



## **Case Study: Incident Management Teams as Vehicles of HRO Implementation**

### **Background**

In November 2007 Jason Greenlee, Fire Management Officer for the Bureau of Indian Affairs Navajo Office, contacted Anne Black, an interdisciplinary scientist working for the U.S. Forest Service, to inquire about her availability to conduct High Reliability Organizing (HRO) related training at the (Southwest Incident Management Teams 2008 Annual Meeting). Black had been working extensively with HRO and she and Greenlee had met when both were involved in workshops in the Managing the Unexpected series organized by the Wildland Fire Lessons Learned Center. In January 2008, five of the Southwest geographical area incident management teams approved the proposed HRO training as an element of their annual spring team meetings, and Black began the planning process by proposing content to the meeting organizers.

Jeff Whitney, a Type 1 Incident Commander (IC) serving as one of the meeting planners, encouraged interpersonal communications elements proposed by Black, believing that this represented an area in which incident management teams could improve. Ultimately, all the involved ICs helped Black identify key content and learning objectives, while the initial focus on interpersonal communications remained the primary theme. Black built a small workshop team by soliciting involvement from a sub-set of an HRO community of practice that had been evolving over the previous five years as a result of the Wildland Fire Lessons Learned Center's series of HRO workshops. A five-person team planned and conducted the training and was joined by a doctoral candidate from the University of California – Berkley, who served as an observer and evaluator.

Following the Southwest workshop, two wildland fire use (WFU) management teams in the Northern Rockies geographic area and the Forest Leadership Team of the Lolo National Forest requested similar training. Following the training efforts, several incident management teams expressed interest in follow-up coaching and mentoring in the field as they embarked on efforts to carry HRO concepts forward during the 2008 fire season. Both Black and David Christenson, of the Wildland Fire Lessons Learned Center, responded to these mentoring requests. Through the efforts described here, people created opportunities to use incident management teams as role models for consciously actualizing and operationalizing HRO principles, a strategy with potential for rapidly transferring HRO principles to the broader wildland fire community.

### **High Reliability Organizing**

Fire management represents a complex and inherently risky undertaking, in the course of which fire management personnel may confront many unexpected events, conditions and circumstances with the potential to escalate beyond their control. However, both research and experience have shown that certain organizations simultaneously operate in high-risk and high tempo environments, achieve their

operational objectives, and yet realize more acceptable levels of human error and accidents. Experts have called these “high reliability organizations” (HRO).

HROs are organizations that create a mindful infrastructure that manages activities according to five organizing principles:

1. *Preoccupation with Failure.* A wary and persistent attention to detecting and quickly responding to all errors and failures. Treating all errors and failures as weak signals of possible larger failures, and a signal of possible weakness in other parts of the operation or organization. Focusing on early problem identification that enables action before problems become substantial.
2. *Reluctance to Simplify.* Resisting the common tendency to oversimplify explanations of events and to steer away from evidence that disconfirms management direction or suggests the presence of unexpected problems.
3. *Sensitivity to Operations.* Maintaining situational awareness and the big picture of current operations. Integrating information about operations and performance into a single picture of the overall situation and operational performance. Sensitivity to operations permits early problem identification, permitting action before problems become too substantial.
4. *Commitment to Resilience.* Recognizing, understanding and accepting that human error and unexpected events are both persistent and omnipresent. Assuming the organization will eventually be surprised; and developing the capacity to respond to, contain, cope with, and bounce back from undesirable change swiftly and effectively.
5. *Deference to Expertise.* The loosening of hierarchical restraints and enabling the organization to empower expert people closest to a problem, often lower-level personnel, when operational decisions must be made quickly and accurately. Shifting leadership to people who currently have the answer to the problem at hand.

These principles represent a blend of organizational alertness, flexibility, and adaptability. They also represent a combination of anticipation and containment. A well functioning HRO also engages in continuous learning, and the five principles outlined above serve as conditions for that learning. In this way, HROs update their system, improve their knowledge, and see learning as an inseparable part of their everyday work.

While “HRO” can signify a type of organization, the Wildland Fire Lessons Learned Center more commonly uses the acronym to signify “high reliability organizing,” an operating philosophy in which the five principles, when taken together, produce organizational mindfulness. Seen this way, the principles described above are five hallmarks of the operating practices found in organizations that operate in risky environments yet persistently have fewer accidents than one might expect. These organizations mobilize their organizational resources and execute their work dynamically, implementing the five principles of mindfulness continuously. Perhaps most importantly, they anticipate unexpected events and human error and act quickly to contain both. The case study that follows provides one installment in a series intended as a resource for organizations wishing to embark on the path of high reliability, and chronicles the initial efforts of several incident management teams to implement HRO principles in their workplace.

### **Notable Successes That Others May Learn From**

Lesson Learned: Use Incident Management Teams (IMT), both individually and collectively, as an entry point for making HRO principles operational in wildland fire management organizations.

Incident management teams (IMT) currently represent key players, with considerable influence over the practices of wildland fire agencies that can significantly aid in the widespread implementation of HRO principles across the wildland fire community. In fact, IMTs could likely lead the implementation of HRO if properly informed and prepared.

Consequently, there exists incentive to continue orienting IMT members to HRO principles, especially Incident Commanders (IC) and their command and general staffs. These efforts should strive to produce, among ICs and their key staff, a common understanding of HRO, how it works in practical terms, and the implications for an IMT and its activities. Those training and coaching IMTs must emphasize HRO as a practical concept for improving the team's performance.

Experienced Incident Commanders (IC) that have initiated HRO efforts in their IMT typically conclude that they face a fairly steep HRO learning curve. They also point out that embedding HRO principles in training and coaching that relates directly to skills and abilities that help them carry on the day-to-day, practical work of an IMT goes a long way toward helping them along this learning curve. Consequently, IMTs seem to be taking an approach that develops the skills of key team members, and then dispersing HRO principles from there.

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Lesson Learned: Incident Management Teams Embrace HRO Once They Relate It to Their Work

Action often precedes cognition. For example, wildland fire management personnel do things in the course of their work that they later recognize as HRO, once they know about the principles of HRO. In the case of the efforts described here, incident management teams, once exposed to the principles in a practical way, immediately showed interest in receiving coaching and mentoring in the field so that they might consciously incorporate HRO principles into their team's work routines. The HRO advocates mentoring and coaching these teams find that once people use HRO principles as a tool to reflect upon their work, and think their way through situations, skeptics become advocates and HRO trainers can use the converted to provide positive and practical examples.

In at least one case, the coaching and mentoring process evolved in a way that reflects the need for team members to relate HRO principles to their work in a practical way. An IMT first engaged an HRO subject matter expert to advise the team and its members on HRO implementation. However, when that purpose seemed too vague, the coach's role changed to consulting the team on both HRO and organizational learning. However, it was when the IMT began to envision the coach's role as that of their team building facilitator, that he was able to help the team make steady progress on the path to high reliability.

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Lesson Learned: Have a Respected Member of the Target Audience Kick-Off HRO Training Efforts

Roy Hall, the IC/Fire Use Manager of one of the participating teams introduced the afternoon session at the Southwest IMT meeting in Santa Fe. Hall had both formal HRO training, having served as an evaluator at the first Managing the Unexpected workshop, as well as direct, personal experience implementing HRO principles on his Fire Use Management Team. Hall's introduction lent an air of credibility to the training effort, the investment of the audience's time, and to the training team's presence. His introduction worked, not only because he was a credible member of the target audience, but because he could also speak knowledgeably of HRO and its relevance to the work of the target audience. During his introduction, Hall touched on several key themes including high reliability organizing, detecting and overcoming blind spots, and communication skills – primary themes of the workshop.

The path that Hall and his team followed to HRO illustrates a typically "messy" and evolutionary manner in which many fire management personnel may convey HRO concepts into their organizations.

Hall and colleague Emily Irwin attended the 2004 Managing the Unexpected workshop in Santa Fe, New Mexico. Hall attended as an evaluator and Irwin as a participant. As it turns out, Hall and Irwin would later serve together on Hall's Fire Use Management Team; he as IC/Fire Use Manager and she as Planning Section Chief, where they would work together to implement HRO principles on their team.

Ironically, HRO initially made Hall very uncomfortable. He describes his initial reaction as regarding HRO as "way too interpersonal for an emergency environment and inappropriate for emergency decision-

making.” However, Hall found his attitude shifting during the workshop, first during facilitated breakout sessions among the participants, and accelerating during the workshop’s staff ride to the Cerro Grande Fire. Both Hall and Irwin had been direct participants in that fire event, having been members of the incident management team assigned to Cerro Grande. The Cerro Grande fire had also threatened Irwin’s parents’ home in Los Alamos.

Armed with a common HRO understanding and similar motivations, Hall and Irwin quietly began to infuse HRO principles into their team’s work, first using them to inform their approach to Wildland Fire Implementation Plans. However, as they proceeded, they discovered that:

- HRO principles provide a foundation for candid conversations among team members.
- Teams need to take small steps, perhaps focusing on just one or two principles.
- Team members relate to the concept of blind spots, and this concept offers a good starting point.
- An IC needs to mentor team members striving to implement HRO principles.



*Skates Fire, June 2006 – Photo Courtesy: Wayne Williams, NM Fire Information*

Then came the 2006 Skates Incident. Hall and Irwin’s team was assigned to manage the 1700-acre Skates wildland fire use (WFU) incident on the Gila National Forest. On arrival, the Team found that they were managing a WFU incident that would challenge their abilities because:

- The incident was situated between two wildland urban interface (WUI) communities.
- Significant WUI values were at risk and needed to be protected.
- There were 250 people assigned, far more than typically managed by a fire use team.
- They needed to manage fire conditions more aggressively than they would normally.
- Active burnout would be required.
- Assigned personnel did not appear to understand the agency administrator’s intent for the incident.
- They had to move camp because it lay directly in the path of fire and had other safety issues.

In short, the Team recognized that they were in a situation very different than what they were accustomed to, had dealt with before, or were staffed to handle. Consequently, the IC/Fire Use Manager and the

Planning Section Chief began to consciously apply HRO principles to their work. In short order, they planned and conducted a team meeting in which the IC pushed all functions to think about and talk about their blind spots.

Hall's fire use team experienced an unexpected development when a spot fire from their burning operations escaped, went to 800 acres, and threatened residences. Ultimately, the Forest converted the incident to a suppression fire and assigned a Type 1 IMT. However, in a demonstration of the HRO principle known as commitment to resilience, in the 72 hours prior to the Type 1 IMT taking the fire, the fire use management team really came together, fully lined the fire, and had mitigated the threat to the communities.

Following the Skates incident, Hall's team met to talk about HRO application and, specifically, the principles of a) deference to expertise and b) commitment to resilience. The meeting primarily presented an opportunity for team members to talk about their expectations for one another. The following spring, the Team incorporated HRO training into their team meeting and, by 2008, all the teams in the Southwest GACC incorporated HRO training into their consolidated team meetings, as described elsewhere in this case study. Today, Roy Hall believes his team stands fully ready to function as short Type 2 IMT for any emergency because they understand HRO principles.

Having seen the positive influence of Hall's introduction at the Santa Fe meeting, Black continued the practice of having an IC, already committed to HRO principles, introduce and close-out the training, and the practice has produced positive results.

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#### Lesson Learned: People Can Learn About HRO by Talking About Other "Practical" Topics

The training efforts described here used interpersonal communication, blind spots in situation awareness, and weak signals of failure as vehicles for introducing and explaining HRO principles, as opposed to overtly training people on HRO principles in a didactic manner. There appears to be a natural opportunity to combine training on HRO principles with practical coaching and training on interpersonal communication tools and techniques. Use interactive and practical, scenario-based exercises to teach people about HRO. Make training practical and enable people to live it by speaking their language, practicing and feeling the results.

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#### Lesson Learned: Engage the Incident Commander in Planning HRO Training for Teams

Teams will succeed best with HRO implementation when the team's members have a common understanding of the principles and have learned together. HRO behaviors are organizational behaviors and, in the case of an IMT, team behaviors. Most importantly, as the person ultimately responsible for team behavior and performance, the IC must engage. Initiate this pattern from the start; in other words when planning the training. At one point the organizers planned to turn training arrangements over to the people handling logistics for the Southwest team meetings. Fortunately, Black prevailed upon the ICs to take the lead in planning and promoting the HRO training at their workshop. Later, Christenson focused his initial team coaching opportunities on communicating with the IC and the Deputy IC, thus giving the team's commanders the opportunity to lead their team's members into the new HRO mindset, employing the concept of commander's intent and their knowledge of the team's character, functional abilities and the expertise of individuals.

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Lesson Learned: Teams Benefit From Coaching and Mentoring in the Field

Pruett Small, IC of the Southeast Arizona Type 2 Incident Management Team, was the first IC to request organizational learning and HRO coaching while on assignment following the 2008 Southwest team meetings in Santa Fe. Small had indicated both his awareness of, and interest in, HRO when he included in his 2007 application to become IC the sentence “My long term goals for the team would be to continue to develop a very capable and competent High Reliability Organization (HRO)...” Small had previously discussed both organizational learning (OL) and HRO with David Christenson, of the Wildland Fire Lessons Learned Center. Christenson and Small had discussed the possibility of Christenson working with his team as an OL/HRO technical specialist, essentially a consultant to the team. Since that time, Christenson has accompanied Small’s team on three assignments, with the sole purpose of advising the team on their efforts to become a learning and high reliability organization.



During these assignments, Christenson observed and took notes on conversations and meetings among team members; discussed team members’ perspectives on the team’s successes, failures, effective practices and learning opportunities with them; helped the team to actively search-out potential vulnerabilities to failure and to identify opportunities for improvement. Christenson also advised the IC on impressions on the team’s strengths, how those strengths aligned with organizational learning and HRO principles, and opportunities for building on those strengths. The Southeast Arizona Type 2 Incident Management Team quickly experienced direct benefits from this coaching and mentoring effort. For example, by the end of the second assignment, the team had successfully implemented a systematic approach to conducting after action reviews (AAR) in all ICS functions and at the Command and General Staff level.

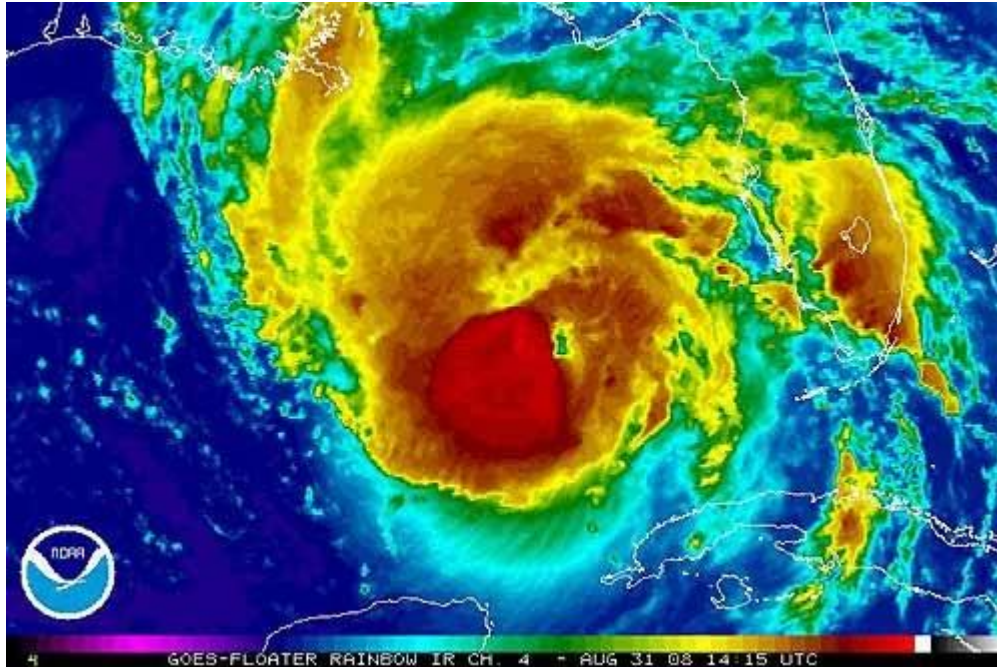


Christenson also worked on assignment with Dugger Hughes’ (Southwest Area Type 1 IMT), observing the performance of that team’s command and general staff over a six-day period. As with the Type 2 IMT, Christenson observed the IMT, took notes, and advised Hughes on his impressions of the team’s strengths and opportunities for building on those strengths. During the assignment, the IMT placed emphasis on themes such as explicitly knowing both what the team must succeed at and where it must not fail, actively seeking-out signals of trouble, using their skills of inquiry, and limiting

assumptions. A national Safety Stand Down occurred during this assignment, and the IMT used the opportunity to drill on an incident within the incident, to improve their capacity for resilient response to unexpected events. This particular exercise produced a list of sixteen weak signals of system failure that the IMT now knows it must watch for and respond to.

In addition to helping to organize the training sessions at the Southwest Geographical Area Incident Management Teams meeting, Jeff Whitney became the commander of the newly formed Phoenix National Incident Management Organization (NIMO) a few months after the Santa Fe workshop. Whitney invited Christenson to join the Phoenix NIMO over a six-day period near the end of the team’s Hurricane Gustav assignment. This Phoenix NIMO responded to support the Emergency Support Function for Firefighting (ESF#4) at the Federal Emergency Management Agency’s (FEMA) Joint Field Office in Baton Rouge, LA. The U.S. Forest Service is responsible as lead agency for that function. The NIMO assignment was to guide ESF#4 personnel, and the FEMA’s appropriate use of the function under the newly revised National Emergency Response Framework. The NIMO’s assignment included supervising a “planning cell” embedded within the planning section of a new FEMA incident management assistance team (IMAT).





*Hurricane Gustav 8/31/2008*

For years, interagency resources from the wildland fire community have assisted FEMA on natural disaster assignments, primarily by employing IMTs and miscellaneous overhead to manage Logistical Staging Areas (LSA), Base Camps and logistical support facilities and by providing labor to operate them. However, it now appears that FEMA, the General Services Administration (GSA) and U.S. Army Corps of Engineers (USACE) are now increasingly taking on responsibility for these needs as part of their IMAT response, supplemented by contracted resources from the private sector.

Consequently, the role of wildland fire resources may rapidly evolve into a mentoring, training and coordinating role in support of logistical and planning activities. ESF#4 personnel report that such an evolved role would represent a better, more effective use of the expertise, skills and abilities of IMTs and other personnel from the wildland fire community, and a stride forward for the interagency wildland fire community. In this way, the Hurricane Gustav response represented a high stakes assignment as it represented a first test of new roles for both FEMA and personnel from the wildland fire community.

To assist the NIMO, Christenson initially communicated several of the themes mentioned elsewhere in this case study directly to the commander and his Operations Section Chief. The NIMO effectively used the concepts of organizational learning and HRO to support their efforts to intentionally build a strong team, mostly from members only recently introduced to each other. Core team members began to demonstrate rich communication skills that the team could deploy to help others see more nuanced perspectives. People began to focus on keeping each other informed, staying connected, and increasing sensitivity to operations across all of the team's functional areas. The NIMO members purposefully communicated with the experienced ESF#4 personnel in an effort to heighten the team's knowledge of the ESF#4 decision-making logic. This proved especially valuable as the ESF#4's written policies and directions had recently been modified significantly.



*Mid-Incident Review with Planning Cell, Hurricane Gustav*

Daily “stand up (morning) and fall down (evening)” meetings brought the team together for a brief time on a regular basis, sometimes to do a “Chainsaw AAR.” A “Mid-Incident Review” gave the expanded ESF #4 Planning Section Cell working with FEMA’s planners an additional opportunity to “learn while doing” at a logical break in their week. This review enabled the Planning Section Cell to immediately implement changes based on lessons learned during the earlier part of the assignment while they were still fresh in their minds. This was also beneficial during the After Action Review at the end of the NIMO’s assignment. Making time to learn in

the middle allowed the Planning Section Cell to focus more on capturing subsequent learnings in the last half of the assignment instead of trying to review two weeks of work only at the end.

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#### Lesson Learned: After Action Reviews (AAR): A Great Place to Start Building a Highly Reliable Team

As the wildland fire community gains interest in HRO, it appears increasingly obvious that for HRO initiatives to succeed and extend from one part of an organization to another, the organization must attend to organizational culture. An unambiguous, safety culture fosters emerging efforts and provide a crucial foundation from which to expand these efforts into additional areas of the organization.

Two incident management teams centered their efforts to build a highly reliable team on the after-action-review (AAR) process. The AAR provides a method of learning from people’s collective experience, and uses a collaborative appraisal of experience to improve performance both by preventing recurrent errors and reproducing success. However, one of these teams also employed facilitated AARs as an applied teambuilding tool.

That team staked their teambuilding efforts on the AAR process and their organizational learning and HRO efforts on their teambuilding effort. Consequently, with AARs so central to their efforts, the team learned that they must systematically train the team’s members to effectively participate in them; a lesson also learned by the other team. Personnel involved in this effort observe that AAR training should go beyond the mechanics of the technique by introducing the AAR as a key organizational learning tool, including information on the intent of conducting AARs, and providing guidelines for conducting AARs to achieve continuous organizational learning. The team implemented a systematic approach to AARs, first conducting AARs at the unit level, advancing to sections, and then ultimately conducting reviews with the command and general staff.\*

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#### Lesson Learned: Consider the Following Learning When Conducting HRO-related Formal Training for IMTs

- Use a diverse team of trainers. Have a mix of skills on the team and include fire operations personnel

to help interpret academic concepts and terminology into practical terms.

- Collaborate on materials, presentations and the session agenda.
  - Use an online meeting and collaboration tool, such as GoToMeeting if the training team is unable to meet face-to-face for planning. Plan for a series of conference calls and prepare agendas for conference calls well in advance (desirable team members are likely to be busy people).
  - Arrive early and prepare with a face-to-face “dry run.”
  - Make sure all exercises are sufficiently structured and designed to address specific teaching points.
  - Plan adequate time for exercises and role-playing.
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#### Lesson Learned: An Internal Near-miss Reporting System Contributes to IMT Reliable Performance

One IMT observed during this effort established a near-miss reporting system on their incident and, following that incident, recognized this effort as an effective practice that contributed to their performance that should be continued. A reporting culture represents an important sub-culture of an effective, informed safety culture, and this decision to capture and learn from near misses represents an important practice that other teams should emulate.

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#### The Most Difficult Challenges Faced and How They Were Overcome

##### Lesson Learned: Teams Must See HRO as Practical and Relevant to Adopt the Principles

Training and coaching personnel involved in this effort found that not all incident management team personnel would readily relate to, understand, or adopt unfamiliar, abstract, and somewhat academic, HRO concepts and terminology. They recommend that any organization intending to implement HRO search for ways to make HRO principles practical, make them resonate with the target audience, and show people that they can use HRO principles to gain insight into their own behavior and the behavior of their team. Use familiar terms to explain HRO principles and relate HRO practice to recognizable field routines and procedures whenever possible. Take every opportunity to pair-up HRO experts with people who have “their feet in the black” both to design and to conduct training or support coaching efforts.

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##### Lesson Learned: Be Prepared for a Variety of Reactions, Not All Positive

People involved in the initiative described here found that some fire managers and agency administrators, when offered the opportunity to pursue high reliability, will say, “I don’t have time for that right now.” While HRO may represent an imperative for wildland fire personnel and one may argue that fire managers and agency administrators must make time to pursue high reliability, HRO advocates should prepare for wide range of reactions, some enthusiastic, some resistant.

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##### Lesson Learned: Coaching in the Field Requires an Approach Acceptable to the Team

Personnel coaching IMTs on HRO implementation during field assignments found success with an approach that illuminates existing, positive behaviors that embody the skills of high reliability. Especially important were opportunities to demonstrate the team’s ability to detect and anticipate weak signals of potential organizational failure, and their commitment to developing resilient team members. However, doing so without intruding in or disrupting the team’s activities can prove challenging, particularly if the members of the IMT feel overwhelmed if the coach challenges too many of their existing mindsets at once. One experienced coach found that beginning with the IC and then expanding to include the Command and General Staffs, looking for and recognizing teachable moments and taking a generally soft approach proved effective.

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Lesson Learned: High Performance and High Reliability Are Not Bankable

People and organizations frequently, mistakenly believe that their objective is to “become a HRO,” as if it were a certification. However, in reality, organizations cannot bank high performance or high reliability. Organizations achieving high reliability know that they must become a learning organization committed to continuously learning and improving performance.

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*Distillery Fire – Photo Courtesy of Eastern AZ T2 IMT*

### **Recommended Training Changes**

The success of the HRO IMT training and mentoring effort employed ad-hoc resources developed by an informal network of HRO advocates and experts. A broader, more far-reaching effort will depend on the availability of training resources beyond the small group and relatively informal materials deployed for the initial effort.

Recommendation: Use HRO training materials developed for 2008 IMT training efforts as the foundation for future efforts (HRO Teaching Tips training package video trailer [http://www.wildfirelessons.net/documents/HROtipstrailer\\_512K\\_Stream.wmv](http://www.wildfirelessons.net/documents/HROtipstrailer_512K_Stream.wmv).) with the following suggestions:

- Maintain focus on communicating to see more and making strong response to weak signals.
- Continue to use the “Gorilla video” (Selective Attention short titled *Basketball 1* from *Surprising Studies in Visual Awareness* (2003) Daniel J. Simons/VisCog Productions.) to introduce the concept of perceptual blind spots. Employ this resource early in the workshop.

- Reinforce the idea that perceptual blind spots and degraded situational awareness represent normal, inevitable parts of the human condition and that people and organizations seeking reliability consciously position themselves to see more of what is happening around them.
- Use common language. Avoid, or interpret, unfamiliar or academic terminology both relating to HRO and communications theory.
- Focus on concrete, resonant and foundational concepts (communication dynamics, weak signals, perceptual blind spots) and use those to segue to HRO principles.
- Keep the training group size manageable and conducive to practical exercises. Train in groups between 15 and 25 in size. Divide audiences and add training cadre as necessary to maintain this group size.
- Plan enough time (approximately two hours) to allow for a moderate presentation pace, interactive and teachable moments, and as well-conducted practical exercises.
- Use staff/faculty role players, prepared in advance, for role-playing exercises. Flesh-out role-play scenarios to facilitate role-player preparation. Role playing exercises take preparation and adequate in-class set-up and their success depends on both.
- Provide a job aid (such as a laminated pocket card) including communication models. The card might also include a picture of a Gorilla, invoking the “Gorilla video” and reminding people to watch for perceptual blind spots.
- Solicit audience feedback verbally and in writing following all workshops with the intent of improving future efforts.

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Recommendation: Develop a series of brief training modules as a training resource for use by incident management teams wishing to embark on the path of high reliability and implement HRO principles as part of their work routines. Take a modular approach, developing training modules for use in annual safety refreshers, team meetings and other existing venues. Each module might consist of a 10 - 20 minute video clip relating HRO concepts and principles to practical examples and practitioners’ stories, but including synthesis points provided by a narrator. Training modules might not address HRO principles per se, but speak to topics such as perceptual blind spots, weak signals of failure, interpersonal communication skills, and gathering information from multiple perspectives when making decisions. Provide an on-line training resources “toolbox” containing foundational elements of future HRO training efforts for incident management teams. The toolbox might also include tips from master performers, suggested exercises for reinforcing communication tools, and a template for applied practice of included training tools.

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Recommendation: Sand table exercises (STEX) have become an accepted and popular training method in the wildland fire community. Develop STEX for use with incident management teams during HRO training. Structure the exercises to systematically bring out HRO teaching points.

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### **Issues Meriting Further Review and Development**

Organizations contemplating HRO implementation may take away a lesson from the IMT training and mentoring experience. For most organizations, movement toward HRO principles will feel and look like significant change, and change requires support and commitment to succeed. In this case, the commitment of the team members and the support of trainers, coaches, mentors, and subject matter experts from beyond the team. Building both the required support and commitment requires the initiative and example of the team’s incident commander. Initial success with the IC is critical.

Other organizations pursuing HRO success should bear two points in mind. First, organizations of many types are finding success with HRO, and incident management teams may find success by applying HRO principles, not only to improve firefighter safety, but to enhance their overall function as well. They may succeed best by planning for and creating short-term wins and by producing visible performance improvements.

## Recommendations for the Future

Recommendation: Develop a web-based posting point (perhaps a “neighborhood” at myfirecommunity.net) for sharing the experiences of instructors training incident management teams and other wildland fire management personnel to implement HRO principles. The intent of establishing this community of practice would be to use the experiences of instructors to build a collective understanding of how to train people about HRO. Employ a template for input to assure consistency in the information collected.

The screenshot shows the homepage of MyFireCommunity.Net. The header features the title "Community Center" and the URL "MyFireCommunity.Net" with a background image of firefighters. Below the header, there is a navigation menu on the left with categories like "My Pages", "General Pages", and "Administration". The main content area displays the user's profile ("Home page for Brenna MacDowell") and a list of "Your Neighborhoods" with various fire-related topics. A sidebar on the right contains a "Welcome to MyFireCommunity.Net" message and a small image of a sunset over a field.

Recommendation: Follow up with incident management teams that have received HRO training and mentoring. Assess what resonated with team members, what stuck, how it stuck, and why.

## Conclusion

Fire management represents a complex and inherently risky undertaking. In the course of discharging their duties, fire management personnel may confront many unexpected events, conditions and circumstances with the potential to escalate beyond their control. However, both experience and research show that select organizations simultaneously operate in high-risk and high tempo environments, achieve their operational objectives, and realize acceptable levels of human error and accidents. Experts have called these “high reliability organizations” (HRO) and their practices “high reliability organizing.”

Through the efforts described here, people created opportunities to use incident management teams as role models for consciously actualizing and operationalizing HRO principles, a strategy with potential for rapidly transferring HRO principles to the broader wildland fire community. Their experience provides several notable lessons that others might learn from. This case study provides one installment in a series intended as a resource for organizations wishing to embark on the path of high reliability, and chronicles one organization’s efforts to implement HRO principles in the workplace.

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Kotter, J. (1990). *A Force for Change*. New York: Free Press.

Weick, K. & Sutcliffe, K. (2007). *Managing the unexpected: Resilient performance in an age of uncertainty* (2<sup>nd</sup> ed.). San Francisco: Jossey-Bass.

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## Resources at the Wildland Fire Lessons Learned Center

Organizational Learning, <http://www.wildfirelessons.net/OrgLearning.aspx>  
High Reliability Organizing, <http://www.wildfirelessons.net/HRO.aspx>  
After Action Reviews, <http://www.wildfirelessons.net/AAR.aspx>

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\* The complete **Conducting Effective After Action Reviews** and the **HRO Teaching Tips** training packages each cost approximately \$12.95, which includes the cost of shipping, and can be obtained by ordering directly from the following source: **Custom Recording and Sound** Phone: (208) 344-3535, FAX: (208) 323-0373, Email: [customorders@cableone.net](mailto:customorders@cableone.net)

This report is the second in a series of HRO Case Studies created as a product of a Wildland Fire Lessons Learned Center (LLC) information collection team effort. Team members on this assignment included:

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Mr. David Allen, District Fire Management Officer, Sequoia-Kings Canyon National Parks

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