



Forest Service

Rocky Mountain
Research Station

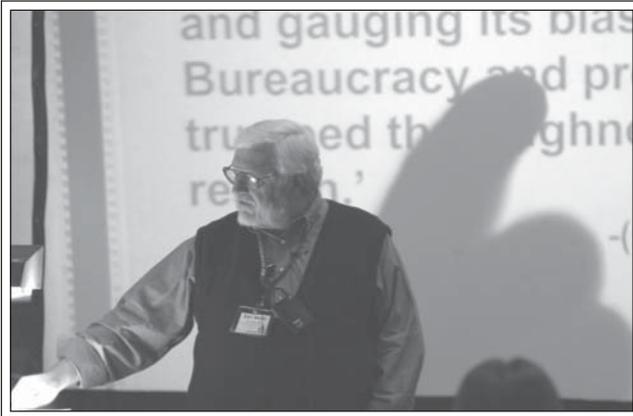
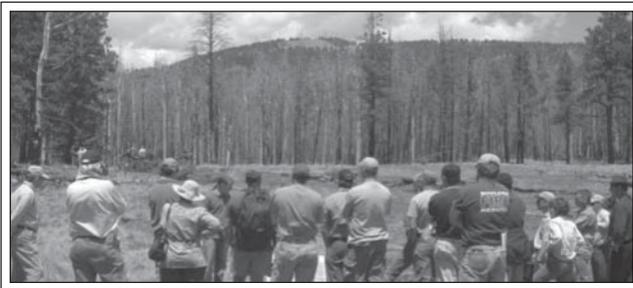
General Technical
Report RMRS-GTR-137

October 2004



Managing the Unexpected in Prescribed Fire and Fire Use Operations

A Workshop on the High Reliability Organization



Co-Chaired by:

- USDA Forest Service
- USDI National Park Service
- Rocky Mountain Research Station
 - Wildland Fire Lessons Learned Center
- Missoula Fire Sciences Laboratory
- National Wildfire Coordinating Group Social Science Task Group
 - The Nature Conservancy
- U.S. Fish and Wildlife Service

**Santa Fe, New Mexico
May 10-13, 2004**

*As part of
"Organizational Learning"
the workshop's primary goal:*

*To explore and possibly adopt
the concepts of "High Reliability Organizing"
for "Managing the Unexpected" to help us
better implement our wildland fire use and
prescribed fire programs.*

Abstract

How do we organize for high performance in a setting where the potential for error and disaster can be overwhelming? In doing so, how can we best apply the High Reliability Organizing concepts into the prescribed fire and fire use arenas? And, to successfully achieve these outcomes, how can we personally and institutionally overcome our immunity to change?

This report summarizes how these questions—and many others—were addressed through the activities, discussions, and lessons learned during the four-day *Managing the Unexpected Workshop* held May 10-13 2004, in Santa Fe, New Mexico. The report documents and examines the day-to-day workshop chronology from its opening keynote address and “Managing the Unexpected” presentation, through the all-day Staff Ride to the 2000 Cerro Grande Prescribed Fire site, the Staff Ride’s Integration Phase, and the final day’s thoughtprovoking and challenging “Immunity to Change” exercise.

Overall workshop intent was to introduce the latest social science to the prescribed fire and fire use management community.

Noted organizational psychologists Dr. Karl E. Weick, the Rensis Likert Distinguished University Professor of Organizational Behavior and Psychology, and Dr. Kathleen Sutcliffe, of the University of Michigan Business School, were the workshop’s featured presenters. Authors of *Managing the Unexpected – Assuring High Performance in an Age of Complexity*, they participated in the entire four-day workshop “clarifying ideas, answering questions, and learning,” notes Dr. Weick.

In addition, the Harvard University Graduate School’s organizational psychologists Dr. Robert Kegan, William and Miriam Meehan Professor of Adult Learning and Professional Development, and Dr. Lisa Lahey, Research Director of the Change Leadership Group, were also featured presenters. Authors of *The Real Reason People Won’t Change*, they introduced workshop participants to their psychologically dynamic Immunity to Change exercise. Twenty workshop participants participated with Kegan and Lahey in a three-month “coaching process” followup.

The workshop was hosted by: The USDA Forest Service; USDI National Park Service; Rocky Mountain Research Station; Wildland Fire Lessons Learned Center; Missoula Fire Sciences Laboratory; National Wildfire Coordinating Group’s Social Science Task Group; The Nature Conservancy; U.S. Fish and Wildlife Service.

Key Words

High Reliability Organization, Mindfulness, Learning Organization, Staff Ride, Sensemaking, Immunity to Change, prescribed fire and fire use.

Managing the Unexpected in Prescribed Fire Use Operations

A Workshop on the High Reliability Organization

Santa Fe, New Mexico May 10-13, 2004

Technical Writer-Editor

Paul Keller

Contributing Authors

Dr. Karl E. Weick

Rensis Likert Distinguished University Professor
of Organizational Behavior and Psychology
University of Michigan Business School

Dr. Kathleen Sutcliffe

University of Michigan Business School

Dr. Jim Saveland

Assistant Director for Research Rocky Mountain Research Station

Dr. Lisa Lahey

Research Director of the Change Leadership Group
Harvard University Graduate School

Dave Thomas

Regional Fuels Specialist
Intermountain Region, USDA Forest Service

Paula Nasiatka

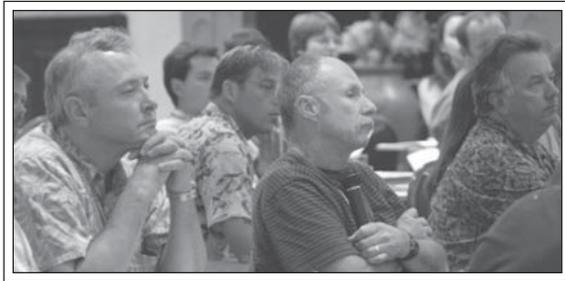
Manager Wildland Fire Lessons Learned Center

*“To avert disasters of biblical proportion,
we need to become organizations that adapt
and evolve in anticipation of catastrophes
rather than as a result of catastrophes.”*

**Tim Sexton, National Fire Use Pro-
gram Manager
USDA Forest Service
Workshop’s Keynote Speaker**

Contents

Acknowledgments	1
I What Happened? Why? What Happens Next?	2
Workshop Objectives	2
II Putting This Workshop into Perspective	4
A Brief Historical Context	6
III Workshop’s Keynote Address	
Why do we need this kind of thinking in our fire use and fire suppression organizations?	8
Time to develop an organizational framework that can adapt and evolve without large losses as a prerequisite	10
Complexity is increasing – today’s wildland fire situation is very different from our past institutional fire use experience	11
This workshop – and you – can help us become a High Reliability Organization	13
IV Day One – Managing the Unexpected	
How do you organize for high performance in a setting where the potential for error and disaster can be overwhelming?	14
The Five Central Processes That Produce Mindfulness	14
How to Work Toward a Mindful Culture	19
A Mindful Infrastructure for High Reliability	22



*"A Learning Organization must be able
To create, acquire, interpret, and
obtain knowledge. It must also
purposely modify its behavior to
reflect new knowledge
and insights."*

**Paula Nasiatka, Manager
Wildland Fire Lessons Learned Center
Workshop Moderator**

V Day Two – Cerro Grande Staff Ride

How Can We Apply the High Reliability Organizing Concepts to the Cerro Grande Prescribed Fire?	24
---	----

VI Day Three – Staff Ride Integration Phase and Facilitated Group Discussions

A. Staff Ride Integration Phase

1. Praise and Empathy for Cerro Grande Prescribed Fire Crew	36
2. Need to Change Investigation Process and Reports	38
3. Constructive Criticism on this Prescribed Fire	40
4. Paul Gleason’s Influence: Positive or Negative?	41
5. Positives from This Prescribed Fire	43
6. Criticisms of the National Prescribed Fire Program	43
7. Feedback on the 2000 Santa Fe Dispatch Organization	45
8. Lack of Resources	46
9. Stakeholders	46
10. The Staff Ride as Learning Tool	47

B. Facilitated Group Discussions	48
--	----

VII Weick and Sutcliffe’s Follow-up to Workshop Participants

1. ‘Preoccupation with Failure’ – You Missed a Key Point	54
2. ‘A Reluctance to Simplify’ – You Need Practice	56
3. ‘A Sensitivity to Operations’ – Not as Easy as It Looks	58
4. ‘A Commitment to Resilience’ – Your AARs Might Be Promoting The Wrong Thing	59
5. ‘A Deference to Expertise’ – ‘Expertise’ Doesn’t Equate to Experience	61

Karl Weick’s Key Principles to Emphasize

1. You Don’t Need More Data	62
2. Small Stuff Makes All the Difference	62
3. Reliability is Not Bankable	63

VIII Day Four

Immunities to Change: A Facilitated 'How to' Commitment Exercise Presented by Robert Kegan and Lisa Lahey	64
How to: Uncover Your Inexplicable Resistance to Change and Your Subconscious Goals	66
IX Conclusion – We Have Lit a Match and Started a Fire	69
X Steering Committee Members	73

"We cannot guarantee that attempting to develop a High Reliability Organization framework for our prescribed fire and fire use operations will prevent escapes. That would be unrealistic. But by working with this key learning organization concept, we are exhibiting leadership in the prescribed fire arena—hopefully, becoming even more assured that we are doing everything possible to lessen the chance of serious escapes, and to increase the chances of replicating our successes. Through this workshop, our prescribed fire managers will therefore be taking the initial steps in becoming experts at organizational learning and managing the unexpected."

**Dave Thomas, Chair
Managing the Unexpected Workshop**



Tom Iraci Photo USDA Forest Service

Managing the Unexpected Workshop Steering Committee members meet with the Staff Ride presenters and facilitated group discussion leaders.

Acknowledgements

The Managing the Unexpected Workshop could not have occurred without the hard work and personal dedication of Dick and Barbara Mangan, Blackbull Wildfire Services, Missoula, Montana.

The workshop's success is due in large part to the contributions of Karl Weick and Kathleen Sutcliffe. We are indebted to their sincere efforts to help us better understand and apply their High Reliability Organizing ideas and concepts. Likewise, we are grateful to Robert Kegan and Lisa Lahey's commitment to helping us implement these concepts.

The Steering Committee also thanks Mark Beighley, Jerry Williams, and Tom Harbour, Washington Office Fire and Aviation Management, USDA Forest Service, for their strong initial support—both financial and personal—in using the “High Reliability Organization” and “Learning Organization” concepts to improve our prescribed fire and wildland fire use operations.

The workshop also benefited from the strong support of Dick Bahr, Fire Use Specialist, Fire Program Center, National Park Service; and Mike Hilbruner, National Program Leader for Fire Systems Research, USDA Forest Service.

June Genf, Support Services, Forest Service Intermountain Regional Office, was immensely helpful in supporting the workshop's logistical and contracting tasks.

We also truly appreciate the Bandelier National Monument employees' hospitality in allowing us to return to Cerro Grande for the Staff Ride. Finally, we would like to thank all the Managing the Unexpected Workshop participants, facilitators, and speakers from all the agencies—both external and internal—for their personal dedication to the workshop's goals and objectives. The end result is more lands properly managed through the beneficial and safe use of fire.



KICK OFF – Paula Nasiatka, Manager of the Wildland Fire Lessons Learned Center, introduces and launches the four-day workshop at its Monday morning opening.

I What Happened? Why? What Happens Next?

"The people who operate and manage High Reliability Organizations assume that each day will be a bad day and act accordingly. But this is not an easy state to sustain, particularly when the thing about which one is uneasy has either not happened, or has happened a long time ago and perhaps to another organization."

**From *Managing the Unexpected*
by Karl E. Weick and Kathleen M. Sutcliffe**

Mindfulness . . .

Paying attention—individually and organizationally—in different ways . . .

Learning how to struggle for a new alertness . . .

Our preoccupation with failure . . . How the architecture of simplicity can get us into trouble . . . Rather than relying on “experts,” letting decisions “migrate” to those with the proper



Workshop participants came from as far away as Australia and New Zealand.

expertise to make them . . . Discovering how to anticipate and prepare for surprises by learning to develop new skills of resilience . . .

Workshop Objectives

1. Explain the basic concepts of a High Reliability Organization.
2. Compare High Reliability Organizations with participants' own organizations.
3. Participate in the Cerro Grande Staff Ride.
4. Participate in facilitated group discussions to work out uses of High Reliability Organizations in fire use operations at the individual and organizational levels.
5. Participate in an “Immunity to Change” exercise to increase the chance of High Reliability Organization concepts being adopted in the field.

These are some of the concepts, tools, and skills that 85 people immersed themselves in during the week-long Managing the Unexpected Workshop. These participants—representing various local, state, and federal agencies from all levels of their organizations—are directly involved in planning, implementing and learning from prescribed fire and fire use operations.

Overriding intent of this week-long event:

- To understand and adopt these High Reliability Organizing concepts, tools, and skills.
- To take these concepts, tools, and skills back home to refine, share and apply in participants' own work and organizations.

Organizations represented at the workshop included: U.S. Forest Service; National Park Service; Bureau of Indian Affairs; Bureau of Land Management; Maine Forest Service; Los Angeles Fire Department; Alberta Sustainable Resource Development Forest Protection Division; Parks and Wildlife Service, Hobart, Tasmania; City of Boulder Fire and Rescue; North Lake Tahoe Fire Protection District.

Central Focus: Staff Ride

Workshop participants discovered and applied key High Reliability Organizing principles. In doing so, a central focus of the workshop was a “Staff Ride” field visit to the nearby Cerro Grande Prescribed Fire site. This was the May 2000 prescribed fire that escaped and eventually burned into Los Alamos, New Mexico and its surrounding communities.

Revisiting this prescribed fire event with its key participants—who honored the workshop with their attendance and participation—enabled unique hands-on insights into applying High Reliability Organizing concepts to participants’ required work expectations and professional responsibilities on the landscape.

“The Staff Ride was the key to this week,”



Photos by Tom Iraci USDA Forest Service

said Dick Bahr, Fire Use Specialist with the National Park Service’s Fire Program Center. “The Staff Ride got everybody’s feet on the ground and simultaneously brought Karl Weick and Kathleen Sutcliffe’s High Reliability Organizing concepts to life.”

Ensuring the Workshop’s Learning and Insights Make It Back Home—Make a Difference to Your Organization

On the workshop’s last day, participants were given a set of processes to facilitate a method of ensuring that what they’d learned would return home with them—that they would be able to apply these High Reliability Organizing concepts into their own work systems.

To help propel this effort, organizational psychologists Robert Kegan and Lisa Lahey, the last day’s featured presenters, walked the workshop participants through their comprehensive “Immunities to Change” exercise.

“It seems that at even the best of conferences people get very pumped up. But they don’t have that same energy level when they return home,” Lisa Lahey explained. “We want to increase the likelihood that you can find a way to take this energy back with you.”

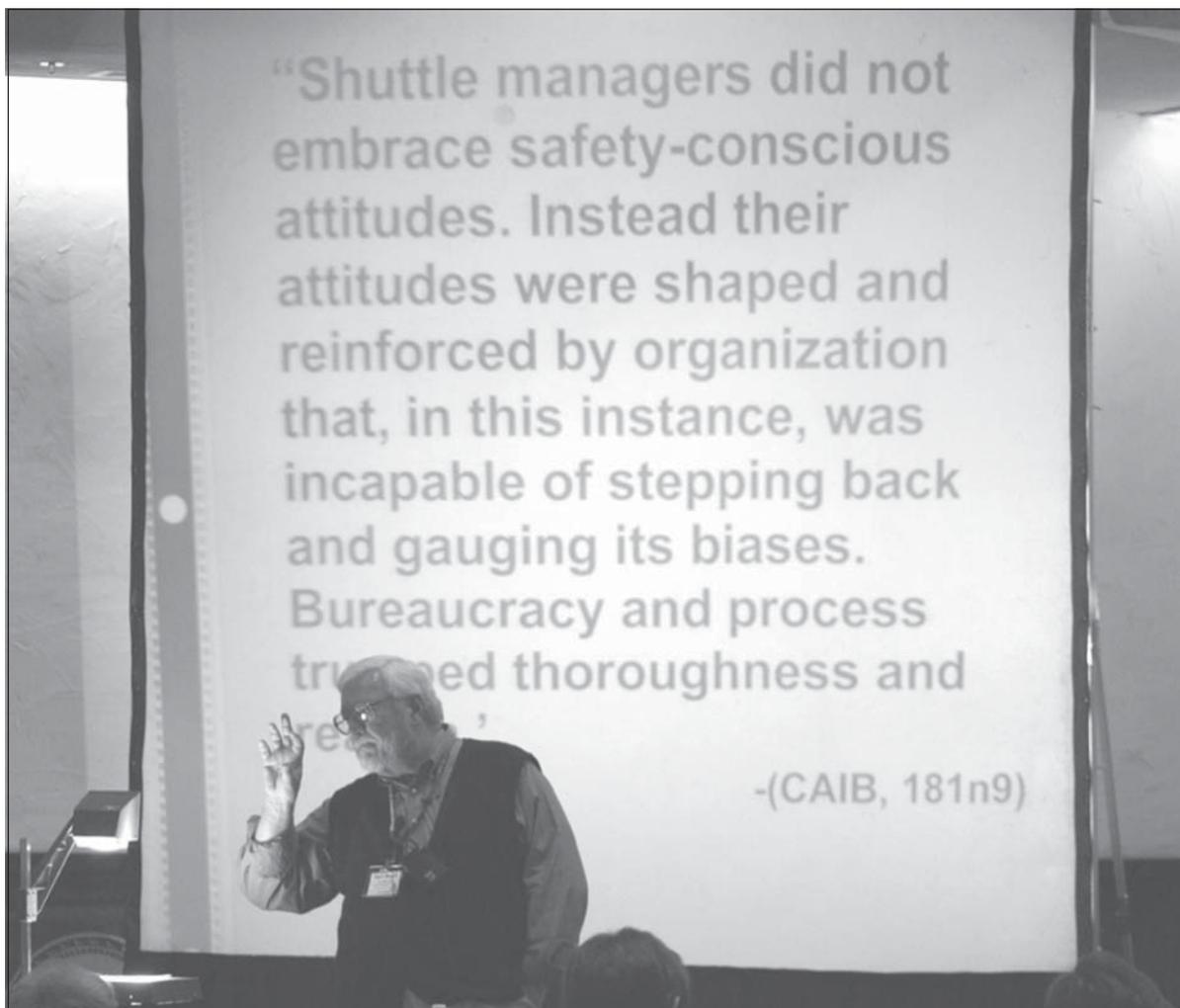
Underlying workshop theme is to help ensure that concepts and knowledge absorbed this week make it back to home units—to help stimulate personal and organizational change.

II Putting This Workshop Into Perspective

In 1969, Dr. Karl E. Weick's book *The Social Psychology of Organizing* "turned organizational psychology on its head by praising the advantages of chaos, demonstrating the pitfalls of planning, and celebrating the rewards of 'sensemaking,'" pointed out The Harvard Business Review in

its recent article *Sense and Reliability: A Conversation with Celebrated Psychologist Karl E. Weick*.

Dr. Weick expanded on these insights in his 1995 book *Sensemaking in Organizations*.



Tom Iraci Photo USDA Forest Service

Karl Weick, internationally recognized expert on High Reliability Organizations, explains to the workshop participants that these are organizations who operate under very trying conditions—performing, sometimes on a daily basis, high-risk operations—and yet manage to have fewer than their share of accidents.



Tom Iraci Photo USDA Forest Service

“As a manager and agency administrator,” said one participant at the end of the fourth day, “I found this workshop to be practical, ‘turf-free,’ open, and very productive.”

In 2001, Weick, the Rensis Likert Distinguished University Professor of Organizational Behavior and Psychology at the University of Michigan Business School, together with University of Michigan colleague Dr. Kathleen Sutcliffe, co-wrote the acclaimed *Managing the Unexpected – Assuring High Performance in an Age of Complexity*.

In this book, the two distinguished researchers and thought-leaders on organizational concepts and strategies, examine organizations that must manage unexpected threats and therefore can’t afford to make mistakes. These include flight deck crews on aircraft carriers, nuclear power-generation and chemical production plants, air traffic control systems, hospital

emergency departments, and the entire wildland and prescribed fire community.

After years of researching excellence in responding to crises in these inherently complex and potentially dangerous organizational settings, these two national experts on organizations, strategies, and management are heralded for helping to develop the concept of “High Reliability Organizations.”

Weick and Sutcliffe’s work and insights served as the underlying theme of the Managing the Unexpected Workshop. In attendance throughout the week, they were featured the first day when they launched the workshop by presenting and discussing the processes and principles of High Reliability Organizing.

A Brief Historical Context

That first morning, Jim Saveland, Assistant Director for Research, Rocky Mountain Research Station, introduced Weick and Sutcliffe to the workshop audience. He recognized their significance to the wildland and prescribed fire community by placing them in historical perspective with this chart.

	Ecological Science	Management Science	Fire Management
1910s	Frederick Clements <i>“Theory of Succession”</i>	Frederick Taylor <i>“Scientific Management”</i>	Coert duBois <i>“Systemic Protection of California Forests”</i>
1930s	Arthur Tansley Coined “Ecosystem” Herbert Stoddard <i>“The Bobwhite Quail”</i>	Kurt Lewin <i>“Action Research”</i>	10 a.m. Policy Aldo Leopold Elers Koch
1960s	Eugene Odum <i>“Fundamentals of Ecology”</i>	Douglas McGregor <i>“Theory X and Y”</i> <i>“The Human Side of Enterprise”</i>	Wilderness Act Wildland Fire Use
Today	Disturbance and Landscape Ecology	Karl Weick, Kathleen Sutcliffe Robert Kegan, Lisa Lahey Chris Argyris, Daniel Kahneman	Sustainable/Healthy Forests and Rangelands Firefighter Safety Controlling Costs Prescribed Fire Escapes

Beware: There's Danger in Simplifying Our Complexities

“Weick and Sutcliffe note that High Reliability Organizations are “reluctant to simplify the complexities that define their environment.”

For most of us, our Land and Resource Management Plans are cumbersome, complex documents that seem only indirectly related to safety, cost, and risk. These plans can seem abstract or obtuse in relation to the operational dimensions of wildland fire management.

Although the Forest Service typically spends about \$600 million per year fielding a fire suppression force and another \$500 million per year suppressing unwanted fires, we often lack enthusiasm for the large-scale Land and Resource Management Plan revisions or amendments that might help reduce the potential for destructive, high-intensity fires.”¹

Jerry Williams, Director, Fire and Aviation Management
USDA Forest Service

Be Glad When You're Having A Bad Day

“. . . How many times have we seen executives and administrators attempt to manage the unexpected after-the-fact by blaming it on someone—usually someone else. Karl E. Weick and Kathleen M. Sutcliffe offer insight into this problem.

But we shouldn't expect easy answers because their goal is to help us learn to cope in realworld organizations and to work together to improve them. For that, we must abandon the search for quick fixes and embrace the reality of living in complex, adaptive systems and organizations.

. . . Weick and Sutcliffe stress that sometimes you can't wrap complex subjects into neat, tidy packages too often seen in the business and management literature. . . . Even the terms they use are unexpected to those who are steeped in win-win or quick-fix reactive management cultures. Weick and Sutcliffe advise us to, among other things:

- *Cultivate humility.*
- *Be glad when you're having a bad day.*
- *Create an error-friendly learning culture.*
- *Develop skeptics.*
- *Be suspicious of good news.*
- *Seek out bad news.*
- *Treat all unexpected events as information—share this information widely.”²*

Dave Iverson, Regional Economist for Intermountain Region
USDA Forest Service

¹ Williams, J. 2002. Next Steps in Wildland Fire Management. *Fire Management Today*. 62 (4): 35.

² Iverson, D. 2002. Book Review: Managing the Unexpected. *Fire Management Today*. 62 (4): 36-37.

III Workshop's Keynote Address

Why do we need this kind of thinking in our fire use and fire suppression organizations?

By Tim Sexton
Fire Use Program Manager, USDA Forest Service
Workshop's Keynote Speaker

Individually, I expect that you are all seeking improvement in your performance.

Collectively, your organizations want you here to improve their *organizational* performance.

Managing the Unexpected and developing a

“High Reliability Organization”... What does it really mean to be a “High Reliability Organization”?

As listed in this Managing the Unexpected Workshop's syllabus: “*Less than their fair share of accidents*” is one of the traits of a High Reliability Organization.

Aren't we already there? Aren't we already a 'High Reliability Organization'?

Every year, our initial attack and fire use program success rates hover around 98%. Thus, only about 2% of our initial attacks escape to become large wildfires. Furthermore, less than 2% of our prescribed burns escape to become wildland fires.

That's pretty good isn't it?

Unfortunately, the answer—when one considers the magnitude of the consequences and outcomes of these albeit small fraction of escapes—is:

Perhaps not.

We need to seek to eliminate these events that result in the loss of life—such as the recent South Canyon, Thirty-Mile, and Cramer wildfires. And we need to seek to eliminate those events that also overshadow—economically, socially, and politically—our entire national programs.



Tim Sexton

Events like the May 2000 Cerro Grande prescribed fire escape.

Organizationally, we have a pretty good history of learning from our—“great magnitude” mishaps. In fact, in almost all cases, our significant organizational and technological improvements have resulted from a nationally significant precursor event: a tragedy wildfire or a calamitous escaped prescribed fire.

These improvements, however, have therefore come at very high prices: human deaths or tremendous property loss.

Organizational Improvements Stemming From “Accidents” or Escapes

In the fire suppression program:

- The 1910 fires that swept the West and resulted in nearly 100 fatalities. Organized fire suppression commenced after that year. The subsequent suppression program became very successful in achieving its stated goals.
- The Mann Gulch and Inaja Fires—that claimed the lives of 25 firefighters—gave us the Ten Standard Firefighting Orders.
- Only after the Loop Fire killed 12 firefighters, did we develop Downhill Line Construction Standards.
- The 1970 Southern California fires claimed both public and firefighter deaths as well as enormous property losses—and led to the development of our Incident Command System.
- The Airtanker Program is currently undergoing reform to address aircraft airworthiness after the lives of 100 airtanker pilots and crew have been taken during the past 40 years.

In the fire use program:

- Canyon Creek (U.S. Forest Service – Wildland Fire Use).
- Mack Lake (U.S. Fish and Wildlife Service – Prescribed Fire).
- Lowden (Bureau of Land Management – Prescribed Fire).
- Cerro Grande (National Park Service – Prescribed Fire).
- Sawtooth (Bureau of Indian Affairs – Prescribed Fire).

Collectively, these wildland fire use and prescribed fire events resulted in significant enhancements in staffing, funding, planning, training, and implementation procedures within the fire use program area.

It is important to note that, in most cases, individuals had already recognized

inadequacies and had made changes locally—averting negative and unwanted consequences. The prescribed fire program appears to go through cycles of repetitive errors due in part to our failure to incorporate this local knowledge gained from minor events *prior* to experiencing a major event.

True Story

Institutional Learning: Uh, What's That?

Recently, a longtime Forest Service fire employee recognized a problem with institutional learning.

His son, now a district-level fire employee, indicated he was having trouble developing prescriptions for burning in western juniper.

Twenty years before, the father had served on the same Forest. He had a great deal of experience burning juniper there. During the intervening years, however, this Forest had “lost” the accumulated knowledge of the prescription parameters that worked well in western juniper.

It became apparent to this father—and son—that the agency needs to adopt a better framework for facilitating “learning-from-experience”.

Isn't it time we develop an organizational framework that can adapt and evolve without large losses as a prerequisite?

There is much yet to learn. And there are many improvements to be made.

At this time, our fire use program is expanding rapidly to meet the needs of an escalating fire risk problem.

In 1999, the national “coarse scale assessment” indicated that far more than half of our federal lands are at elevated risk of unwanted wildfire (Fire Regime Condition Classes 2 and 3). Subsequent modeling associated with the Cohesive Strategy indicate that this problem is only getting worse.

Even under current levels of treatment, we are losing ground each year. prescribed fire.

To halt the increase in Fire Regime Condition Classes 2 and 3, the modeling indicates we will need to treat *twice* as much as we are treating under this year's fuel reduction program. The modeling also indicates that to make significant improvement in the wildland fire risk situation on this country's federal lands, we would need to *quadruple* the size of the current fuel reduction program.

The problem we face is huge. It is only becoming bigger and bigger.

Complexity of Situation is Increasing – Today’s Wildland Fire Situation Is Very Different from Our Past Institutional Fire Use Experience

The wildland fire situation in which we find ourselves today is very different from much of our institutional experience in fire use.

Historically, our prescribed fire program was primarily slash burning. Characteristics of that former program included:

- Mostly small units of up to 40 acres.
- Fuels within the burn unit were typically more flammable than outside the unit. Spot fires therefore occurred in less flammable fuel and self-extinguished or were relatively easy to suppress.
- Burning was completed within a few hours. Consequently, weather forecasts were relatively accurate from start to finish.
- Staffing plans were for only one or two days.
- Burn unit locations were typically far removed from communities and other important values-to-protect.
- Readily available help (should something go wrong) was usually nearby in the form of logging equipment and crews.



Tom Iraci Photo USDA Forest Service

The majority of the Managing the Unexpected Workshop participants are prescribed fire and fire use practitioners from a variety of agencies.

Our national leadership believes you can make the difference in these outcomes if you help us become a "High Reliability Organization." An organization that learns and adapts before it experiences catastrophe.

Our current and future program is fundamentally different in many ways:

- Units are much larger. We are encouraging landscape-scale treatments of up to thousands of acres. (In FY04, The Forest Service's Southeast Region's burn units average more than 700 acres in size.)
- Fuels outside the burn unit are usually just as flammable as those within the unit. Consequently, spotting has become a much greater threat to control efforts.
- Because of this larger scale, many of these burns occur over a period of days or even weeks. Weather forecasts become much less accurate when extended over periods of more than 2 or 3 days. Staffing plans for firing, holding, and mop-up become much less certain and more difficult to maintain as duration of the burn lengthens.
- Much more of our burning is occurring in proximity to communities and other improvements. The rapid expansion of the wildland-urban interface and the need to treat hazardous fuels around these communities contributes to this dilemma.
- Due to the decline of the timber industry, trained and experienced crews and equipment are not as available locally. This makes it more difficult to obtain support resources in a timely manner when things go wrong.

In addition to these program changes, we are also experiencing many environmental changes that increase our program's complexity

The following conditions continue to conspire to produce fire environments beyond our experience base:

- Climate change.
- Extended droughts.
- Increase in widespread insect and disease outbreaks.
- Forest densification.
- Invasions of highly flammable exotic species such as cheat grass and saltcedar.

Escaped Cerro Grande Prescribed Fire, May 2000



Photos by Steven G. Smith/Albuquerque Tribune



“Coming back here reopens the book on the darkest chapter in my life. But if my participation here today helps prevent any of you from going down the road we did four years ago, it will all be worthwhile.”

**Al King, Banderier National Monument FMO in 2000,
on the 2004 Managing the Unexpected Staff Ride.**

**This Workshop
– and You – Can
Help Us Become
a High Reliability
Organization**

The wildfire problem is huge and getting bigger.

It is complex and getting more complex. To avert disasters of biblical proportion, we need to become organizations that adapt and evolve in *anticipation* of catastrophes rather than as a *result* of catastrophes.

Within our programs, we are involved in a tremendous undertaking with potential outcomes could be enormously positive—or negative.

Our national leadership believes you can make the difference in these outcomes if you help us become a “High Reliability Organization.” An organization that learns and adapts *before* it experiences catastrophe.

Thank you for your time. Have a great week exploring these concepts.

Tim Sexton

IV Day One: Managing the Unexpected

How do you organize for high performance in a setting where the potential for error and disaster can be overwhelming?

This chapter shares key points from Karl Weick and Kathleen Sutcliffe’s *Managing the Unexpected* and High Reliability Organizing initial all-day presentation and discussion.

‘Mindfulness’ is the Passkey into High Reliability Organizing

If you depend too much on a simple set of expectations, unusual events can develop to more serious levels—before you even notice them.

Therefore, people in High Reliability Organizations try to see more, make better sense of what they see, and remain attuned to their current situation. They do this through five central processes that encourage:

- A self-consciousness about the validity of their beliefs.
- A willingness to question, reaffirm, update, replace, and learn from all five of these processes.

Thus, these five diverse processes resonate together by producing the passkey into Weick and Sutcliffe’s High Reliability Organizing. They call it “*Mindfulness*.”



Tom Iraci Photo USDA Forest Service

After Karl Weick and Kathleen Sutcliffe kicked off the workshop’s first day by presenting ideas about High Reliability Organizations, mindfulness, and managing the unexpected, they joined the workshop participants for the rest of the week “clarifying ideas, answering questions, and learning” says Weick.

The Five Central Processes that Produce “Mindfulness”

Weick and Sutcliffe have discovered that the following five processes repeatedly surface in organizations who successfully contain errors. In other words, High

Reliability Organizations are attentive to: 1) Failures, 2) Simplifications, 3) Operations, 4) Resilience, and 5) Distributed Expertise.

In introducing people to High Reliability Organizing concepts, Kathleen Sutcliffe explains that these concepts don't really describe a "static organization" per se, but rather are a set of organizing principles—a dynamic process rather than an entity.



Tom Iraci Photo USDA Forest Service

These five processes, then, serve as hard won lessons in the continuing struggle for the necessary “alertness” that High Reliability Organizations face every day:

1. A Preoccupation with Mistakes/Failure

Systems with higher reliability: worry chronically that analytic errors are embedded in ongoing activities, and that unexpected failure modes and limitations of foresight may amplify these analytic errors. These high reliability systems have been characterized as “consisting of collective bonds among suspicious individuals,” and “as systems that institutionalize disappointment.” In the words of the head of Pediatric Critical Care at Loma Linda Children’s Hospital, to institutionalize disappointment means: *“to constantly entertain the thought that we have missed something.”*

2. A Reluctance to Simplify

To truly get the work done, all organizations must ignore most of what they see. The crucial issue here: whether their simplified diagnoses force them to ignore key sources of unexpected difficulties. Mindful of this tradeoff’s importance, systems with higher reliability restrain their temptations to simplify. They do so through such means as diverse checks and balances, adversarial reviews, and cultivation of multiple perspectives.

At the Diablo Canyon nuclear power plant, people preserve complexity in their interpretations by constantly reminding themselves of two important themes:

- We have not yet *experienced* all potential failure modes that could occur here.
- We have not yet *deduced* all potential failure modes that could occur here.

3. Sensitivity to Operations

People in systems with higher reliability tend to pay close attention to operations.

Everyone—regardless of his or her level—values organizing to maintain situational awareness. Resources are deployed to enable people: to see what is happening; to comprehend what it means; to project into the near future what these understandings predict will happen. In medical care settings, sensitivity to operations often means that the system is organized to support the bedside caregiver.



Tom Iraci Photo USDA Forest Service

IN THE FIELD – Karl Weick and Kathleen Sutcliffe share a lighter moment on the Staff Ride with Matt Snider, lead presenter at Stand Two. Snider was the Ignition Specialist on the 2000 Cerro Grande Prescribed Fire.

“High Reliability Organizations try to understand the systemic reasons for why the accident happened—rather than focusing on punishing the individual.”

Kathleen Sutcliffe

4. A Commitment to Resilience

While most systems try to anticipate trouble spots, higher reliability systems also pay close attention to their capability to improvise and act—without knowing in advance what will happen.

These reliable systems spend time improving their capacity to:

- Do a quick study.
- Develop swift trust.
- Engage in just-in-time learning.
- Simulate mentally.
- Work with fragments of potential relevant past experience.

5. A Deference to Expertise

Reliable systems let decisions “migrate” to those with the appropriate expertise to make them. Adherence to rigid hierarchies is loosened—especially during high-tempo periods. In this way, a much better matching of experience with problems is achieved.

‘Mindful’ is Paying Attention in a Different Way

“To better understand what we mean by *“mindfulness,”* Kathleen Sutcliffe explained to workshop participants, “it’s sometimes easier to think of the opposite: *mindlessness*. ‘Mindlessness’ is being tuned out, being on autopilot.’ ‘Mindful’ is being aware of the context, of paying attention in a different way:

- You STOP concentrating on those things that confirm your hunches, are pleasant, feel certain, seem factual, and explicit—and *that others agree on*.
- You START concentrating on things that disconfirm, are unpleasant, feel uncertain, seem possible, are implicit—and are *contested*.”

**To Be Mindful
is to ‘See More Clearly’ –
Not to Think Harder and Longer**

- See where your model didn’t work, or see indicators you missed that signaled expectations weren’t being filled – 1. FAILURE.
- Strip away labels and stereotypes that conceal differences among details – 2. SIMPLIFICATION.
- Focus on what is happening here and now – 3. OPERATIONS.
- See new uses for old resources through improvisation and making do – 4. RESILIENCE.
- Discover people who understand a situation better than you do and defer to them – 5. EXPERTISE.

“Weick and Sutcliffe challenge us as managers to maintain ‘awareness of discriminatory detail’ and focus on our ‘ability to discover and correct errors that could escalate into a crisis.’

At the operational level, we have reacted to errors quickly. Over the past several years—in response to the 1990 fatality Dude Fire, the 1994 fatality South Canyon Fire, the 2000 Cerro Grande prescribed fire escape, and the 2001 fatality Thirtymile Fire—we have focused on policy and process.

Our fire policy has changed. Our burn plans are more complete, our fire management plans are more detailed, and our large-fire situational assessments are more thorough.

I do not wish to demean any of these improvements. However, I believe that we need to go beyond the fixes that we have traditionally relied on.

The necessary steps will represent a profound change in how we plan and execute the high-risk, high-consequence fire program that we are charged with leading.”

**Jerry Williams, Director
Fire and Aviation Management
USDA Forest Service, February 2002**



Tom Iraci Photo USDA Forest Service

At the end of the week, a widespread workshop participant comment was how beneficial it was to have the external “experts” sharing their insights and knowledge.

How to Work Toward a Mindful Culture

Strive for what noted psychologist and author James Reason calls an “*informed culture*” that creates and sustains intelligent wariness. Informed cultures result from these four coexisting subcultures:

1. Reporting Culture

What gets reported when people make errors or experience near misses?

2. Just Culture

How do people apportion blame when something goes wrong?

3. Flexible Culture

How readily can people adapt to sudden and radical increments in pressure, pacing, and intensity?

4. Learning Culture

How adequately can people convert the lessons that they have learned into reconfigurations of assumptions, frameworks, and action?

“High Reliability Organizations try to understand the systemic reasons for why the accident happened—rather than focusing on punishing the individual,” Sutcliffe explained to the workshop participants.

Examples of Organizations Failing to Be Mindful

Weick and Sutcliffe used several “real world” examples of successful High Reliability Organizing (e.g. aircraft carrier flight deck operations), as well as organizations who weren’t mindful and developed “blind spots” in their attention to the aforementioned five High Reliability Organizing processes.

As pointed out in the Columbia Accident Investigation Board Final Report (Aug. 26, 2003), NASA made several actions and inactions that most likely contributed to the February 2003 Columbia Space Shuttle disaster and tragic deaths of its seven-member crew.

“NASA’s employees did several things that moved them away from paying closer attention to failure,” Weick, who served as a consultant to the Columbia Accident Investigation Board, told the workshop audience. “They were less than a High

Reliability Organization. They did not *reliably* return the Columbia back to earth.”

Among other failures, oversights, and inaction, Weick said the agency was insensitive to operations. It did not mobilize to cope with an unforeseen situation. It did not use experts wisely.

Reluctance to Simplify: Information regarding the Columbia’s potential takeoff damage was filtered as it moved up through the organization. Top management, therefore, ultimately received a simpler view of the problem than the “lower level” employees.

Preoccupation with Failure: NASA did not use the previous fatal Challenger disaster as a case to promote learning (as the Navy did with its organization’s Thrasher and Scorpion disasters).

Kudos to Federal Wildland Agencies for Honing Their Learning Curves

Weick lamented that after the earlier tragic Challenger Space Shuttle disaster, NASA failed to put any new information back into its training processes.

He applauded the federal fire agencies for learning from their major mishaps.

“You people pump information back into your organizations,” Weick told the Managing the Unexpected Workshop audience.

“You’re not afraid to look at your tragedies, your disasters. You try to learn from them.”

All HRO’s Heed Close Calls and Near Misses

High Reliability Organizations:

- Regard close calls and near misses as a kind of failure that reveals potential danger, rather than as evidence of the organization’s success and ability to avoid danger. They pick up on these potential clues early on — before they become bigger and more consequential.
- Know that small things that go wrong are often early warning signals of deepening trouble that provide insight into the health of the whole system.
- Treat near misses and errors as information about the health of their systems and try to learn from them.
- Are preoccupied with all failures, especially the small ones.
- Understand that if you catch problems before they grow bigger, you have more possible ways to deal with them.

High Reliability Organization Employees are Encouraged to Report Problems

Unfortunately, most organizations have a tendency to ignore or overlook their failures (which suggest they aren’t competent) and focus on their successes (which suggest they are confident).

Therefore, High Reliability Organizations encourage people to report problems.

They also simultaneously ensure “psychological safety” to their employees.

Thus, employees know it’s acceptable to bring up “bad stuff”—to report failures.



Tom Iraci Photos USDA Forest Service

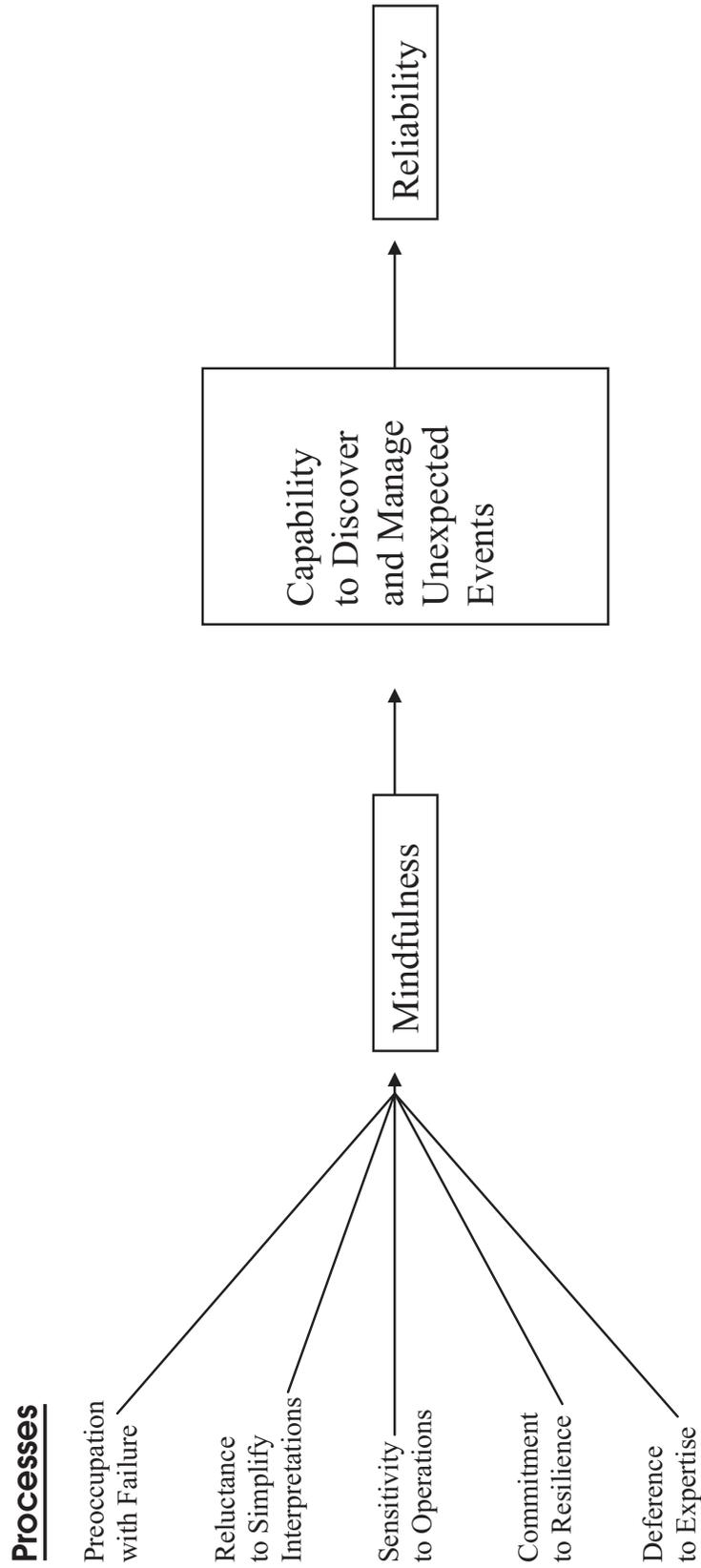
High Reliability Organizations:

- Shift decisions away from formal authority toward expertise and experience.
- Have flexible decision-making structures. Their networks do not have a fixed central player who can mistakenly assume that she/he knows everything.
- Decision-making migrates to expertise during high-tempo times. It migrates up as well as down.



To truly adopt the High Reliability Organizing concepts requires repeating and learning them over and over—fostering “deep learning” with continuous critical feedback.

A Mindful Infrastructure for High Reliability





Tom Iraci Photo USDA Forest Service

INTERNATIONAL APPEAL – The diversity of the participants—from various agencies and even countries—enriched the workshop. Pictured here (center foreground) is David Clancy, the Occupational Health and Safety Officer for the Country Fire Authority at Mt. Waverley in Victoria, Australia. Clancy is working on his Ph.D. on human factors in wildland fire.

Sensemaking Versus Decision-Making

“If I make a decision, it is a possession. I take pride in it. I tend to defend it and not listen to those who question it.

If I make sense, then this is more dynamic and I listen and I can change it. A decision is something you polish. Sensemaking is a direction for the next (burning) period.”

Paul Gleason

Karl Weick used this quote of Paul Gleason’s in his presentation. “Paul was a real inspiration to me,” Weick said.

(Gleason was also involved in the Cerro Grande Prescribed Fire and served as Incident Commander on its initial Type 3 suppression operation.)

V Day Two: Cerro Grande Staff Ride

How Can We Apply the High Reliability Organizing Concepts to the May 2000 Cerro Grande Prescribed Fire?



Al King



Matt Snider



Mike Powell



Edward Hiatt

Overall Consensus: These Four Provided Professionalism, Courage, and Class

They didn't have to do it. Would you?

The four employees most intimately involved with the planning and implementation of the prescribed fire that escaped to eventually become the infamous May 2000 Cerro Grande Wildland Fire agreed to come back to Bandelier National Monument—to Cerro Grande itself.

For the benefit of the national prescribed fire and fire use programs, Al King, Matt Snider, Mike Powell, and Edward Hiatt—all instrumental in the original Cerro Grande prescribed fire—were asked by workshop organizers to be the key presenters in a Staff Ride designed, more or less, to scrutinize their actions and decisions.

“It took a real strength and strong display of courage for these folks to return here and become so intimately involved in this,” said Dick Mangan, Lead Workshop Organizer.

Keep in mind that—only four short years ago—these four individuals had been the target of numerous post-fire inquiries, investigations, and reviews.

As reflected in Chapter VI of this paper, during the post-field visit “Integration Phase,” workshop participants—again and again—voiced a unanimous theme: these four individuals made the Cerro Grande Staff Ride a true success.

“I saw a tremendous display of resilience by these people who came here to share their stories with us,” voiced one workshop participant. “I hope their presence here was as helpful for them as it was for me.”

Organizational Recovery

In the After Action Review at the week's end, one participant noted that an “unspoken objective” of the four-day workshop had been another step toward “organizational recovery” from the entire Cerro Grande incident.



Tom Iraci Photos USDA Forest Service

Background

Three weeks prior to the workshop, all of the participants were mailed Karl Weick and Kathleen Sutcliffe’s book *Managing the Unexpected*. They were also sent a “Preliminary Study” of the Upper Frijoles Units 1 and 5 Prescribed Fire (now commonly known as the “Cerro Grande Prescribed Fire”)—which escaped on May 4, 2000 to become the Cerro Grande Wildland Fire that evacuated 18,000 people, destroyed 235 homes, and caused significant damage to structures and property on the Los Alamos National Laboratory. The fire resulted in an estimated total of \$1 billion in damages.

Exposure to this Preliminary Study—which included a summary of the prescribed fire project area and prescribed fire burn plan, conditions prior to the prescribed fire’s ignition, and a chronology of events before and during the prescribed fire’s implementation—was the Staff Ride’s first phase.

Thus, the Staff Ride’s actual on-site field visit—which consisted of five separate presentation and discussion stops (“stands” in Staff Ride parlance)—was enhanced by the workshop participants’ in-depth knowledge via this Preliminary Study.



Three of the Staff Ride “stands” were located at the bottom of Cerro Grande, where fire snags serve as a reminder of the prescribed fire’s transition to wildfire.

Staff Ride

The 85 workshop participants were divided into three groups who each left Santa Fe for Bandelier National Monument in separate buses in 45 minute intervals on Tuesday morning. By 4 p.m. that day, the last group had finished its session at Stand Five, the final stop of the field visit portion of the Staff Ride.

Stand One

Ponderosa Campground, Bandelier National Monument

Lead Presenter

Al King, FMO at Bandelier during the Cerro Grande event, who also served as Holding Boss on this prescribed fire.

[King is now the National Park Service's Fire Safety and Prevention Specialist]

Discussion Topics

The history of fire in the area—including the nearby Dome and La Mesa wildland fires; the Bandelier prescribed fire program at that time; weather prior to the prescribed fire's ignition.



Tom Iraci Photos USDA Forest Service



Middle Photo – Al King kicks-off Staff Ride at Stand One with a vista of the 1977 La Mesa Fire-scarred lands.

Top and Bottom Photos – Key ingredient in any successful Staff Ride is the encouragement of reflection and discussion by participants.



Tom Iraci Photo USDA Forest Service

"Coming back here reopens the book on the darkest chapter in my life. But if my participation here today helps prevent any of you from going down the road we did four years ago, it will all be worthwhile."

Al King's opening remarks at Stand One

Stand One Summary

- In 1977, the La Mesa Fire was the first large wildland fire that burned onto Los Alamos National Laboratory lands and threatened the town of Los Alamos.
- Bandelier National Monument's prescribed fire program began in 1978.
- The 1996 human-caused Dome Fire was the second large fire to burn near and threaten the town of Los Alamos. It served as a hazardous fuels threat "wake up call." The Los Alamos National Laboratory began doing mechanical treatments on its lands.
- In the aftermath of the Dome Fire, the "Interagency Wildfire Working Team" was also formed. It joined the following agencies in an effort to make the general Los Alamos area more defensible to wildland fire: The Department of Energy, Los Alamos National Laboratory, Los Alamos County, Santa Fe National Forest, Bandelier National Monument, New Mexico State Forestry, the Bureau of Indian Affairs. This interagency group met every two weeks—including prior to the Cerro Grande Prescribed Fire.
- As part of the Bandelier Fire Management Plan, Dr. Tom Swetnam, Director of the University of Arizona's Tree Ring Laboratory, performed a fire history study of the area that revealed fire historically burned here on a 5 to 25-year return interval. More than half of these fires occurred in the spring.



Stand Two

Meadow on south side of Highway 4,
across from Cerro Grande

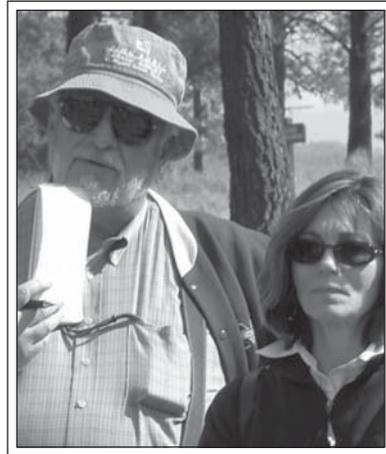
Lead Presenter

Matt Snider, Ignition Specialist
on this prescribed fire.

[Snider is now the Fuels Technician/Fuels Captain
at Lassen Volcanic National Park]

Discussion Topics

Fuels, weather, firing plan,
holding plan, MMA, monitoring,
RAWs, phasing of burn.



Tom Iraci Photos USDA Forest Service



*“The Staff
Ride was
amazing,” said
a workshop
participant. “It
far exceeded
my
expectations
and was
helpful as an
example of
how and where
to apply
mindfulness.”*



"I came back here today for two reasons. One, I'm hopeful that something I do or say might help prevent any of you from ever going through what we went through. And, two, for (the late) Paul Gleason. Because of his emphasis on learning and teaching, I know he would have wanted us to come back here—to be a part of this. I know that wherever Paul Gleason is today, he's saying: 'Way to go, you guys'."

Matt Snider's closing remarks at Stand Two

Stand Two Summary

- This burn's planning and pre-ignition data are missing or gone. [Shortly after the escape, during the initial investigation process, Snider and the others had everything in their offices packed up and taken away by federal Law Enforcement Officers. None have seen any of these work folders and records since.]
- Bandelier's fire staff had a very close working relationship with the supervisor's office.
- Snider—and everyone involved in the prescribed fire—felt this was a good burn plan. He had no qualms—nor sense of urgency—regarding the implementation of this burn.
- He had extensive experience burning in these fuel types.
- Even though the 10-person Black Mesa Bureau of Indian Affairs crew who showed up that day to help with the burn had never worked here before, Snider said this did not seem out-of-the-ordinary or risky.





Stand Three
Meadow on north side of Highway 4,
with views of Cerro Grande's top.

Lead Presenter
Mike Powell, Burn Boss on this prescribed fire and,
in May 2000, Bandelier's acting AFMO.
[Powell is now the Prescribed Fire Specialist
at Lava Beds National Monument]

Discussion Topics
The ignition process; spot weather forecast; ignition
pattern; staffing; events up until 0600 May 5th;
dispatch discussion; holding crew actions.



Tom Iraci Photos USDA Forest Service



Stand Three Summary

- When Mike Powell called Santa Fe Zone Dispatch at 0317 Friday (the burn was ignited at 2200 the night before) and asked for a Type 2 Crew, the (new to nightshift) dispatch employee informed him he would have to speak with a supervisory dispatcher—who wouldn't be there for a few more hours.
- Because the 10-person Black Mesa BIA crew could no longer work due to fatigue, the staffing plan failed and they needed to fix that. When Powell called dispatch back at 6 a.m. no one answered.
- With Paul Gleason there, Powell's "comfort level" was increased.
- Participant Question: *Is it typical for your crew resources to work all day and then burn that night?* Mike Powell: *No. We were pushing issues.*
- They'd been having discussions with the Black Mesa BIA unit about getting crews to help for several days. But by the day of the prescribed burn, Black Mesa's regular fire crews had all been dispatched to a faraway fire. Bandelier got "the last ten people they had available."



Dispatch Dilemma

Burn Boss Mike Powell explains how it took nine critical hours from the first time additional resources were requested through dispatch until they arrived on the prescribed fire.



Stand Four
Meadow on north side of Highway 4,
with views of Cerro Grande’s top.

Lead Presenter
Edward Hiatt, Bandelier’s Fire Use Module
Lead Crew Member. (As planned, Al King who
helped implement the burn—joins Hiatt to add
information and answer questions.)
[Hiatt is now the Wildland Fire Use Specialist
at Grand Canyon National Park]

Discussion Topics
The prescribed fire escape; fighting the slope
from 1000 to 1300; ordering retardant.

Tom Iraci Photos USDA Forest Service



*Cerro Grande (“big
hill” in Spanish) rises
to 10,200 feet in New
Mexico’s Jemez
Mountains. The
prescribed fire’s
primary project area
was located between
the 9,000 to 10,000-
foot elevation.*



Stand Four Summary

- At 1000 Friday, Edward Hiatt radioed Al King to tell him they needed a helicopter to suppress the problematic slop-over.
- A Type 3 helicopter arrives at approximately 1030 *without* the anticipated and much needed suppression bucket. It drops off one crew member and departs for bucket.
- By 1100, the Santa Fe Hotshots arrive.
- The Type 3 helicopter, with its subsequent small bucket—at 10,000 feet—is not providing the water amounts and saturation necessary to stop the slop-over’s spread. At 1255, an air tanker is requested.
- King is surprised by how quickly the Black Mesa Crew experiences fatigue. “For their safety, I knew we had to get them off the hill,” he says.
- Hiatt reminded how “contingency resources” procedures were different four years ago—you didn’t have to have them on-site as you do today. “Our ‘contingency resources’ for this burn,” he says, “was a crew on the Forest and one in Albuquerque.”



Edward Hiatt recalled the series of events that unfolded with the prescribed fire’s problematic slop-over. This included a late-arriving helicopter that came on-scene without its bucket. Karl Weick noted that this—one of many delays—was a ‘small’ failure that collectively and cumulatively foreshadowed the ‘big’ failure of the prescribed fire escape. “Delays are often a valuable clue that the system is not operating the way we thought it would and, therefore, we need to be even more alert for further problems,” Weick explains. “High Reliability Organizations are preoccupied with small, emerging, early failures—also known as ‘problems.’”

Craig Martin (l) and John Hogan explain how local residents knew that wind gusts are common near Cerro Grande in May.

Karl Weick believes that a High Reliability Organization needs to be preoccupied with early hints of the unexpected—like this wind-related local knowledge.



Stand Five

Ponderosa Campground (same location as Stand One)

Lead Presenters

Tim Sexton, served on the four primary Cerro Grande investigation teams.
John Hogan, U.S. Geological Survey, Jemez Field Station.
Craig Martin, Open Space Specialist, Los Alamos County.

Discussion Topics

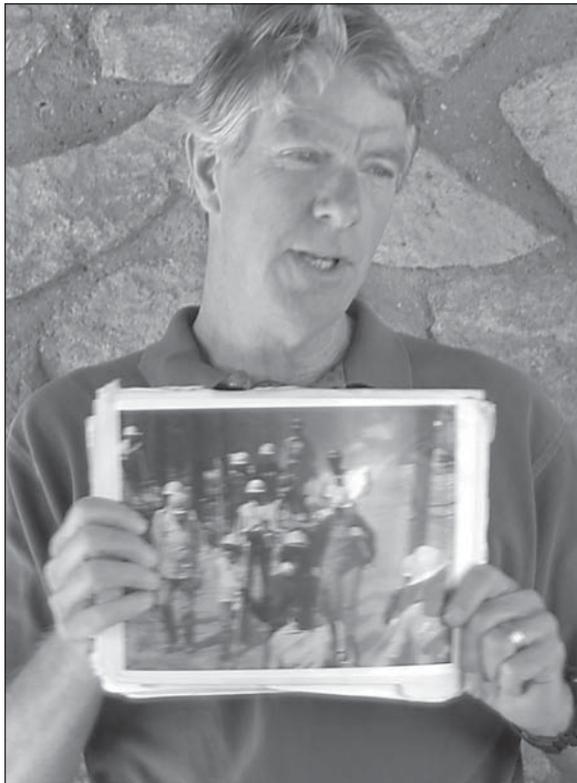
Where are we today? What is it like to manage natural resources here four years after this prescribed fire's escape?



Tim Sexton has an inside view into the Cerro Grande aftermath by serving on its four primary investigation teams.

Stand Five Summary

- This prescribed fire escape galvanized national public attention and Congressional action.
- This event helped trigger the creation of the National Fire Plan.
- The people of Los Alamos “love” these mountains. So far, they have donated 50,000 hours of volunteer time helping rehab the Cerro Grande burn area. Thus, some positive natural resource learning opportunities are emerging from this event.
- Closer connections are also forming with the public and land management agencies in these post-fire activities.
- However, to get back into a “burning mode” is still a “hard sell” in this community.
- Community members still say that the Bandelier employees who planned the prescribed burn should have known about the “spring winds” that reportedly occur up there in May and blast down into town. (An unpredicted wind event—41 hours after the escape transitioned to a Type 3 suppression incident—triggered the fire’s run into Los Alamos.)



John Hogan, an area resident, talks about the positive involvement of local denizens in helping rehab the fire’s burned area.

- This prescribed fire escape resulted in an immediate national moratorium on prescribed fire ignitions. In addition, today, the National Park Service has far more stringent prescribed fire plan requirements than the other federal agencies—especially for fire contingency resources.
- Statement from Staff Ride participant: *“We need to reward our employees who initiate these landscape-scale burns-rather than provide so many disincentives.”*

VI Day Three: Staff Ride Integration Phase and Facilitated Group Discussions

A. Staff Ride Integration Phase

How Do We Apply the Lessons Learned on Yesterday's Staff Ride to High Reliability Organizing Concepts and to Our Current and Future Fire Use and Prescribed Fire Program Organizations?

1. Praise and Empathy for the Cerro Grande Prescribed Fire Crew

Kudos for the four former Bandelier employees was the predominant theme voiced again and again during the Integration Phase.

“I work for local government fire services in Los Angeles County. I walked away with a great respect for what you all do in the [public land management agencies]. If I understood it correctly, you guys were ready to do this [Cerro Grande] burn. I thought you had a good, well laid-out plan. What you were trying to do was very reasonable—what you wanted to accomplish—your ultimate goal of introducing fire where it hadn't burned since 1890.”

Professional Operation

“That whole prescribed burn was a very professional effort and operation. It was based on logic and professional rationale. I think, in terms of what happened, it was easy for me to see how I could have been a part of that—either had I been there, or looking back at my own personal history, in which I have been a part of similar events.”

Final Phase of all Staff Rides: The Integration Phase

A Staff Ride's “Integration Phase” combines its first two phases—the pre-study of the event and the on-site field visit—into the final group discussion climax that identifies lessons learned.

This open-ended “no holds barred” discourse was held the morning after the all-day Cerro Grande Staff Ride.

Workshop participants expressed a variety of lessons learned, observations and insights. Subjects ranged from the need to revamp the escaped prescribed fire review process—to prevent employees from enduring what the Bandelier National Monument staff experienced, to various suggested changes to the national prescribed fire program organization.

One-by-one, people verbally volunteered their comments, many of which have been transcribed and grouped here into ten separate subject matter categories.

Learn from Past Actions

“It is so important that we learn from our past actions and experiences. It is absolutely critical. That’s why I appreciate you guys coming here this week to give your side of the story. It’s been a real pleasure working with you.”

I Would Have Done That Burn, Too

“What I came away with from the Staff Ride was that I would have implemented that burn, too.”

“I also could see myself in that same position. I appreciate those folks coming out and talking about it with us.”

“I believe the folks who conducted that prescribed burn did everything that they could. I probably would have made the same decisions they made.”

Pivotal Experience

“I think the most pivotal experience for me yesterday was Al King at the beginning of the Staff Ride saying—really with all his heart—how tough it was for he and the others to come back. But he said they were doing it to prevent any of us in this room from going through what they had to go through. That kind of took me through the rest the day’s stations.”

An Incredible Feeling of Pride

“I’m looking at this crew [Al King, Matt Snider, Mike Powell, Edward Hiatt] who had the willingness to come back here and share with us yesterday. I have an incredible feeling of pride standing shoulder-to-shoulder with this group of individuals who had the courage to return here to help us learn more about this event.

I mean this very sincerely. Just trying to imagine what you guys must have gone through . . . In a way, you were responsible for lighting a burn that was ripping into one of the largest nuclear facilities in the United States. A fire that was burning homes. I can’t even begin to imagine what that must feel like. So, just knowing that you came back here to share your insights with us—it sends shivers up my spine—to know that I work with people who are that professional. From a High Reliability Organization concept, I wish someone higher up in the organization would have stood up and said, ‘This crew did the best job they could.’”

Dave Thomas, Chair; Managing the Unexpected Workshop

Roy Weaver was a True Leader

“We’ve been remiss this week in not mentioning our Park Superintendent Roy Weaver. He was the true dictionary definition of ‘Leadership.’ To protect us, he stood up and took accountability for what happened out on that hill.”

Matt Snider, Ignition Specialist on Cerro Grande Prescribed Fire



Tom Iraci Photo USDA Forest Service

“Finding other people interested and actively working toward my same goals far exceeded my expectations. There were some great people here!” enthused a workshop participant at the end-of-week After Action Review.

2. Need to Change Investigation Process and Reports

How Do We Stop Playing ‘Blame Game’

“It seems like our investigation reports like to play the “blame game.” Our bureaucracies like to do that. Maybe starting today, through the Wildland Fire Lessons Learned Center and this workshop’s concepts, we can begin to look at these events as ‘disasters’.

In essence, that’s what Cerro Grande was. It was a disaster for many people both directly and indirectly involved. It was a disaster for the agency. And it was definitely a disaster for these folks who came back to share with us this week.

After Cerro Grande I think we went immediately to: *Who did what wrong?* We didn’t act like a true High Reliability Organization that would say: let’s really have a fundamental desire to look at what

structures and processes we need to examine to avoid this type of disaster in the future.

I think we’re on the right track, we’re moving forward in the right direction. It comes down to what Karl Weick and Kathleen Sutcliffe talked about the first day. It’s going to take repetition to develop a new organization behavioral action. We need to practice this over and over again. When the next crisis or disaster occurs, we don’t want to go back to our previous institutional behavioral action. That’s our challenge.”

Wildland Fire Lessons Learned Center Can Help Set Record Straight

“Even though I was on the Type 1 Interagency Management Team assigned to the Cerro Grande Fire, I learned a whole lot more about this fire yesterday on the Staff Ride.

What I now know about this prescribed fire—what we learned yesterday—and what the investigation reports say, are two different things. We need to find a way to set the record straight. I think the Wildland Fire Lessons Learned Center could play a big role in that.”

Beware of Perceptions and Opinions Based on Reports

“I think we all realize the difference between the investigation reports and some of the data that we heard yesterday. It’s been my experience on other staff rides—after we’ve gone out on-the-ground and really assessed what occurred—that we need to be very careful how we formulate our perceptions and opinions based on these reports.”

Need to Revisit Our Escape Burn Investigation Process

“I firmly believe that the whole investigation process needs to be revisited. We all know mistakes are going to happen—hopefully not on this scale. But I’d like to think that when we conduct these post-event processes—these investigations

and reviews—that we protect our employees and not abandon them.”

A Few Courageous Leaders

“There are a couple of folks who had the courage to stand up and support their people [during past escaped prescribed fire investigation processes]. People like Tim Sexton have stood up and put their careers on the line. They made sure the political process didn’t run roughshod over people who were trying to do the right thing. So there are leaders among us who have the courage and have the ‘right stuff’.”

How Do We ‘Grow’ More of This Leadership?

“Some of the leadership that we wish would be more present and more involved in providing “‘psychological safety’ to you folks might be more apt to occur if you told them that this is important to you. This workshop has the opportunity to provide some of that impetus to our leadership. I really appreciate the managers who are here, who now have this possibility before them: this opportunity to stand up and take pro-active leadership positions.”



Tom Iraci Photo USDA Forest Service

Everyone has an opportunity to share impressions and ideas kindled by the Staff Ride.

'I Lost Faith with the Organization'

"We need to develop a national policy to protect our employees in the aftermath of when we have incidents like this. We need to protect them from the time the problem occurs through the end of the investigation.

During this entire process, we need to attempt to minimize the amount of influence that politics may have. We need to insure that a just decision is made on the employees' welfare. We need to find out all the facts. We don't need to have an investigation that is politically deemed to be five days and then move on to a decision before all the facts are even collected [criticism of the first Department of the Interior Cerro Grande investigation].

I'm reminded of the wonderful people out there in management who do what is right and not what is normally 'best'. People like Tim Sexton and Tom Zimmerman—and my [former] Park Superintendent Rob Arnberger and my [former] Chief Ranger Steve Bone. Those guys were there for us. They put everything on the line."

Ken Kerr, former Grand Canyon National Park Prescribed Fire Manager, third generation Park Service employee. At the same time the 2000 Cerro Grande escape occurred, he simultaneously had a landscape-scale burn which escaped and burned 14 thousand acres and cost \$10 million to suppress.

While he said he hadn't planned to speak during the Integration Phase, a sometimes emotional Kerr nonetheless stood up and took the microphone.

"What you guys [the four Bandelier veterans] went through deeply affected me. As your investigation unfolded, ours did too. We were also under a national investigation team in which a number of different individuals from a variety of agencies came in to review what we were doing. It was a very tough experience. By the grace of god, we didn't have any homes to burn up. We didn't hurt anybody. We were very fortunate."

In the aftermath of the agency's overall reactions to these prescribed fire escapes, Kerr—whose family had devoted a total of 75 years working for the Park Service—left the agency. Kerr laments: "I lost faith with the organization."

3. Constructive Criticism on this Prescribed Fire

Contingency Lines on Large Burns

"The main lesson I learned yesterday was how they did this burn up on the top [of Cerro Grande]—with the open end down on the bottom. That kind of concerned me. When we're doing these large landscape-scale burns, we need to look at how are we going to break them up so we have contingency lines from which we can shut the burn operation off when—and if—we need to.

Communication Trap

"During the Staff Ride, in reviewing what occurred prior to the prescribed fire, I saw a communication trap. And I say this with all respect to the people who were there because I know this is hindsight. But those meetings that occurred every two weeks between the area's fire managers may have prevented some of the them from getting together on the telephone and

talking to each other in a more immediate sense . . . But because they knew they'd be seeing each other in a couple weeks—they

didn't do this. So on the surface, it's a great plan to get together every couple weeks. But it may have been a communication trap."

4. Paul Gleason's Influence - Positive or Negative?

A Passion for Learning

"After the Staff Ride someone asked Matt Snider what his motivation was to come here and speak. He answered that that's what Paul Gleason would want us to do. I also believe this is true. One of Paul's lifelong passions was being a student of fire—and he tried to instill that passion in others. In reflecting back, I think that passion for learning and being a student of fire was with us yesterday. Hopefully, now, we can all have that passion as we continue through this week. We can try to tie-up some loose ends and bring some sense to all of this. And we can come out with new ideas that we can take back to our own units and organizations to implement."

Al King, Bandelier FMO during the Cerro Grande Prescribed Fire

Paul Gleason, the National Park Service's Wildland Fire Management Specialist for the Intermountain Regional Office at the time of the Cerro Grande Prescribed Fire, was serving as "fire observer" on this burn. Fourteen hours after ignition, due to extenuating circumstances, the FMO and Burn Boss decide to transition Gleason to Burn Boss. Gleason was a widely acclaimed veteran in wildland fire and fire use, known internationally for his fire skills and savvy. (In February 2003, at 57, he died of cancer.)

this room. It certainly would have been comforting to me, had I been there. I'd feel that same way, too. But because of having that high level of expertise there—would there be some automatic deference to that expertise? I don't know if this actually happened, I'm just wondering if that may have been an issue here."

Gleason Mindful - Dispatch Wasn't

"In response to comments about Paul Gleason. I think this was a different, positive model for having an 'esteemed expert' on site. Paul exemplified an esteemed expert who was *right*. He *was* being mindful. What happened to Paul was he ran smack up against an unmindful bureaucracy. And that can happen to any of us. Those people [Bandelier fire staff] made sure those contingency resources were there right up until the time they implemented that burn. But when they needed those resources, they ran into mindlessness and chaos when they actually called for those resources."

A Deference to Expertise?

"Everybody yesterday agreed that there was good communication on that prescribed fire—and I absolutely believe that. They all also said that it was very comforting having Paul Gleason there. Obviously, I know that would have been very comforting to everybody in



Tom Iraci Photo USDA Forest Service

Karl Weick and Kathleen Sutcliffe participated and shared their observations and insights during the Integration Phase.

Karl Weick: An Ill-Advised Deference to Paul Gleason?

“The thing that really surprised me [on the Staff Ride] was that I came here, like many people did, with enormous respect for Paul Gleason. And, now, I really understand—even more—the reverence in which people hold him and his expertise.

What struck me yesterday was the number of times I heard things like *‘Paul was everywhere’*; *‘Paul said to me, look we’ve got to do something’*; *‘Paul says go get some sleep’* . . .

So there’s an interesting tension for me around the issue that it’s possible to have someone so venerated, with so much perceived expertise, that if anything was going rotten on this fire, he’d know it and he’d speak up. Therefore: *If I have any kind of nervousness, but Paul isn’t nervous, we must be in good shape.*

I guess I haven’t seen that possibility quite as clearly before. And it’s just a possibility that I perceived yesterday in trying to put together all the pieces.”

Karl Weick

5. Positives from this Prescribed Fire

Lessons Learned from Cerro Grande

“I was struck by the fact that some of the changes and issues we deal with today are a direct result of Cerro Grande. In some cases, we may not be dealing with certain issues today because we made some of these institutional changes as a result of Cerro Grande.”

I Congratulate You

“I thought I heard you say yesterday that you

had two crews in place. But up there on that east flank you only had two people to cover it. I have a lot of respect for what you do. You only had 30 people on that entire fire. When we [local government fire services in Los Angeles County] call for a “first alarm brush,” we have 141 people respond. Yes, I have a lot of respect for what you do. It boggles my mind the kind of work you accomplish with the limited resources that you have. I walk away with a great admiration for you. I congratulate you.”

6. Criticisms of the National Prescribed Fire Program

Inadequately Prepared to Make Decisions – Using Wrong Models

“When I listen to some of the data that went into making those decisions regarding that prescribed fire, it reinforces the very cynical outlook I have about us, about our profession. Specifically, how inadequately we prepare ourselves to make our very complex decisions. We are continually using models or modeling concepts that are developed for wildfire suppression and try to adapt them into a prescribed fire setting— particularly with the use of the Haines Index.”

Taking Risks – Yet No Rewards

“What I saw yesterday was a difficulty in analyzing risk. Everything we do is how we look at risk and how much risk we are willing to take. But it is very difficult for us to get a

true handle on what the risks are that we are taking. Why are we so willing to take these risks? Other than it’s just our job to do this. What rewards or what benefits are we getting for going out there and taking that risk?

In terms of the [Cerro Grande] prescribed fire, I would have taken that risk, too. Yes, I am a risk taker—as most of the people in this room probably are. But why are we taking this risk? We don’t reward people for taking these risks. What rewards do we get? Our agencies certainly don’t reward us for taking this risk. They only come out and look when there has been a problem. They don’t come out and look at the good successes. How many workshops do we have in which we get together to look at what we have accomplished? None. We only look at problems. We need to start rewarding people for taking risks—even when circumstances go bad.”

Become Better at Anticipating the Surprises

“In our work we think about the idea that you can try to anticipate as much as you can. But as you implement prescribed fire, you certainly are not going to be able to anticipate everything. Whether there is a certain risk that you are willing to live with is one thing. But there is also really focusing on that part of trying to contain or to act on the surprises that do come up. That’s where I would be spending most of my time . . . Plans do have their risk. Making sure you focus on the other end—on containment and how you can recover from things that go wrong—is where I’d also concentrate.”

Kathleen Sutcliffe

Landscape-Scale Multi-Day Burns and Unpredictability of Weather

“One thing that struck me yesterday—that’s been gnawing on me for several years—is that once we get beyond about two days from our weather forecasts, we’re really susceptible to unknowns. It’s been my experience that I can trust the weather forecast for about 48 hours. Beyond that it’s a crapshoot. As we start to go more and more toward landscape level and multi-day burns, we’re really headed into a gray area. It really makes me wonder where we’re going in the future and how we’re going to accomplish our target goals.

Sometimes with the situations we are dealt, due to the shape of the landscape and ecosystems—how we have so much Condition Class 3 lands that we’re trying to do something with—the tendency for a lot of agencies—mine included—is to go out there and fix everything *right away*. I believe there is also a political emphasis to do this. And I don’t think that’s right. That’s not what we should be doing.

We have all these areas that are suppose to burn, for instance, once every 5 to 10 years

that haven’t had any fire for 100 years. So we try to go out and meet all of our objectives and return it back to that 5 or 10 year burn cycle—all in *one* burn. In doing so, I don’t think that we’re doing the ecosystem right. And I don’t know if we’re doing our personnel right—asking them to do that. Trying to meet all our objectives all at once might be something we need to reconsider.”

Improve Prescribed Fire Teaching

“I was reminded again yesterday of the inadequacy of the National Prescribed Fire curriculum. It needs to be adjusted and overhauled. It doesn’t address landscape scale burning at all. There is no book on landscape-scale prescribed burning. Perhaps we should all think about that today in our future efforts to put a better prescribed fire program together. To help the people that will be coming up behind us. It’s our job to grow the best fire management programs that we possibly can.”

Need Prescribed Fire Paradigm

[From a municipal fire chief’s perspective.]
“Are there any risks that are acceptable? . . . Is

that written down anywhere? . . . If we're out doing prescribed fire, some are going to escape. From a risk management point-of-view, identifiable risks are manageable risks: if it's predictable, it's preventable. So do you want to keep the system the same and define and accept what your losses are going to be? Or do you want

to fine-tune your system and find out what your acceptable loss is going to be and then find ways to break that down—via dispatch systems, contingency plans, resources, etc.? Right now, you're going out there with a suppression attitude/paradigm. You need to change that paradigm. You need to change to a prescribed fire paradigm.”

Using the Wildland Fire Lessons Learned Center to help spread the word on this workshop's findings was voiced several times during the Integration Phase.



Tom Iraci Photos USDA Forest Service

7. Feedback on the 2000 Santa Fe Dispatch Organization

Significant Systemic Failure

“Based upon what we heard yesterday and what we read before we came here, I believe we had a significant systemic failure on this prescribed fire: the dispatch organization and its response to the burn boss. Unfortunately, I've also dealt with this several times where I work.

It is not the responsibility of the dispatch organization to determine whether or not resources are needed—or how they will be paid. That's a question that is up to the agency administrators and the budget and fiscal folks.

That burn boss should have been responded to immediately. And they should have received the resources they needed. Whether or not it was a prescribed fire is irrelevant. What *is* relevant is that there was fire just over the ridge from the Los Alamos National Laboratory. Having to check with one's [dispatch office] supervisor in that situation is a time lag that isn't necessary. I think that's the main thing I'll take back home with me.”

8. Lack of Resources

Staffing Levels

“I’m a local government fire chief. We do micro burning—on a very small scale. After the Staff Ride, what struck me was that on our burns we staff with 3 or 4 times the people you do. You need to take a look from a risk management point of view at how you’re staffing and your contingencies. Are they in place to do the job? I don’t know how you guys do this. It seems like you really need to determine: do you *truly* have enough folks on the ground to do the right job?”

Contingency Resources

“What struck me really hard yesterday—and it’s still a huge problem for us—is the concept

of contingency. We recently had a big rug ripped out from under us with the air tankers.

How many of us have written burn plans where that’s the contingency—to load and run retardant? Where are we going to go now? What is our contingency? L.A. County can call on first alarm and get 141 people. On the [Cerro Grande] prescribed fire we were only asking for one hand crew. And we couldn’t get it. Where are our contingencies and what are they going to be in the future?

I’m really concerned about how we are going to play this game out with the dispatch organization.”

9. Stakeholders

Need to Educate the Public

“It seems like you should be asking the question: ‘How can we educate our other stakeholders about the risks involved with prescribed fire?’ There need to be efforts to educate the public about risk. That stood out yesterday as being very important.”

Kathleen Sutcliffe

Include Communities

“We need to start including our communities as part of our team. As we begin to do that, communities will support us and be behind us—even when things go bad.”

Working Together Internally

“I’ve begun to think more and more about our organization being a lot like that aircraft carrier flight deck we studied Monday . . . In my own program, I’m going to work to get my budget people, my dispatch people, my agency administrator, all on the same side. To look at ourselves as a true High Reliability Organization will be measured in how well we respond when we have an escape.”

Best Way to Learn

“From a lessons learned perspective, folks came up to me yesterday and said that from all the different ‘lessons learned’ activities that they’ve done, this—the Staff Ride—had been the best way for them to learn.”

**Paula Nasiatka, Manager
Wildland Fire Lessons Learned Center**

Focus was on Learning

“The Staff Ride exceeded my best case scenario. I believe the reason for its success was the participants. You guys were really engaged. You asked good questions. Your focus was on learning. There was a lot of good dialogue. I really appreciate that. I felt very comfortable with you.”

**Al King, Bandelier FMO
during the Cerro Grande Prescribed Fire**

Difficult, Challenging, Emotional

“I want to say how impressed I am that you are doing this. That you are trying to learn from these experiences. I know it is difficult and it is challenging and it is emotional. I think you will learn a lot from this.”

Kathleen Sutcliffe



***Dick Mangan, Lead
Workshop Organizer,
moderated the Staff
Ride’s vital third
component: The
Integration Phase.***

10. The Staff Ride as Learning Tool

Safe Forum for Staff Ride Presenters

“One of the presenters yesterday said how they were thankful that they had an opportunity to tell their side of this event. Certainly, considering all the liability that is surrounding these folks and their agencies, it’s understandable how they might not want to say a lot. But it’s important. It’s important to them. And it’s important to us as professionals to hear their side—especially presented in a way in which these people can feel safe doing this.”

Other Cerro Grande Staff Ride Possibilities

“It’s important to remember that there was more that transpired at Cerro Grande than this prescribed fire. While we focused on the prescribed fire on this Staff Ride, we really have multiple stories to tell, to examine. The Type 3 and the subsequent Type 1 wildland fire event also led to the end result that was so tragic. It wasn’t just solely that prescribed burn.”

B. Facilitated Group Discussions

1. *Remembering what we have learned from the Cerro Grande experience, what aspects of High Reliability Organizing do we need to institutionalize?*
2. *What specific actions need to be taken for prescribed fire and fire use organizations to become High Reliability Organizations?*
3. *What actions can workshop participants take to help make this happen?*
4. *What about High Reliability Organizing works for you or your home unit that you intend to apply immediately?*

Discussing these Questions in Facilitated Settings

After the Staff Ride Integration Phase, workshop participants were introduced to these (above) four key questions by moderators:

Wayne Cook

*Fire Technology Specialist, Fire Sciences Laboratory
Missoula, Montana*

Paula Seamon

*Director of Fire Management and Training
The Nature Conservancy's Fire Initiative, Tallahassee, Florida*

Participants then dispersed into five (strategically pre-assigned) groups to discuss and answer these questions in facilitated settings. Michael DeGrosky, CEO of the Wisconsin-based Guidance Group, served as the lead facilitator/organizer for the entire exercise.

All of the groups reunited at the end of the afternoon to present their summary priority answers, insights, and High Reliability Organizing suggestions.



Tom Iraci Photo USDA Forest Service

Lead facilitator Michael DeGrosky (center sitting) confers with four of the workshop's nationally-selected facilitators—both agency employees and private contractors—in preparation for Wednesday's facilitated discussion groups.

Summary Comments from Facilitated Group Participants

1. Remembering what we have learned from the Cerro Grande experience, what aspects of High Reliability Organizing do we need to institutionalize?

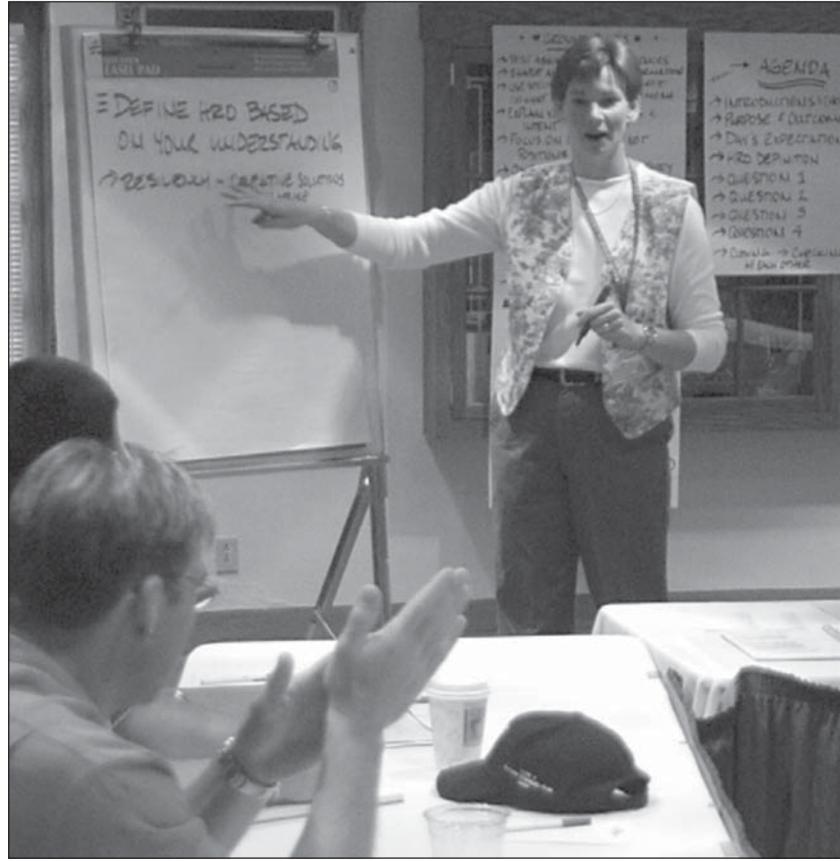
- All five High Reliability Organization elements are important to institutionalize.
- Prescribed fire and fire use organizations are currently doing all five High Reliability Organization elements to some degree. Here's what we can do better:
 - Use the After Action Review tool (daily/incident)
 - Do High Reliability Organization (HRO) audit (from the *Managing the Unexpected* book) with more people
- Important to point out day-to-day examples of how various aspects of High Reliability Organizations are already being used.
- Be a historian—review of past events, successes and failures—through verbal and written means (staff rides, etc).

- We need more After Action Reviews versus investigative actions—at both the large and small scale.
 - Prescribed fire and fire use organizations are currently doing all five High Reliability Organization elements to some degree. Here’s what we can do better:
 - Deferring to experience:
 - Foster management understanding
 - Foster experience after qualifications (continuing education)
 - Be a historian—review of past events, successes and failures—through verbal and written means (staff rides, etc).
-

2. *What specific actions need to be taken for prescribed fire and fire use organizations to become High Reliability Organizations?*

- Stop thinking about “failure” of program. In meantime, take steps like helping people to understand risk, using intermediate goals, and using different markers (e.g. restoration, processes, functions).
- Need to look at close calls and near misses. After Action Reviews are currently used more in suppression—they can also improve the prescribed fire and fire use organizations. Could add as appendix to burn plan.
- Training:
 - Change paradigm to fit all five elements of High Reliability Organizations at all levels.
 - Change and improve national training courses.
- Community Education:
 - Education with commitment to change for decision makers at all levels to support High Reliability Organizations.
- Shift the paradigm from “agency/unit” to landscape.
- Review board and investigation procedures:
 - Systemic focus
 - Change negative to positive
- Pull expertise and local knowledge whenever you can, break down functions.
- Escape reviews need to build resilience, competence, confidence. They should not be judgmental or punitive.
- Escape support team(s):
 - Team concept
 - Supporting people while they take risks

“I liked the multi-day format, both to let the concepts gel and to allow for productive dialogue among the workshop participants,” commented one person in the workshop’s end-of-week After Action Review.



Tom Iraci Photo USDA Forest Service

3. *What actions can workshop participants take to help make this happen?*

- Extend After Action Reviews from suppression to fire use/Rx fire.
- Encourage people to review this workshop information.
- Use Wildland Fire Lessons Learned web site to share common issues coming up in After Action Reviews.
- Apply High Reliability Organization theory to local programs (Rx and Use).
- Weave High Reliability Organization concepts into all areas of training.
- Create a sub-committee of people affected by escapes to improve tone of investigations.
- Advocate, apply, integrate, and institutionalize High Reliability Organization processes in your own workplace.

- Be a disciple of High Reliability Organizations.
- Challenge peers to take fire community/unit forward.
- Provide more workshops like this one.
- Form a group of practitioners to rewrite Wildland Fire Use/Rx interagency guidebook.
- Weave High Reliability Organization concepts into all areas of training.
- Develop report from this workshop and disseminate at many levels across agencies:
 - Wildland Fire Lessons Learned website
 - Fire training
 - Fire Management for Leadership
- Work with the two prescribed fire training centers:
 - Expand curriculum
 - Develop new training
- Infuse High Reliability Organization concepts in fire plans and project planning.
- Re-write curriculum/participate actively:
 - Relaxation of rules re: retiree participation
 - NWCG: Encourage them to consider new learning methods



Tom Iraci Photo USDA Forest Service

Promoting and incorporating the High Reliability Organizing concepts from the home unit workplace to the national level, including all areas of training, proved to be a universal suggestion among the facilitated work groups.

“Having people from different agencies—both federal and municipal governments—and the openness of the discussions, helped achieve common concerns,” said one workshop participant.



Tom Iraci Photo USDA Forest Service

4. *What about High Reliability Organizing works for you or your home unit that you intend to apply immediately?*

- Utilize skills in the research community. Engage them in some of the problems areas. Develop a process/infrastructure for filtering and coordinating research.
- Encourage others to review materials from this workshop.
- Incorporate High Reliability Organization concepts into this year’s readiness review.
- Work with Wildland Fire Lessons Learned Center to disseminate Cerro Grande lessons.
- Commit to work with escaped fire review process.
- Incorporate High Reliability Organization into existing training plans.
- Look at burn plan contingencies.

VII Weick and Sutcliffe's Follow-Up to Workshop Participants

The four-day Managing the Unexpected Workshop's full schedule prevented Karl Weick and Kathleen Sutcliffe from commenting to the larger group at the week's conclusion about:

- How the High Reliability Organization ideas were being used.
- Where there seemed to be High Reliability Organization misunderstandings.
- Where there were good examples of the High Reliability Organization principles.

Therefore, after the workshop, Karl Weick e-mailed all the participants follow-up comments that he and Kathleen Sutcliffe wanted to share *"in the hope that they might be of some help if you are trying to adapt some of these High Reliability ideas to your own groups."*

The following section is excerpted and edited from Weick's eight-page follow-up commentary to the Managing the Unexpected Workshop participants.

1. 'Preoccupation with Failure' – You Missed a Key Point

Your discussions of "preoccupation with failure" often missed a key point.

When you heard the word "failure" you seemed to think "escaped fire." And then you went on to discuss how unfair it is that a suppression effort never fails and yet any prescribed fire escape is *always* a failure.

The word "failure" is clearly a red flag. We understand your concerns. But what you forgot is that High Reliability Organizations

are preoccupied with **small, emerging, early failures aka problems**. (In other words, "failures" in the sense of things not working out exactly as expected.)

High Reliability Organizations see those small failures as clues that the system is not as healthy as they thought it was. Those early small failures are also easier to deal with than the full-blown failures. Thus, High Reliability Organizations spend a great deal of time and effort on catching stuff while it is still small.

Examples

A. Needed: Stronger Preoccupation with Failure

Cerro Grande was not the first time there had been problems with Santa Fe dispatch. But the earlier problems persisted untreated and made it harder for the burn boss to do his job at Cerro Grande. If there had been a stronger "preoccupation with failure," people might have diagnosed and dealt with that dispatch problem earlier.

B. 'Small' Failures Can Portend Likelihood of Bigger Failures

The Cerro Grande prescribed fire crew was told “*help is on the way.*” But delays prevented this from occurring in a timely manner. A delay is a small failure. Delays are often a valuable clue that the system is not operating the way we thought it would, and therefore, we need to be even more alert for further problems.

C. Need to Make Strong Responses to Weak Signals

During the Staff Ride and workshop, we kept hearing the phrase “*that fire was a wakeup call.*” The previous Dome Wildland Fire, for example, was also described that way. If it takes something that big and that dramatic to stir you into action, then it’s not very likely that you’ll do much of anything when there is a much smaller failure—like a late arrival, a surprisingly exhausted crew, or an unanswered (dispatch) phone.

The whole point of a preoccupation with failure is that High Reliability systems make strong responses to **weak** signals. If your mindset is that you only make strong responses to strong signals, then you need to consider changing that.

D. Need to be More Preoccupied with Early Hints of the Unexpected

Here’s an example of what it sounds like when you’re NOT preoccupied with failure. During the Staff Ride, a comment was made that firefighting personnel often failed to solicit “*local knowledge*” of quirks in local weather.

In the aftermath of the Cerro Grande escape, local area residents said they knew that sudden “*wind spurts*” were common in April and May. They contended that the “*new*” federal fire people didn’t know that. And it was just such a spurt that was the severe wind event on Sunday (after the incident had been declared a Type 3 wildland fire) that pushed the fire into the canyon.

When it was suggested during the Staff Ride that burn bosses should pay more attention to local knowledge, a (federal) administrator replied, “*It wouldn’t hurt to check, and at least try non-traditional ways to look at fire.*” The sentiment that “*it wouldn’t hurt to check*” has less intensity than is necessary to be preoccupied with early hints of the unexpected. Remember that Slide Three in the handout said that what is crucial for reliability is how strongly you disvalue mis-specification, misestimation, and misunderstanding. If it’s really important to get local quirks in the weather right, it will take more than “*it wouldn’t hurt to check.*”

Cerro Grande Prescribed Fire, Board of Inquiry Final Report, Feb. 26, 2001:

“The Cerro Grande Prescribed Fire had tragic results. Employees at all levels of the National Park Service, including the management and staff at Bandelier National Monument, have expressed deep regret for the impact it had on the lives of those people in Los Alamos who experienced property loss.

We can and must gain from this experience.

We must use the lessons learned as a basis to improve and enhance the prescribed fire program throughout the country and all agencies. For, indeed, we will need to continue to employ these methods to protect life and property in the future.”

2. ‘A Reluctance to Simplify’ – You Need to Practice

In reflecting on the lessons he learned from Cerro Grande, Paul Gleason said that a big lesson was that *“we do way too much simplifying.”* His example was that people erroneously tend to lump complexity, which is a logistical problem, and risk, which is an environmental problem.

Therefore, when people lump these two problems, neither problem tends to be handled adequately.

While it is true that it is more complicated to pull those two problems apart and analyze them separately, it is also true that fire itself is complicated. And the whole point of simplification is that it takes a complicated analysis to grasp a complicated event.

Several examples came up in discussions.

Examples

A. Needed: Stronger Preoccupation with Failure

Recently, people within your organization have become more reluctant to simplify what they mean by *“contingency resources.”* *“Contingency”* used to mean that the resources were available somewhere in the area—anywhere from minutes to hours away.

Now, however, you are beginning to refine the ways you describe and request contingency resources. The category of *“on-site”* contingency resources has been added—thereby avoiding some of the old simplifications, and providing people in the field more control.

B. How to Make More Sense of a Complex Event: Prescribed Fire Escape

A different example is the fact that with your current categories, a fire is either within prescription or it has escaped. To refine that distinction, you might want to think about varieties of escape. Rather than a fire being *either* in prescription *or* escaped, maybe there are times when it is *both* within prescription and escaped, and times when it is *neither* in prescription or escaped.

Think about whether there might be times when what you are seeing might actually fit these odd descriptions. When you do that, you are practicing a reluctance to simplify. Once you begin to use a more detailed and differentiated set of categories to label your world: You may discover more options for action. You may discover a greater variety of potential clues that can tip you off that a situation is beginning to deteriorate. You could be in a better position to make sense of more complex events.



New Forest Returns

*Aspen trees
return to
Santa Fe
National
Forest
lands two
years after
the 2000
Cerro
Grande
Fire.*

Tom Iraci [July 2002] Photos USDA Forest

New Homes Rebuilt

*New homes
reappear where the
Cerro Grande Fire
burned through Los
Alamos.*



C. Beware of Mimicking Nature as a Potential ‘Blind Spot’

A different example of a potentially troublesome simplification is the idea that when planning a burn, the intent is to “*mimic nature*.” Your mindset: if nature starts more fires in spring than fall, then that’s when we should also ignite fires.

But that may be a simplification that is misleading.

Nature’s ways—as judged by fire return intervals—may be relatively insensitive to more recent changes such as: global warming, drought, different forest composition due to suppression, and landscapes interrupted by human structures.

Disclaimer: we are not trying to sound like fire ecologists. That’s your specialty, not ours. But we *are* trying to sound like people who have studied how labels and categories can produce blind spots. If you lump burn plans together and try to design all of them to “*mimic nature*,” then you may blind yourself to some differences that could give you more options—or headaches.

3. ‘A Sensitivity to Operations’—Not as Easy as It Looks

To be sensitive to operations means, in part, to put your understanding of operations into words. That was the central message of the handout’s Slide 57 entitled “*Explain Yourself*.”

- Why you think that is what we should do;
- What we should keep our eye on because if that changes it’s a whole new ballgame.

You then need to ask people:

To be sensitive to operations means to first tell people:

- What you think we face;
- What you think we should do;
- What is unclear;
- What you might have missed;
- What they think they may not be able to do.

A. Speak Up to Discover What You’re Thinking

Sensitivity to operations means partly that you make sense of puzzling situations—but you do so publicly. When you explain your understanding of what you face, that gives listeners a framework.

Equally important, you also hear yourself talk and you may discover that parts of your reasoning are shakier than you realized.

A sizeable chunk of our life is spent living by the recipe: “*How can I know what I think until I see what I say*.” People who live in the world of fire are no different. You have to speak up to discover what you’re thinking. And then be prepared to update and modify what you discover.

B. Beware of Your Relationship with Your Burn Plans

Sensitivity to operations means getting the big picture of what is going on here and now. It's important to keep this in mind because you tend to pay lots and lots of attention to your burn *plans*.

On pages 42-44 in *Managing the Unexpected*, several liabilities of planning are noted, especially the fact that plans tempt you “to search narrowly for confirmation that the plan is correct.” The problem is, you overlook signs that the plan isn't working and unexpected events are piling up.

When people are sensitive to operations that are unfolding here and now, they catch the unexpected sooner and, thus, are in a better position to deal with it.

There seemed to be sensitivity to operations during the prescribed fire up on Cerro Grande. But that same sensitivity did not seem to continue on through the system until it was too late.

C. Sensitivity to Operations Needs to Spread from Bottom Up to Top

Usually, when people hear the phrase “the big picture,” they think it refers to toplevel stuff like strategy, system, plans, policy, a macro point-of-view. The good High Reliability Organizations are teaching us that it's just as important to have the big picture at the bottom—where the situation is unfolding right here and now in all its intricacy.

NASA lost sight of the situation in the Columbia shuttle disaster when the organization paid more attention to future shuttle flights than to the puzzling debris strike on the left wing—caught on a fuzzy photograph.

Sensitivity to operations is an issue involving the frontlines in the field. But, the point of this principle is that this frontline sensitivity has to spread upward in the organization—not get stalled in a dispatch center that is insensitive to operations.

4. ‘A Commitment to Resilience’—Your AARs Might Be Promoting The Wrong Thing

It's interesting to us that when you looked for examples of a commitment to resilience, the example that you mentioned most often was the After Action Review. The AAR seems to be a program you like and a program that is working.

But, even so, we would argue that the AAR is

an example of your efforts to intensify your “*Preoccupation with Failure*,” and not so much an example of resilience.

The AAR is an example of resilience only *if* the lessons you learn from the AAR help you increase your capabilities to deal with unexpected events in the future.

Resilience is about making do with the resources you have at hand to contain and manage an unexpected event. And a commitment to resilience is about increasing

the capabilities of those resources that you have at hand so that they can better handle whatever is thrown at them.

A. Resilience is Really Improvising to Better Deal with the Unexpected

Another word for ‘resilience’ is ‘improvisation.’ You do improvisation all the time. And you’re good at it. You have to be. As one person put it during the workshop: *“On every fire we do have an idea what will happen, but what actually occurs is always a surprise.”*

Paul Gleason didn’t plan to be a temporary burn boss, he actually had tickets to fly back out of Albuquerque that day. Mike Powell didn’t anticipate that he would have to send a newly arrived crew back down the hill for rest. No one expected that a much-needed helicopter would arrive with no bucket.

Despite these setbacks and unanticipated events, people had to keep going. And that’s where a commitment to resilience comes in. The broader and deeper the capabilities in the group, the better your chances that they can re-plan and improvise a new system and a new response that can deal with the unexpected.

B. ‘Before Action Reviews’ and ‘During Action Reviews’

In many ways, commitment to resilience takes the form of what might be called:

- A **Before** Action Review (*Do we have lots of capability and do we have confidence in our ability to recombine some of those capabilities in novel ways?*);
- And a **During** Action Review (*I didn’t expect this, but if we redeploy our people we can handle it*).

C. Our Investments in Our Burn Plans Can be Hazardous

An interesting tension in many of your discussions revolved around the fact that people develop a big investment in the burn plan. This makes it harder for them to see the necessity for improvisation when the unexpected occurs.

Furthermore, a big investment in a plan makes it even harder for a planner to accept that having a capability for improvisation is a significant basis on which to select the people who will manage the incident.

5. 'A Deference to Expertise'--'Expertise' Doesn't Equate to Experience

Several interesting themes surfaced in your discussions of expertise. One of Wednesday's facilitated discussion groups said it was important to "*Defer to experience.*" That's not quite the same thing as "*Defer to Expertise.*"

A person could have lots of experience with fire, but not much expertise. This person could keep showing up at fires, but never reflect, seek feedback, experiment, learn, or try to improve.

A. Experts Can Overestimate How Much They Know

Expertise itself can be something of a trap as in the fallacy of centrality notion (Slide 53 in the handout). Experts sometimes overestimate how much in-the-know they are. These people can erroneously assume that if something threatening or unexpected or potentially dangerous were occurring, they would know about it. Thus, if they don't know about it—then it isn't occurring.

When experts think this way, the people who work with them are ill-prepared to deal with growing problems until it is too late. As Kathie Sutcliffe has found in her research in medical settings, the fallacy of centrality discourages curiosity.

B. It is Everyone's Responsibility to Communicate Warning Signals

But expertise can be something of a trap for the consumer of expertise as well as the expert. We saw a good example of this in the Tenerife air disaster (studied on Monday). The KLM pilot was head of training at KLM and his co-pilot had been trained by this pilot. When the co-pilot sensed that the premature takeoff of the KLM plane might be in error, he did not speak up to the pilot. Instead, he assumed that if another plane was on the runway ahead, surely a pilot of this stature would know it.

Similar dynamics may be put in play when there are big differences in expertise on fire management teams. People with lesser expertise may spot early warning signals but fail to mention them under the assumption that—if they were really significant—the expert would say something about them. But since he or she is saying nothing, there must be nothing to worry about.

In this case, no news is not good news. No news means simply: no news. And it is everyone's responsibility to communicate whatever news they do know and not to assume that it is common knowledge.

Karl Weick's Key Principles to Emphasize

1. You Don't Need More Data

Paul Gleason described your situation as one of “*limited information in a dynamic environment.*” You could also say your situation is: unpredictable, often ambiguous, and usually complex.

So?

So, because you don't face clearcut questions to which there are clearcut answers, more and more data won't help you that much.

Instead, you've got to hammer-out some sense of what seems to be happening, and then update that sense often and through discussion. That's why we kept urging that you see yourselves NOT just as decision-makers, but as “*sensemakers.*”

NASA did not do a good job of sensemaking in the Columbia disaster. Why? Because they used inappropriate models and ignored cues of trouble from both the shuttle as well as the administrative hierarchy in Houston. And because they did a poor job of prior sensemaking, when they finally got around to

making decisions (e.g. *Should we try to get external photographs of the damage?*), they made bad decisions.

But the problem wasn't with their decision-making. It was with their sensemaking. It was their tendency to look for data that confirmed their belief (and hope) that things were okay on the shuttle—their tendency to see this as an “in-family” event that they already knew about.

Both of these tendencies set the stage for the wrong decision. The remedy lies in:

- Candor;
- Trustworthy reporting;
- Listening;
- Actively seeking viewpoints;
- A willingness to negotiate a workable understanding of what might occur;
- And how to deal with the inevitable gaps that will show up inside that understanding.

2. Small Stuff Makes All the Difference

At Edward Hiatt's Staff Ride stand, he was still amazed that a one-inch wide finger of fire crawled across the black, ignited a stand of one-foot tall bunch grass that would relight every time he thought he had it extinguished. Thus, this slop-over became harder and harder to catch.

Cerro Grande is a story of other small stuff like a depleted Black Mesa crew, a prescribed burn not entered in the dispatch log, a temporary dispatcher on duty at night, a new FMO in the adjacent Santa Fe National Forest, water drops from a small bucket at 10,000 feet, a Haines Index of 6.

These are small events with large consequences. High Reliability Organizations have learned the significance of the small stuff. Mindfulness incorporates a deep respect for the small stuff and what it can become.

High Reliability Organizations try to tilt the playing field of risk to better enable the ability to spot events that are hard to diagnose—but easy to cure. They do so because they know full well that by the time those events become easy to diagnose, they are much, much harder to cure.

3. Reliability is Not Bankable

If there is one flaw with the phrase “High Reliability Organization,” it is that these three words are too static.

We’d all be better off if we kept referring to High Reliability Organizing.

Systems, teams, groups, and the best laid plans all unravel. You have to keep redoing them. Al King and Mike Powell were continually reorganizing the burn crew.

While it is true that you may want to develop mindfulness as a standard operating procedure, this doesn’t mean you run through the routine mindlessly. It means that you audit your group often to see where your strengths and weaknesses are. (See Chapter 4 in *Managing the Unexpected*.)

While you may not realize it, you’re probably already doing something about all five of these High Reliability Organizing properties. Yet, until you actually do realize this, you can’t improve and strengthen *how* you’re doing it.

This means you use the five High Reliability Organizing properties as a checklist, as a briefing format, as a set of “watch outs” for reliable team functioning.

Organizing for High Reliability means fitting the High Reliability principles with guidelines that you know well and value. For example, think about the fit between LCES and the five High Reliability Organizing characteristics:

Lookouts are people whose role is to be sensitive to operations and to be preoccupied with expectations for fire behavior that fail. **C**ommunication covers all five High Reliability Organizing characteristics, but is geared to be sure that sensemaking and decision-making flow toward expertise, and that people are not oversimplifying but rather are attentive to fine-grained details that signal changing conditions. **E**scape routes and **S**afety zones are the epitome of both resilience and a preoccupation with failure. Escape routes and safety zones also represent capabilities that allow crews to bounce back.

Karl Weick

VIII Day Four: Immunities to Change

A Facilitated “How-To” Commitment Exercise

Presented By Robert Kegan and Lisa Lahey

“Robert Kegan and Lisa Lahey’s research tells us that change doesn’t come naturally. In planning this workshop, we realized that most of the commitments we would make during our week in Santa Fe would probably disappear and not be acted on. That’s why we decided to conclude the workshop with these two nationally recognized organizational psychologists. Their facilitated exercise will help us understand why there’s a natural immunity to change in all of us. They’ll give us hands-on methods for overcoming this resistance. And they’ll be following up with participants to see if we make any progress.”

**Dave Thomas, Chair
Managing the Unexpected Workshop**

We all know the scenario.

You go to a stimulating conference or workshop. You become motivated and inspired. You can’t wait to get home and apply your new insights, your new enthusiasm.

But once you’re back in your regular home office routine, your newly acquired motivation, inspiration, and good intentions unintentionally get relegated to some distant mental back burner. Like the best of our New Years resolutions, no change ever really occurs.

“It seems that at even the best of conferences, people get very pumped up. But they don’t have that same energy level when they return home,” organizational psychologist Lisa Lahey tells the Managing the Unexpected Workshop audience—mostly prescribed fire people primed with three full days of Managing the Unexpected ideas and stimuli. “We want to show you how you can increase the likelihood that you can find a way to take this energy back with you.”

“We want to provide you a seamless transition on what you’ve been doing this week to when you return home,” confirms fellow organizational psychologist Robert Kegan.

“The wildland firefighting community lives a repeating story. Sooner or later, disaster strikes and firefighters lose their lives in the line of duty. An investigation follows; causes are determined and remedies suggested. For a time, there is increasing vigilance for safe operations, but the vigilance declines over time. At some point, disaster strikes again and firefighters lose their lives. The question arises, does anything ever really change? Do we ever really learn anything?”

... Rather than aiming for the immediate relief of symptoms or for behavioral strategies to bring about short-term solutions, the authors [Kegan and Lahey] focus on the deeper, underlying changes in the way individuals and groups make meaning. The book is for people interested in the possibility of their own transformational learning, as well as for people interested in supporting the transformational learning of others—an increasingly necessary feature of effective leadership.”

Jim Saveland, Workshop Co-Chair

Assistant Director for Research, Rocky Mountain Research Station

From his review of Kegan and Lahey’s book How the Way We Talk Can Change the Way We Work that appeared in the Fall 2002 Fire Management Today Vol. 62, No. 4

Self-Reflection Proposed to Workshop Participants

- What’s your biggest contribution to becoming a High Reliability Organization?
- If the people closest to you at your home unit could tell you the four things you need to focus and improve on, what would they be?
- What’s the highest priority change you’d like to see occur when you get home?
- Take a fearless inventory of all the things you do or fail to do that work against your High Reliability Organization commitment.



Tom Iraci Photo USDA Forest Service

Robert Kegan (and Lisa Lahey behind him on right in blue) help the workshop participants explore and negotiate their sometimes challenging Immunities to Change exercise—which includes responding to the four self-reflective bulleted items above.

How To: Uncover Your Inexplicable Resistance to Change and Your Subconscious Goals



Lisa Lahey, who observed the previous day's facilitated workshop conclusion, said she was "impressed and moved by the energy and enthusiasm" she witnessed.

Robert Kegan is the William and Miriam Meehan Professor of Adult Learning and Professional Development and Lisa Lahey is the Research Director of the Change Leadership Group at the Harvard University Graduate School.

Co-authors of *How the Way We Talk Can Change the Way We Work*, they are also the founding principals of *Minds at Work* (www.mindsatwork.com), a Massachusetts-based consulting firm.

They not only provided the Managing the Unexpected Workshop participants their hands-on "Immunities to Change" facilitated exercise, they also provided an ongoing follow-up effort.

Twenty workshop attendees participated in this three-month follow-up "coaching process."

From Kegan and Lahey's *The Real Reason People Won't Change* Harvard Business Review article:

Although competing commitments and big assumptions tend to be deeply personal, groups are just as susceptible as individuals to the dynamics of immunity to change.

Face-to-face teams, departments, and even companies as a whole can fall prey to inner contradictions that 'protect' them from significant changes they may genuinely strive for . . .

Overcoming immunity to change starts with uncovering competing commitments. In our work, we've found that even though people keep their competing commitments well hidden, you can draw them out by asking a series of questions—as long as employees believe that personal and potentially embarrassing disclosures won't be used inappropriately.

It can be very powerful to guide people through this diagnostic exercise in a group . . .

If there are 7 frogs on a log and 5 decide to jump off into the water, how many frogs are left on the log?

If you answered 2, Robert Kegan will tell you—just as he informed the Managing the Unexpected Workshop participants—you are wrong.

If there are 7 frogs on a log and 5 decide to jump off into the water, there are still 7 frogs left on the log.

“Simply *deciding* to do something—is *not* doing it,” Kegan enlightens.

He and Lisa Lahey’s unique Immunities to Change exercise is designed to teach people how to overcome their barriers and limitations. To go beyond simply deciding and intending to do something. To actually do it.

To change.

20 Workshop Participants Join Three-Month Follow-up Coaching Process

“The goal of this follow-up process is for each person to overturn his or her personal immunity to change in order to change behaviors and thinking patterns,” explained Lisa Lahey. “In this way, the person can maximize his or her inherent capacities and more fully realize those changes he or she is committed to toward developing High Reliability Organizing skills.”

Lahey said the basic ingredients of this follow-up process include:

- A series of structured “learning opportunities” (assignments).
- Coaching conference calls.
- Baseline performance data.
- Post-coaching data collected for each individual.
- On-going dialogue on the coaching platform.
- Aligning personal commitment and organizational objectives.

“In general,” Lahey reported eight weeks after the actual conference, “people have

clarified and tightened-up their immunity ‘maps’ so that they best capture competing commitments and are delving deeper into the ‘Big Assumptions’ that ground their immunity systems.”

She said that many participants had also aligned their personal commitments for change with HRO objectives and their own work goals and objectives. In addition, by early July, a few people had already begun their important “baseline data collection.”

Next Step Might Appear ‘Small’; But It’s Not

Lahey said the next step is becoming aware of your competing commitments by moving the “immune system” from unconscious to conscious. “We will be asking people to engage in systematic observation of their assumptions in action. While this may appear to be a small step, it’s not.”

She said this oft-times most difficult step involves observation—*not* action.

"It's not about identifying unproductive behavior . . . It's not about coaxing or cajoling or even giving poor performance reviews. It's about understanding the complexities of people's behavior, guiding them through a productive process . . . And helping them cope with the inner conflict that is preventing them from achieving their goals."

The Real Reason People Won't Change
Harvard Business Review
By Robert Kegan and Lisa Lahey

"It's a psychological dynamic called a 'competing commitment.' And until managers understand how it works and the ways to overcome it, they can't do a thing about change-resistant employees."

Harvard Business Review, November 2001

"Often, conscientious people want to move quickly from awareness into action. But for significant challenges, that's an uncharitable expectation to have of oneself," Lahey assures.

After this stage is achieved, she explains that

"people will begin to design safe and modest tests of their assumptions so that they can mindfully discover the situations in which those assumptions may be legitimate—and, just as importantly, the situations in which they are not valid."

IX Conclusion – We Have Lit a Match and Started a Fire

Our world of fire management is fraught with low probability, high consequence events. There's always a slim chance that something terrible is going to happen. And when it does, it is truly terrible.

Our job entails the use of fire to restore and maintain healthy ecosystems and to protect human communities and what they value. Managing one of the most powerful forces in nature is challenging. On occasion, disaster does strike. A major escaped fire can result in the loss of: life, valuable property, critical infrastructure (drinking water supplies, power grid), and cherished natural resources.

We ask ourselves: "Are there weak signals of impending doom? If we pay close enough attention to these signals, will we be able to make sense of the situation with enough time to take action to avert disaster?"

This workshop was about bringing the latest social science to the management community in an effort to enhance our individual and collective sensemaking ability and our ability to change things for the better. The central question we examined: What does it mean to be constantly organizing for high reliability? And—like the last question in an After Action Review—what do we need to keep doing and what things do we need to do differently in our day-to-day operations?

Jim Saveland

We Have Lit a Match and Started a Fire



By Jim Saveland
Workshop Co-Chair
Assistant Director for Research,
Rocky Mountain Research Station

When I look back at the entire Managing the Unexpected Workshop, several important topics come to mind.

First and foremost is this workshop's Staff Ride. I have been on a couple of these now. They amaze me.

As discussed in Chapter V, four courageous individuals returned to the site of the "Cerro

Grande" prescribed fire to make our Staff Ride a success.

This unique undertaking enabled us to look beyond the investigations and begin to make sense of what happened (with this prescribed fire) for ourselves.

Making sense of the situation retrospectively improves our ability to make sense of similar situations in the present moment—aka *mindfulness*.

“ . . . We must be more willing to seek peer reviews and to seek input from the outside. We must focus more on situational analysis—so we’ll have a less likely chance of being unexpected . . . ”

“We need to get all the documentation out on the Cerro Grande Staff Ride . . . ”

“We also need to be resilient. We need to lead the way. We have the background and we learned the tools this week. We need to move from decision-making to sensemaking—and, in the process, we need to be mindful . . . ”

**Dick Bahr, Workshop Co-Chair
Fire Use Specialist, Fire Program Center
National Park Service**

I am reminded of Jerry Harvey’s classic book *The Abilene Paradox and Other Meditations on Management*. The Abilene Paradox chapter explores how groups take collective actions contrary to the desires of any of their individual members.

Elsewhere in the book, Harvey makes the impassioned plea that we desperately need to develop organizational policies, procedures, and processes that facilitate forgiveness and grace:

“In fact, cautious inactivity occurs in virtually all formal organizations, because we generally have no processes, procedures, or policies for granting forgiveness. This is particularly unfortunate, since the ancillary effects of grace are risk taking, innovation, reality testing, and community building.”

With this Staff Ride we facilitated forgiveness and grace. And, because of this, we are much richer.

Harvey also writes of “The Gunsmoke Phenomenon” in which leadership stands up to angry lynch mobs. Jim Collins in his

extensively researched book *Good to Great* makes a similar point about the leadership required to transform a good company into a great one:

“Leadership is equally about creating a climate where truth is heard and the brutal facts confronted. How do you create a climate where the truth is heard?”

Collins offers four basic practices, including: “Conduct autopsies—without blame.”

We Have Searched For Someone to Blame

Whether investigating fatalities or escaped prescribed fires, we have not stood up to angry lynch mobs in the past. Rather, we have searched for someone to blame.

We can and must do better.

I am sick and tired of the phrase “*hold people accountable*” as a euphemism for finding someone to blame and inflicting punishment. We need to hold systems accountable and trust people.

“ . . . From the research community, we want to partner with you to get fire on the ground . . . We also want to continue to partner with universities.”

**Anne E. Black, Workshop Participant
Post Doctoral Research Ecologist
Aldo Leopold Wilderness Research Institute**

The only person I hold accountable is myself.
Jim Collins calls this “*Level 5 leadership*.”

“Level 5 leadership looks in the mirror, not out the window, to apportion responsibility for poor results, never blaming other people, external factors or bad luck. [It] looks out the window, not in the mirror, to apportion credit for the success of the company – to other people, external factors, and good luck.”

Valuable Feedback

Karl Weick and Kathleen Sutcliffe’s follow-up commentary (Chapter VII) is valuable feedback. This is not easy material. It will take several iterations to “get it right.” I would like to echo some of the important points they make:

- High reliability systems make strong responses to weak signals.
- Labels and categories can produce blind spots.
- The importance of improvisation.
- The need to improve sensemaking.

Meaningful Personal Development

In Robert Kegan and Lisa Lahey’s “Immunity to Change” exercise, I reflect on my “Big Assumptions.” And, when I find the courage, I test them. I am convinced that this exercise is an effective way to create meaningful change that enhances our personal development.

Importance of Sensemaking

Weick and Sutcliffe have shown the importance and central role that sensemaking plays in high-performing individuals and organizations. Our ability to make sense in the moment is “mindfulness”.

Kegan developed a theory of adult development based on how we make meaning (sense). Our sensemaking ability changes over time as we develop. Kegan and Lahey developed their Immunity to Change exercise to help us make substantive change and to navigate our personal development.

Create an Environment that Fosters Growth and Development

If we are truly interested in high performance, we need to abandon anachronistic “performance management” strategies aimed at coercing compliance.

Rather, we need to focus on creating an environment that fosters our growth and development.

With this workshop we have lit a match

and ignited a fire. Hopefully the fuel bed and environment is ripe for these ideas and practices to spread through our organizations.

After Action Reviews

At the last day's conclusion, an After Action Review of the entire workshop—involving all of the participants—was conducted by Michael DeGrosky. (DeGrosky led a similar After Action Review with his facilitators the previous day.)

On Friday morning, DeGrosky facilitated the final After Action Review with the workshop's steering committee members. Information from all of these reviews will be used to hone and enhance any future Managing the Unexpected workshops.

X Steering Committee Members

Dave Thomas, Chair

Regional Fuels Specialist, Intermountain Region, USDA Forest Service

Dick Bahr, Co-Chair

Fire Use Specialist, Fire Program Center, National Park Service

Jim Saveland, Co-Chair

Assistant Director for Research, Rocky Mountain Research Station

Paula Nasiatka

Manager, Wildland Fire Lessons Learned Center

Wayne Cook

Fire Use and Technology Transfer Specialist, Missoula Fire Sciences Laboratory

Linda Langner

Research and Development, Washington Office, USDA Forest Service
Representing National Wildfire Coordinating Group Social Science Task Group

Paula Seamon

Director of Fire Management and Training
The Nature Conservancy's Fire Initiative

Tim Sexton

Fire Use Program Manager, USDA Forest Service

Michael DeGrosky

Lead Facilitator, Chief Executive Officer of The Guidance Group

June Genf

Support Services to Workshop, Intermountain Region, USDA Forest Service

Dick Mangan

Lead Workshop Organizer, Blackbull Wildfire Services

Joette Borzik

National Fire Training and Qualifications Specialist
U.S. Fish and Wildlife Service

Paul Keller

Lead Writer-Editor

Mindfulness . . .

Paying attention—individually and organizationally—in different ways . . .

Learning how to struggle for a new alertness . . .

Our preoccupation with failure . . .

How the architecture of simplicity can get us into trouble . . .

Rather than relying on “experts,” letting decisions migrate to those
with the proper expertise to make them . . .

These are some of the concepts into which the Managing the Unexpected
Workshop participants were immersed—in a quest to integrate the High
Reliability Organizing ideas and characteristics into their future work—at
both the local and national levels in the prescribed fire and fire use arena.

*A video and DVD production highlighting the entire four-day May
2004 Managing the Unexpected Workshop is in production and
will be available through the Wildland Fire
Lessons Learned Center.*

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political benefits, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA’s TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5946 (voice or TDD). USDA is an equal opportunity provider and employer.