



Knowledge management is getting the right information to the right people at the right time.

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Lesson Learned –
An innovative approach or work practice that is captured and shared to promote repeat application. A lesson learned may also be an adverse work practice or experience that is captured or shared to avoid recurrence.

Best Practice – A process, technique, or innovative use of resources, technology, or equipment that has a proven record of success in providing significant improvement to an organization.

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SPECIAL REPRINT EDITION SUMMER 2003



Our Driving Responsibility

To aid firefighters, supervisors and managers during an extended fire season, the Wildland Fire Lessons Learned Center is publishing a special reprint edition. Articles on **Driving Safety, Tools of the Trade – Best Practices for Driving During Wildland Fires, Driving – A Shared Responsibility, Supervising Vehicle Operators, and Vehicle Operations and Accident Response** are contained in this newsletter.

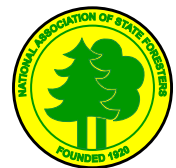
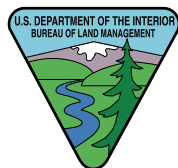
With the upcoming Labor Day weekend and thousands of firefighters driving to and from incidents around the country, we need to stop and remind each other about the significant responsibility we take on once we sit behind the wheel or in the passenger seat of a vehicle.

As of August 25, there have been six reported motor vehicle accidents involving 23 firefighters in 2003. Twelve firefighters

died and one was injured in these accidents. In 2002, nine firefighters died and 26 were injured in vehicle accidents.

Based on Predictive Services' projections, there are three to four weeks of continuing hot and dry weather ahead. Many fire personnel feel the stress and fatigue that comes this time of year. The wildland fire community has continued with a strong, professional effort and commitment to manage the wildland fires across the United States. Cumulative fatigue should be addressed for all our personnel, including ourselves, as the 2003 fire season continues.

All agencies and cooperators at all levels of the fire organization are encouraged to use these articles as "tools to teach with." Please ensure that this special edition is widely distributed in fire camps and at home units. ★



DRIVING SAFETY

NATIONAL EMPHASIS TOPIC FOR 2003

Driving may be the most dangerous job we do. Even with raging fires, hovering helicopters, falling trees and rocks, our exposure in motor vehicles has more people exposed to more risk.

All the Federal, State, and local agencies, as members of the National Wildfire Coordinating Group, have elected to focus special attention on driving in 2003. As the National Emphasis Topic, our ambition is for every one of us to make significant positive steps in how we drive, and how we expect others to drive.

You say you are a pretty good driver? We agree! And when you consider the long hours, unusual vehicles, and incredible terrain, we are truly a remarkable community

of drivers. But, when an accident does happen, after those long hours, in heavy vehicles, in unforgiving terrain, we pay too high a price.

Look hard at your attitude. The best drivers are confident in their skills, yet always thinking, always looking for new ideas, and always getting better yet.

The Wildland Fire Safety Training Annual Refresher Web page presents a variety of resources for your driving skill development, and some useful links. Intended initially as a supplement to annual firefighter safety refresher, use these products throughout the 2003 field season. Click on http://www.nifc.gov/safety_study/annual-refresh/hot_topics/driving_safety.html. ★

Web Sources for Driving Best Practices

National Highway Traffic Safety Administration (NHTSA) at <http://www.nhtsa.dot.gov> home page contains current information on Traffic Safety/Occupant Issues that includes injury prevention and driver performance. The *Hot at NHTSA* button will take you to current safety bulletins.

National Safety Council (NSC) at <http://www.nsc.org> home page contains a bullet on *Driving* that includes articles on driver safety, cellular phones and driving, and safety awareness. The NSC's two defensive driving courses Defensive Driving: The Professional Way and Defensive Driving: The Best Offense can be ordered on line at \$1.60 per copy. Go to *More on Defensive Driving* under the Training heading on the home page.

Iowa Highway Safety Management System at <http://www.iowasms.org/toolbox.htm> home page contains a toolbox of driving safety information including *Increasing Driver Safety Awareness*, *Increasing Seat Belt Usage*, *Preventing Drowsy and Distracted Drivers*, and *Curbing High-Risk Driving Behaviors*.

TOOLS OF THE TRADE

BEST PRACTICES FOR DRIVING DURING WILDLAND FIRES

Special thanks to Engine Captain Mike Chiodini of the Eldorado National Forest in California and Fleet Manager Tim Rollins of the Coronado National Forest in Arizona for contributing to this article.

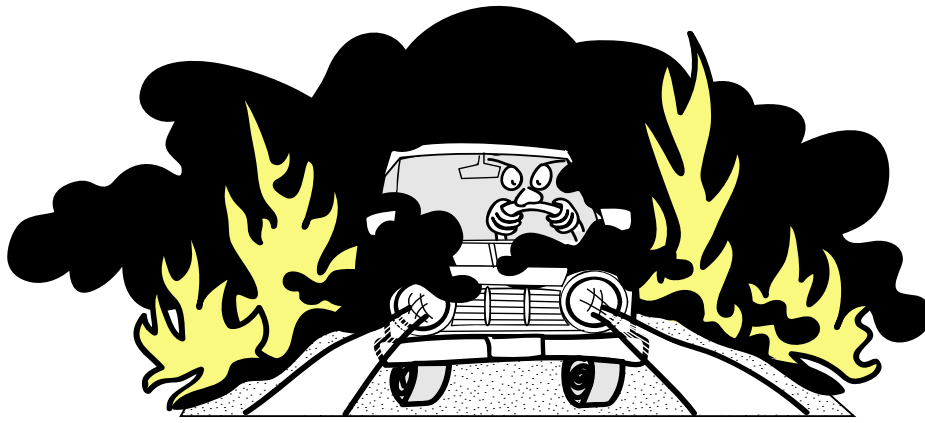
In the Fall 2002 issue human factors were identified as a major contributor to wildland fire agency motor vehicle accidents. These factors include fatigue, level of operator proficiency/experience in a specific vehicle type, and unsafe operator practices.

In summary, the operator and passengers need to be cognizant of their surroundings and continually alert and

prepared to deal with the following potential “watch out” situations while driving to and from wildland fires. These driving “watch out” situations can include:

Environmental Factors – Weather, roadside hazards, work zones, unusual traffic conditions, and other vehicles operated in a hazardous manner.

Driver Limitations/Behaviors/Practices– Physical and mental fatigue, slower reaction times due to aging driver population, anger including road rage, drinking and driving, lack of seat belt use, failure to ensure proper vehicle maintenance, aggressive driving, driving while inattentive/distracted, deliberately disobeying traffic control devices, and taking unnecessary risks.



Most of these factors, limitations, and behaviors can be controlled; those that cannot are primarily the ones of the other drivers. Because the driving behaviors of others cannot be controlled, we **must** anticipate what they might do. For example, expect other drivers to make mistakes at intersections and be prepared to act defensively.

Drivers can exercise control over their own distractions. **Research has proven that driving has to be the single focus of our attention.** Studies prove operators are not capable of fully concentrating on multiple tasks and driving as safely as when solely concentrating on vehicle operations. The latest research on "[Inattention Blindness](http://www.nsc.org/news/nr012703.htm)" in [Behind-the-Wheel Cell Phone Users](http://www.nsc.org/news/nr012703.htm) is now available from the National Safety Council. <http://www.nsc.org/news/nr012703.htm>

In preparation for the upcoming fire season, and to improve agency driving safety records, an emphasis should be placed on preparing vehicle operators to foster best practices while on the road. There are numerous tools available to improve situational awareness while driving. The ones mentioned are representative examples.

Best Practices That Work

Best practices that should be part of your normal routine while driving wildland fire vehicles include:

At the Beginning of an Operational Period -

Clean the Windshield and Headlights Every Day – This will improve general visibility. Glare, dust, and ashes can build up on the windshield and impair vision especially at night or in bright sunlight. Make certain to clean all windows as well as all outside and rear view mirrors. The lower position of headlights, compared to the location of a windshield, causes them to accumulate dirt and dust that reduces their effectiveness. In extremely dusty and smoky conditions windshield and headlight cleaning might be required multiple times during an operational period.

Inspect the Vehicle Every Day – A walk around and under the hood inspection is critical before the operator gets behind the wheel. Check for body damage, tire pressure, lights, fuel and oil levels, and all other fluids. Manually bleed water from air brake equipped vehicle

systems if necessary. This is also the ideal time to ensure all support gear is loaded, such as maps, phone, and first aid kit. Use a checklist to best perform this inspection to avoid overlooking an important item. There is a sample expanded [vehicle inspection safety checklist](http://www.wildfirelessons.net/Library/Safety_Health/Vehicle_Inspection_Checklist.doc) available now in the Center Library. http://www.wildfirelessons.net/Library/Safety_Health/Vehicle_Inspection_Checklist.doc

Stow and Secure All Loose Items – Remember to secure all loose tools, equipment, or supplies in the rear compartment of utility vehicles. These items need to be stored in a cargo box that is properly anchored or otherwise properly tied down.

Obtain a Briefing – Whenever possible on an incident get a briefing before driving into unfamiliar territory. Inquire about road conditions such as steep mountainous grades or terrain with sharp roadside drop offs. Even if you have received a detailed briefing, exercise caution and reduce your speed based on your unfamiliarity with the area.

Remember another operator may know even less than you do about local road conditions that may be encountered. In strange territory, expect the unexpected.

Side View Mirrors Adjustment - Many preventable accidents occur due to vehicle induced blind spots. For one method to eliminate these blind spots, view the short PowerPoint show on [Mirror Positioning](http://www.wildfirelessons.net/Library/Safety_Health/SafetyAutomobileSideMirrorPosition.pps) now available in the Center Library. http://www.wildfirelessons.net/Library/Safety_Health/SafetyAutomobileSideMirrorPosition.pps

Other Operator Tips -

Drive For Conditions – Use the posted speed limit as a guide. During rain, sleet, fog, or darkness drive below the speed limit. Never exceed the speed limit. Too many accidents involve operators that were speeding or driving too fast for conditions.

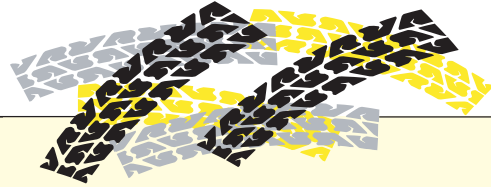
Driving In Shade – Slow down when driving from an area of high sun intensity into shaded areas. This helps to provide the time needed for the eyes to adjust to the reduced light environment.

Check All Directions – When backing up, pulling forward, or turning to the left or right make sure to look in all directions. Have passengers or spotters assist. When backing is required, large vehicles like engines and vans should have a spotter assist by standing outside the vehicle.

Driving in Smoke – Turn on lights and drive slowly. Stay as far to the right side of the road as possible. As a guide, be able to stop in half the visible distance. This is a driving watch out situation; use extreme caution. Remember that if fog is also present, for all practical purposes you are driving blindfolded.

Using Emergency Lights and Siren – Emergency response vehicle operators need to obey all applicable

traffic laws while responding to an incident and anticipate that others may not yield to your vehicle. Remember that having lights and a siren on does not provide a license to operate in an unsafe manner. During emergency responses situational awareness must be in a state of heightened alert when approaching intersections and traffic signals, as other vehicle operators may not be aware of your approach. ★



DRIVING – A SHARED RESPONSIBILITY

It is every vehicle operator's and supervisor's personal responsibility to ensure that drivers are adequately screened, trained, and experienced to operate the type of vehicles they may be required to drive. If assigning an operator to an unfamiliar vehicle, do not make assumptions about them knowing the handling features and characteristics of that vehicle. Coordinate to ensure the newly assigned vehicle operator receives needed practical training. Monitor the operator proficiency before final clearance to operate a vehicle is given by a qualified driving instructor. The clearance check ride of the potential vehicle operator should simulate actual as well as reasonably anticipated extraordinary conditions of use, such as on steep windy mountain roads.

Whether practicing skills or responding to an incident, it is every operator's, passenger's, and supervisor's responsibility to eliminate distractions and ensure adequate rest prior to driving. Manage your attention by concentrating on the road and learn to recognize indicators for driving "watch out" situations. Know and abide by the driving standard including emergency driving limitations.

SUPERVISING VEHICLE OPERATORS: PRE-HIRE TOOLS FOR MANAGERS

Best driving practices begin with adequate pre-hire screening to ensure the hiring of qualified and capable operators. Supervisors and managers should review job applications closely and then inquire and verify the claimed driving skills and vehicle experience types of applicants applying for positions. The verification should be based on the type of vehicles they will be operating. Keep in mind former supervisors and past coworkers may themselves not be qualified or willing to offer an accurate assessment of the applicant's past driving performance. Following agency guidelines, check the applicant's motor vehicle record for accidents, moving violations, suspensions, and other indicators of poor driving habits. Eliminate those that pose a significant potential liability for your agency.

Once hired, supervisors and managers should have in place procedures that ensure employees are properly trained and adequately experienced in the particular vehicles they are assigned to operate. Supervisors should become directly involved in ensuring that an employee's driving skills and training are sufficient to allow safe operation under all foreseeable circumstances before clearance to operate a vehicle is given. Although there are specific courses for engine operators, employees

driving other types of vehicles need specific, practical, and situational awareness training as well. A [supervisor checklist](#) that supervisors can use for monitoring employee driving practice skills is available. http://www.wildfirelessons.net/Library/Safety_Health/Observation_Driving_Practices.doc. **Before the 2003 wildland fire driving season begins**, supervisors and managers should familiarize themselves with the current operator and vehicle guidelines found in [2003 Standard for Fire and Aviation Operations](#). In particular, [Chapter 4 – Safety](#) outlines the latest Driving Standard. This chapter covers the driving standard for all employees operating government fire vehicles, emergency driving, non-emergency driving, and emergency fire vehicle operation standards. <http://www.fire.blm.gov/Standards/redbook.htm>

Remember that poor screening of potential operators can lead to costly tort claims and even fatal accidents. Ultimately driving standards are only as good as those practiced when a responsible and skilled operator is entrusted with a vehicle. Take all the time needed during the hiring and training period to ensure you are hiring and training a qualified, competent vehicle operator. ★

VEHICLE OPERATIONS *and* ACCIDENT RESPONSE

The Lessons Learned Center recently obtained the input and expertise of certified accident reconstructionist Mark T. Bailey. Mr. Bailey is certified by the Accreditation Commission for Traffic Accident Reconstruction (ACTAR) and has among his credentials over 20 years experience with one of the largest U.S. Government fleet operators. This is the last of a series of articles the Lessons Learned Center has presented to foster the best practices relative to vehicle operations in the wildland fire community.

According to Mark Bailey, there are two critical means by which to identify and institute safety improvements in wildland fire vehicle operations. The first is the institution of a proactive prevention approach that includes standardized vehicle type-specific operator training and second timely and quality post-accident data collection especially of short-lived evidence.

Specialized Training

Bailey cited the vehicles normally associated with the wildland fire community such as engines, water tenders, utility body trucks, sport utility vehicles, pickup trucks, and extended body 15 passenger vans as the ones for which a type-specific minimum amount of specialized operator training is beneficial and should be provided.

Bailey further stated that these vehicles do not generally fall within the requirements for a Commercial Driver's License (CDL) endorsement. However, their high center of gravity or unique handling characteristics, especially under conditions of use in the wildland fire community, warrants that their operators be recipients of an ongoing program of initial and refresher training.

For a new operator of these vehicle types, he recommends a graduated supervised program of training to develop the needed level of proficiency. He believes initial training should conclude with a realistic road test that requires a practical demonstration of operator proficiency that is monitored and evaluated by trained vehicle type-specific driving instructors. The road test conditions should include narrow dirt and gravel mountainous roads and highway operation of fully loaded vehicles.

Practical training resources are available such as through the National Highway Transportation Safety Administration (NHTSA). As an example, they have published guidelines to reduce the risk of rollovers in 15 passenger vans. The Bureau of Land Management (BLM) has adopted these guidelines. The guidelines include assigning only those with experience in these types of vans as unsupervised operators. The guidelines also discuss the removal of the rear seat and properly screening the rear area of the van to provide a small storage space that separates cargo from passengers. Finally, the NHTSA recommends using the roof racks for lightweight items only. To view the entire NHTSA

15 passenger van safety guideline click on <http://www.nhtsa.dot.gov/Hot/15PassVans/index.htm>.

Response Kit

In the event of an accident, Bailey stressed the benefit derived from a standard accident response kit that is developed and placed in each vehicle to include an at scene checklist. This would aid the systematic gathering of basic post-accident data. The sealed plastic bag type kit he described would include a disposable camera and be kept in each vehicle to record the accident scene before vehicles are moved and if practical, before the scene is otherwise disturbed. Bailey also suggested that a more advanced kit should be provided to responding supervisors. This response kit should have a SLR 35 mm camera, multiple rolls of various speed film, and the means to measure and more fully diagram the accident scene.

These kits and their cameras would provide two benefits, according to Bailey. Short-lived evidence such as tire markings on dirt, gravel or even paved roads can then be readily documented before they are erased by traffic or weather. The pictures can often be used later by an accident reconstructionist. The information facilitates subsequent technical analysis of what factors led to an accident and the development of focused and specific preventative training using actual occurrences as examples. Secondly, Bailey stated that high quality initial documentation of the accident scene and subsequent investigation follow up be combined with a reconstructionist expert testimony to aid agency success in tort claim adjudication.

Mr. Bailey mentioned how this two-prong approach was applied by one U.S. Government agency in a motor vehicle accident case he prepared. It resulted in a probable payout of a multimillion dollar tort claim actually being settled during the trial for a fraction of what the Government had at one point offered the plaintiff in pretrial settlement discussions. The U.S. Attorney's Office ability to impeach the plaintiff's expert witness-alleged causation of events that led to the collision was a key factor. The depth of this post accident investigation recovered short-lived evidence that is usually unavailable for reconstruction purposes. This evidence, when it was properly examined and evaluated, showed the collision did not occur in the sequence the plaintiff alleged, and that another defendant bore the primary responsibility for the accident. The agency was also able to show, based on recovery of this short-lived evidence, that the local police agency had placed the wrong private vehicle occupant as the vehicle operator in this fatal collision. ★

Mr. Bailey can be contacted through the Lessons Learned Center at <http://www.wildfirelessons.net/ContactInfo.htm>.