

The Fires that created an Incident Management System

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Abstract

From September 22 to October 4, 1970, 773 wildfires in Southern California, burned 576,508 acres, destroyed 722 homes and killed 16 people. From these 13 days of death and destruction by out-of-control wildfires in the Urban-Wildland Interface, a Federally-funded project was created in California called the “Firefighting REsources of Southern California Organized for Potential Emergencies” or otherwise known as FIRESCOPE. Out of the FIRESCOPE research project came two new concepts, the Incident Command System (ICS) and the Multi-Agency Coordination System (MACS).

Introduction

For many years, local fire departments, police departments, EMS units and emergency managers operated within local incident management systems (IMS) that varied according to local historical and political experiences. Changes in these systems followed major emergency and disaster incidents. Two separate incidents occurred in the nation that led to revolutionary changes in the process of managing incidents. The first incident involved a series of wildfires which led to a statewide system that slowly evolved into a functional IMS used by the wildland fire service and by a federal maritime agency. The second incident involved the largest international terrorist attack in the nation’s history. This second incident took the basics of the state incident management system and built a National Incident Management System or what is now referred to as NIMS. As with the state system, total acceptance, incorporation and competency will most likely take a generation.

Before Incident Command

All fifty state legislatures have enacted state laws relating to disasters and major emergencies. Typically, the laws define terms, establish organizations, assign responsibilities and authorities and describe financial requirements. In California, the state legislature enacted an “Emergency Services Act” that provides direction for the state during emergencies. This Act also called for all emergency response agencies in the State of California to operate under a State Fire Disaster Plan which is coordinated by the Fire and Rescue Division of the Office of Emergency Services during a major wildland fire. “Depending on the nature and extent of a fire disaster, there is therefore a planned build-up of fire control assistance from the local, to the state, to the federal level.” (California Aflame p. 31) This was the process that was in place in 1970.

In the fall of 1970, the conditions for a major wildland disaster were present in California and the State's local, state and federal firefighters waited for the shoe to drop. Southern California had experienced little or no rain in six months. In mid-September the humidity dropped to ten percents and at various times the humidity dropped to around one to two percent. Temperatures were averaging over 100 degrees Fahrenheit day after day. Winds were gusting; at times the wind velocities were hurricane strength. (California Aflame p. 3)

Then it began. “It all started when a man set his match intentionally to tinder-dry grass along the Fish Ranch Road in the hills behind Oakland. Within minutes flames, feeding on dry coyote brush and pine trees and whipped by a strong northeast wind, swept to the ridge top and leaped into homes perched on the steep hillside above San Francisco Bay. In less than two hours fire completely destroyed 36 homes, badly damaged 37 others, and desolated 230 acres of valuable watershed.” (California Aflame p.3) However, no one expected that this fire would grow to the size it did and have the impact that it did on California firefighting.

“The 1970 fire disaster was unique in modern times, primarily in terms of geographical area involved, total acreage burned, the wildland-urban nature of the fires, and the large number of agencies, people, and equipment involved. Not since the Bar Harbor Fires in Maine in 1947, perhaps, has such a widespread disaster of similar nature occurred. Control of California's 1970 catastrophe depended upon the nationwide depth of the United States Forest Service, the statewide depth of the California Division of Forestry, and execution of the State Fire Disaster Plan under which men and equipment from many communities converged upon the various fires, providing assistance to local firefighting forces.” (California Aflame, p. 1)

After thirteen days of fire, the California firefighters managed to stabilize the disaster. “The statewide disaster ended--slowly, stubbornly--when the Fire Boss of the 34,000 acre Meyers Fire in southern California determined his fire had been wholly surrounded by a line cleared of flammable fuel.” (California Aflame, p. 1) During those thirteen days, 773 individual wildfires swept across Southern California and burned almost 580,000 acres. “The fires completely destroyed 722 homes when they burned isolated residences or spread from the hills into urban communities. Sixteen lives were lost, attributed directly to the fire activity. Suppression costs and damages together were estimated at 233 million dollars.” (California Aflame p.3). This damage would equate to \$1.24 billion in 2006.

Thirty-two of the 773 wildfires became “large” fires or 300 acres or larger and “accounted for 93 percent of the total acreage burned and 89 percent of the homes that were completely destroyed.” (California Aflame p. 4). Early fire suppression efforts were able to control the other 741 “small” fires. A remarkable job had been accomplished by the California firefighters, considering the conditions that existed. However, despite the Herculean efforts, many things went wrong that allowed the disaster to grow to the size that it did. (California Aflame p. 4)

One of the difficulties that came to light was the ability to control and coordinate the vast numbers of firefighters and other emergency responders. “Because the fire disaster was reaching such widespread proportions and involved the firefighting apparatus of so many separate fire departments, there was need for a coordinating body. Therefore, in accordance with the State Fire Disaster Plan, Region 1 GHQ [General Headquarter] was established at Los Angeles County Fire Department Headquarters.” (California Aflame p. 19)

Early in the fire disaster, the State of California found that the numbers of firefighting resources in the State were insufficient to stabilize the emergency. “In the wake of the fire disaster and total commitment of state forces, Governor Reagan applied for federal assistance from the Office of Emergency Preparedness. As a result of this application, the state received considerable help, especially from military forces and from highly trained and experienced Indian crews flown in from several western states.” (California Aflame p. 19) With the Federal government’s response came new capabilities that would become standard in future responses.

Satellite photographs were provided by the ESSA 8 satellite circling overhead, “demonstrating its potential for providing fire intelligence in future years.” (California Aflame p. 21) Because firefighters were spread so thin, there was no one on the ground or in the air to report on several of the wildfires in remote locations. “Only the use of the Forest Service’s infrared scanner, flown to California from the Boise, Idaho, Interagency Fire Center, permitted firefighters to maintain continuous vigil of the [Buckeye Fire] fire’s location and progress.” (California Aflame p. 23) However, with the vast numbers of local, state and Federal resources that became involved in the 1970 California wildfires, some resources were not effectively utilized, while other resources were used to the point of exhaustion. Existing methods of managing the incident soon proved to be insufficient.

On September 28th, midway through the nearly two week incident, the number of firefighters and equipment peaked with “...probably some 19,500 professional firemen from about 500 separate departments and agencies were involved with wildland fires in California on that day, through mutual aid agreements, the State Fire Disaster Plan, and inter-state and intra-state movement of forces. Thousands of other people were also involved in the suppression effort or in support roles.” (California Aflame p. 24) Never before had California, nor anywhere in the United States, experienced a disaster that involved such large numbers of responders.

California’s “State Fire Disaster Plan”, as organized by the Division of Fire and Rescue of the State Office of Emergency Services (OES), was specifically developed to coordinate resources with local communities and to mobilize and deploy these resources statewide. The Plan established procedures for managing statewide voluntary mutual aid programs, integrated state-owned fire response equipment into the mutual aid program and converted the voluntary program into a mandatory program when the Governor proclaimed a “State of Emergency”. (California Aflame p. 37)

The Statewide Dispatching Center in Sacramento “...immediately went into an expanded 24-hour a day manning pattern to coordinate the statewide movement of men and equipment.” (California Aflame p. 35) Informal information connections existed with the ad hoc General Headquarters (GHQ) in Los Angeles, the Sacramento Headquarters of the Division of Forestry, Ranger Unit and District Headquarters Offices.” (California Aflame p 35) Difficulties came with these separate control centers all having a segment of the firefighting response. Various agencies “had sent top level representatives to form the Board of Strategy of Region I GHQ. These agencies included the U. S. Forest Service (USFS), the California Division of Forestry (CDF), the California Office of Emergency Services (OES), the California Highway Patrol, the Los

Angeles County Fire Department, the Los Angeles County Sheriff, Los Angeles County Administrative Services and the Los Angeles City Fire Department. The Ventura and Kern County Fire Departments were also invited to send representatives to GHQ. This liaison group became the focal point for all fire intelligence and acted to coordinate results and assign priorities to the region-wide dispatching of firefighting forces.” (California Aflame, p. 39). Because of the size and spread of the fires, several California counties south of Los Angeles County were also involved. This led to some friction and the “GHQ did not operate smoothly at all times.” (California Aflame, p. 39). “By September 28, the greatest needs for assisting firefighting forces had shifted principally to San Diego and San Bernardino Counties in Region VI. Therefore GHQ was shifted to the Division of Forestry's district office at Riverside.” (California Aflame, p. 39). Movement of the GHQ midway through the fires also caused some difficulty in coordination and control.

Lessons Learned

Two months after the extinguishment of the 1970 California Wildfires, “California's Secretary for Resources Norman B. Livermore, Jr., appointed a 21-man Task Force on California's Wildland Fire Problem, formed by Director of Conservation James Stearns.” (California Aflame, p. 65). The Task Force on California's Wildland Fire Problem included representatives from a variety of Federal, State and local government agencies and “several firemen’s’ associations, the League of California Cities, the Pacific Fire Rating Bureau and the University of California.” (California Aflame, p. 65). Cooperation among the representatives of the Task Force went well and in 1972 the Task Force issued a report detailing the lessons learned from the Wildfires. (Chase p. ii).

Though the cooperation between all the entities that were involved in the 1970 Wildfires went well, “all agencies recognized, however, that a number of problems significantly hampered the effectiveness of this cooperation. Most apparent was the lack of a centralized information source from which to obtain accurate, up-to-the-minute facts about the fast-changing fire situation region-wide and an inability to carry out centralized planning. This fact made it difficult - sometimes impossible - to establish rational priorities in allocating scarce fire suppression resources and coordinating individual agency requests for aid. Considerable difficulty was encountered in establishing and maintaining communications between the various agency units on the firelines because of the high volume of radio traffic and the many radio frequencies involved. Confusion also existed between agencies because of nonuniformity in terminology, wildland fire suppression organization structure, and procedures.” (Chase p. ii).

The difficulties experienced during the 1970 Wildfires and identified in the report by the members of the Task Force were categorized into six major areas for improvement. (Heide Chapter 7, p. 3). These included:

- Lack of a common organization.
- Poor on-scene and inter-agency communications.
- Inadequate joint planning.
- Lack of valid and timely intelligence.
- Inadequate resource management.
- Limited prediction capability

Finding solutions to these six general areas for improvement was determined to be critical to the success of any future wildfire operations on the scale that were experienced in 1970. Therefore, an organization was created to find and detail these solutions.

FIRESCOPE

Even before the Task Force on California's Wildland Fire Problem report had been issued, the problems faced during California's Wildfires of 1970 gained the attention of the 92nd U.S. Congress. As a result, the "House of Representatives, Committee on Appropriations, recommended an appropriation of \$900,000 to strengthen fire command and control systems research at Riverside, California, and Fort Collins, Colorado." (Chase p. i). In Riverside, California, the research was conducted at the Pacific Southwest Forest and Range Experiment Station's Forest Fire Laboratory. (Chase p. i). The initial funds were channeled through the U.S. Forest Service. Between 1972 and 1977, five million dollars was spent on researching the problems identified during the Task Force and on developing systems to solve these problems. (Progress p. 1). From this research, a program called FIRESCOPE was born.

The research, development and application process located at Riverside involved two efforts. One of the research efforts developed computer hardware and software that provided wildfire managers with greater ability to collect and analyze fire information. The other effort developed a coordination system that more effectively linked all wildland firefighting resources, regardless of location and jurisdictional responsibilities. "The major product of this complex team effort involving Forest Service researchers and land managers, cooperating fire agencies, and contractors was FIRESCOPE" otherwise known as "**FI**refighting **RE**sources of **S**outhern **C**alifornia **O**rganized for **P**otential **E**mergencies". (Chase p. i). The FIRESCOPE program charter, developed in March 1973, indicated that "the intent of the research design effort was to make a quantum jump in the capability of southern California wildland fire protection agencies to effectively coordinate interagency action and to allocate suppression resources in dynamic, multiple-fire situations." (Chase, p. 2). In this, FIRESCOPE was successful.

“The basic operational concept of the FIRESCOPE system calls for timely commitment of adequate multi-agency resources, operating under common procedures and organizational structure, to all incidents which exceed, or threaten to exceed, the capability of any single fire protection agency.” (Chase, p.2). To accomplish this basic concept, the FIRESCOPE partner agencies identified five individual components. These components were:

- Coordinate multi-agency resources during major incidents.
- Develop improved methods for forecasting fire behavior.
- Develop standard terminology.
- Provide multi-agency communications.
- Provide multi-agency training.”

(Progress Report p. 1).

Creating systems and definitions that would meet the five components of FIRESCOPE took several years of work by the members of the program. In 1976, common terminology for incident management was formally agreed upon by the members. (Highlights p. 1). In that same year, an operations coordination center was established in Riverside. (Progress p. 2).

“The first system wide implementation years were 1977-1979. During these years, the Forest Service with the partner agencies would distribute and train Southern California Fire Agencies on FIRESCOPE. The federal government would allocate 2.4 million dollars to assist in this initial implementation. In 1979, an additional 10 to 12 million dollars would be spent on full implementation. The partner agencies assumed costs for operation and maintenance of the system.” (Progress p.2). By far, the greatest contribution of the efforts of the FIRESCOPE team during this time period would be the development of two management systems called ICS and MACS.

The Incident Command System and Multi-Agency Coordination System

The research efforts of the Riverside Laboratory and the teamwork of the FIRESCOPE program resulted in the development of two management systems. The first was called the Incident Command System or ICS. The second system was called the Multi-Agency Coordination System or MACS. Together, separate incidents could be managed on scene and coordinated off scene. The two systems provided for “common terminology, uniform organizational structure, and uniform procedures for incident operations.” (Chase p. 3).

The new Incident Command System included several concepts to solve the problems learned during the 1970 Wildfires. “The Incident Command System can accommodate a variety of incident types, sizes, and operational environments. Particular functions and organizational elements are activated only at the time and to the extent dictated by operational requirements of each specific incident. Coordination of such an effort presumes that all agencies adopt uniform terminology for day-to-day use, as well as minimal uniform training and qualification standards for personnel potentially assigned to multiagency incidents. Jurisdictional command responsibility and authority are not compromised. Unless there is express agreement to the contrary, each agency retains its legal responsibility within its jurisdiction and is assumed to maintain full command authority within that jurisdiction at all times.” (Chase p. 3).

Likewise, the new Multi-Agency Coordination System (MACS) included similar concepts and was “...designed to perform regional information management, situation assessment, resource coordination, and other services as appropriate, to support existing Federal, State, and local fire protection agencies in southern California. MACS specifies the procedures, hardware, and personnel required to integrate the command-dispatch functions of the individual organizations to increase significantly both opportunities and capabilities for coordination of

emergency operations, with emphasis on multiple-incident situations.” (Chase p. 3-4). In Southern California, the lead MACS function was accomplished at a control center staffed around the clock at Riverside and called the “Operations Coordination Center (OCC)”. This facility provided the “...site from which top command personnel from involved agencies can coordinate and direct integrated operations in a major emergency.” (Chase p. 4).

During the early formulation of the ICS and MACS, it was decided by the FIRESCOPE Team that a field test would be required before full implementation of these two management systems would be incorporated. “A wildland fire burning on the Angeles National Forest was selected for the test. Many lessons were learned during this response that influenced not only the proposed operating procedures, but the training that would be required if the system was to be accepted and implemented throughout California.” (Proceedings p. 7). The test was a success. This was then followed up in 1982 with a large exercise run out of the Riverside OCC called “Top Hat.” (Progress p. 2). “This exercise simulated multiple major wildland fires in Southern California burning under peak fire season conditions. The exercise proved that the MACS element of FIRESCOPE was indeed a vital part of mutual aid coordination and situation, resources status. (Progress p. 2).

By 1982, the FIRESCOPE member agencies had “fully implemented FIRESCOPE ICS and were using the standardized lesson plans and training materials.” (Progress p. 2). During this same year, the first Incident Management Teams or IMTs were created and trained. (Progress p.2). “The partner agencies spent 1982-1985 concentrating on finalizing lesson plans for the Incident Command System and developing the Multi-Agency Coordination System. In 1984, the partner agencies also realized that if this system was ever to be completed and fully operational it would have to be a statewide effort with more emphasis on all risk application.” (Progress p.2).

In November 1987, the FIRESCOPE team met with representatives of the California Fire Information Resource Management System (CALFIRMS) in San Luis Obispo, California. CALFIRMS had been organized to coordinate interagency firefighting in Northern California following the development of FIRESCOPE. Following this meeting, the two groups joined forces and renamed the acronym for FIRESCOPE to represent both groups. The word “Southern” was dropped and the new acronym became the “**FI**refighting **RES**ources of California **O**rganized for **P**otential **E**mergencies.” (Progress p. 4). But this was just the beginning. A few years earlier, the program began to expand outside of the State of California.

The National Interagency Incident Management System

The U.S. Forest Service, Bureau of Land Management, National Park Service and U.S. Fish and Wildlife Service serve public parks and sectors throughout the Nation. Additionally, nationwide mutual aid agreements and processes were already in place between many state forestry programs and because of this, wildland firefighters mobilized and deployed from many federal and state departments to major wildfires throughout the Nation. “National organizations soon realized that you cannot operate one way while managing incidents in California and another way when responding outside of the state. (Proceedings p. 7). Therefore, in 1981, a program called the National Wildfire Coordinating Group or NWCG, which is represented by a number of Federal and state wildland protection agencies, decided to accept the FIRESCOPE management systems as a concept. (PMS 700-1 p. 3). Adoption formally came in 1982 and “the National Interagency Incident Management System (NIIMS)” was created. (Proceedings p. 7). That same year, the FIRESCOPE documentation was revised to NIIMS terminology and organization. (Highlights p. 2).

The National Wildfire Coordinating Group was originally formed in January 1973 and now includes representatives of the Bureau of Indian Affairs, Bureau of Land Management, U.S. Fish and Wildlife Service, National Park Service, Forest Service - Fire and Aviation Management, Forest Service - Fire Research, U.S. Fire Administration, National Association of State Foresters and the Intertribal Timber Council. (NWCG 2007). Since 1982, the NWCG has been refining the concept of the National Interagency Incident Management System. (PMS 700-1 p. 3). In this time period, the NIIMS program developed many publications to include field operations guides, reporting forms, job tasks, and qualifications. Other organizations around the Nation would see the benefits of this program.

ICS Spreads to the Nation

Even in 1980, Richard Chase, then assistant manager of the FIRESCOPE research and development program, could see the national applications of the FIRESCOPE management systems. He felt that the primary contributions of the FIRESCOPE program would be the Incident Command System and the Multi-Agency Coordination System. (Chase p. 16). He also saw that there would need to further changes to the programs in order to take the management systems national.

In 1982, the ICS and MACS were adopted by the National Wildfire Coordinating Group and the FIRESCOPE program was adapted to fit wildland firefighters throughout the nation. In 1987, the National Fire Protection Association (NFPA) adapted the NIIMS to structural firefighters when it developed NFPA 1561, the Standard on Fire Department Incident Management System; which the Association adopted in 1990. In 2002, the NFPA would change the title to the Standard on Emergency Services Incident Management System, thereby incorporating other first response agencies into the Standard. (Position Paper p. 1).

“Recognizing the continuing challenges occurring in the fire service in applying a common approach to incident command, the National Fire Service Incident Management System (IMS) Consortium was created in 1990. Its purpose was to evaluate an approach to developing a single command system. The consortium consisted of many individual fire service leaders, representatives of most major fire service organizations and representatives of federal, state and local agencies, including FIRESCOPE and the Phoenix Fire Department. One of the significant outcomes of the consortium's work was an agreement on the need to develop operational protocols within ICS, so that fire and rescue personnel would be able to apply the ICS as one common system.” (Position Paper p.1)

In February 1987, the Federal Emergency Management Agency (FEMA) introduced the management concepts of ICS and MACS to the emergency management community throughout the Nation when they published the guide called “Exemplary Practices in Emergency Management: The California FIRESCOPE Program.” (FEMA p. 3). In this guide, FEMA describes the value of using ICS and MACS in all hazard incident and planned events. The guide cites that “although the initial focus of FIRESCOPE was suburban and wildland interfaces, the concept has spread to urban fires, high rise fires and other agencies responsible for different types of incidents such as search and rescue, earthquakes, rock concerts, and the 1984 Summer Olympics in Los Angeles.” (FEMA p. 3).

In 1989, one of the worst environmental disasters in United States history occurred in the coastal waters off Alaska. The response to the Valdez oil spill was not considered to be one of the U.S. Coast Guard’s shining moments. In response to their after action review, the Coast Guard became “one of the first national organizations to adopt ICS outside of the wildland fire community...” (Proceedings p. 7).

“In 1996, the Coast Guard adopted the NIIMS for response to pollution incidents involving interagency response operations. In February of 2001, the Coast Guard formally adopted NIIMS ICS for all of the contingencies to which it responds, and the ICS training program was accelerated to begin meeting implementation requirements.” (Proceedings p. 7).

By the dawn of the 21st Century, the NIIMS Incident Command System had become a standard and accepted management system for wildland firefighters, the U.S. Coast Guard and a segment of the structural firefighters and emergency medical technicians. However, it would take the largest international terrorist attack on the United States in its history to propel NIIMS to a true national stage.

Following the Al Qaeda Terrorist Attack on New York City and Washington D.C on September 11th 2001, public officials called for the implementation of a national incident management system in order to better coordinate the response to incidents of national significance. “On February 28, 2003, the President issued Homeland Security Presidential Directive-5 (HSPD-5), which directed the Secretary of Homeland Security to develop, submit for review, and administer a National Incident Management System (NIMS).” (PMS 700-1 p. 3). The primary goal of NIMS was to “to provide a consistent nationwide approach for federal, state, tribal, and local government to work together to prepare for, prevent, respond to, and recover from domestic incidents regardless of cause, complexity, and size.” (Proceedings p. 8). “On March 1, 2004, the Secretary of the Department of Homeland Security issued a memorandum formally adopting the National Incident Management System (NIMS) as the national model.” (Proceedings p. 8).

As stated by the NIIMS program, “The NIMS builds upon the existing National Interagency Incident Management System (NIIMS)... [and] ...it includes those aspects of NIIMS that have

proven themselves over the years (training, qualifications and certification, publication management, and supporting technology).” (PMS 700-1 p.4)

Conclusion

Little did the California fire managers on September 22, 1970 expect that when a wildfire broke out on the Fish Ranch Road in the hills behind Oakland, a National Incident Management System that would link first responders and emergency managers from all levels of government and non-governmental entities would be born. From its roots in the Task Force on California's Wildland Fire Problem, which sought to learn from the lessons of the California Wildfires of 1970, to its development under the FIRSCOPE program and maturity through the National Interagency Incident Management System, the Federal program to develop a common incident management system for the entire nation would become a reality. This case study sought to study and comprehend the development of this national system.

Dedication

This case study is dedicated to Gordon Thomas Rowley one of the pioneers of the FIRESCOPE program. A wildland firefighter and instructor with the U.S Forest Service from 1959 to 1992 and stationed to protect the Angeles National Forest, he is the author's personal connection to this remarkable achievement in United States history.

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