

Similar Known and Later Discovered Wildland Fire Human, Psychological, and Fire Weather Causal Relationships Saved Lives on Two Separate Wildfires 23 Years Apart

Fred Schoeffler

Project 10 & 18 International, Pine, AZ 85544 USA

ABSTRACT

This paper examines the parallel human factors, psychological elements, and weather conditions that influenced survival outcomes in two fatal Arizona wildfires: the June 1990 Dude Fire and June 2013 Yarnell Hill Fire. The analysis reveals how lessons learned from the earlier fire directly contributed to life-saving decisions 23 years later, challenging the notion that historical lessons go unheeded. Through examination of deep-seated systemic drivers, the paper explores how similar weather patterns, fire behavior, and human factors resulted in multiple fatalities in both incidents, while also highlighting how proper application of learned experience saved lives. The research questions whether current wildland fire management adequately promotes and ensures strict adherence to established Rules of Engagement and principles of entrapment avoidance. This analysis provides valuable insights for improving future training, site visits, and staff rides while acknowledging the impossibility of preventing all fatalities despite best practices. These findings staunchly suggest that while complete prevention of wildland fire fatalities is impossible, properly integrating human factors training with accurate and truthful practical knowledge can significantly reduce them.

Keywords: Wildland fire, Human factors, Fire weather, Fire behavior, Fire psychology, Dude fire, Yarnell Hill Fire

INTRODUCTION

This paper explores the common Dude and YH Fires human factors and psychological elements that together saved lives 23 years apart. From the perspective of a former career USFS Hot Shot Superintendent turned Wildland Fire Human Factors and Fire Weather researcher, this author's intended primary goal in this paper is to reveal the truth, absent examples, and experiences garnered over the years regarding the wildland fire human factors, psychology, and wildland fire weather causal elements of two epic fatal Arizona wildfires. The fatal Dude Fire (June 1990) and Yarnell Hill Fire (June 2013) wildland fires occurred 23 years apart and both contain numerous accurate and truthful lessons learned, even though

purposely avoided and neglected by those Serious Accident Investigation Team (SAIT) - Serious Accident Investigation Reports (SAIR) over the years. Further, for those of you engaged in wildland fire management and/or suppression assignments or even citizens aware of the YH Fire and the alleged “official” lessons learned from the acclaimed “official” YH Fire SAIT-SAIR conclusion of “*no indication of negligence, reckless actions, or violations of policy or protocol*” virtually emasculating the tried-and-true Fire Orders. Ask yourselves this question; So then, how is it possible to do everything right and yet kill 19 PFD WFs in one fell swoop? In a word, it’s impossible! Moreover, for the inquisitive readers, depending on your combined experiences and/or wildland fire knowledge, for you to then draw your own conclusions and take-aways from these two historical fatal wildfires and apply them to yourself and those you supervise and work with. This includes acknowledging, accepting, and then setting straight Harvard intellectual George Santayana’s alleged false and misplaced absolute notion that “*Those who cannot remember the past are condemned to repeat it*” (Internet Philosophy, 2025). The obvious answer rests in the context of this paper’s title alone, his bold statement being patently untrue. Because of the lessons learned pre-1990 for the USFS Prescott HS (PHS) Foreman regarding the wildland fire weather and fire behavior he had faced on a previous wildfire, he then effectively utilized that knowledge on the June 26, 1990, Dude Fire regarding the impending downdraft warning that, in fact, saved lives. And once again, years later, when the PHS Foreman shared that knowledge with other attendees at a pre-2013 Arizona Wildfire Incident Management Academy (AWIMA) briefing, a Sun City West Fire Captain who would eventually perform as a Task Force Leader (TFLD) on the June 2013 YH Fire, recalling and then instinctively acting on that lesson, clearly saving lives on the June 30, 2013, YH Fire - 23 years later. So then, it would be a permissible inference to accept that the past, considered as history, is all these things. Most tragic wildland fire history can be painful to consider at times and then there are those denying the facts and the constant human factors element. Incredibly, they deny any and all wrongdoing to defend them. “*In January 2014, [eleven] veteran firefighters from the nation’s biggest fire agencies—the vanguard of fire, as they were described to me—met in Yarnell. They hiked along the route the hotshots had likely taken from the ridge into the canyon where the 19 died seven months earlier. They arrived at a startling conclusion. “We could see ourselves making the same decision they’d made ... Before Yarnell, it was about getting better at fighting fire. ...after it’s been about getting better at accepting death ... labelled “an underground group” implying a secret society (Dickman, 2018). Unfurling the thorny fatal wildland fire history of these two wildfires, the voices of common sense must be louder than the voices of the obsessed-deceiver public servants or it will never change. And neither will the blurred and up-to-now lesson of Santayana’s supposedly valid but realistically flawed maxim.*

RULES OF ENGAGEMENT – ENTRAPMENT AVOIDANCE VALUES

It presumes that we already grasp, know-by-heart, and follow the long established tried-and-true Rules of Engagement (RoE), e.g. Ten Standard Fire Orders; and recognize, mitigate, and heed the precautionary Eighteen Watch Out Situations as guidelines that *usually* occur on every wildfire; the Common Denominators, Downhill Checklist; and the Lookouts, Communications, Escape Routes, Safety Zones (LCES) criteria outlined in the Incident Response Pocket Guide (IRPG). A perceptive former USFS Fire Director notes the value of the Fire Orders on several historical fatal wildland fires, including the June 1990 Dude Fire: *“Several factors limit our decision space and our operating space. The Ten Standard Firefighting Orders must be firm rules of engagement. ... Compromising one or more of them is a common denominator of all tragedy fires. On the Dude, South Canyon, and Thirtymile Fires, the Fire Orders were ignored, overlooked, or otherwise compromised. The Fire Orders mean little after we are in trouble. That is why we must routinely observe them and rely on them before we get into trouble. ... Entrapment avoidance must be our primary emphasis and our measure of professional operational success.”* Conditions on the fireline can rapidly change. In the pressure of the moment, it is easy for people to overlook something important. That is why we must encourage our firefighters to speak up when they notice safety being compromised. As Weick and Sutcliffe point out, *“people who refuse to speak up out of fear enact a system that knows less than it must to remain effective.”* We must promote a working environment where even our greenest firefighters feel free to speak up. We must embrace the rules of engagement as a way of doing business—as a professional standard” (Williams, 2002). This is worthy advice, however, time and determination will see if this guidance remains.

The germane paper on US Wildland Firefighter Entrapments by Page, Butler, Freeborn, and Jolly is well worth reading and discussing with FFs, WFs, and up-to-date, informed, and truth-seeking academics in order to solidify it in our minds: *“[WFs] in the US are trained to identify and monitor particular elements of the fire environment in order to assess possible dangers or potential suppression opportunities. ... developed based on the findings from investigations conducted after fatal firefighter entrapment incidents detailed analysis of the circumstances and factors that influence the likelihood of an entrapment will presumably reveal important information about the conditions under which extreme fire behaviour develops as well as insights into how firefighters can anticipate their occurrence. ... e.g. eruptive fire behavior, particularly on steep slopes and in canyons, limits the ability of firefighters to adapt or escape”* (MDPI, 2019).

Dr. Ted Putnam (Putnam, 1996), the Wildland Fire Investigator that refused to sign the fatal 1994 (CO) South Canyon, a.k.a. the Storm King Mountain Fire SAIR because *“he found it inaccurate and incomplete, ignoring too many pertinent human factors,”* confidently stated: *“Historically, wildland fire fatality investigations focus on external factors like fire behavior, fuels, weather, and equipment. Human and organizational failures are seldom discussed. When individual [FF] and support personnel*

are singled out, it's often to fix blame in the same way we blame fire behavior or fuels. This is wrong-headed and dangerous, because it ignores ... an underlying cause of firefighter deaths - the difficulty individuals have to consistently make good decisions under stress." His comments are daring and notable even though Dr. Putnam was rejected on the YH Fire.

This author worked on the Dude Fire from the initial attack to rehabilitation phases as a Field Observer and Operations Section Chief. The author's intent is somewhat complex attempting to reveal the mostly unrevealed truths, lies, and missing historical experiences gained regarding the wildland fire human factors, psychology, fire weather, and transition from benign to aggressive to extreme to explosive fire behavior causal elements of these two fatally epic Arizona wildfires. The historically epic Dude Fire - June 1990 and Yarnell Hill Fire - June 2013 wildland fires containing many accurate and truthful lessons learned, in spite of the purposely avoided and neglected by their historical SAIT-SAIR no blame, no fault conclusions. Confidently, inquisitive readers, experienced wildland fire knowledge-dependant individuals and others will draw valid lessons learned conclusions relating this historical epic knowledge to yourself and others.

The crux of the matter is to initially acknowledge, and then briefly accept in order to set straight Harvard intellectual George Santayana's false, misplaced absolute notion that *"Those who cannot remember the past are condemned to repeat it."* The answer lies in the context of this paper's title alone suggesting his bold statement is clearly untrue because of the PHS lessons learned pre-1990 regarding the wildland fire weather and fire behavior experienced on a previous wildfire when the *"smoke pooled around our waists like in a horror movie."* He then objectively applied that prior knowledge and warning on the June 26, 1990, Dude Fire for the impending downdrafts, saving lives. Years later he shared that knowledge with others at a pre-2013 wildland fire training academy, and a Sun City West FD Fire Captain later performing as a Task Force Leader (TFLD) on the June 2013 YH Fire recalled that lesson and then later acting on it, saved lives on the June 30, 2013, YH Fire 23 years later. The past, considered as history, is all these things supplying us with ideas and cautions, supporting our actions, only if we have absorbed those true lessons and given them thoughtful respect. Learning from past successes and errors will often produce a wealth of knowledge. Though tragic wildland fire history can be painful at times, its true lessons can greatly enhance the quality of our future wildland fire skills for those willing to accept the facts and the constant human factors element, the unfolding of any history. When the voices of common sense are heard louder than the voices of idealistic academics, this situation will change. Losing the ability to free ourselves of Santayana's maxim, and the flawed shared and allied belief, the lacking leadership, and linked ineptitude typifying the current national wildland fire human factors and psychology approach would nullify this author's conclusion and premise. All this presumes that you must wholly understand, know-by-heart, and utilize the tried-and-true Rules of Engagement, Ten Standard Fire Orders, Eighteen Watch Out Situations, LCES, Common Denominators, and Downhill Checklist outlined in the IRPG Risk Management Process. Based on

your individual and collective prior required training and refresher trainings and experience, your solemn supervisory task is ensuring the health, safety, and welfare of those you supervise - no matter what your supervisor is telling and/or threatening you to do! The quasi-official Watch Out No. 19 - Death From Above, begun in 1985, has been long-accepted and applied as beneficial in the wildland fire realm as a harsh yet sound reality.

“The fire environment conditions or subsequent fire behavior, particularly rate of spread, at the time of the entrapment ... only needs to be unexpected in the sense that the [FFs] involved did not anticipate or could not adapt to the observed fire behavior in enough time to reach an adequate safety zone” (Freeborn et al., 2019). That unmistakably implies many of the Fire Orders and the cautionary Watch Out Situations. The USFS policy states: *“The orders are arranged according to their importance and grouped in a logical sequence: fire behavior, fireline safety, and organizational control”* (NWCG, 2025) and this Bureau of Land Management training publication states: *“If firefighters follow the Standard Firefighting Orders and are alerted to the 18 Watch Out Situations, much of the risk of firefighting can be reduced”* (NWCG, 2020). All supervisors and/or future supervisors need to know and follow the IRPG (p. 19) “How to Properly Refuse Risk” precepts. Bear in mind that the wildland fire service requires us to *“follow orders”* unless they are illegal, immoral, unethical, or unsafe. Unfortunately, WFs and FFs must at times follow *“stupid orders”* for one Operational Period while staying within the tried-and-true WF RoEs and Entrapment Avoidance Principles safety margins to prove to your less-educated, less-experienced, less-informed supervisor(s) that their orders are, in fact, stupid, a waste of time and effort, that needs to be judiciously and safely adjusted for the benefit of all those involved in the decision making while drawing on the sage guidance to *“speak up”* endorsed by Weick and Sutcliffe (Reed, 2015) (Williams, 2002).

The Genesis of it Began on the June 26, 1990, Tonto NF Dude Fire

This is a story that needs to be told and retold and always remembered - truthfully. This story began in June 1990, when a US Forest Service (USFS) Prescott Hot Shot (PHS) Crew Foreman during the firing operation along with several other HS Crews in Walk Moore Canyon, recalled from a previous wildfire that *“the smoke was pooling around our waists like in a horror movie”* the result of impending downdrafts, that he recalled from a previous wildland fire experience; and that these ensuing dangerous downdrafts were imminent. Whether this was intuition, an (un)conscience decision, a fortuitous *“gut feeling,”* or what, he then communicated this to the PHS Crew Boss to quickly vacate the area and they did, avoiding any fatal and/or near-fatal incident(s). This life-saving experience and Lesson Learned was recounted by this prior PHS Foreman - now the AWIMA Administrator - during a pre-2013 morning briefing at the Prescott, AZ Embry-Riddle Aeronautical University (ERAU) AZ Wildfire and Incident Management Academy (AWIMA). The result of this insightful Lessons Learned would be later recalled, heeded, and applied on the June 30, 2013, Yarnell Hill (YH) Fire when a SCW Fire Captain that attended that AWIMA pre-2013 briefing,

was later serving as a Task Force Leader (TFLD) on a firing operation in the Shrine area. When he felt *'spritzes of rain on his face'* and recalled the previous AWIMA briefing discussion that downdrafts would be imminent. He ordered his Task Force to quickly pull out of the area. He was then nationally and internationally awarded for his fortuitous actions. Thus, these valuable Lessons Learned saved many FF and WF lives on both of those fatal wildfires 23 years apart. Hopefully, these worthy Lessons Learned will result in a much safer and more effective future trainings, annual refresher discussions, and pre-SWA Monsoon season briefings, especially for any non-local FFs, WFs, etc. (i.e. Watch Out No. 4 *"Unfamiliar with weather and local factors influencing fire behavior"*). In fact, during each Southwest Area (SWA) wildfire season there are always numerous wildland fire assignments of local, Regional, and Out-of-Region visiting and assigned FFs and WFs hiking each of the fire sites; some while on the Tonto NF, Payson RD for the Dude Fire site and others while traveling home from their assigned SWA wildfire assignments for a hike of the GMHS Memorial Trail (GMHS MT). A current Prescott NF employee and former PHS and Dude Fire participant has stated that permission to hike and/or visit the GMHS MT is the most requested question for those FFs and WFs passing through the Prescott Fire Center on the way back to their respective home units. Additionally, during the off-season there are always ongoing Site Visits and Staff Rides from other areas and other entities with the exception of any non-existent *"official"* ones from the annual mid-March ERAU AWIMA course schedule sessions. Certainly on the inevitable highly scrutinized Dude and Yarnell Hill Fires Site Visits and Staff Rides that follow. Check it out for yourself. In the heartland of the YH Fire, an hour away yet no YH Fire Site Visit or Staff Ride course is offered. This author alleges that with very few exceptions, the YH Fire and GMHS tragedy Lessons Learned are banned from discussion in an *"official"* capacity there. This includes the professional OMNA International LLC using these two fatality fires together in their annual USFS Round Table events as well as the AZ Department of Forestry and Fire Management (DFFM). On these *"official"* Dude Fire Staff Rides, know that certain first-hand witnesses, are allegedly highly vetted, and restricted in this author's professional opinion to ensure only politically correct and Agency-approved *"versions"* are shared. A 2024 OMNA International-sponsored Dude-Yarnell Fire Staff Rides included a former Marine OMNA Safety Officer tell this author *"We know who you are. And we have to allow you here because it's Govt. land. However, you are restricted from engaging with any of our participants."* The (NWCG, 2023) Staff Ride Guide *"Concluding Thoughts"* section is instructive: *"A constant dilemma for staff ride organizers is the use of first-hand witnesses, especially for incidents that involved injuries or fatalities. ... survivors and eyewitnesses are available for many wildland fires. [FFs] who served at South Canyon, Thirtymile, Butte, Yarnell Hill, Twisp, Thomas, Camp, or any number of other fires are still employed by a variety of wildland fire agencies. ... involved in management or investigation roles are also available for those fires. Providing personal accounts from first-hand witnesses in the delivery of a staff ride is a very effective technique. ... designed to depend primarily on first-hand presenters, it will become*

more and more difficult to conduct with each passing year as the first-hand presenters lose interest in participating in the event... one of the most powerful instruments available for the professional development of wildland fire service leaders.” The Oct. 2013 Southwestern HS Crew YH Fire Site Visit After Action Review (AAR) comment from a senior HS Supt. boldly reasoned: *“this is the final, fatal link in a long chain of bad decisions with good outcomes, we saw this coming for years.”* Several others stated they vainly attempted peer pressure. A notable comment worthy of reflection, discussion, and endorsing.

This title focus will be realized with innate evidences on both of these fatal wildfires revealing the safe outcomes of experienced FFs and WFs noticing historical impending aggressive wildland fire weather, first observed, then heeded, and then communicated to others, resulting in extreme, fatal and near-fatal fire behavior. In addition, utilizing far-reaching psychological applications questioning the ingrained ways of thinking and acting that may be at odds with the alleged insincere administrative intentions post-YH Fire and GMHS tragedy in the incredulous 2013 SAIT-SAIR no blame, no fault conclusion involving wildland fire accidents, burnovers, entrapments, injuries, fire shelter deployment, and fatalities. This author posits whether supervisors are ensuring and promoting memorization, understanding, and application of the tried-and-true Rules of Engagement (RoE), e.g. Ten Standard Fire Orders, Watch Out Situations, Common Denominators, Downhill Checklist, and (RiP) Paul Gleason’s Lookouts, Communication, Escape Routes, Safety Zones (LCES) recognition tool, a minimum safety standard for all wildland firefighting and other factions. And the established and time-tested principles of Entrapment Avoidance included in the National Wildfire Coordinating Group Incident Pocket Guide (NWCG, 2014). Many WFs have unbelievably claimed difficulty learning these 43 things yet they well made it through high school and/or college and/or as sports aficionados, knowing the hollow hundreds of team’s and player’s irrelevant statistics.

Several researchers and meteorologists have written detailed complex fire weather articles and papers on both wildfires including (1) NSF-Funded Research Sheds Light on [YH] Fire Tragedy (Pinholster, 2022), (2) The Multi-Scale Dynamics Organizing a Favorable Environment for Convective Density Currents That Redirected the [YH] Fire (MDPI, 2021), and (3) The tragic tale of another deadly AZ wildfire. The incredible story of a 1990 Arizona forest fire, the prison inmates who died fighting it, and the families who struggled for justice (The Week, 2015). A simple internet search reveals many others.

Listening to the former NPS HS Supt. Fire Mgmt. Officer and former Natl. Advanced Fire Resource Institute (NAFRI) Center Mgr. Brit Rosso’s Wildland Fire Safety Training and Refresher YH Fire - Weather Channel Video on the critical importance of healing by respectfully discussing the YH Fire tragedy will be worth viewing and listening to, and then practicing what Mr. Rosso emotionally and professionally advises (WFSTAR, 2019).

HISTORICAL WILDLAND FIRE WEATHER AS A CRITICAL FACTOR

The pivotal moment on the June 1990 Dude Fire occurred when a U.S. Forest Service Prescott Hot Shot (PHS) Crew Foreman noticed smoke “*pooling around our waists like in horror movie*” during a firing operation in Walk Moore Canyon. Being alert, thinking clearly, and acting decisively, endorsed by Fire Order No. 5, based on a previous successful wildland fire experience with similar fire weather circumstances, this urged him to speak up and act promptly, ultimately resulting in their successful rapid escape to safety thus preventing their otherwise potential injuries or deaths. The prescient PHS foreman’s notable actions would prove crucial then and again by design 23 years later.

Former Tonto NF District Ranger Robert Bates’ seminal 1962 paper titled: “A Key To Blow-up Conditions In The Southwest?” established the crucial understanding of weather patterns that contribute to extreme fire behavior in the Southwest. Both the Dude Fire and Yarnell Hill Fire exhibited this condition for several days before the fatal events occurred witnessed by this author and the “*two local residents, avid hikers who are familiar with the area*” mentioned in the SAIT-SAIR. Both fires show similar weather characteristics in the form of a classic “*inverted V*” profile indicating dry microburst conditions. Recorded Skew-T soundings from nearby weather readings and sudden downdrafts preceding/causing extreme fire behavior are documented in (Goen and Andrews, 1990) and (Kaplan et al., 2019). The Skew-T soundings offer a nearly current atmospheric snapshot up to the jet stream level. In tandem, the National Weather Service satellite water vapor imagery revealing subsidence (dry air) aloft, and blind to the naked eye (NWS, 2025). Many Incident Management Team (IMT) briefings now include these.

HUMAN FACTORS AND PSYCHOLOGICAL ELEMENTS

Human and psychological factor research psychologist Dr. Gary Klein, known for pioneering in the field of naturalistic decision making, studied FFs and WFs in their natural environments, discovered that laboratory models were unable to amply describe decision making under time pressure and uncertainty. So, he developed the Recognized Prime Decisions Making (RPDM) model for fire supervisors and the military, which eventually became commonly referred to as “*slides*” by those involved in these hazardous duty realms. The RPDM describes what people actually instinctively do when making difficult decisions. RPDM’s has many training values, to help people make decisions under stressful situations, often helping to explain the human factors behind bad decisions. “*The standard method of decision making is the rational choice model. Under this model, the decision maker generates a range of options and a set of criteria for evaluating each option, assigns weights to the criteria, rates each option, and calculates which option is best. This is a general, comprehensive, and quantitative model which can be applied reliably to many situations. Unfortunately, this model is impractical. People making decisions under time pressure, such as fire fighters, don’t have the time or information to generate options and the criteria to rate each option*”

(Klein, 2016). Also referred to as intuition or “gut feelings” and must be shared with others once manifested.

The RPDM model explains how to make good decisions under difficult conditions, like time pressure and vague goals judged normal in the wildland fire realm by studying [FFs], the RPDM demonstrates how experienced decision-makers quickly size up the situation and determine prior safe, viable course(s) of action without comparing them to other options (Connect, 2024). Furthermore, the RPDM: *“The RPD model explains how fireground commanders can make good decisions within seconds. Researchers at the time thought that effective decisions depended on generating a set of options and then comparing them on evaluation dimensions. But what if you don’t have much time, or if an uncertain situation prevents careful evaluation? The RPD model shows how experienced decision-makers can do a good job even with minimal time”* (Klein, 2016).

This author and many other experienced wildland fire participants are engaged in a dangerous, misleading belief that these wildland fires will be staffed by competent individuals. Wildland fires require them to safely function effectively. Granting influence to such alleged experts must be based on reliable certifications instead of inexperienced and/or incompetent administrators, supervisors, and managers. Trust works based on theories about who people are, instead of what they do. Unless we already know them, are working for or with them, we have a short time window to gain the required trust we need to make safe decisions, i.e., Watch Out No. 19, Death From Above. We trust because we are unable to judge everything ourselves. Our jobs have been declared *“inherently dangerous”* by the Courts and Legal Scholars.

The Fortuitous Yarnell Hill Connection

During the 2013 YH Fire, a Sun City West (SCW) Fire Captain serving as Task Force Leader (TFLD) recalled one of the more memorable pre-2013 ERAU AWIMA briefings shared by the former PHS’s Dude Fire experience. When he felt rain spritz on his face, he remembered the warning signs and ordered immediate evacuation, saving his Task Force’s lives. This application of historical knowledge demonstrates the value of shared experiences, the value of recognizing patterns, the critical role of decisiveness, and effective clear communication. This 2013 Yarnell Hill Fire weather, fire behavior, human factors, and psychological causal factors related to his lifesaving endeavor earned him a *“national honor for decision[s] during [YH] blaze”* (Grant, 2014). *“As soon as I felt that rain, that’s when I decided we needed to pull out,”*... It was a decision colleagues believe prevented further loss of [FF] lives in the blaze that claimed ... the [GMHS] in the deadliest day ... [of] firefighting since 1933.... It also earned Starr ... the Veterans of Foreign Wars’ National [FF] of the Year Award, one of the VFW’s highest honors bestowed on public safety and public service workers throughout America” (Grant, 2014).

IMPLICATIONS FOR TRAINING AND EDUCATION

A seemingly frustrating pattern of failing to remember the past and condemned to repeat it instead of truthfully learning from the past and applying it to current training attempts often fails to satisfactorily integrate

wildland fire human factors and psychological elements with wildland fire behavior knowledge. Google Earth cross-fade videos of Resource locations, fire perimeter, and fire behavior icons and images are worth viewing (WTKTT, 2013) to better realize the dynamic June 30, 2013, YH Fire and GMHS tragedy. This paper suggests several improvements, including a greater focus on wildland fire human factors and psychology, wildland fire weather and fire behavior, decision-making triggers while under pressure, recognizing and then sensibly acting on intuition, speaking up when required, RoE Applications with practical and real-world scenarios and case studies, decision-making exercises, factual and true Lessons Learned, and solid shared After-Action reviews (IRPG, 2014).

CONCLUSION

This paper, derived from specific historical real-world wildland fire human, psychological factors and fire weather research demonstrates that preventing fatalities in any work group, especially wildland fire fatalities is patently impossible. We can only significantly reduce burnovers, entrapments, fire shelter deployments, and casualties by intuitively speaking up, and applying true learned lessons based on honest investigations and reports, and heeding and applying the tried-and-true RoEs and established Entrapment Avoidance Principles. Both wildfires had incidents that saved lives decades later. Findings include recognizing critical wildland fire weather and fire behavior indicators, heeding intuition, good decision-making, clear communications, and quality training, including factual and true Lessons Learned.

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