High Meadow Fire Rollover
Incident Accident Investigation

Bureau of Land Management (BLM)
Arizona (AZ) State Office

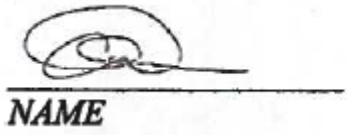
13 August 2015
Arizona Strip District Report

Investigative Team:

NAME

11/23/15
Date

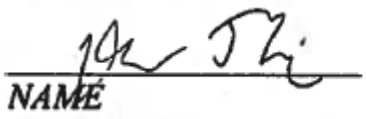
Bradley A. Eadelman
Arizona State Safety Manager
Investigation Team Leader



NAME

11/23/2015
Date

Glenn W. Pepper
District Safety Officer
Color Country, Utah
Team Member



NAME

11/23/15
Date

Daniel Philbin
Assistant Fire Management Officer
Phoenix District Office (PDO)
Team Member

Executive Summary:

An Administrative Determine (AD) employee assigned to the Arizona Strip fire district was tasked to take supplies to a fire crew, working the High Meadow fire incident near Mount Trumbull. The road traveled is a combination of dirt and gravel surface with several "wash board" areas found in numerous places along the driving route. The road, also known as "Main Street," has adequate driving distance between the shoulders of the road for drivers traveling this corridor. At approximately 1520 hours on August 13, 2015, the AD employee was driving Unit 1552 (this is an automatic F350 Ford Crew Cab) traveling northwest on "Main Street" returning to his home duty station. The AD Employee had a load of damaged fencing material from the High Meadow fire incident secured with a three inch ratchet strap to the bed of the F350. He was the only occupant and not traveling with any other vehicles at the time of the incident. There had been isolated rain in the area before and after the incident. It was stated the rain had stopped about an hour before the incident and started again shortly after the rollover.

The vehicle was traveling northwest at an undetermined speed coming from a straight away into a slight left bend when the rear of the vehicle "fish tailed" toward the right side of the road. The AD employee attempted to straighten the vehicle, which caused the vehicle to "fish tail" in the opposite direction. The vehicle continued its travel toward the right side of the road striking a rock and started sliding sideways for approximately 42 feet. As the vehicle continued to slide sideways, the front bumper dug into the shoulder of the road causing the vehicle to rollover onto its roof. The vehicle's side airbags deployed, but the front airbags did not. The AD employee was able to unbuckle his seatbelt and crawl out of the vehicle. A Heavy Equipment Boss and his equipment operator were heading back into St. George, Utah when they came upon the rollover, and stopped to assist the AD employee. The equipment operator assessed the AD employee for injuries and the Heavy Equipment Boss assumed command of the scene. A fire unit with a wilderness first responder was dispatched to the scene to assist. The Heavy Equipment Boss was given the order to transport the AD employee to the local emergency room for further evaluation. The AD employee sustained a minor cut to his thumb.

Narrative:

At approximately 1523 hours on Thursday, August 13, 2015 a crew consisting of a Heavy Equipment Boss and his equipment operator were returning from the High Meadow fire and notified Color Country Interagency Fire Center (CCIFC) about a vehicle rollover incident involving a Bureau of Land Management (BLM) fire utility vehicle. The Heavy Equipment Boss informed the Color Country Dispatch that the incident was located on County Road Five, also known as "Main Street" on the Arizona Strip, near BLM Road 1037. The incident location is approximately 26 miles southeast of the city of St. George, Utah. The driver of the BLM fire utility vehicle (the AD employee assigned to the warehouse and logistics for the Arizona Strip fire section) crawled out of the vehicle under his own power and stated he was not hurt. The bull hog operator assessed the AD employee while the Heavy Equipment Boss assumed the Incident Command (IC) position for communication purposes between them and the CCIFC. At approximately 1526, the Arizona Strip Fire Duty Officer (DO) made the decision to follow through with having Emergency Medical Services (EMS) respond to the incident to assist with patient care. E-4711, an asset from the U.S. Forest Service assigned to the High Meadow Fire incident, was notified of the rollover accident and requested to rendezvous with the Heavy

Equipment Boss on scene since they were the closest unit with trained medical personnel on board. It was relayed to CCIFC that E-4711 did not have an Emergency Medical Technician (EMT) on board but had a trained Wilderness First Responder.

At approximately 1533 the Heavy Equipment Boss informed the CCIFC that the AD employee had no major injuries, but sustained a small laceration on his thumb. He also informed the CCIFC that the equipment operator completed his assessment of the AD employee and made the decision to place a C-Collar on him as a precautionary measure until a more thorough assessment could be conducted. At approximately 1544 hours the High Meadow Fire IC determined they could send two EMTs from their current incident. The High Meadow IC turned that incident over to the IC Trainee, and with his EMTs, headed in the direction of the rollover incident. At approximately 1602 hours E-4711 arrived at the rollover incident and began a second assessment of the AD employee. While in route, the High Meadow Fire IC spoke with the Wilderness First Responder on E-4711 to keep him updated on the AD employee's condition and to continue to check his vitals. During this time, CCIFC informed the employees on scene and those heading to the scene that the closest Emergency Medical Services (EMS) ambulance would be more than two hours away (Colorado City) due to the fact Washington County did not have an ambulance that had the ability to operate safely in the location of this incident. Local EMS vehicles aren't equipped for off road travel. The High Meadow Fire IC requested CCIFC contact law enforcement for traffic control to begin the initial investigation and to contact Washington County EMS once again to verify that they definitely could not respond to the "Main Street" rollover incident. It was decided at that time not to request a helicopter for this incident as it appeared there were no major injuries and the AD employee's vital signs did not warrant an advanced EMS response. At approximately 1643, CCIFC informed the High Meadow Fire IC that Washington County EMS verified they would not be able to respond due to their inability to access the incident location with their current emergency vehicles.

At approximately 1620, it was decided by the High Meadow Fire IC to allow the Heavy Equipment Boss to transport the AD employee via government vehicle to St. George, Utah's Emergency Room for further, more in-depth evaluation. This decision was based off of the Wilderness First Responder's assessment of the AD employee. At approximately 1650, the High Meadow Fire IC and the two EMTs arrived on scene of the rollover to wait for law enforcement to arrive. The Heavy Equipment Boss, the AD employee, and the wilderness first responder arrived at the St. George Emergency Room at approximately 1750 with the AD being admitted for further assessment. The equipment operator followed behind in their white BLM 3500 work truck. The AD employee was cleared and released by the hospital staff a short time later with no follow up evaluation required. At approximately 1731 BLM Law Enforcement and a Mojave County Sheriff arrived on scene to begin their investigation of a possible cause of the incident. At approximately 1815, the District Safety Officer and Arizona Strip's Collateral Duty Safety Officer (CDSO) arrived at the rollover incident to assist law enforcement with the investigation. During the course of the initial investigation, it was determined further analysis of the vehicle and the incident location would be needed. The Color Country District Safety Officer asked for the vehicle to be secured at the Brigham Ware Yard until this could be accomplished. On Friday August 14, 2015 the Arizona State Director requested to have an Accident Investigation Team be formed and conduct a non-serious accident investigation of this incident.

Investigation Process:

A three person non-serious accident investigation team completed an accident report using the Serious Accident Investigation Guide and BLM accident investigation protocols. The Arizona State Safety Manager was assigned as Team Lead to complete a formal investigation designated by the Arizona State Director. The process required interviewing the employees impacted by the incident, and taking on-site photographs of vehicle damage at the accident scene. The on-site investigation started on August 17, 2015 and concluded on August 19, 2015. The assigned investigation team reviewed pertinent and non-pertinent training records related to the investigation. The investigation included an analysis of human, material, and environmental factors. The in-brief was conducted on August 17, 2015 and out-brief was conducted on August 19, 2015. An analysis of the onboard vehicle computer Event Data Recorder (EDR) was used to help determine vehicle specific conditions just prior to the crash.

Bradley Eadelman (Team Lead), AZ State Safety Manager

Glenn Pepper (Safety SME), District Safety Officer

Daniel Philbin (Team Member), Phoenix District Office AFMO

Brad Eadelman (Team Lead) received Delegation of Authority from Arizona State Director Ray Suazo on 08/14/2015 at 1539.

The accident team received an in-briefing at the AZ Strip Office from the District Manager Tim Burke and Assistant Fire Management Officer (AFMO) Mark Mendonca on 08/17/2015.

The team arrived at the accident scene at 1000 the same day and inspected the vehicle at Brigham Ware Yard at 1200.

The out-brief was conducted with Ray Suazo, Tim Burke, Kelly Castillo, Mike Spilde, Bradley Eadelman, Dan Philbin, Glenn Pepper, Mark Mendonca, Wayne Monger, Mark Whimmer and all team activities were concluded in St. George Utah, at 08/18/2015 at 1600.

Findings and Recommendations:

Finding: U1552 went into service for logistical backhaul operations without notifying the ASD Duty Officer (DO) on duty.

Discussion: The AD employee was tasked with transporting new fencing material from the District office and backhaul of damaged fencing material from the fire incident. The employee coordinated the plan for the day through the logistics office. Logistics personnel inquired as to the driver's ability in performing the associated duties alone and the driver said, "he was okay".

Recommendation: Ensure that all ASD fire personnel communicate through the DO for availability and resource tracking to include administrative, fire related and official travel. The DO tracking mechanism is a control measure in which to ensure capacity and accountability for fire personnel at all times. Through effective tracking, the welfare of personnel can be ensured. Ensure all employees have proper training for the equipment/vehicle being used and the activity being conducted. Verify employees have the appropriate training for the activity being

conducted by reviewing their personnel file and/or training record. Verification of ability and training should not be done through verbal communication from the employee.

Finding: The legal speed of the road was not clearly marked or made aware to all employees.

Discussion: Crash data was retrieved from the vehicle, after the crash, which showed multiple vehicle sensors in sequence 5 seconds before the airbags deployed. The data showed all safety devices were active and deployed as designed with no faults or alerts recorded during this incident. The crash data also indicated the driver did use his safety/seat belt prior to the rollover. The indicated speed 5 seconds prior to the accident was recorded at 51 (MPH), which was consistent with the driver's statement. The reader should know that it took the accident investigation team almost a week to determine what the rated speed for the county road, since it was not clearly posted. The legal speed of the road was determined to be 35 MPH.

***** *Crash data report redacted from this publication is secured data located at the Arizona State Office. PII information has been redacted in compliance with Federal privacy regulations.*

Recommendation: Ensure all employees have proper training on speed limits and develop a maximum speed for employees on assigned county roads not to exceed legal limits. Have district add four-wheel drive usage to safety policies and in-briefs of new and visiting employees. Utilize existing risk management procedures to brief employees associated with dangers of off road travel.

Finding: Washington County does not have an off pavement ambulance to respond to emergencies.

Discussion: The High Meadow Fire IC requested an ambulance, but was told it would take 2.5 hours to get to their location. Due to the possible mechanism of injury, the IC wanted to get the driver to a hospital for evaluation. It was determined to transport the driver by government vehicle after second assessment by a wilderness first responder. An EMT was in communication with the wilderness first responder by radio who assisted with the assessment.

Recommendation: Have local unit discuss if and when medevac should be used due to the remoteness of the area and have it added to the medical plan since off pavement ambulance is not available in close proximity. Make sure unit updates their medical plan and verifies all phone numbers are correct.

Finding: The accident team discovered that multiple accidents occurred within 20 yards of the High Meadow Rollover (Refer to map 1).

Discussion: During the investigation the team discovered accident debris from two other vehicles within 20 yards of the BLM accident vehicle. After discussion with different district employees, they reported that civilian accidents have occurred in the same area over the past several years. (Refer to map 1 in the Appendix).

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Recommendation: Have the district leadership team develop a process to educate employees on the high risk area to help avoid future accidents. Work with the county to mark or label the area as needed, to help drivers identify the area of concern for both public and employee safety. Have unit assign a max speed limit for roads on the AZ Strip. Educate AZ Admin Dispatch on the area and provide coordinates, so they can be aware and help warn employees throughout the State of the higher risk section of the road.

Finding: Vehicle was found to be in two -wheel drive after the accident

Discussion: BLM policy does not require vehicles to be in four -wheel drive during any specific action, but in this case it could have helped aid traction to reduce the likelihood of the driver's inability to control the vehicle.

Recommendation: Require employees to engage four-wheel drive once they are off pavement. Have employee's conduct off-road vehicle training that explains the advantage of using four-wheel drive off pavement. Have district add four-wheel drive usage to safety policies and in-briefs of new and visiting employees. Utilize existing risk management procedures to brief employees associated with dangers of off road travel.

Finding: Per Interagency Standards for Fire and Fire Aviation Operations, some required forms for training were missing out of the AD employee's personnel folder, which included BLM Form 1112-11.

Discussion: The AD employee had limited experience and no formal driver's training for off road or off pavement use. The AD employee recently completed a qualified defensive driving course shortly after being hired. The risk assessment for this activity was available, but the employee was not aware of what it was or its intended use.

Recommendation: Warehouse AD employees need to be trained in safe operation of vehicles used for off road activities, their capabilities and limitations and become familiar with the vehicle they are driving. Drivers tasked for off road activities should be made aware of how a vehicle's capabilities and limitations differ from type and style of vehicle they may have to drive in the course of completing a required task. Be aware of road conditions and maintain situation awareness. Ensure proper paperwork is filled out and filed in the employee's personnel folder. The BLM Form 1112-11 should be used to document every fire and aviation employee's authorization to drive government vehicles or to drive private or rental vehicles for government business. Employees need to be educated on the proper use of risk assessments and needs to be developed for each task. Add specific checks for logistic AD employees during fire review since training requirements can be different from fire AD employees.

Finding: The AD employee and most district staff personnel could not determine who the supervisor of record is for him or other AD employees during a fire incident compared to their day to day work schedule.

Discussion: With logistical AD employees reporting to work on an abnormal basis due to an emergency or as tasks are required to be completed, it can be easy to not associate them with the fire AD employees. It is important to recognize all new employees and the training and local safety policy and procedures that may be required for them.

Recommendation: Have a process in place for employees to know who their supervisor of record is so they know who to report to and who has supervisory responsibility for them. Ensure supervisors know what employees they are responsible for and educate them on what required training and risk assessments are needed for their employees for the tasks being completed.

Conclusions and Observations:

The AZ Strip Logistical support AD employee was conducting logistical support for the High Meadow fire. The AD employee was fortunate he suffered only minor injuries and was cleared for work the next day. Driving is one of the highest risk activities undertaking to accomplish the mission of their job. All employees of the BLM and wildland fire service should be extremely careful while driving in all types of conditions.

With changing dynamic of the fire environment, it is important to continue to support the firefighters on the ground with logistical support. With that in mind, leaders need to be aware of what tasks their employees are engaged in at all times. Leaders should ensure their employees are following all agency policies and procedures related to the task being performed. Employees also have the responsibility to follow agency policies and procedures related to performing the task to ensure risk is mitigated to a level that will allow them to complete the task they are assigned to and if not, afford them the opportunity to voice their concern. These policies and procedures are in place for the safety of the employee and welfare of the agency. Supervisors and employees should be aware of speed limits and road conditions for off road travel. The district could benefit from setting a speed limit for the entire district when off pavement.

Roughly 4,000 miles were driven off road to help support these fires, which can increase the risk of possible accidents. The overall safety miles driven to accident ratio on the AZ Strip is very good, so it is important to ensure all employees are getting the training needed to maintain a good safety record. The driver stated in his interview that he was using a seatbelt, which the analysis of the crash data analysis verified. It was determined that the driver could have sustained serious injuries if he was not wearing his seatbelt. The brakes were fixed a few days prior to the incident and the team determined this was not a cause or factor in this circumstance. The standard safety devices within the vehicle worked properly and helped protect the employee from serious injury. In addition to the standard safety devices, the rollover bar on the vehicle behind the cab helped protect the employee from full cab collapse from the roll over.

Vehicle repairs were completed a few days prior to this incident and included; a brake inspection, 2 new rear calipers, new set of brake pads, 2 new rotors, brake system flush and 2 new axle seals, which were all for the rear of the vehicle. The AD employee stated that the brakes felt like they were working appropriately and a physical inspection of the vehicle after the incident showed that all parts appeared to be replaced to standard. The team started the vehicle to check the brake pedal play and they did notice that the brakes felt “spongy,” which could have been a result of air getting into the system from the vehicle being overturned.

The use of a Wilderness First Responder and EMTs on this incident was important to be able to assess the patient and get him the kind of care needed for a remote area accident. It is

recommended that all engine crews and fire modules have an EMT in place to help assess situations and get initial care started for any situation that may arise from remote incidents.

Due to reductions in budgets and the resulting reduction in seasonal workforce, challenges are created within the fire programs. Programs thus, rely more heavily on the AD program to help fill staffing needs for fire incidents. Logistical support is necessary to support the firefighters on the ground. Fire programs need to ensure the Warehouse ADs are getting all necessary training and briefings that meet agency standards.

Commendations

Dispatch

The Color Country Dispatch and staff are commended for operations during the rollover incident. With high efficiency, they were able to effectively handle the incident within an incident and were also able to maintain effective fire operations. Dispatch and staff personnel showed a level of professionalism and efficiency in handling these emergency incidents that is beyond reproach. This level of response proves training is crucial in preparing for mitigating the rollover incident and effectively communicating with personnel on the High Meadow Fire incident, simultaneously.

Medical Training

The interagency fire personnel should be commended for having appropriate medical training that helped aid in prompt medical treatment of the driver. More advanced medical training is usually completed by the employee prior to being hired with the Forest Service or BLM. Encouraging and providing more medical training should become common practice in the event of future occupational related incidents or injuries with the potential victim/patient receiving needed medical care in a timely manner.

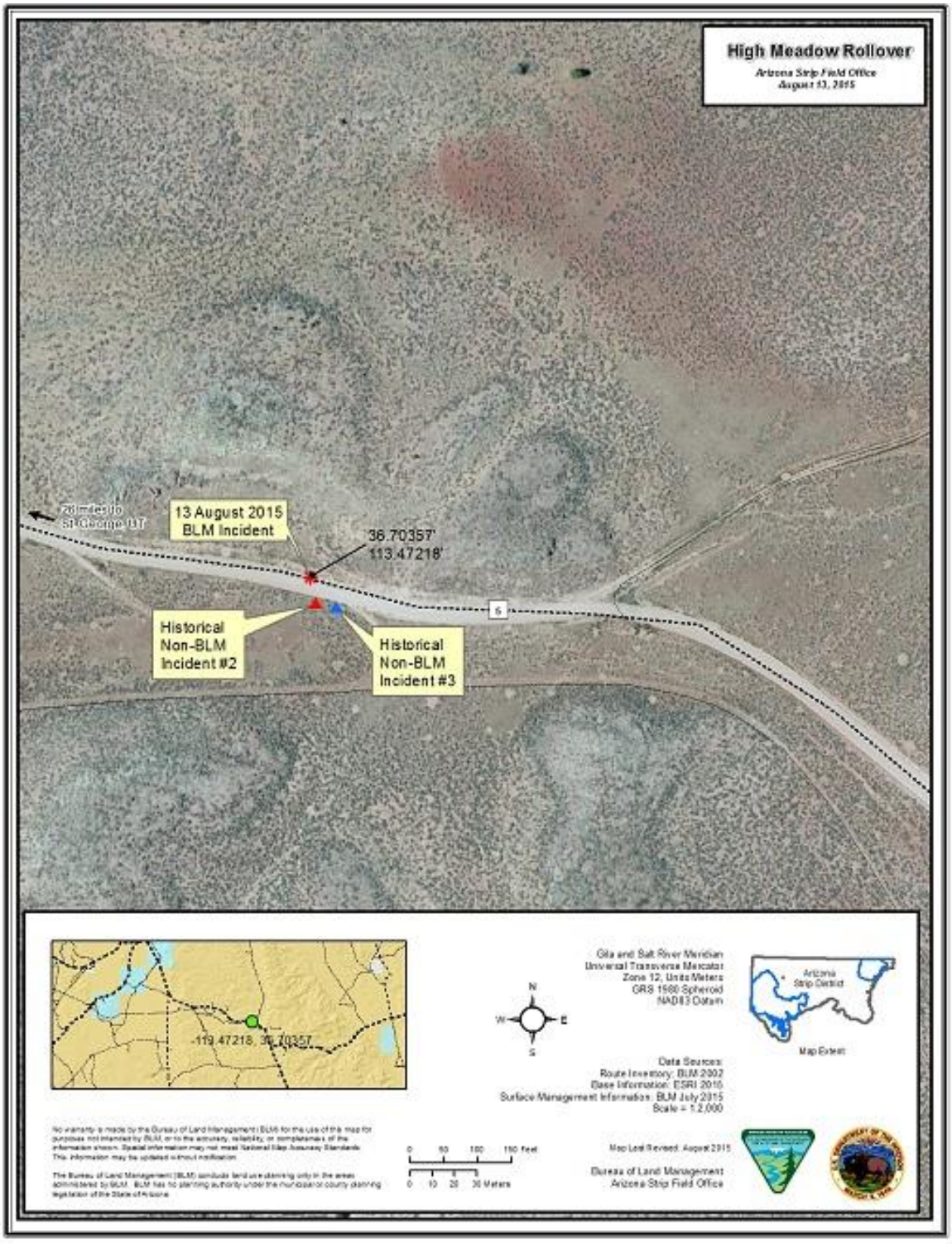
APPENDIX A: Supporting Reference Documents

Guide, Publications, and Protocols

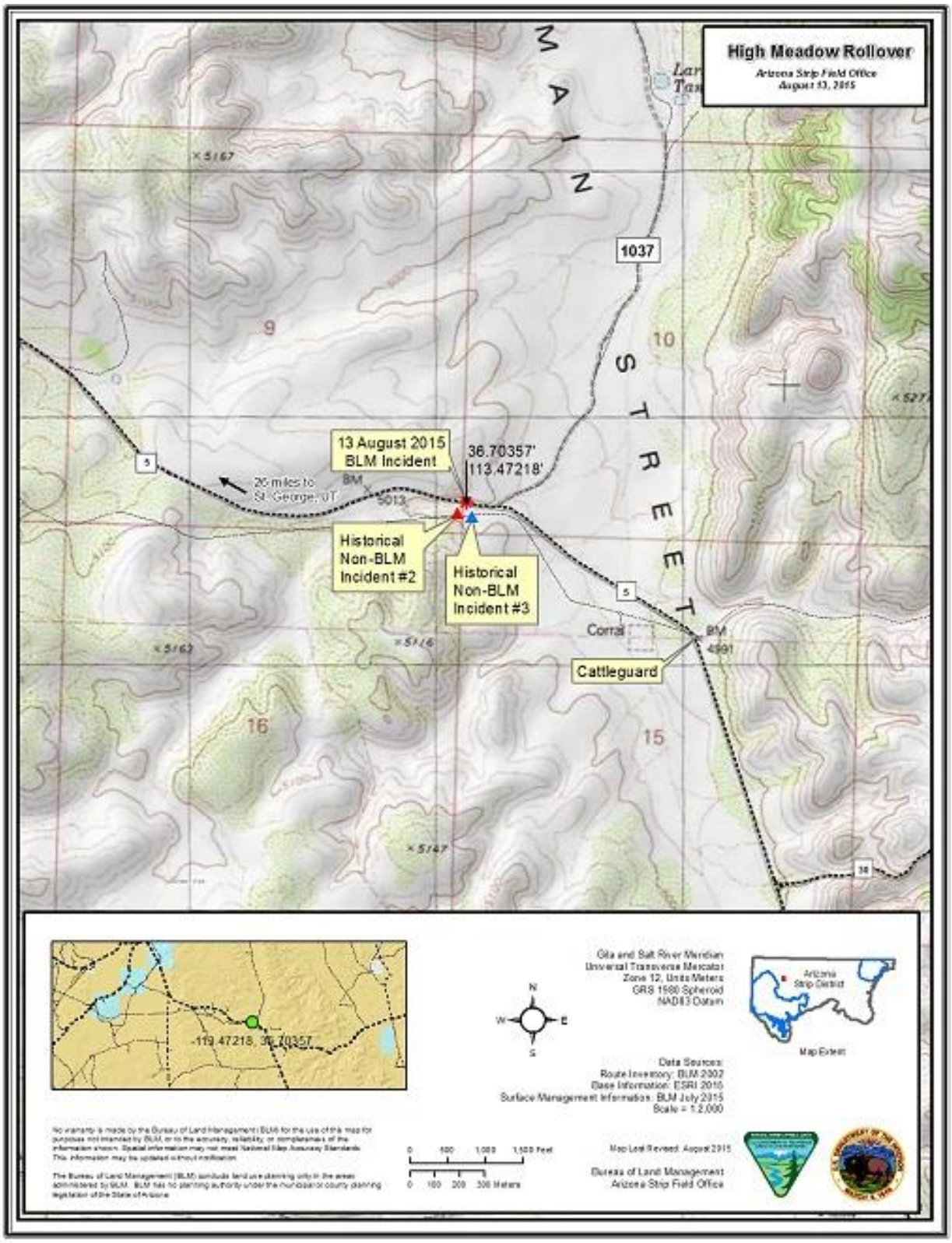
Interagency Serious Accident Investigation Guide (December, 2013):
http://www.nifc.gov/safety/safety_documents/SAI_Guide.pdf

Interagency Standards for Fire and Fire Aviation Program Management and Operations Guide (Red Book), Chapter 07 – Safety and Chapter 18 – Review and Investigations:
http://www.nifc.gov/policies/pol_ref_redbook_2013.html

APPENDIX B: Maps



Map 1 of Rollover Incident Site



Map 2 of the Rollover Incident