PROMOTIONS:
The Office of Engaged Learning is pleased to announce that Dr. Eric Russell has been named as the incoming Director of Academic Service Learning. In partnership with the Volunteer & Service Learning Center, he will work closely with faculty from across campus to provide engaged learning opportunities for students and to contribute to the university’s mission to effectively serve our community. Dr. Russell is an assistant professor in the Department of Emergency Services and comes with a wealth of academic and practical experience in service learning. With expertise in the application of servant leadership models, he has been part of the Service Learning Committee and participated in the Faculty Fellow Program. In addition to receiving his college’s Faculty Excellence Award for 2011-12, he was named the university’s Community Engaged Scholar of the Year for 2013-14. Eric will officially begin on July 1st.

RETIREMENTS:
Firefighter/Paramedic Robert Lemon retired from the West Jordan Fire Department on March 9, 2014 after 14 years of service. Combined with his service to Salt Lake County, Bob had more than 39 years in the fire service.

DEATHS:
Frank A. Brown passed away at the age of 84 on May 10, 2014. He was retired Battalion Chief who proudly served the Salt Lake County Fire Department for 30 years.

Retired Castle Dale Fire Chief Richard Herring passed away after suffering from brain tumors. Prior to becoming chief, Richard had been a volunteer firefighter for many years, as well as a traveling volunteer EMT for the Emery High football team.

Vernal L. Kresser, Jr. passed away at the age of 87. He joined the Air Force after graduating from high school and served in WWII. Following his military career, Kresser worked as a firefighter for the Salt Lake City Fire Department. He is notably the first EMT for the city’s fire department. He retired as the Captain of the Salt Lake Airport Station in 1981.
FROM THE DIRECTOR

The UFRA budget requests were approved this year in the legislature. Ongoing requests included money for salaries and benefits and operational money for two new Emergency Apparatus Driver Simulators. A one-time sum was approved for a new tractor, tilt-trailer, mobile air compressor, and Emergency Apparatus Driver Simulator prop.

The Standards and Training Council met in April and discussed several issues related to UFRA. The council agreed on the following courses of action:

- Continue investment into blended learning formats that allow students to learn online and on the drill ground. The blended HM-Ops course is currently in pilot testing; the next courses to be converted into blended learning formats will be ADO-P and ADO-A.
- Change the Live Fire course to evolution-based training.
- Continue with the current delivery format using direct, supported, and direct-only models. Those courses for direct-only include Extrication, Haz Mat Tech, Live Fire, Mobile CTC, and Emergency Apparatus Driver Simulator.
- Research and implement a systematic movement program for the new Emergency Apparatus Driver Simulator props.
- The fourth FAST prop is scheduled to be delivered to UFRA in May. Having four FAST props will allow props to stay in a region for a longer period of time. FAST props allow for basic firefighter skills training; firefighter safety and survival training; and, in conjunction with a UFRA direct delivery, live fire training.

The blended HM-Ops course will soon begin the second pilot test. The first pilot was successful and the course should be ready for scheduling in late summer. The blended course significantly reduces in-class time for students while allowing for better learning.

The trailer for the first of two Emergency Driving Apparatus Simulators has arrived and fabrication work has begun at the local vendor. Work should be complete by early summer and the prop should be in service fall of this year.

Stay safe,
Hugh Connor was hired by the Orem Fire Department in 1979 where he worked for 27 years. He served as a Firefighter/Paramedic, Engineer, Lieutenant, Captain, and Battalion Chief. Hugh has worked at the Utah Fire and Rescue Academy since 2005.

A MESSAGE FROM THE EDITOR:
PASSING THE TORCH

Hugh Connor

The time has come for me to “retire” from the UFRA Straight Tip magazine so that I can spend more time with my children.

When I first took over the UFRA Straight Tip magazine, the intimidation factor, on so many levels, was intense. Over the last several years, I have learned a great deal about publishing, the fire service, and how to talk to a firefighter. The most rewarding part of my job has been meeting some truly amazing people who I greatly admire.

The UFRA Straight Tip magazine is only possible with the dedicated support of its contributors and readers — thank you for making it a success! It has been an absolute pleasure being the Managing Editor for the UFRA Straight Tip magazine.

Take Care,
Andrea

Stay safe,
Hugh Connor

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questions were passed along to the Fire Prevention Office to better enable school districts and charter schools. This came about as a result of the legislature and the governor enacting a new law (SB 58), which requires carbon monoxide (CO) detectors be installed in all schools, including charter schools. This came about as a result of the November 2013 CO incident at Montezuma Creek Elementary School. The State Fire Marshal’s office is currently working with the Utah State Office of Education to better enable school districts around the state to comply with this new law.

On the residential side of things, a family in Idaho recently died from carbon monoxide exposure. As a result, some of the local stores were inundated with requests for CO detectors. The local fire department had received some inquiries about what detectors to purchase, and it seems that these members of the public were given information relating to commercial-style CO detectors. If an incident were to occur in your area and your department began getting calls asking about CO detectors, please recommend detectors that are UL 2034 listed. The title for UL 2034 is Standard for Single and Multiple Station Carbon Monoxide Alarms.

Some fire departments are inadvertently suggesting the type of CO detectors that are designed for use in an addressable fire alarm system with a UL listing of 2075 (Standard for Gas and Vapor Detectors and Sensors) and UL 268 (Smoke Detectors for Fire Alarm Systems). However, the aforementioned detectors are a special order item. So home improvement stores were special ordering these alarms for their customers, only to discover the alarms won’t work unless connected to monitored alarm systems such as those installed in schools and buildings with fire suppression systems. Being that the recommended detectors were special orders, the stores wouldn’t allow customers to return them.

Good intentions, but with an undesired result. So please make the correct reference for CO detectors for residential use. I have visited a few of the major home improvement stores and found that they all displayed both residential grade and UL or ETL/Intertek tested instructions and/or rated detection devices. Some of them are also dual devices for smoke and CO detection.

Mounting of CO detectors should be per the manufacturer’s instructions; as some are mounted low, some are mounted on or near the ceiling, and some are simply plugged into the nearest outlet. We must always work together and keep informed in order to best protect our families and the families we serve.

Keep up the good work out there, and remember to always be safe.

Coy

Coy D. Porter retired from Provo Fire & Rescue after 30 years of service; he then worked for almost four years as the Assistant Director of Training at UFRA. Porter enjoys his association with the firefighters of Utah in his position as State Fire Marshal.
Message from Utah State Fire Chiefs Association
Embrace the Volunteer Departments

I recently had the opportunity to have dialogue with a few volunteer fire chiefs, where we discussed some of the struggles in running rural departments. These departments do not have a substantial tax base to fund even the very basic equipment to successfully perform the job. As a result, rural towns face serious challenges in putting together and overseeing an adequate fire department.

Rural departments endure flat budgets, which delay equipment purchases and create a lack of compensation for chiefs. The news that the fire chiefs’ major concerns relate to retaining volunteer firefighters humbled me. These volunteers have a passion for the job, and their pay is nothing more than the satisfaction and fulfillment derived from taking care of their town. The members of these volunteer departments also have full-time jobs and families they need to support. As volunteer firefighters, they are often and unexpectedly pulled away from their families and work responsibilities.

There are approximately 267 fire departments in the state of Utah, and of those, 228 are part-time or volunteer departments with very limited budgets. There are grants available to help some of these departments, but at times they are matching grants. The match is still too much for the department to absorb. It is important to remember that many of these volunteer departments are the first line of defense in potentially large and dangerous wildland incidents. Please embrace these organizations, especially as we surplus equipment, and support these departments in any way we can.

Gil Rodriguez has worked for Murray City Fire Department for 30 years. Rodriguez is originally from Los Angeles, California. He attended college at Southern Utah University, and upon graduation he moved back to Los Angeles, where he taught for three years. He moved to the Salt Lake area in 1981, where he taught for three years at South High School before getting hired by Murray City Fire Department in 1984.

In the January – March 2014 issue of Straight Tip, Director Hugh Connor mentioned technology innovation as an opportunity identified as part of UFRA’s SWOT analysis. Recall that an opportunity as it relates to SWOT is outside of the organization and is considered an area for potential growth. The technology innovation opportunity discussed by UFRA’s director relates to Unmanned Aircraft Systems (UAS). Since Hugh’s article was written, UAS-related activities have increased dramatically and by all accounts will continue to grow. It is estimated that the greatest initial impact of UAS, or those who will use it the most, will be within the areas of agriculture and public services. This article provides a brief overview of UAS to include driving forces and potential impact on public services.

There are several driving forces that are helping build momentum for UAS use in the United States. The Federal Aviation Administration (FAA) is one driving force and has begun to take some serious action. In February of 2012, Congress ordered the FAA to integrate UAS into the National Air Space (NAS). The FAA has finally started to take action by selecting six UAS test sites with the intent to conduct research on a variety of UAS-related challenges. These test sites were selected in December of 2013, and the first one began operations in April of this year. Another way the FAA is taking action is with the soon-to-be released regulations on small UAS. These new regulations should provide greater flexibility and freedom for UAS operations. Finally, the FAA announced in April that they will award one Center of Excellence (COE) for UAS, and the competition is expected to be significant. Universities and companies are now establishing partnerships and research aims toward securing the COE.

Another driving force is the potential economic impact of UAS. A study conducted by the Association of Unmanned Vehicle Systems International (AUVSI) reports that the expected economic impact in the US could be $84 billion during the first decade following integration. It makes sense, then, that several major companies have recently indicated their interest in UAS technology. A 60 Minutes segment aired regarding Amazon’s plan to deliver small packages via UAS (calling them drones). The segment created a lot of excitement and started widespread discussion continued on next page
about UAS use in America. FedEx has discussed the desire to use unmanned aircraft (robotic cargo plans) to deliver mail, products, and goods. The goal, in part, would be to transport more goods at lower costs. The expected positive economic impact of UAS is driving individuals and companies to experiment with UAS.

Finally, the cost of manufacturing UAS, especially small UAS, has declined significantly, so more individuals and companies have started looking seriously at what and how they can benefit from UAS. Technology advances with lighter weight instruments and more efficient and long-lasting batteries have increased the versatility and use of UAS. Advancements in autopilot software provide semi-autonomous to full-autonomous flights of UAS, allowing for greater control, accuracy of data, and safety. In short, the UAS market is ready to explode.

The aforementioned basic components of UAS can be either fixed wing or rotor. Fixed wing have a number of designs but primarily look like a regular plane with lift occurring via the wings. With rotor aircraft, lift is provided via rotors, allowing for vertical take off and landing. Small rotor UAS often have multiple rotors, with the number of rotors typically in their name: quadcopter (4 rotors), hexa-copter (6 rotors), octocopter (8 rotors), etc. The payload can consist of any number of instruments but most often include a camera, an infrared (IR) camera, atmospheric monitors, and/or communication equipment such as signal boosters or repeaters. Lastly, the ground control system provides communication to and from the aircraft to include flight operations and data transfer.

UAS can be used to reconstruct a crime scene using 3D modeling software. As Hugh indicated, the growth possibilities for UFRA and firefighting are endless. The problem is, while they are working hard, they are also hard to shut down non–FAA approved UAS operations. Okay, so why don’t we just go get one and start using it?

The College of Aviation and Public Services (CAPS) is uniquely positioned to help with UAS integration into the public services. In fact, CAPS has already started working on this important process. We are focusing on how to leverage UAS to increase safety of our emergency responders, while helping them do their job in an efficient and effective manner. A demonstration of UAS capabilities was conducted in the UVU airport hanger and included emergency service personnel, researchers for universities, and CAPS faculty and staff. Several UAS were demonstrated that included visual and IR images. In figure 1 a BYU student is flying a hexocopter. Note the smoke in the background? Figure 2 is the same location but with an IR camera. Note the lack of smoke and the victim? The College of Aviation and Public Services is working on this technology innovation opportunity.

Case in point: consider the recent Lynchburg, Virginia train derailment involving over 12 tankers carrying crude oil. Google this incident and you will find a YouTube posting of a quadcopter taking video images of the wreck. The quadcopter flew over the wreckage at low altitude and can even be seen flying through smoke or vapor. Consider what might occur if the vapor was combustible. I doubt the quadcopter is intrinsically safe. Also, imagine a large incident where multiple individuals fly their UAS; this could be a nightmare for the incident commander.

The problem is, while they are working hard, they are also hard to shut down non–FAA approved UAS operations. Okay, so why don’t we just go get one and start using it? Well, the FAA wants the NAS to be safe. They are working hard to shut down non–FAA approved UAS operations. The problem is, while they are working hard, they are also working slowly in developing regulations and guidelines that will allow greater flexibility for UAS operations. For example, the required training of a UAS pilot has not been established. Another important aspect is that we have not yet established concepts of operations for emergency services. For all practical purposes, you can’t just buy a quadcopter at a local hobby store and start flying it around to take pictures. Well actually you can, but you shouldn’t.

Figure 3 – Lockheed Martin’s Ground Control Station for their Indio Hexacopter.

Figure 2 - IR camera penetrating smoke to see heat signature of victim.

With over 30 years of experience, Dr. Thomas Sturtevant has a unique blend of emergency response and educational experience with responsibilities and accomplishments in program assessment, management of accreditation and certification programs, and degree program development and administration. Dr. Sturtevant is a published author and has assessed several foreign emergency response training and certification programs.
Gravity is unbiased, unyielding, and unforgiving. Because untrained or unprepared and draw him or her downward.ing object to terminal velocity, and waiting to snatch the Rescue Package toward the ground, accelerating a fall constantly tugging on the rope—rescue technician, pulling. The rope rescue environment is extremely diverse, potentially unforgiving, and inherently dangerous. Gravity is continually attentive, and exercise total control 100% of the time while operating in the rope rescue environment. Rope-based rescue techniques and the principles that drive them can be applied to almost any environment. In many ways, the environment dictates the rescue situation and patient circumstances. Those two factors in turn lead to the selection and application of the specific technique. While continually attentive, and exercise total control 100% of the time while operating in the rope rescue environment. The primary objective of any technical rescue team is to locate, access, treat, and extricate the patient from the situation as efficiently as possible while minimizing the risk to the patient and the team members. To accomplish this objective, rescuers and teams must know and apply the following four general concepts (aka: “The Four ‘S’s”):

- Safety. Without a doubt, personal and team safety is the first and most important concept in all technical rescue disciplines. Rope-based rescue is no exception. Safety involves a realistic respect for the team’s operating environment and a commitment to maintain the rescuer’s overall health and wellbeing while working in such an environment. Safety is not only a technical skill; it is an attitude and a mindset. Remember, rescue is a team effort. Safety is everyone’s concern.

- Security. Rescuers working at heights are continuously exposed to the forces of gravity. Consequently, they must ensure constant security for themselves and their patients. This involves a deep understanding of specialized equipment and techniques as well as the solid application of sound rigging principles. Any unanticipated movement in a rope rescue system is inappropriate. Ensure the security of all persons working at heights.

- Skill. The rope rescue environment is not the place to be unsure or unclear on a technique. Rescuers must be totally honest with themselves about their personal level of knowledge and their ability to apply that knowledge in a practical way. There can be no second guessing, no bluffing, and no deception. Skill equals competency and comes not only from knowledge of the actual techniques of rope-based rescue but, more importantly, comes from the sound understanding and application of the principles that drive the rescue techniques. This only comes through proper training, a lot of practice, and real-world operational experience.

- Speed. Rescue teams may be safe, secure, and skilled, but if they cannot accomplish the rescue before the patient dies, frankly, they are of little use. Speed during a rescue is not just moving quickly. Speed is moving purposely and efficiently, and is directly related to simplicity, effectiveness, and skill. Rescuers must fill their own rescue toolbox. But this alone is not enough. They must also have the ability to quickly size-up the situation, select the appropriate tool for the circumstances, and then apply that tool in a fast, efficient, and effective manner. While certain skills may seem very complex and difficult to some, to others, the same skill is simple and fast to perform. It is not a matter of team makeup or personality; it is a matter of quality training, skill level, and performance. In short, rescuers must first be safe, secure, and skilled to be efficient and fast.

Principle-based decision-making allows the team to choose the proper techniques and affect the rescue in the most efficient manner. The application of the principles outlined within “The Four ‘S’s” at the scene of a rope-based rescue may not necessarily guarantee success, but their proper implementation will certainly increase the odds of having a positive outcome.
While recruitment and retention remain an ongoing challenge in volunteer fire and EMS, there are efforts underway at the federal level to ease some of these burdens.

There are two pieces of legislation currently pending that would impact volunteer first responders, says Dave Finger, director of Government Relations for the National Volunteer Fire Council (NVFC). The NVFC represents the nation’s volunteer fire, rescue, and EMS personnel.

Those bills are:

Volunteer Emergency Services Recruitment and Retention Act (H.R. 1009/S. 506)

The Volunteer Emergency Services Recruitment and Retention Act, also known as VESRRA, would simplify how Length of Service Award Programs (LOSAPs) are taxed. LOSAPs are retirement accounts for volunteer responders and are among the most popular financial incentives, according to the NVFC.

“Simply put, VESRRA eliminates burdensome and confusing IRS requirements that make it unnecessarily difficult for departments to administer plans and for volunteer emergency personnel to receive benefits,” the agency’s handout explains.

Volunteer Responder Incentive Protection Re-authorization Act (H.R. 3747/S. 501)

The Volunteer Responder Incentive Protection Re-authorization Act, known as VRIPRA, would allow communities to provide volunteer firefighters and EMS personnel with property tax reductions and/or up to $600 per year of recruitment and retention incentives without those benefits being subject to federal income tax and withholding. According to NVFC, the original VRIPRA was enacted in 2007 but expired at the end of 2010.

Both bills have been introduced, and advocates hope to get them attached to a larger tax bill in order to get these bills passed.

“Those are the two main recruitment and retention bills the NVFC is pursuing at the moment,” Finger says. “They just get the federal government out of the way of these small communities.”

Volunteer Fire Service Facts

Of the approximately 6,700 firefighters in Utah, about 75% are volunteers. These volunteers find themselves limited by a number of factors:

1. Increased time demands due to increased training requirements, increasing call volumes, and a wider variety of services expected of fire departments.
2. Less time available for individuals to volunteer due to factors such as the proliferation of two-income families and longer commuting distances to work.
3. Change in attitudes among the public such as less focus on volunteering, loss of community pride or feeling that one should give back, employers less willing to let employees off to run calls, etc. (NVFC, Recruitment & Retention in the Volunteer Emergency Services: Challenges and Solutions).
4. Fire department call volume nearly tripling in the last 25 years, mainly due to a sharp increase in the number of wildland fire and EMS calls and false alarms (NFPA, Fire Loss in the United States 2012).

Years ago, when I took the battalion chief promotional exam, one of the questions asked, what would change for me should I be promoted? I answered that my perspective would need to change and that they (the administration) would own me. I went on to explain that perspective changes because as chief officers we move from mid-level management to upper management, and a battalion chief’s job is to support the chief and department in organizational direction represented by strategic values, vision, and mission statement. While the department wouldn’t literally own me, chief officers must be available 24/7 according to organizational needs, whether paid or not (non-exempt or exempt), for the additional effort and time beyond a traditional work schedule.

Perspective: Upper management must have an organizational view. We all have our own self-interest and agendas; that’s natural. As members rise through the ranks, they must temper what they or a subordinate may want with what is in the best interest of the organization. This perspective shift will mean that some will look at you differently. Regardless, the quicker new battalion chiefs recognize the need to shift their perspective, the easier their transition into the chief ranks will be.

To clarify this necessary perspective change, consider this: In the absence of a higher-ranking chief officer, as a battalion chief, you are THE chief. Of course your organizational policies dictate how far that authority goes, but you get the drift. One expectation all chiefs have is that chief officers will represent the chief’s office in the chief’s absence. Former Phoenix Fire Chief Alan Brunacini knew his officers would be required to act when he wasn’t there, so he worked to put them at ease by instructing them to ask a few simple questions when making decisions: Is it the right thing for the customer and the organization, and is it legal, ethical, and nice? Combine this solid advice with knowledge of your chief’s expectations, and your job as a battalion chief becomes much less complicated.

As chief officers, we support the same mission that our line firefighters work at every day. Our roles and responsibilities revolve around supporting that work.

24/7: Is there a better job than captain in the fire service? Engineers may argue the point, but captains indeed have a good work/life balance. Any veteran battalion chief will tell you that the work/life balance changes after being promoted to battalion chief. This change may become uncomfortable for some as the months and years pass. Sometimes the battalion chief will be so wrapped up in his or her ambition that this shift may be imperceptible to him or her personally but family and friends will certainly notice the change. Being available to your organization 24/7 is imperative when entering the chief’s ranks. If this doesn’t appeal to you, save you and your organization the grief and don’t apply.

As chief officers, we support the same mission that our line firefighters work at every day. Our roles and responsibilities revolve around supporting that work. The best way to demonstrate that support as a battalion chief is to keep your organization’s best interest in mind—24/7.

Paul Hewitt began his career as an Orem City reserve firefighter in 1987. After 20 years with the Salt Lake City Fire Department, he served as a Fire Chief in Arizona before his 2011 appointment to Fire Chief of the Park City Fire District.

Battalion Chief: What Changes?
Here we will explore fire ground tactical considerations and operations for various fire scenarios; I would like to first begin our journey by looking at overall strategy of an incident.

Before any decisions can be made with regards to tactics and tasks to be employed, one must first determine the correct strategy and clearly communicate the strategy to all personnel on the fire ground. This was illustrated early in my career. I took a college fire science class in Arizona from Chief Cliff Jones of the Tempe Fire Department. The course was called “Tactics and Strategy.” Chief Jones made it very clear to students that “first comes the strategy then comes the tactics.”

The aforementioned advice became apparent when I found myself as a young captain operating as an initial incident commander on a working structure fire. Before I could decide where I wanted the first attack line placed, what ventilation was needed, and if I would commit resources to search, I first had to decide what my overall strategy would be. Would I commit my crews to an interior fire attack and operate in an offensive strategy? Or, would I keep my personnel out of the structure (out of the collapse zone) and be in a defensive strategy?

At the Utah Fire & Rescue Academy’s Command Training Center we teach that there are only two strategies: offensive or defensive; however, the following terms are also heard often: transitional or marginal. I would agree that these are tactical operations being used in one of those two strategies (typically offensive). If I direct my engine crew to knock down a large body of fire from the outside of a blown-out front living room window to make the interior more tenable with the intent of committing them to interior operations (marginal), we are utilizing an offensive strategy, and if I commit my crews to an interior search and rescue operation with the thought of obtaining an “all clear” before tactically withdrawing (transitional), we would again be using an offensive strategy.

One way of viewing these two strategies is by relating them to the risk management profile:

- **Offensive:** We will risk our lives (within a structured plan) to save a savable life
- **Defensive:** We will not risk our lives at all for lives or property that is lost

“Bad decisions made at the strategic level are paid for by the guys and gals working at the task level.”

~ Alan Brunacini

As we lay the foundation for operations, we had better be ready to constantly evaluate our strategy in order to make the right tactical decisions and assignments.

One of my favorite Alan Brunacini quotes that has stuck with me since I heard him say it early in my career as an officer was: “Bad decisions made at the strategic level are paid for by the guys and gals working at the task level.” How true it is. As we lay the foundation for operations, we had better be ready to constantly evaluate our strategy in order to make the right tactical decisions and assignments.

“All men can see these tactics whereby I conquer, but what none can see is the strategy out of which victory is evolved” – Sun Tzu

Kevin Ward is a 37-year fire service veteran, having been the fire chief for Layton City since 2004. Prior to this appointment, Chief Ward progressed through the ranks from firefighter/paramedic to battalion chief with the Chandler Fire Department in Arizona. He holds several NWCG qualifications, such as ICT3 and Structure Protection Specialist, and is an instructor for the Utah Fire & Rescue Academy. Chief Ward has been an instructor for UFRA’s Command Training Center since its inception.

Captain Charles (Chuck) Stokes of the Weber Fire District became the first Utah “Designated Supervising Fire Officer” on May 28th. The Designated Fire Officer Program recognizes fire officers who have achieved a high level of professional development through education, training, certification, and personal development. The program is based on the IAFC Professional Development Model. Captain Stokes met and exceeded the requirements and presented a portfolio of professional development achievements as part of the designation process. Find more information on the program at http://www.uvu.edu/ufra/resource_center/fodp.html.
What went so wrong on the Yarnell Fire, where 19 elite members of the Granite Mountain Hotshot crew died? To answer this question, it is necessary to examine whether fire management and leaders were prepared to manage the severity of the fire and its environment. This sort of examination leads to learning from the fatality fire, and the severity of the fire and its environment. This sort of fire management and leaders were prepared to manage answer this question, it is necessary to examine whether it is critical to understand the severity of the fire and its environment from NFDRS. This simply did not happen. As a result, the ERC model was not successful, since it was not systematically taught, enforced, nor adapted to local conditions. This is unfortunate, given the fact of knowing that intricacies of ERC offers a precise prediction tool for fire severity.

Fire Workload
We believe that increasing fire workload can lead to compromised management, which in turn increases hazards and risks and reduces the margin for error in maintaining safety. A 1957 Forest Service Report illustrates an emphasis on management’s relationship to fatality fires, claiming that “fire fatalities are the result of a series of management misjudgments, errors,” and something they called “sins of omission that happen in a severe fire environment.” Therefore, it is critical to understand the severity of the fire and be able to quantify fire risk in order to effectively manage the workload, reduce hazards, and increase margin for error.

“Reading” a Fire is Critical
Reading and understanding fire conditions in order to quantify hazards and develop mitigation tactics cannot be overemphasized. It is nevertheless apparent there are significant deficits in the ability to read the fire conditions and site-specific fire behavior. In the Yarnell fire, for instance, both the fire environment and the fire itself were grossly underestimated. Accurately Knowing the severity of the fire environment and intensity of the fire allows leaders to effectively match the management and fire strategies to the intensity of the fire. Once again, we saw this failure in the management of Yarnell.

Not having a system or process to methodically read the fire’s risks and hazards compromises safety, particularly when fires become larger, hotter, and more explosive due to either climate cycles of drought or global warming. The current system of fire assessment has proven grossly inadequate, however, in managing current fires, which have increased in severity, intensity, and explosiveness as the result of long-term droughts.

Knowing Thresholds
There are no set of magic thresholds that guarantee an accurate prediction of fire explosiveness, although some fire managers have tried to use temperature, relative humidity, and other environmental factors to determine when to “disengage” from an unsafe fire environment. The challenge is that fire environments vary and change continually. Firefighters will always confront parts of any given fire that are relatively safe and other portions which are dangerous, but any particular section of a fire changes continually.

Energy Release Component: A Predictive Tool
Tools to understand the fire environment and fire conditions are essential in effectively managing firefighting strategies and work load. We call the use of these tools “fire preparedness.” The best tool to accomplish this is the National Fire Danger Rating System (NFDRS). We surmise a lack of training and understanding of Energy Release Component (ERC) are to blame for the fact that fire managers and fighters do not use ERC information and pocket cards.

The ERC (G model) was developed as a basic level of standard assessment of the fire environment. In some parts of the country, this model worked effectively. National fire policy mandated, however, that each agency, region, and unit find its own best predictors for the fire environment from NFDRS. This simply did not happen. As a result, the ERC model was not successful, since it was not systematically taught, enforced, or adapted to local conditions. This is unfortunate, given the fact of knowing that intricacies of ERC offers a precise prediction tool for fire severity.

Fine Fuel Moistures and ERC Values
When fine fuel moisture values are examined in conjunction with historical ERC averages, the result is a much more precise prediction of fire severity. Fire policy mandates that fire managers compare current ERC values in a fire environment to historical averages. If a current measured ERC value is significantly higher than historical averages for that time of year, then it is extremely likely for fire conditions to be severe. The fine fuel moisture to this algorithm, and fire managers can quite accurately predict the severity of fires that are being battled on any given day.

ERC values are just one of many fire danger threshold indicators, for indicating whether a fire will act with the force of a Sunday stroll or a speeding train. The US Forest Service threshold value for extreme fire danger is the 90th percentile ERC. The first Yarnell Fire Serious Accident Investigation (SAI) did not even mention ERC in its report. The Arizona Department of OSHA Yarnell Fire Investigation Report mentioned ERC values, but did not consciously link them to an alignment of forces that signaled precisely defined dangerous and explosive fire conditions.

Thousand Hour and Live Fuel Moistures
Thousand hour fuel moisture values are a reliable threshold indicator for fire severity. When thousand hour fuel moisture values in the Southwest are 12% or lower there is high probability for a large fire occurrence. Live herbaceous and woody fuel moistures are also important conditions to monitor. For example, conifer <75% live fuel moisture corresponds to potential for independent crown fire when in alignment with wind and slope. There is also a corresponding live fuel moisture value for crown fire in brush to consider.

When ERC, live fuel moisture values, and dead fuel moisture values are in alignment, and determined to be more severe than historical averages, fire managers, leaders, and firefighters can assume without doubt that the fire will be dangerous and explosive.
Reading Site-Specific Fire Forces

Conditions influencing the fire environment, especially as measured by NFDRS, are mostly unseen. Conversely, once a fire begins, the forces affecting the fire, such as fuels, slopes, shading, and aspects, are visible.

The Campbell Prediction System (CPS) offers a systematic method to read the fire, as well as language to describe alignments and thresholds that affect the fire. Firefighters using CPS to methodically assess fire alignments and thresholds can more precisely predict where changes in the fire will happen. In addition, CPS predictions provide coherent and consistent communication between firefighters, because all are using the same language to describe the fire.

CPS works by looking at alignments of slope, fuel, and preheat (aspect, shading and or solar heating). In addition to CPS assessments, wind and weather must also be assessed, given their dramatic effects on the direction and force of fire.

CPS and the Yarnell Fire

Had CPS been used during the Yarnell fire, managers and firefighters would have recognized predictive information about the fire as solar preheat increased. Fire behavior escalated dramatically on all sides of the fire as solar preheat intensified. These changes in fire behavior are clearly described by the Blue Ridge Hot Shots in their testimony during the Yarnell Fire investigations (flame lengths increasing, fire churning through retardant, winds increasing and changing directions, spot fires occurring, spot fires increasing in size and frequency, etc.).

CPS descriptions of the fire signature also offer the ability to predict fire behavior if a wind shift occurs. For example, it is common knowledge among firefighters that if the fire head is making a strong explosive run with wind and a wind shift occurs to either flank of the fire, the same intense explosive fire behavior will occur if the fuel, slope, and solar preheat conditions remain the same. This is exactly what happened during the Yarnell Fire when wind shifts occurred. A less intense flaming fire turned into a deadly head fire as the winds from the bank of thunderheads likely collapsing, creating an outflow event, and sending the fire directly toward firefighters. The unfortunate point here is that every behavior of the devastating Yarnell fire was foreseeable, had fire assessment and predictive tools been better utilized.

The Yarnell Fire: An Absence of Fire Prediction and Assessment Tools

The fire assessment tools we have described in this article, if utilized by the Yarnell fire team, would have offered opportunities to a) control a harmless fire early on, or b) maintain command and control of the fire later. There is no reasonable doubt that the initial fire could have and should have been easily extinguished. The fact that the early fire was growing significantly in size during the night offered a signature that cried out to be extinguished early on, in light of the severe fire environment.

A study of the historical severity of the fire environment for the Yarnell area during the last week of June confirms the potential for an explosive fire for which a “Short” Type II Team would be ill prepared to manage. (R-3 fire severity map) The confusion, mistakes, conflicts, and near misses that occurred when the Yarnell Fire blew up on June 30th confirm that the Short Type II Team was not using the tools necessary to maintain command, control, and safety for firefighters and the public. The peaking fire behavior and urgent need to protect the local communities simply and quickly overwhelmed the initial Type IV Team, Short Type II Team and Granite Mountain Hot Shots.

In summary, a small fire began in the Yarnell area at a time when drought had created dangerously explosive conditions in local fuel beds. The explosive nature of the fire fuels was predictable, given standard fire predictive tools (ERC, thousand hour fuel moistures, etc.). Overnight the small fire morphed into an aggressive fast-running inferno as the typical forces we’ve described (solar preheat, fuels, topography, wind) aligned. The aforementioned transformation, too, was predictable, had fire assessment tools like CPS been utilized. In fact, the testimony of the Blue Ridge Hotshots indicated that their assessments of the fire had kept them and others they notified safe. Finally, the devastating shift in fire direction, which eventually caught and overwhelmed the Granite Mountain Hot Shots, was also predicted. Chuck Maxwell, who led the Southwest Fire Behavior Predictive Center, had sent warnings of a bank of thunderheads likely collapsing, creating an outflow event, and sending the fire directly toward firefighters. The unfortunate point here is that every behavior of the devastating Yarnell fire was foreseeable, had fire assessment and predictive tools been better utilized.

In Closing

We want to acknowledge once again the tremendous work and high level of professionalism of many fire managers, leaders, and firefighters. Many fire teams have successfully managed for fire safety in extreme fire environments. Our team will continue to question why effective fire management cannot be assumed in all geographic areas, and in all fire environments. We believe systematic training, the consistent use of effective fire assessment tools, and the demand for a culture of professional learning from fire events are essential to improve safety. The probability of safety in stressful changing fire conditions depends upon an accurate assessment of fire hazards and risks.

In addition, we recognize the importance of matching appropriate strategies and tactics to fire severity, as well as matching fire management teams to the fire workload. We therefore place great emphasis on transitioning fire teams effectively to meet an escalating fire, for maintaining command and control of the fire. In short, management of the fire must match the severity of the fire to ensure safety. An effective well-trained fire team, equipped with appropriate fire assessment tools, is capable of managing fire risks and hazards and safeguarding firefighter and community safety.

In Part III, our fire team will examine training models that equip fire teams to manage fire hazards and risks with measurable proficiency.

Editors Note: This article has been greatly condensed for publication. Please visit http://www.uvu.edu/ufra/docs/yarnell_fire.pdf for this article in its entirety as well as part one.

The authors of this article are a group of five wildfire experts from different geographic parts of the west: Doug Campbell, author of CPS and retired fire manager, USFS, R-5; Will Spyrison, InciNotes Cofounder, division chief, USFS R-5; Jerry Chonka, retired fire manager, USFS, R-2 & 3; Paul Orozco, retired fire manager, USFS, R-2 & 3; and a preferred to be anonymous retired fire manager, USFS, R-3 (reviewed fatality site). Each have a unique wildfire specialty and combined boast 200 years of combined fire experience. Ruth Harrison was the editor for this article.

CAMPUS FIRE MARSHAL MEETING

by Mark Burton, Deputy State Fire Marshal

The Spring Seminar of The Campus Fire Marshals Association was held at UFRA on May 7th, 8th, and 9th. This group is comprised of Special Deputies that assist The Office of the State Fire Marshal at their various job sites. In attendance were representatives from colleges and universities, school district personnel, state buildings, corrections, as well as health and human services personnel. The topics of discussion ranged from fire detection and suppression systems, kitchen hood cleaning and fire safety, and installation of carbon monoxide systems.
The Duchesne Fire Department (DFD) is located on the western edge of the Uintah Basin in northeastern Utah. It was established in 1927 to serve Duchesne City and a designated geographical area of Duchesne County. The department is comprised of 21 volunteer members.

1 - Fire Chief
1 - Assistant Chief
1 - Assistant Chief (Battalion)
1 - Administrative Captain
3 - Captains
14 - Firefighters

Nineteen of the twenty-one members are certified at the Utah State Firefighter II level, and approximately fifty percent of the department personnel are Wildland Fire certified.

DFD provides Structural Fire suppression, Wildland, Hazardous Material Response, Vehicle Extrication, Rescue, Fire Safety, and assistance to EMS in their approximately 900-square-mile response area. In addition, the department offers mutual aid to the neighboring fire departments of Roosevelt, Myton, Altamont, Tabiona, and Fruitland.

Our department is equipped with a 1994 Spartan 1500 gpm Pumper, a 1986 Pierce Arrow 1500 gpm Pumper, a Freight Liner 3000 gallon Tender, an F-550 Brush Truck, an F-350 Rescue/Extrication Truck, and a county-owned 2005 Dodge 3500 that is used to pull either a Hazmat Operations or Hazmat Technician cargo trailer.

Over the past eighteen months, Duchesne Fire has significantly changed in order to serve a larger response area. The Uintah Basin, known for its rich oil deposits, has been listed as one of the fastest-growing areas in both residential and industrial development. With residential housing increasing and hundreds of oil wells being added each year, the fire department is working and training continuously to meet these growing demands of residential responses and oil well location/equipment-related fires and emergencies.

Part of DFD’s response area includes thirty-six miles of State Road 191 South through Indian Canyon to the Carbon County line. SR191 is a winding two-lane mountain road that, in addition to normal traffic, paves the way for over two hundred and forty daily trips of semi-trucks hauling crude oil to the rail yards in Price. Duchesne Fire is experiencing higher levels of response for extrication and hazmat incidents due to an increase of traffic within designated response areas.

DFD is community-oriented by delivering fire safety presentations to grades K-12, scout groups, and various community functions. Duchesne holds a fire safety week in conjunction with the Duchesne County Fair each August. It provides the community with an opportunity to visit the fire station, see our apparatus, meet firefighters, experience the State Fire Marshal’s “Life Safety Trailer,” and get a photo with “Sparky” the fire dog.

The department has a strong working relationship with the Duchesne City mayor, the Duchesne City Council, and the “Green Team” and assists on projects that enhance quality of life for those who live in or visit the area.

DFD is currently working with the Duchesne County Commissioners and Newfield Exploration Company on construction of a five-acre training facility that will include a complete simulated oil producing location with propane burn capabilities.

Members of the Duchesne Fire Department take pride in offering excellent customer service, response time, training standards, and community involvement.
FIREHOUSE BULLYING: HOW TO RECOGNIZE TROUBLE

We must create a culture where bullying is not tolerated.

No one would ever confuse a professional football locker room with a firehouse. However, last fall’s widely publicized episode involving allegations of bullying in the Miami Dolphins locker room left me concerned because there are similarities between the two. Undoubtedly, there is a strong sense of camaraderie in a locker room, just as there should be in a firehouse. And, this camaraderie may lead to some of the unfortunate attitudes and values that were reported to have existed in Miami. A firehouse is not like other work environments. It’s not your typical office or factory or retail space. It is in the firehouse that we build confidence in the people we work since with our life may depend upon them. But, it is easy to imagine how the firehouse culture can lead to inappropriate behavior.

PATTERN OF BEHAVIOR

We all recognize the concept of bullying, but our understanding varies from person to person and from one type of workplace to another. According to the Workplace Bullying Institute, bullying includes verbal abuse, offensive conduct and/or behaviors that are threatening, humiliating or intimidating. It isn’t a single action, but a pattern of persistent, aggressive and unreasonable behavior that occurs over time.

Other organizations have similar definitions. These definitions sound reasonable, but they are difficult to apply. Actions that might seem harsh in an office may be appropriate in the firehouse. Likewise, actions that may be reasonable in one department might be unacceptable in another.

Legally, neither the courts nor the legislature have adopted a single clear definition for the term. There is no law prohibiting bullying. Some states, such as Washington, have anti-bullying programs, but they don’t include any statutory enforcement. According to Society for Human Resource Management, at least 25 states have considered bills in the past decade that would make bullying illegal and provide remedies for those who are victims. None has been enacted yet.

The Healthy Workplace Campaign has produced the “Healthy Workplace Bill,” a model law for states to consider. It defines an “abusive work environment,” holds employers accountable for workplace bullying and provides remedies for those who have been bullied.

Those who support workplace-bullying bills argue that without laws, employers will condone bullying and not make a significant effort to address it. Opponents argue that the law will lead to frivolous lawsuits. If juries are given the power to pass judgment on claims of bullying, that could lead to very inconsistent verdicts based on how they view the accused “bully.”

Courts generally have been unwilling to intervene in bullying cases unless they involve a discrimination claim or some other type of wrongful conduct, such as a claim of “intentional infliction of emotional distress.” But, in those cases the plaintiff must prove that the defendant acted intentionally or recklessly, showing extreme and outrageous conduct that caused emotional distress.

What should you do if you believe you are being bullied? First, recognize that you are being bullied and that you are not the problem. Next, keep a record of bullying incidents and any related documents. Make sure you understand your department’s personnel policies and know what remedies might be available. Find someone you can talk to, either in your chain of command or someone else you can trust. If internal processes aren’t working, talk to a lawyer.

How should the fire service address bullying? Departments need to recognize the potential presence of bullying and address it. It is especially important that the fire service do this itself, so that it isn’t done by courts or administrative bodies that don’t understand the firehouse culture. We must set our own standards and create a culture where bullying is not tolerated.

Establish a policy that reflects your department’s culture. Definitions of inappropriate activity must be made as clear and precise as possible, including specific examples of inappropriate behavior. This may be the most challenging part because of the difficulty in separating those who have legitimate complaints from those who are unhappy, but aren’t really being bullied. Make sure the policy is understood and enforced throughout the organization. Everyone must understand that this kind of behavior won’t be tolerated.

Provide an appropriate way to respond to complaints of bullying, first through informal channels and then more formal actions. This should include some form of counseling for the person who is being complained about. Then, be prepared to act on the results of any investigation into bullying-type of behavior.

There is momentum to change the ways the legal system treats workplace bullying. The fire service should get ahead of it by making sure our own house is in order. We must avoid the kind of high-visibility incident that occurred in Miami.

For more news about fire service law, visit: http://www.firehouse.com/topics/politics-law.
Let me start with a question; If you were about to go SCUBA diving and you had a single bottle of air that would only allow you to safely dive to 75 feet and return to the surface – Would you dive to 120 feet? Of course not, so why would a responder, with a 2,216 psi bottle and a use time of approximately 22 minutes under work conditions, possibly enter a building and go 15 minutes into the structure and try to get back out with only 7 minutes of air remaining? Sadly, firefighters make that fateful decision too often. It’s called “The Point of No Return”. It’s the remaining? Sadly, firefighters make that fateful decision.

The normal oxygen concentration in breathing air is 20.9%. IFSTA states that in oxygen deficient atmospheres as high as 19%, the firefighter’s “Ability to perform strenuous work decreases. Coordination is impaired” (pg. 282). Firefighting is a strenuous business, fighting for your life is even more intense. How much good can you do when panic is your partner? When your ability to work and your coordination is diminished by lack of oxygen?

The duration of your air supply is dependent on several factors:

- Air cylinder size and your beginning pressure
- Your physical conditioning
- The task being performed
- Your level of training
- The operational environment
- Your level of stress (IFSTA, pg. 313)

The preceding list contains solutions to the problem of the point of no return. 1) Air cylinders should be maintained at their maximum pressure. 2) Your physical conditioning should be such that your anaerobic air consumption is as efficient as possible. 3) The task performed should be one you are familiar with and your physical strength should be sufficient to handle anything the call throws at you. 4) Your level of training should include air management and drills specific to the point of no return. 5) You need to be able to complete a competent hazard assessment and a risk benefit analysis based on the operational environment that is present. 6) Training should be provided that will equip you with the tools and procedures to reduce stress and conserve air should you find yourself lost or trapped such as skip-breathing and MAYDAY procedures.

Bottom line: your training needs to include point of no return air management, emergency egress procedures and practice for MAYDAY operations. If your training is lacking in these important aspects of firefighter survival, you’re asking for trouble. With this in mind, you should take away one important lesson – it happens so fast. Don’t think that you can fight your way through it – panic is a poor partner.

References:


Andy Byrnes retired after 21 years of service as a Special Operations Battalion Chief from the Orem Fire Department. He was also in Law Enforcement for 18 years and a certified Paramedic for 16 years. He is currently an Assistant Professor and the Coordinator for the RCA program at UVU. He is an experienced Emergency Services Instructor; working for local, state, and national Fire/EMS and Law Enforcement organizations. He has reviewed and contributed to several textbooks related to Hazardous Materials/WMD response and he is a frequent course reviewer and subject matter expert in the areas of Hazmat and Firefighting Leadership and Management. Byrnes is a graduate of the National Fire Academy’s Executive Fire Officer Program. He holds an Associate degree in Fire Science, a Bachelors degree in Public Emergency Services Management, and a Master’s Degree in Instructional Technology from Utah State University.

UVU Recruit Candidate Academy students learning critical SCBA survival skills.
RCA Graduation:
Christopher Mair, Nick McQueen, Shiloh Sandoval, Dylan Noble, Peyton Black, and Travis Smith.

RCA Graduation Class #68 Picture (left to right)
Shiloh Sandoval and Travis Smith earned the Physi-
awarded the Outstanding Instructor Award. Candidates
Outstanding Student Award and Firefighter Jeff Jones was
of the class. Candidate Travis Smith was awarded the
Mittelman, M.Ed., spoke to parents, friends, and family
CAPS Associate Dean, Tom Sturtevant, Ph.D., and Emer-
University Emergency Services Recruit Candidate Academy
also the class officer. Andy Byrnes, M.Ed., is the RCA
Shiloh Sandoval, and Travis Smith. Shiloh Sandoval was
awarded the
UFRA’s Assistant Director of Training and Program Man-
Hugh Connor, initiated a plan to redesign the Academy’s
evaluation program. The strategy used targets products
in the mission specific areas of curriculum, instructors,
testers/test process, and certification. To manage the
evaluation program, UFRA hired a Quality Assurance
(QA) Program Manager. The primary tasks for the
QA Program Manager was to develop an operational
manual, develop new evaluation surveys, and make use
of software that is engineered specifically to measure
and analyze what UFRA’s customers have to say. The
goal is to improve all of UFRA’s products and services
offered to firefighters of Utah.

How does “what you say” translate into measureable data
used to improve the key areas? First, a series of questions
were designed and placed on a two sided form divided into
three sections: 1 – Course Material, 2 – Instructor Informa-
tion, and 3 – Additional Comments and Recommendations.
The form used has been designed to be read by a scan-
n system, which reads both the marked bubbles and
any comments written on the form. Next, the answers are
fed through analytical software where raw data is tallied,
sorted, and stored within a database. Finally, the Quality
Assurance Office applies demographical information to the
survey and generates a report that scores each question and
comments provided.

UFRA has set a minimum threshold value of 85% for all
products. Meaning that if any key areas receive a score
of 85% or less, in any section, then a red flag appears.
UFRA’s Assistant Director of Training and Program Man-
agers are provided the compiled data and a finished quality
report, which drives change. As an example, two training
courses recently received scores significantly below the
minimum threshold. Low scores in training course mate-
rial, presentations and instructor quality quickly raised a
red flag. The reports provided to the Assistant Director led
to one of the courses being temporarily pulled off-line and
a complete curriculum re-write was ordered. In the other
instance, information provided by students indicated that
they could not hear the instructors during the Fire Behav-
ior/Flashover training presentation. From this report, one
of UFRA’s Assistant Director’s ordered that a voice micro-
phone be placed inside each SCBA face piece worn by all
lead instructors. The amplifiers were tested and positive
test results led to the purchase of two microphones, which
are now in service.

The next time you participate in any UFRA training
course, presentation, or certification test and are asked
to provide feedback, please take the time to complete
the survey. Remember, what you say makes a difference
toward the quality of what the Utah Fire and Rescue
Academy has to offer.

QUALITY ASSURANCE
YOU CAN MAKE A DIFFERENCE

It seems like anytime you purchase something, attend a training
course, or attend a presentation, you are asked to
take a survey. Why is this and does it makes a difference?
Surveys are strategically designed to gather objective
data about the product they represent. Marketing experts
listen to what you say about a business or product and this
feedback can make the difference of whether the product
or business succeeds.

What does any of this have to do with the Utah Fire and
Rescue Academy (UFRA)? In 2013, UFRA’s Director,
Hugh Connor, initiated a plan to redesign the Academy’s
evaluation program. The strategy used targets products
in the mission specific areas of curriculum, instructors,
testers/test process, and certification. To manage the
evaluation program, UFRA hired a Quality Assurance
(QA) Program Manager. The primary tasks for the
QA Program Manager was to develop an operational
manual, develop new evaluation surveys, and make use
of software that is engineered specifically to measure
and analyze what UFRA’s customers have to say. The
goal is to improve all of UFRA’s products and services
offered to firefighters of Utah.

On April 30, 2014, Class #68 of the Utah Valley Univer-
sity Emergency Services Recruit Candidate Academy
(RCA) held its graduation ceremony. During the program,
CAPS Associate Dean, Tom Sturtevant, Ph.D., and Emer-
gency Services Assistant Department Chair, Margaret
Mittelman, M.Ed., spoke to parents, friends, and family
of the class. Candidate Travis Smith was awarded the
Outstanding Student Award and Firefighter Jeff Jones was
awarded the Outstanding Instructor Award. Candidates
Shiloh Sandoval and Travis Smith earned the Physi-
cal Training Excellence award. Three candidates were
awarded the Charles J. DeJournet Recruit Excellence
Award & Instructor Recommendation: Christopher Mair,
Shiloh Sandoval, and Travis Smith. Shiloh Sandoval was
also the class officer. Andy Byrnes, M.Ed., is the RCA
Course Coordinator as well as Lead Instructor for the
semester and Firefighter Will Mackintosh was the As-
sistant Lead Instructor.

The next time you participate in any UFRA training
course, presentation, or certification test and are asked
to provide feedback, please take the time to complete
the survey. Remember, what you say makes a difference
toward the quality of what the Utah Fire and Rescue
Academy has to offer.

Dennis Goudy rejoined the Utah Fire and Rescue Academy in
March of 2013 and serves as the Quality Assurance/Risk Manage-
ment Program Manager. Prior to rejoining UFRA he served 5 years
with a disaster preparedness, training, and exercise
team based in Honolulu, HI. He began his career
in the Fire Service nearly 37 years ago. After
retiring from the active fire service, he joined the
UFRA team and assisted in the development of the
Command Training Center. He also served as an
adjunct instructor for Texas Engineering Extension
Service, as an adjunct instructor for FEMA, and as
a full-time employee for Booz Allen Hamilton.

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Air Bag Restraint

Ray Mann has been a high voltage lineman for more than twenty-five years. His work is as much about safety as firefighting is. So when he saw a YouTube video of a firefighter getting knocked out of a car by the steering wheel airbag during an accident, he thought, “I know how to stop that from happening.”

He made a prototype restraint bag out of rope and canvas in a buddy’s wrecking yard. He then began to methodically experiment with materials of different strengths until the device worked perfectly every time. The final design of the Airbag Restraint System (ARS) uses seat belt-type webbing, two layers of 1,000- and 600-denier ballistic material, an inner liner of sound-absorbing material, a Petzl locking device, and some nylon rope.

The following video http://www.mansaver.com/default.html shows a simple installation process. A responder slips an ARS over the steering wheel and pulls a tensioner, which then adjusts to the wheel size. If an airbag discharges, the ARS absorbs all of the energy, thereby preventing further injury to the driver or the responders performing medical care or extrication.

Upon termination of the incident, a responder simply loosens the tensioner and slips the ARS off. It will then be ready for the next rescue, unless the airbag did deploy; then one would need to replace the ARS, since the force that gets absorbed may have damaged the unit. The unit retails for about $700 for cars, SUVs, and pickups. It is $850 for large trucks.

Crude Oil Hazards

It’s rare for fire departments to actually conduct scientific experiments that help with response planning; but when faced with unique new challenges, Chief Paul Bedont of the Price City FD did just that. According to Chief Bedont, a huge increase of oil production in the Uinta Basin will be affecting Carbon County.

High-paraffin crude (HPC) oil is viscous or even solid at normal atmospheric temperatures. This material must be heated in order for it to be removed from the ground (hot fracking) and must also remain heated throughout loading and transportation. It is typically stored at 180°F, which keeps it in a liquid state for transportation. At 150°F, HPC will thicken to the point that it will not flow through pipelines. Bedont has done experiments where this specific type of crude is heated, and then associated flammable off-gassing is measured. He found very high levels of flammable gasses at 180°F. He also measured flammable gasses as the crude samples were cooled into solid form by water.

According to Petro Wiki, depending upon the crude’s exact makeup, the following gasses can be released: methane, ethane, propane, decane, naphtha, benzene, toluene, and others.

Plans have already been approved to begin trucking as many as seven hundred 11,000 gallon loads of HPC oil per day down US-191, through Indian Canyon, on to US-6 and eastward to a new tank farm and rail car terminal near Wellington, where there will be nine 500,000 gallon hot tanks. The route passes within 150 feet of the Price Hospital and numerous other exposures, including Wellington Fire and Police Departments.

Bedont reports that, in the possible event of a spill and/or fire, his department will need large quantities of foam and water to help suppress the aforementioned vapors, which are toxic as well as flammable. He has also concluded that typical methods used by Haz Mat Technicians, which plug a leaking non-pressure container, will be problematic due to the highly heated state of material. He is currently experimenting with rapid cooling techniques using CO2 and Nitrogen—these are non-flammable gasses that are very cold as they rapidly exit a pressurized tank through a small orifice. Continuous application of the cold gas (while using full PPE, including SCBA) slows and then stops the flow of heated crude by causing it to solidify. However, the mass of heated oil in a tank will re-melt the waxy oil, which consequently makes Bedont anticipate the need to continue cooling said oil, while a more permanent patch is applied or the crude is transferred.

Recent spills, wrecks, fires, and explosions have shown that the nature of today’s crude oil and the volume being transported via truck, rail, and pipeline is an emerging threat. With that realization, Utah fire departments need to be ready with equipment, supplies, and training to meet possible challenges.
When was the last time your department completed a thorough inspection of vehicle extrication tools and equipment? The answers received when I have asked this question ranged from “daily” to “I’m not sure.” Unfortunately, with the many demands placed on a fire department, equipment inspection, repair, and replacement is often a low priority or forgotten completely.

Most full-time departments have a scheduled time, either weekly or daily, dedicated to equipment inspection and cleaning. Though a dedicated inspection/maintenance time is set, training, meetings, or other duties are often scheduled over the inspection time. When this happens, equipment checks are either missed or completed in a shorter time frame, which does not allow for adequate maintenance checks.

Volunteer departments have a difficult time keeping up with equipment and tool inspection due to time available for the task. Many volunteer departments meet for two or three hours once or twice a month. Completing required training and addressing department business usually takes all of the allotted time that a volunteer organization has available for its normal meeting.

However, I can’t express enough the importance of a frequent quality equipment and tool inspection. The best time to discover a deficiency is during an equipment check. Finding out that a tool won’t work during an emergency incident poses life-threatening complications. Scheduled tool maintenance and inspection will increase life of the equipment and reduce repair costs to the organization. When applicable, always follow the manufacturer’s recommended use, maintenance, and cleaning guidelines for all equipment.

Wood Cribbing: Wood cribbing blocks are the basic tool for stabilization during vehicle extrication. Most wood cribbing blocks are made using 4”x4” or 6”x6” pine lumber that is 18–24 inches long. Check the cribbing to see that the lumber is straight and free of splits, crush, and chemical damage. The ends can be painted for length identification, but the body of the block should be free of paint or finishes. Rope or webbing can be attached to the ends in a loop to serve as a handle; ensure that the handles are free of frays, complete, and firmly attached.
**Jacks:** Bottle jacks (hydraulic) and Hi-Lift jacks (Handyman) are two of the most commonly carried jacks on extrication apparatus. Bottle jacks contain hydraulic oil to move the piston; ensure that the oil is full and that the piston operates to full extension. Check the Hi-Lift jack for wear, lubricate the mechanism, and ensure proper operation. Clean any debris or fluids from the jacks prior to storage.

**Chains:** Rescue chain is chosen for its working strength rating. This rating is severely reduced by wear and abrasion. Check the links for wear, bends, cracks, or deformity. All chains used for rescue work should have a grab hook at each end for maximum performance; ensure that hooks are in place and do not have stress cracks or show other signs of fatigue.

**Hydraulic Tools:** Inspect each hydraulic tool for cleanliness, signs of damage, or leaks. Clean and inspect each hydraulic connector and operate each tool to full extension while watching for smoothness of operation. Hydraulic tools should be connected and operated at least once a week to lubricate the internal seals. Store all hydraulic tools in the closed position unless the tool manufacturer specifications dictate otherwise.

**Lifting Airbags:** Inspect all lifting airbags for cuts, abrasions, or chemical damage. Clean the airbags with mild soap and water then wipe dry. Clean and inspect each air connection. Each lifting airbag (high pressure or low pressure) should be fully inflated monthly at a minimum (weekly is optimal). Inflation of an airbag exercises the material and allows the airbag to fold in a different area. This decreases cracking and wear from vibration encountered with rescue vehicle movement.

**Battery-operated Tools:** Inspect all battery-operated tools for cleanliness and operation. Verify that there are adequate amounts of attachments (saw blades, grinding wheels) and that they are in the appropriate sizes. Charge and/or regenerate all batteries at least weekly.

**Hand Tools:** Clean and inspect all hand tools. Check for cracks, signs of stress, or missing sizes. A complete set of hand tools may make a difference in the outcome of an emergency incident.

Regardless of the type or amount of extrication equipment that an organization uses, inspection and maintenance must be completed in order to perform safe, competent vehicle extrication operations. There’s a significant difference between having the right equipment and being able to use it effectively during an incident. Routine inspection and maintenance of equipment ensure proper and safe operation, reducing the chance of equipment failure during an emergency incident. With use also comes competency; the more one assembles and operates extrication equipment, the more familiar one becomes with the operation. Check it out! You may just learn something new.

**Russell Young** is a Captain and assistant Training Officer for the Orem Fire Division where he is responsible for extrication and ambulance driving operations. Young has 19 years of experience in fire and emergency medical service and is an instructor and certification tester for UFRA.
I would like to share my thoughts and personal experiences since taking on a new role as boss. As I review my leadership career, I realize just how much I have had to learn about being an effective leader. I would like to help other beginning leaders learn from my mistakes and errors in judgment. OK, here we go.

You are the new boss. Congrats! It can be very difficult being a boss who is not respected or who is even actively disliked. How do you get your team to be the best thing that ever happened to you? The answer is intuitive: be the best boss that ever happened to them.

First, let’s discuss the fire service’s dirty little secret. Leadership positions surprisingly come with little guidance. Whether promoted from inside or brought in from the outside, one would probably want to hit the road running. However, due to vague goals, there is a level of uncertainty regarding which direction to run. This bit of information makes it easier to see why potentially capable, well-meaning supervisors may resort to micromanagement, detachment, grandstanding, or sheer block-headedness in an effort to find some stability for themselves and their team members.

When I was promoted to captain, I considered it a celebratory time of excitement and possibility tied in with a little nervousness. With my personality and youth (six years on the job), I did ultimately fall into many supervisory pits.

On my first day, I fully expected my battalion chief to discuss his expectations, my expectations, and his personal do’s and don’ts with me. He was in the same station, so I waited and waited. Finally, I decided to talk with him. When I asked him about his expectations and for some direction, his reply was, “Just do your job and keep me out of trouble.”

I then reviewed department policy and procedures (which were out of date), considered my professional behavior (young, immature, aggressive, and testosterone heavy), and my performance, past and future (this introspective review was an important step for me as a leader, and I will discuss it in more detail in a forthcoming article).

After taking a personal inventory, I decided that as a leader I needed to actively avoid being a gossip (easier said than done) in order to create an atmosphere of trust and camaraderie. 

After taking a personal inventory, I decided that as a leader I needed to actively avoid being a gossip (easier said than done) in order to create an atmosphere of trust and camaraderie. I’m sure most Straight Tip readers have heard of the fire department philosophy: “If you haven’t heard a rumor in 24 hours, start one.” Not to mention the old firefighter saying for gossip spreading: “Telegraph-telephone-tell a firefighter.” Gossip does nothing but negatively affect the workplace. If I found myself in a situation where someone was spreading malicious gossip about another firefighter, I would do one of two things: ask the gossiping individual if he or she really had the actual facts or just walk away.

Rumors can be debilitating for any organization. They create a kind of parallel universe that siphons vital energy from important work. Whether true or not, rumors cause a need for leaders to do damage control. I recently conducted an organizational climate survey for a department. While I was interviewing department members, I heard many uncomplimentary comments about the behavior of the department leadership. Most of the comments were false, embellished, or just lacked the facts.

I have shared my own philosophy with department members: that the antidote to rumors is trust. Trust and rumors are mostly incompatible. If there is low trust, it is easy for someone to project something negative. Low trust creates a roaring wildfire where wind, fuel, and terrain make for a perfect firestorm. If trust is high, rumor sparks might still be there, but they will have trouble catching on and growing because people will just check with the boss about the validity of the rumor.

Next month, I will continue my review of important leadership skills with a discussion on awareness of policy and procedures, professional behavior, and performance, past and future. I will also identify the steps to become not only the trusted boss but the well-liked and respected boss.

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LEADERSHIP

Paul Stein retired as Chief Officer of California’s Santa Monica Fire Department. After retirement he served as Interim Fire Chief for the Lakeside Fire Department in California. He holds an A.S. Degree in Fire Technology and a B.A. Degree in Management. Chief Stein is a Master Instructor for the California Department of Education.
Salt Lake City Fire & Police Museum

Salt Lake City recently opened its new Fire and Police Museum in the atrium of the new Public Safety Building, just east of Library Square. The museum features exhibits of vintage fire department and police department gear. The original 1853 hand pumper is the first thing one sees upon entering the light filled space. Old uniforms, turnouts, bugles, radios, guns, and photographs tell the story of the development of the Capitol City’s finest.

The displays seek to educate the public about the departments’ histories, the work they do, and the sacrifice of the members. The displays show the progression of firefighting technology from leather buckets to modern apparatus and PPE.

Posters and artifacts also tell the stories of the fallen. A fire engine vs. trolley car accident killed the first SLC firefighter, Asa Hancock, in 1920. Fires at the Victory Theater and the Newhouse Hotel claimed four firefighters in 1943. Each of these LODDs are respectfully and briefly described.

Much of this history would have been lost if not for the efforts of current and retired SLCFD members who saved much of the display materials from short-sighted “housecleaning” done to make space or to tidy up. Some materials had previously been kept at the old Volunteer Hall in Memory Grove Park and then in the replica hall at This Is The Place State Park.

Quite a bit of additional material is able to be stored in a climate storeroom of the building. Department spokesperson, Jasen Asay, said the department was reaching out to those who may have saved historical materials from going to the dumpster. He said every donation is treated with respect and gratitude.

Climbing the Ladder

West Jordan Fire Department

PROMOTIONS

Clint Petersen has been promoted to Deputy Chief. He is a graduate of Utah Valley University and has been with West Jordan for 13 years. He previously worked for Salt Lake County Fire for 21 years.

Reed G. Scharman has been promoted to Deputy Chief. He is a graduate of the University of Utah and has been with West Jordan for 31 years.

Chris Trevino has been promoted to Captain. He is a graduate of Utah Valley University and has worked for West Jordan for 10 years.

Zach Sumner has been promoted to Engineer. He is a graduate of the University of Utah and has been with West Jordan for six years.

APPOINTMENTS

The following personnel have completed their probationary year and have been appointed as Firefighters with the West Jordan Fire Department.

Josh Kopinsky – Utah Valley University

Calvin Wayman – Columbia Southern University

Danny Gates – Southern Utah University

Ryan Ottley – Utah State University
by Steve Lutz

Jay Westergard has proven time and time again that being a member of the department is not just about firefighting, it’s about serving the community. When Jay joined in 1958, his father, Nephi, had already been with the department for many years. Back then, getting funds to improve the department was tough. A young lady offered to help the department put on a musical, Around the World In a Daze, to benefit the department. The Westergards, along with most of the other firefighters, stepped up to join the cast. For some of them, performing in public was more terrifying than fighting a raging fire. Jay had quite a bit of singing talent, so he agreed to sing the lead. As the performance was set to commence, he also had to go find some of the cast who were hiding out with severe stage fright that was only relieved by some liquid courage.

On another note, some of the toughest calls he’s been on were early in his tenure when Garland FD, as the farthest northern department in Box Elder County, protected life and property all the way into Idaho. A 14-mile run in sub-zero conditions to Plymouth, while clinging to the tailboard of a 1937 Lafrance, was enough to keep some people at home in their warm beds. But stalwarts like Jay and his lifelong friend and fellow firefighter, Bill Bishop, always showed up and did their best, even when that meant building a fire under the pump to thaw it so they could fight a house fire.

Bishop said: “The thing about Jay is that he’s always here for us. He never backs away from a challenge. He’s the first one to greet a new member and to start educating him or her about what it means to be on the department. That often starts with the Salmon Fry Lecture.” The Salmon Fry is a longstanding tradition in Garland and a fundraising successor to the aforementioned musical. It began with a hundred pounds of salmon to feed supporters decades ago. The department now needs tons to feed the thousands of hungry folks that come from as far away as Montana.

“Jay lets the new guys know that they are expected to work on that and bring everybody they know along to support the department,” Bishop continues.

Fire Chief Rob Johnson recalls that as soon as he moved to town, Jay was at his door urging him to join the department. In a small town like Garland, with 2,400 people, everybody knows Jay and he knows most of the residents as well. Among his many accomplishments, Jay served as chief in the 1970s when Garland FD, as the farthest department in Box Elder County, protected life and property all the way into Idaho. A 14-mile run in sub-zero conditions to Plymouth, while clinging to the tailboard of a 1937 Lafrance, was enough to keep some people at home in their warm beds. But stalwarts like Jay and his lifelong friend and fellow firefighter, Bill Bishop, always showed up and did their best, even when that meant building a fire under the pump to thaw it so they could fight a house fire.

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Bill mentioned how hard Jay worked with the joint council to get the Firefighter License Plate law passed and how he still goes to every joint council meeting. Even when he’s been too weak from cancer treatments to drive himself, one of the firefighters drove him down to Salt Lake. Nothing seems to dampen his sense of humor and dedication to the people of Garland and his fellow firefighters. All the fire service representatives on the council know and respect Jay and depend on him to help reach out to legislators on fire-related issues.

Many things have changed since Jay started in the fire service, some of which he wishes would have changed earlier. SCBA and PPE are among the most important. Jay suspects that if he’d had access to proper gear earlier, he may not have gotten cancer, which has plagued him in recent years. He has let his sons and grandsons know they’d damn well better use SCBA and get the training they need to be safe and effective.

His closest call came on one of the hundreds of wildland fires he’s fought. While fighting a brush fire, the wind changed and fire suddenly surrounded Jay and two other firefighters, which ultimately burned over their rig. The fire scorched paint and burned hoses, but luckily the men survived, although shaken by the experience. Jay explains, “These days we get good spot weather forecasts from the Weather Service during fires, but we can learn from the ranchers and others that work out in the country and know the indicators of just when things are going to change. We need all the information we can get. Another thing that I really appreciate is air-drops on wildfires. They can really help you out.”

Battalion Chief Steve Harrington agrees, “Jay has been a teacher to us all. He points out what’s important. He’s been the one to recruit a lot of the department. He knows the history and knows about the buildings and the people.”

At 80 years old, Jay no longer fights fires, but he’s still there to help however he can. He acts as department historian and elder statesman. Jay is proudest of his family’s four generations of firefighting and the support his whole family gives to the effort. A bunch of his family members turned out this February when the Utah Fire Caucus honored Jay with the Lifetime Service Award. He seemed a little uncomfortable when the council offered him a standing ovation. He pointed out what’s important. He’s the thing that I really appreciate is air-drops on wildfires. They can really help you out.”

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FIRE OFFICER I STANDARD UPDATED by Lori Howes

The Certification Council updated the Fire Officer I standard on May 15, 2014 to include a new appendix. The appendix contains samples of a memo, the fire flow calculations, and a scenario in the hopes to better prepare candidates for the manipulative skills exam. The updated standard can be found on the UFRA website: http://www.uvu.edu/ufra/certification/standards.html.

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