FIRESCOPE ICS for possible national adoption.

The adoption of ICS and its successful execution for management of wildland fire provided the impetus for other disciplines to evaluate and implement ICS. During the 1980's, 1990's and the early 2000's there were numerous attempts to migrate ICS to an "All Hazards" or "All Risk" application. These attempts met with limited success. The events of September 11, 2001 and subsequent formation of the Department of Homeland Security accelerated the move to an "All Hazard" approach to incident management.

On February 28, 2003, President George W. Bush issued Presidential Homeland Security Decretive 5:

"To prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies, the United States Government shall establish a single, comprehensive approach to domestic incident management. The objective of the United States Government is to ensure that all levels of government across the Nation have the capability to work efficiently and effectively together, using a national approach to domestic incident management. In these efforts, with regard to domestic incidents, the United States Government treats crisis management and consequence management as a single, integrated function, rather than as two separate functions."

This declaration resulted in the creation of the National Incident Management System (NIMS) and required the use of ICS for the management all domestic incidents managed by federal, state, local government sectors as well as by private and nongovernmental sectors. To meet this mandate it is necessary that experienced rescuers be able to apply the traditional avalanche rescue model to ICS.

Rationale for Change

The rationale for change to ICS was clearly directed in the creation of NIMS. To enforce the use of ICS, NIMS requires that all agencies at all levels adopt ICS as a condition to receive Federal preparedness funding. The challenge facing rescuers and responsible-jurisdictions is how to incorporate the time-proven and well-known Three Stage Avalanche Rescue Response model to the new management structure of ICS.

The Three Stage Model has served the rescue community well for many years. During that time, avalanche rescue response has transitioned from being performed by a single agency such as a ski patrol or a search and rescue unit to being performed by a combination of resources from ski patrols, search and rescue units, snow mobile organizations, emergency services, and the fire service. The multidisciplinary response brings with it separate organizational management models which may not be familiar with the Three Stage Model or each others management model.

The implementation of an Incident Command System based response for avalanche rescue provides a discipline neutral management structure, applicable to all disciplines. The inherent modular design of the Incident Command System model provides a scaleable management model which is applicable to incidents ranging in complexity from initial response to extended, multi-day operations.

The use of an ICS model brings the management of avalanche rescue incidents into alignment with Presidential Homeland Security Directive 5.

Assumptions

In the models presented below for ICS-based avalanche rescue response, the authors make the following assumptions about and the implementation of an ICS based management organization and our readers

Our readers and rescuers will have a basic awareness of ICS. Thusly, the paper only provides sample organizational frameworks. More detailed descriptions of the Incident Command System can be found at www.fema.gov or through formal Incident Command System training programs.

ICS does not affect how the job of avalanche SAR is performed, only affects how it is organized and managed. The stages or phases of avalanche search and rescue remain the same.

- Stage 1 - responding, searching, and locating the buried victim.
- Stage 2 - caring for and evacuating,
- Stage 3 - supporting prolonged operations.

Management under the Incident Command System provides a standard, documented process for the management organization to grow and contract as the management demands of the avalanche incident change.

For avalanche-oriented SAR personnel just learning about ICS, it is important to know there is no deliberate correlation between ICS organization and any other administrative organization. The reason is to avoid any potential confusion with other position titles, management styles, and organizational structures.

One concern in particular is for rescuers familiar with the Three Stage Model who are concerned where the Accident Site Commander function and role are to be placed within the ICS organization. The Accident Site Commander's role will be positioned usually as a Group/Division Supervisor or Operations Section Chief.

The authors are only offering guidelines/suggested management organizational frameworks for response to Type 5 through Type 3 incidents. Response to larger, more complex Type 2 and Type 1 incidents that require regional and national resources are not covered as this level of response is seldom necessary for avalanche rescue. Organizations should work with their local agencies having jurisdiction to establish and practice a formal response plan

Sample Models: ICS Based Avalanche Response

Type 5 Incidents

Incidents at this level of complexity are managed with a minimum number of resources, there is not a written incident action plan and with a duration of a few hours through a single operational period. There are a limited number of single resources composed of single individuals and/or

crews with a leader. The Incident Commander would typically be located on the incident scene and provide all of tactical direction and incident management.

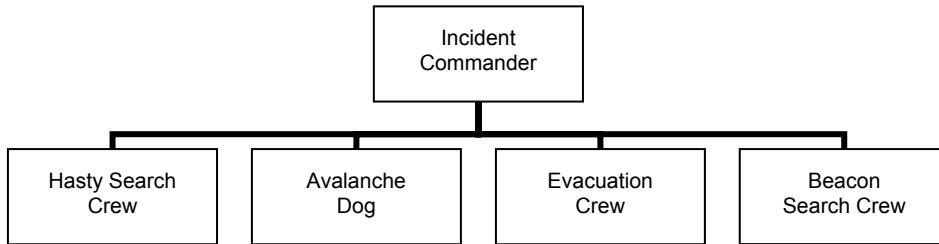


Figure 2: Sample Type 5 Incident Management Model

Type 4 Incident

The incident has become more complex than the Type 5 incident, typically requiring additional resources and management personnel. The incident commander may or not be located at the site of the incident. A dedicated manager will be assigned to manage the tactical operations on the incident site. Command Staff positions may be filled to manage media demands and safety issues.

No Incident Action Plan is completed, though the operational period briefing may be documented to aid in briefing incoming resources. Additional management positions are filled to maintain span of control limits and/or assist the incident commander with managing work load demands. This management configuration may be implemented for a single operational period or during multiple operational periods with a limited number of resources assigned.

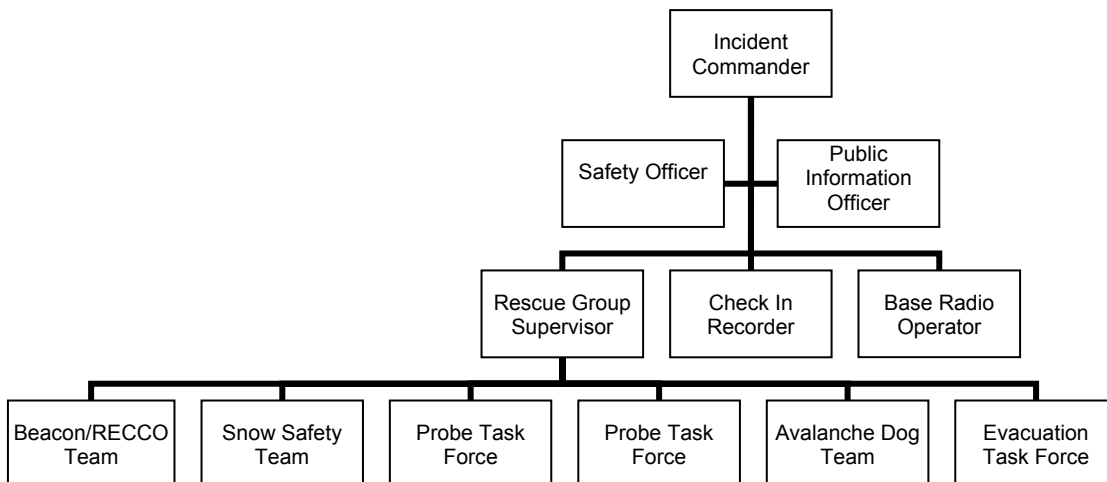


Figure 3: Sample Type 4 Incident Management Model

Type 3 Incident

At the Type 3 Level of complexity, the incident has not been resolved during the first operational period. It has increased in complexity, number of resources, and requires additional tactical management and supporting function personnel to support the effective management of the incident. Tactical resources may be organized as single resources, strike teams or task forces. Command and General Staff positions are filled as needed to manage span of control and work load; however, the Incident Commander will add positions only when needed. The incident will require the implementation of a formal incident planning process resulting in the production of a written incident action plan.

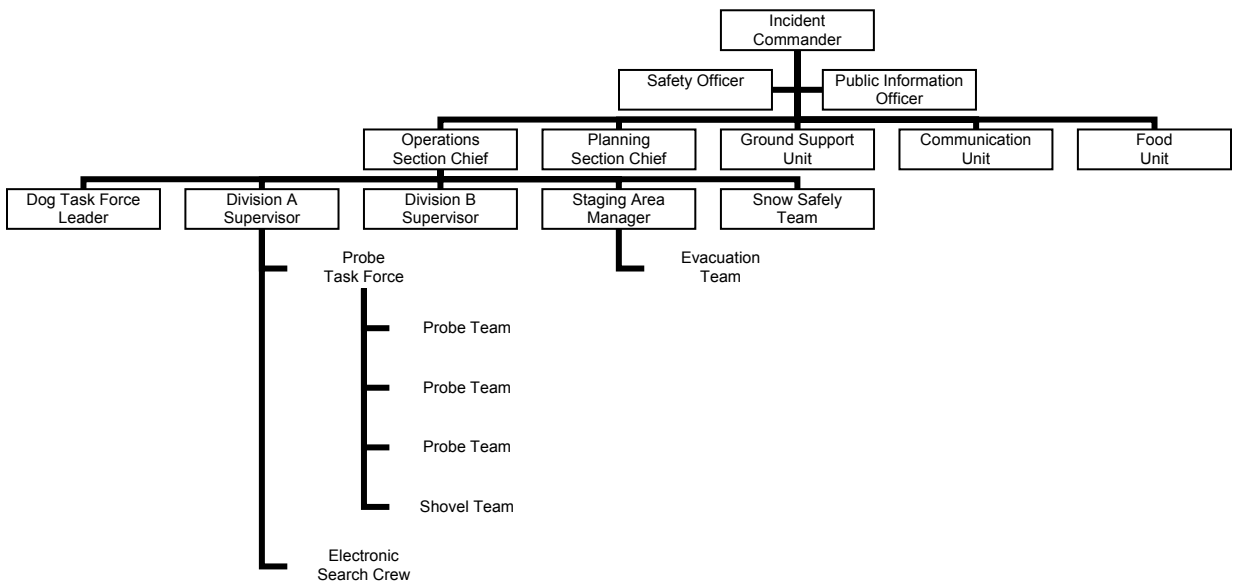


Figure 4: Sample Type 3 Incident Management Model

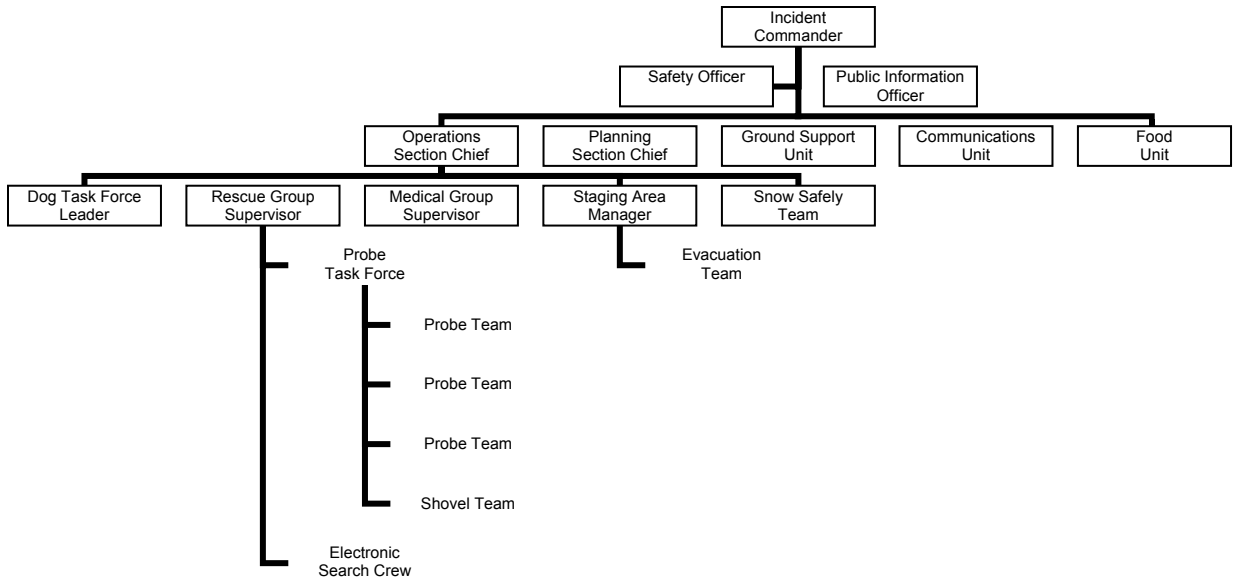


Figure 4a: Sample Type 3 Incident Management Model

ICS offers considerable flexibility and when ICS is organized by functional units the Three Stage Rescue model fits neatly within ICS. This simple structure can be added to as incident complexity increases; however, usually the organization will adopt the more traditional management functions of ICS.

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