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Integrated Incident Command: Colorado Floods 2013

SUMMARY

In September 2013, record rainfall in Colorado resulted in significant flooding, extensive damage to private property and public infrastructure, and six deaths statewide.¹ Boulder County was among the hardest-hit communities. On September 12, the heaviest day of rainfall, more than eight inches of rainwater accumulated over a 12-hour period. By September 16, the month-to-date precipitation totals in Boulder County were 1.7 times higher than any monthly total since record keeping began in 1897.²

As a result of the rainfall and floods, the President declared a state of emergency and signed a Federal disaster declaration on September 14, 2013. During the ensuing incident response, teams and resources from a variety of Federal, state, and local organizations evacuated citizens, rescued trapped individuals, and assisted Boulder County with issues related to critical infrastructure emergencies. An integrated command structure oversaw and coordinated the response. The integrated command included the Federal Emergency Management Agency's (FEMA) Urban Search and Rescue (US&R) Incident Support Team White (White IST), and the U.S. Forest Service's (USFS) Rocky Mountain Incident Management Team, Team B (RMA Team B).

The integrated command structure between RMA Team B and White IST was a new, unique arrangement for command and control of response operations. This innovative command structure ultimately supported collaboration across all participating organizations, allowed both RMA Team B and White IST to use their applicable skillsets, and promoted strong communication and coordination between response teams and the community. Drawing from the lessons learned captured in the *IST White Colorado Floods After-Action Report (AAR)*, the *Boulder County Flood 2013 Incident Final Report*, and interviews with the RMA Team B Incident Commander and Deputy Incident Commander, this paper examines the actions and impact of the integrated command structure and its benefits for streamlining response operations.

EVENT OVERVIEW

In September 2013, the State of Colorado experienced historic rainfall impacting a stretch of land extending from Colorado Springs to Fort Collins. The heavy rain severely flooded Boulder County, located northwest of metropolitan Denver. Between September 11 and September 13, Boulder County recorded 12 inches of rain. This three-day total exceeded

monthly totals for any month since the state started tracking rainfall in 1897, and climatologists classified the storm as a “1,000-year event.”³

Power outages resulted in thousands of residents left without electricity and flooding forced thousands to evacuate their homes. The flooding damaged or destroyed roads, public utility infrastructure, homes, and businesses. In Boulder County alone, flooding damaged over 397 private residences and destroyed 340 entirely. Thirty-three commercial properties were also damaged, while three were completely destroyed.⁴ Because of the terrain, the loss of roadway infrastructure left many mountain communities—and their residents—isolated and trapped as floodwaters rose around them.⁵ In narrow river valleys, mudslides and mudflows trapped people and cars on roadways leading into and out of small communities.⁶

In the early phases of the incident, the State of Colorado and Boulder County both activated their respective Emergency Operations Centers (EOC), which in turn allowed them to deploy necessary assets. The US&R Colorado Task Force 1 (CO-TF1) was one of the first teams activated. Colorado activated CO-TF1 as a Type 3 team to help rescue citizens trapped in the Boulder County town of Lyons. However, emergency managers quickly elevated CO-TF1 to a Type 1 team as the severity of the incident grew, and the team remained deployed as a State asset throughout the entirety of the event. At the same time, emergency managers activated plans to begin deploying other US&R task forces and IST assets.

Locally, the Boulder County All Hazards Type 3 (IMT3) response team managed the flood response for the county from the Boulder Municipal Airport.⁷ As the flooding spread and the consequences became more severe, IMT3 was quickly overwhelmed. Subsequently, Boulder County activated RMA Team B—a Type 2 Incident Management Team (IMT2)—and the team deployed to take over flood response operations from the county’s IMT3. As the county transitioned response operations to RMA Team B, leaders from the White IST contacted the RMA Team B leaders and discussed the concept of integrating commands.⁸

Stakeholders and Organizations Involved in the Response

Interagency collaboration across Federal, state, and local levels contributed to the overall success of the flood response.

During the incident response, emergency responders activated three types of Federal teams, including the following organizations:

- US&R Nebraska Task Force 1 (NE-TF1);
- US&R Utah Task Force 1 (UT-TF1);
- US&R White IST, composed of representatives from the US&R task forces; and
- RMA Team B.

US&R Task Forces

The US&R task forces deployed to the Boulder County floods—including the State-activated CO-TF1—are multi-hazard teams capable of responding to a range of emergencies and disasters, including hurricanes, tornadoes, floods, dam failures, terrorist incidents, hazardous materials releases, and earthquakes. These task forces provide personnel and equipment with four areas of specialization: search, rescue, technical (composed of structural specialists who make rescues safe for rescuers), and medical. Though they traditionally operate within collapsed structure and confined space rescue scenarios, task forces are capable of providing search and rescue services in any number of complex and difficult operational environments. When a disaster response warrants the services of the

task forces, FEMA will deploy the three nearest task forces within six hours of notification.⁹ The US&R task forces operate under the authority of Emergency Support Function (ESF) #9 – Search and Rescue (SAR). Each task force brings its own cache of equipment to an incident response. A typical US&R cache allows a deployed task force to operate self-sufficiently for up to four days, and includes the following types of equipment:

- Medical supplies, such as medicine, intravenous fluids, blankets, suture sets, defibrillators, burn treatment supplies, and scalpels;
- Search equipment, such as concrete saws, jackhammers, drills, lumber and rope;
- Communications equipment, such as generators, radios, cell phones, and laptops; and
- Technical support equipment, such as fiber optic scopes, listening devices, and other technical equipment used to identify trapped victims.¹⁰

ISTs

An IST is a stand-alone team that supports deployed US&R task forces through incident command assistance, support logistics, and resupply functions common to any large, complex incident. Each member of the IST belongs to one of the 28 US&R task forces. When a disaster strikes, the three nearest qualified IST members deploy to the incident. Those three members provide support, until the main group of IST members arrives later.

The IST traditionally operates in support of ESF #9, coordinated through FEMA. The IST deploys with a cache of materiel designed to fully support the 29-member IST throughout its activation. During the Boulder County flood response, the White IST supported its respective task forces in direct collaboration with RMA Team B and in support of both ESF #9 and ESF #4. A communications van from a regional FEMA Mobile Emergency Response Support (MERS) detachment supported the IST's communications needs during the incident response. This MERS van equipped the IST with all forms of communication, including cellular, internet, satellite, video teleconference, and remote repeater capabilities.

RMA Team B

RMA Team B is an interagency, multi-jurisdictional, all hazard incident management team (IMT) that deploys to incidents at the Federal, state, local, and tribal levels. RMA Team B directly supports responses related to ESF #4 – Firefighting, though the teams are capable of responding to incidents involving all hazards, including weather-related disasters such as tornados, earthquakes, or floods. Like other IMTs, this team includes personnel from different departments, organizations, agencies, and jurisdictions at the Federal, state, and local levels and the team provides command and control support for across all levels of government during an emergency. Members of RMA Team B are trained in firefighting, fire management, and other related skills. In the Boulder flood response, the USFS—the lead agency for ESF #4—administered RMA Team B, which was responsible for providing command and control services to all of the response resources assigned to it. RMA Team B effectively acted as an “air traffic controller” for all response organizations, including White IST.¹¹ RMA Team B received its initial delegation of authority from the State of Colorado, and city and county of Boulder. FEMA later tasked the team with overseeing command and control for the entire ESF #4 and ESF #9 response. The Incident Commander and Deputy Incident Commander led RMA Team B in Boulder County.¹²

Other Stakeholders and Organizations

Several additional organizations were involved in the response, including:

- The Colorado National Guard (CONG) and the U.S. Army (based out of Fort Carson), who assisted with land and air SAR operations with a helibase, crash rescue vehicles, refueling, and air traffic control personnel;
- Federal Aviation Administration (FAA), who assisted with clearance requests in flight-restricted areas that were critical to air rescue operations;
- National Weather Service (NWS), who provided a local incident meteorologist to deliver real-time updates and forecasts to units operating in the field;¹³ and
- The Boulder Fire Department, Boulder County Sheriff, Boulder County Office of Emergency Management (OEM), and Colorado Office of Emergency Management (COEM), who provided SAR support.

Stakeholder Objectives

For the Boulder County floods, RMA Team B and all other stakeholders responding shared the following incident objectives:¹⁴

- Minimize risk to responders and the public through constant assessment of relative risks and potential benefits;
- Provide operational and logistical support to the individual commands throughout the affected areas of the county;
- Prioritize, direct, and supervise all search and rescue operations to account for all individuals in the affected area; and
- Support distribution of food and water to stranded citizens.

Similarly, the delegation of authority established the following turn-back standards—benchmark criteria used to determine when responding teams can be demobilized from an incident response—for RMA Team B:

- Ensure that all functional routes are clear and passable;
- Ensure that the all individuals who have been trapped are successfully evacuated;
- Ensure that all flooded structures are cleared of all occupants;
- Identify all damaged structures;
- Ensure that all drainages are clear of all occupants; and
- Ensure that all debris piles have been mitigated of any hazardous materials and/or human remains.¹⁵

During their initial discussions with RMA Team B leadership about integrating the two teams, leaders from White IST observed that RMA Team B's turn-back standards overlapped with the ESF #9 tasking of White IST and the US&R task forces. This overlap in purview and tasks established the framework for the integrated command.

IMT and IST Roles During a Traditional Response

IMTs and ISTs deploy to incidents in need of support in coordinating response efforts, such as Hurricane Sandy, Hurricane Gustav, and the Iowa Floods of 2008, among others.

During emergencies, the nature and scale of the incident dictate the IMT and IST's activation, although the two teams work independently of each other. Both the IMT and the IST operate under the Incident Command System, with unique missions and separate reporting systems.

Upon the IMT's activation, the Incident Commander determines the mission objectives for the response and rescue teams. The Incident Commander, in coordination with his general planning staff, makes tactical and operational decisions during an incident.

On the other hand, emergency responders traditionally call the IST to respond to an incident after an emergency declaration, or after official activation by FEMA. Unlike the IMT, the IST receives its authority and tasking from FEMA and the Federal government. The IST and Incident Support Leader are responsible for establishing operational and tactical priorities for search and rescue operations, and they report through internal FEMA command structures.

Both teams have traditionally acted as mutual aid resources that manage disaster operations and relieve the burden for response on local authorities. Interaction between the IMT and IST organizations tends to be coincidental, and they typically perform incident response actions apart from one another.¹⁶ Figure 1 depicts the traditional organization structure of the IMT and IST around their respective ESF roles and tasks during an incident management response.

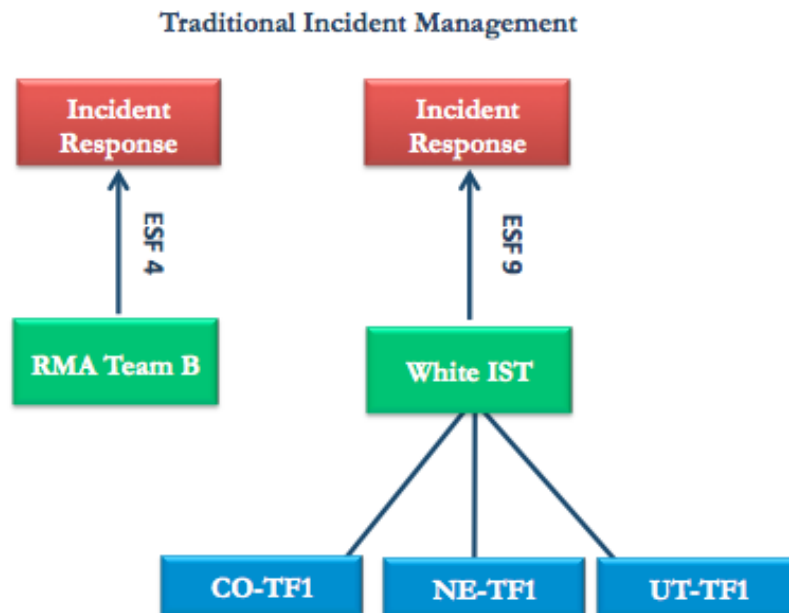


Figure 1—Traditional IMT2 and IST Incident Response Approach

Figure 2 introduces the organization of the IMT and IST within the integrated command structure used during the Boulder County flood response.

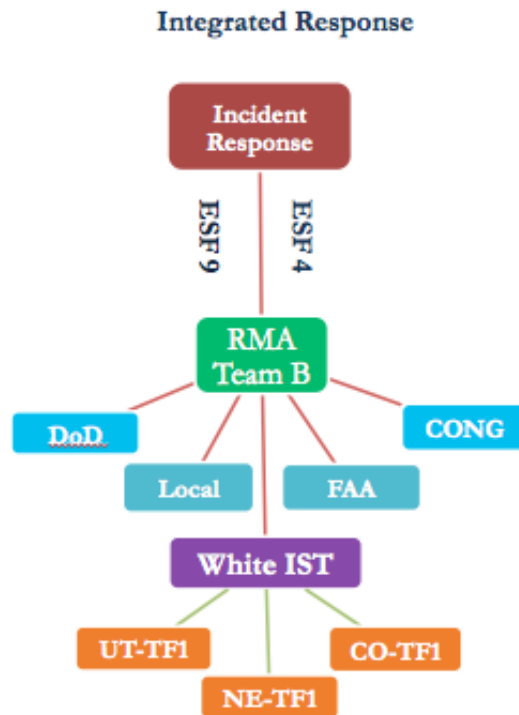


Figure 2—Integrated IMT2 and IST Incident Response Approach

Finally, the prevailing authority overseeing the response, funding, and territorial boundaries associated with an incident traditionally delegates authority for IMT operations.¹⁷ This structure results in local authorities maintaining overall control of the incident, rather than transferring authority to the IMT.¹⁸ During the Boulder County flood response, the local authorities provided delegation, while the integrated command structure assumed control of the overall incident.

Response Timeline

RMA Team B and White IST leaders received verbal notification on September 12, 2013, that they would deploy to assist with response. Their respective authorities issued activation orders on September 13, 2013.

The morning after the Federal emergency declaration, the RMA Team B Incident Commander met on-scene with representatives from the Boulder County All Hazards Type 3 IMT. Following this transition meeting, the White IST Incident Support Leader approached the RMA Team B Incident Commander about the possibility of integrating the command and control functions of the two teams under the leadership of RMA Team B. After a subsequent meeting between the command and general staff for the two teams, White IST and RMA Team B began search, rescue, and planning operations as an integrated command.

Timeline of Events	
Date	Event
September 12, 2013	RMA Team B notified of potential deployment
	White IST notified of activation
	Disaster Declaration
September 13, 2013	Formal Activation orders issued
	Integration of RMA Team B and White IST discussed
September 14, 2013	Delegation of Authority signed releasing command and control to RMA Team B
September 15, 2013	Formal Integration of RMA Team B and White IST
	Ground and air operations begin
September 20, 2013	Joint RMA Team B and White IST hot wash of incident
	Final day of air and ground operations
September 21, 2013	Close out meeting with White IST leader, RMA Team B leadership, and Boulder County officials
	Remainder of White IST demobilized
September 22, 2013	Close out reports finalized and final hot wash
	Resources demobilized

Source: Thomas Miner. *IST White Colorado Floods After Action Report*. October 2013.

THE INNOVATIONS OF THE COLORADO RESPONSE

The success of the Boulder County flood response can be attributed to the complete integration of RMA Team B, White IST, other US&R resources, and stakeholders from the CONG, U.S. Army, FAA, Boulder Fire Department, Boulder County Sheriff, Boulder County OEM, and COEM.

The command integration between RMA Team B and White IST supported collaboration on planning response actions and management strategies; leveraging applicable skillsets and resources; and strong communication and coordination between response teams and the community.

Collaboration on Planning Response Actions and Management Strategies

Although RMA Team B and White IST independently performed their response actions, they coordinated their actions with the full response efforts. The integrated command structure created an assimilated organization with diverse skills and capabilities that acted with one mind, rather than acting as separate teams. The State and requesting counties established clear mission objectives and the response organizations had common goals and objectives established by the delegation of authority. The clear tasking and mission objectives provided the integrated command with a set of measurable goals for collaboration and response.¹⁹

RMA Team B retained full command and control authority throughout the incident response, and White IST reported to RMA Team B within this modified structure. In doing so, both teams effectively shared their individual planning efforts, problem solving capabilities, objectives, and other planning resources. Since the turn-back standards established for RMA

Team B and White IST's ESF #9 mission largely overlapped, the integrated command structure seamlessly de-conflicted competing priorities. Neither team reported a conflict of priority during the response. Additionally, the overlapping turn-back standards and ESF #9 mission made it easier for the integrated command structure to rally resources behind ad hoc requests that fell outside of the day's planned missions. In one such instance, the integrated command quickly responded to a real time request to rescue citizens trapped on a remote hilltop. While the rescue fell outside of the planned activities for the day, the integrated command structure allowed for teams to quickly change plans and respond to an urgent need.²⁰

Also unlike traditional responses, leaders from RMA Team B, White IST, and the other stakeholder organizations convened each night and discussed the response efforts that were completed that day. This discussion allowed the teams to review successes and areas for improvement from the day's operations, solve problems at the incident level, and assist with setting objectives for the upcoming operational period. The informal night meetings allowed decision makers to come together and make strategic and managerial choices without placing additional burdens on the next day's response efforts.²¹

These nightly meetings also provided an opportunity to identify the needs for the following operational period, the required resources, and how to prioritize response activities. The nightly team-leader consensus about mission needs enabled the integrated command to quickly process and plan each day's activities and priorities during the morning operational meetings.²²

Following the Boulder County response, White IST assessed that its integration with RMA Team B provided "efficient and coordinated management of incident resources." Such integration, they assessed, was "unprecedented in large disaster management and facilitated seamless operations with US&R, SAR, the Department of Defense, and ESF #4 resources." The collaboration of the integrated command with CONG and U.S. Army assets similarly "facilitated seamless air operations, particularly with setting and executing priorities for air search and rescue."²³

Leveraging of Applicable Skillsets and Resources

The integrated command structure also enabled teams to leverage their individual skillsets and resources to complement the capabilities and assets of other teams. For example, in the initial staging of the US&R materiel cache, team members from RMA Team B used their staging skills and access to local resources to provide a large, powered staging area for the entire US&R contingent and cache.²⁴ This gave the US&R teams a level of flexibility and accommodation they were not accustomed to during previous responses.²⁵ This base of operations provided by RMA Team B has "eluded IST over the last 25 years," and allowed the US&R personnel to be properly fed, housed, fueled, and cared for in the field during the flood response.²⁶ This, in turn, enhanced their ability to provide quality and timely rescue services to citizens affected by the Boulder floods.

Similarly, RMA Team B resources provided support to White IST and the CONG personnel performing land and air-based SAR operations. Personnel from RMA Team B used their experience clearing wooded areas quickly and efficiently to open up obstructed roadways for land-based rescue vehicles and clear temporary landing zones for air-based transports.²⁷ This allowed rescue teams to reach people stranded in hard-to-reach locations, and provided White IST and CONG rescuers with the ability to reach targets quicker than if operating independently.²⁸

The integration of the FAA and NWS into air-based SAR operations also simplified air operations and improved the overall safety of the incident response. When combined with the ability of the CONG and Army assets to continuously service and refuel rescue aircraft, this collaboration and information sharing allowed for immediate and ongoing operations that evacuated hundreds of stranded citizens during the first three days of the disaster.²⁹

At the same time, US&R task forces helped RMA Team B resolve a “significant issue” in getting medical help to personnel located in the field and in managing medical issues around base camps. RMA Team B had requested paramedics, but could not locate more than one with authority to practice in Colorado. Because they are authorized to work in all 50 states, paramedics and doctors affiliated with the US&R task forces solved this public safety concern and filled the capability gap.³⁰

As another example, emergency managers tasked RMA Team B to establish casualty collection points (CCP)—a task outside of its portfolio of experience. To backfill this capability, the White IST Medical Officer helped organize the two CCPs. This not only assisted RMA Team B with filling a capability it was not able to perform on its own, but also achieved one of the overall tasks for the incident response.³¹

Strong Communication and Coordination between Response Teams and the Community

The integrated command structure also strengthened communications and coordination between the response teams and the community. Unlike previous incident responses, the integrated command structure of the Boulder flood response allowed for incident response teams to engage and speak to the community with one voice during “daily cooperator meetings.” These meetings—established by the RMA Team B Liaison Officer—included community stakeholders who directly managed roads, schools, water, sewer, public utilities, and public health and welfare. They also included representatives from other local, state, and Federal response teams assisting with the incident.³²

These meetings provided a focus for information exchange, and ensured that all stakeholders involved in response activities had a common operational picture of the incident. Additionally, the meetings assured the community that RMA Team B and White IST integrated command structure was addressing their needs and interests. The incident command structure’s centralized community meetings created an efficient means of ensuring that both response teams and community stakeholders had access to the same information and streams of data. These meetings provided a central “pulse” of events in the field, which the integrated command quickly translated into resource assignments and response operations.

This community engagement benefited the integrated response because it provided a cohesive package of community information for operational planning and offered the chance to rapidly assess previously unknown issues—such as a breached sewer lagoon and exposed natural gas line—in the County. Similarly, this interaction benefited the community by offering another means of communicating immediate needs.

Unlike previous responses where a number of individual “voices” from response organizations might speak to the community about their efforts and actions, the Boulder flood response adopted a “unified voice” to reach out via mass media and social media. Initially responders had trouble finding the appropriate representative for the public face of the unified response; however, an appointed FEMA liaison communicated the activities and messages of the integrated incident command. In addition to the information gained from the “daily cooperator meetings,” the use of social media outlets like Twitter and Facebook

gave RMA Team B a bi-directional means of discovering critical information in the community, even as information was disseminated. Traditional media outlets like radio and television broadcast the “unified voice” of the team’s actions and conveyed important information to the public. When combined with the centralized planning of the integrated command structure, this central data source gave RMA Team B planners an operational planning advantage by providing actionable information and creating public awareness of activities.

APPLICABILITY AND RECOMMENDATIONS FOR FUTURE USE

The integration of RMA Team B and White IST created a unified structure that resulted in efficient and successful rescue efforts for the Boulder County flood. Clear tasking and common set of goals; motivated and well-trained responders; collaboration and open mindedness towards new solutions and practices all contributed to the successful response.

In after-action hot wash meetings between the integrated command participants and Boulder County officials, participants at all levels of government agreed that future incident responses would benefit from following this model, and that “every effort should be made to replicate this experience.”³³ To increase the effectiveness of this model, the integrated command leadership recommended the following:

- IMTs and ISTs should have some form of pre-deployment communication, in order to establish contact, make leaders aware of the presence of other teams, and provide opportunities for pre-deployment collaboration and integration;³⁴
- Ensure that FEMA issues mission assignments with a clear tasking—such as it did when it gave RMA Team B the command and control tasking requested by Boulder County and Colorado—and communicate this to all state and location EOCs;³⁵
- Ensure the presence of FEMA Incident Management Assistance Team and Federal Coordinating Officer representation at the field command level of an integrated command structure in order to provide integrated commands with awareness of major issues before they become operational hindrances;³⁶
- Develop a communication/strategy plan ahead of time to reduce confusion about roles and responsibilities among the various agency information officers;³⁷
- Pre-script FEMA mission assignments for ESF #4 IMT2s to support state and county authorities with the stipulation that deployed ISTs will be fully integrated into the IMT2 at all levels in a supporting role; and³⁸
- Ensure clear communication about the organization and intent behind the integrated command structure to all local, state, and national EOC liaisons during an incident response.³⁹

The integrated command structure during the Boulder County flood response was a success for information sharing, collaborating incident responses, and sharing personnel and resources against a set of common goals. This response provided a unified front in response to a challenging threat, and leveraged the resources and skills of diverse organizations to achieve common mission goals. As such, it may provide a useful approach for emergency managers and leaders in future incident responses.

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