

Crowl Road Fire Burnover Review April 7, 2012



**Florida Forest Service
Jacksonville District – Clay County**



Executive Summary

On April 7, 2012 from approximately 1555 hours to 1610 hours, two Florida Forest Service firefighters were involved in a burnover while operating enclosed cab medium dozer/plow units to suppress a wildfire in the vicinity of Crawl Road and US 17 in Clay County. This is on the edge of Bumpy Bay. The cause of the fire is currently under investigation but it appears that it may have been caused by an unattended burn barrel.

The initial responding dozer/plow units (Jax-53 and Jax-57) became stuck in a wet area. Jax-53 became stuck first and Jax-57 came to assist. After an unsuccessful attempt to free Jax-53, Jax-57 also became stuck. As the fire was encroaching, the firefighters made the decision to leave the units on foot, taking their fire shelters with them. Neither firefighter had their portable radio and as a result, communications were lost for approximately 15 minutes until the two firefighters were found by Clay County Fire Department Personnel after making their way to safety. There were no injuries as a result of this event; however, substantial damage was caused to the internal engine of Jax-53.



View from the west looking towards the east at the burnover site.

Review Team

A Review Team was commissioned by the Florida Forest Service Fire Chief to examine the events and facts surrounding this burnover. The Review Team was asked to specifically identify factual data about the factors and circumstances relating to the burnover on the Crowl Road Fire (Incident #2012-07-0148) and list findings to include appropriate actions taken and any recommendations for preventing similar occurrences on future wildfire responses.

The Review Team consisted of the following personnel:

- Kasie Crowe, Fire Standards Administrator
- Larry Grubbs, Safety Officer
- Jeffrey Johnson, Senior Forest Ranger

The Team arrived in the Jacksonville District on April 18, 2012 and spent the afternoon visiting the fire and the burnover location, gathering information on the fuel, terrain and fire behavior indicators. On the following morning, April 19th, the team met with those involved in this event to facilitate an after-action review. Those participating in this process are listed below.

Sources

Justin Rogers, Forest Ranger, Jacksonville District
David Sechrist, Forest Ranger, Jacksonville District
Kevin Macewen, Forest Area Supervisor, Jacksonville District
Timothy Stiltner, Senior Forest Ranger, Jacksonville District
Barry Coulliette, Forestry Operations Administrator, Jacksonville District
Bruce Hill, District Manager, Jacksonville District
David Seymour, Captain, Clay County Fire Rescue
Eric Padgett, EMT, Clay County Fire Rescue
Lanny Wilson, Firefighter, Clay County Fire Rescue

The following is a detailed report for the purpose of documenting this event so that others can benefit from the lessons learned.

Narrative

The Crowl Road Fire in Section 23 – Township 7S – Range 26E of Clay County, Florida, started around 1300 hours on Saturday, April 7, 2012. The fire was east of US 17 and west of the St. Johns River in pine flatwoods with transition to swampy fuels. This area is known as Bumpy Bay. The origin of the fire is on Plum Creek property and burned onto St. Johns River Water Management District property. The fire is believed to have started from a burn barrel at a hunting camp that is leased from Plum Creek; however, it is still under investigation at the time of this report. Florida Forest Service Firefighters were finishing lunch when they heard radio traffic from Clay County advising of a wildfire. Due to the current heightened fire danger conditions and the fact that this area was known to have the potential for a significant fire, they made the decision that two dozer/plow units would start heading in that direction. Jax-52/53 and Jax-56/57 went en route at 1309 hours and arrived on the fire at 1344 hours. Upon arrival, Jax-52/53 became the Incident Commander and reported the fire to be approximately five acres and starting to make a run. As both units unloaded, the IC (Jax-53) requested a third dozer/plow unit as well as a supervisor. The third unit and the supervisor were contacted and both were en route prior to 1400 hours.

Jax-53 and Jax-57 unloaded and both followed standard protocol for this district which is to conduct a radio check with dispatch prior to engaging. Both units were loud and clear; however, not long after the IC (Jax-53) began plowing, communications with dispatch was lost. The IC utilized Jax-57 to relay information to dispatch. Both units made a direct attack on the left flank and the head of the fire. They were unable to establish their own lines; however, as the fuels required that one unit plow while the other followed to clean out the line. They experienced problems with spotting and realized that they needed to change tactics. Just after 1400 hours, the IC (Jax-53) requested a fixed-wing aircraft (relayed through Jax-57) as they were making an indirect attack on the head further west and began establishing multiple lines. At this point, both units were able to establish their own lines. The IC (Jax-53) was advised that the fixed-wing was currently committed to another fire in Putnam County.

The supervisor, Jax-5, requested a helicopter due to spotting and structures threatened at 1420 hours; while still en route. Jax-5 arrived on the fire at 1431 hours and the third dozer/plow unit, Jax-54/55, arrived a few minutes later. Jax-55 unloaded and was instructed by Jax-5 to tie in with the other two units. Although there was no formal transfer of command between Jax-53 and Jax-5, all crews on-scene understood that Jax-5 was now the Incident Commander. All three dozer/plow units began working together to contain the head. Jax-5 was informed that no helicopter was available at the time.

Around 1450 hours, Jax-5 advised dispatch that the fire was now 30 acres, crews were making progress and they would be utilizing radio channel, Tac3. Jax-5 also made the request for an additional dozer/plow unit. It is unclear how this information was communicated as Jax-5 advised the Review Team that communications between him and dispatch were also an issue. Not long after this, the State OIC advised that the fixed-wing aircraft, FOR-58, that was committed in Putnam County would be going down for fuel and could fly this fire before returning to Putnam County.

FOR-58 arrived on the Crowl Road Fire somewhere around 1535 hours and advised that the fire was holding on the rear, left flank and head. FOR-58 advised crews that it appeared that they could stop the right flank and have the fire contained and that fire behavior at that time was moderate at best. FOR-58 left to head back to the fire in Putnam County but advised that he would return if needed.

At this point, around 1540 hours, the three firefighters met face to face to discuss their plan of attack. It was decided that they would complete their re-enforcement on the head and begin an indirect attack down the right flank. Jax-53 was the first unit to start down the right flank. He noticed the vegetation he was in beginning to transition and saw the swampy fuels that the fire was currently burning in the distance with 1-2 feet flame lengths. Jax-53 re-directed in an effort to stay on good ground. There were no issues until his plow flipped, probably due to heavy vegetation. He noticed the fireline behind him beginning to fill with water and the unit became stuck soon after.

Jax-53 called for Jax-57 to assist while Jax-55 continued to reinforce the head. Jax-57 made his way to Jax-53 and attempted to

free the unit by hooking chains to the plow of Jax-53 and the blade of Jax-57 and backing out. This method was unsuccessful. The firefighters exited their units to talk face to face and while discussing their options, Jax-57 felt the wind increase and shift directions. At this time, the fire behavior began to increase. Jax-57 then backed up to make another attempt in freeing Jax-53 and contacted Jax-55 to request his assistance. Prior to making another attempt to free Jax-53, Jax-57 became stuck also. The firefighters reported that at this point the flame lengths were approximately 60 feet and 15-20 yards from their units. Jax-57 contacted Jax-55 to advise him not to come down the line as it was no longer safe and reported that they are leaving the units to make their escape. Jax-55 advised them that their line was now compromised as the fire had already crossed. The engine of Jax-57 was shut off while the engine of Jax-53 was left on as both firefighters began their escape on foot through the heavy vegetation to the north. They took their fire shelters with them but did not have their portable radios. As a result, communications between crews were lost. This occurred around 1555 hours.

At this time, Jax-5 was near the origin to scout a place for another incoming unit to unload. He heard the radio traffic that the two firefighters were leaving their units on foot. After several attempts to make contact with them using both radio and cell phone, Jax-5 contacted dispatch to inform them that communications with two firefighters had been lost. During this time, the Clay County Fire Rescue Operations Chief on scene contacted his brush truck to advise of a "Mayday" and that two Florida Forest Service firefighters were on foot. The brush truck crew began looking for them but could only go so far in the vehicle and they too continued on foot. After several minutes, the Clay County firefighters heard the two firefighters calling for help and began following their voices. They met up with them after they had reached a mowed line to the north. This is an area that Jax-53 had seen previously and knew that if they continued in that direction they would eventually reach it.

At this point, the two firefighters were exhausted after fighting their way through the heavy vegetation with the fire close behind. During their escape, both firefighters' hard hats were knocked off and because of the proximity of the fire; they were not able to retrieve them (The location of the hard hats is marked on the attached map). Both

firefighters were in need of rehab. Per Clay County Fire Rescue protocol, when they initiate an emergency (Mayday Call) they automatically dispatch a rescue unit and it was on scene when the firefighters reached safety. Clay County firefighters assisted the two Florida Forest Service firefighters who were not injured during their escape. Jax-5 was informed that they had been found and were okay. This information was relayed to dispatch at 1612 hours.

Weather

The following is the fire weather forecast for April 7, 2012:

FFS District Observations taken at Jacksonville District Office:

Winds	Temperature	Relative Humidity	Fire Readiness	Buildup Index	Spread Index
E @ 17	72	40	2	30	30

NWS / FAWN Weather Observations taken at Hastings:

Time	Winds	Temperature	Relative Humidity
1300	NE @ 15	70	61
1400	NE @ 16	70	60
1500	NE @ 14	70	60
1600	ENE @ 15	71	60

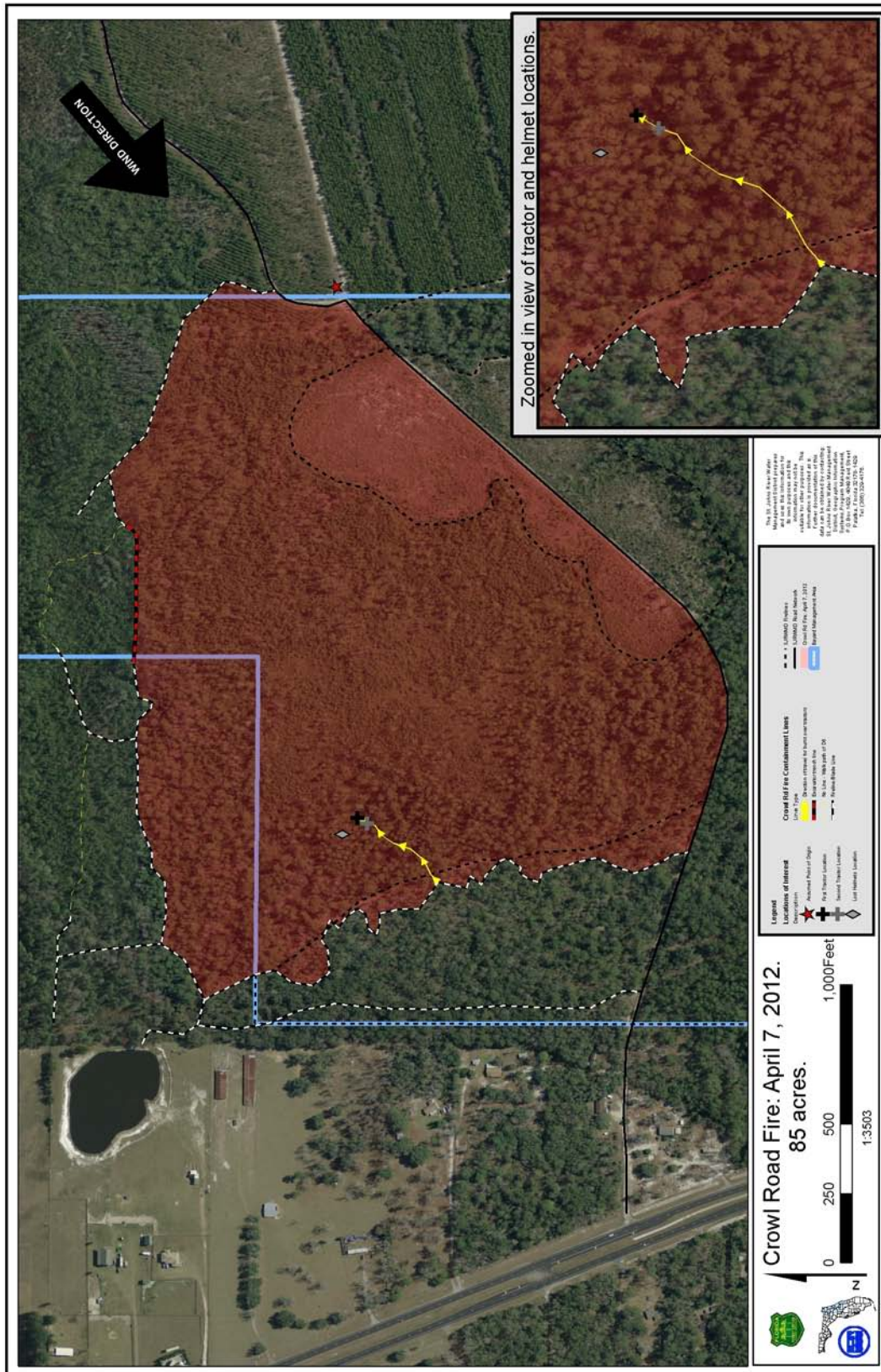


View of the burnover site.



View of the fuels encountered during their escape.

Map



Lessons Learned Analysis

On initial attack the fire situation escalated quickly and put the crews on an increased state of awareness, however; with a brief lull in the fire activity it led the crews to cut across an unfamiliar swamp in an attempt to connect the firelines. After becoming stuck and being unsuccessful at freeing the dozer/plow units, the fire started to become very active again, thus leaving the firefighters with only one option, escape to safety.

After thoroughly reviewing the Crowl Road Fire, the Review Team found the following factors to be points of interest and lessons that can be learned as a result of this event. The following lessons learned analysis includes both the positive steps that were taken as well as those areas where we can improve.

The Review Team would like to acknowledge the many positive steps taken by firefighters on the Crowl Road Fire. The following list is certainly not complete, but points worth mentioning for discussion purposes as we learn all we can from this event.

- After hearing radio traffic of a wildfire in the area and understanding the current conditions, firefighters made the decision that two dozer/plow units would head in that direction.
- After sizing up the fire, the IC (Jax-53) requested a third dozer/plow unit as well as a supervisor.
- Units followed standard protocol for this district which is to conduct a radio check with dispatch prior to engaging.
- Units adjusted their tactics when their current tactics were not working.
- Aerial resources were requested when needed.
- Units worked together and in tandem to contain the fire.
- Firefighters met face to face to discuss their plan of attack.

- Communications during the time the two units were stuck, up to the point where the firefighters escaped on foot, were good. Firefighters relayed pertinent information while maintaining their composure and keeping calm. This prevented a third unit from being exposed to unnecessary risk and let other FFS personnel on scene know that the two firefighters were escaping on foot.
- The two firefighters attempted to free the stuck units, but realized when it was time to leave their equipment and made the right decision to escape to safety.
- The two firefighters took their fire shelters with them upon their escape.

As with any Incident Review, we can always find areas where we can improve and it is imperative that we discuss those as well. The Review Team found the following areas where we can potentially improve as an agency. Recommendations are included:

- **Emergency Communications Procedures** - Prior to making their escape, the transmission that was put out over the radio was "We're leaving our tractors". While this was good and relayed valuable information, it led to confusion for the Fire Department on scene. It was their understanding that the FFS Firefighters were just leaving their tractors for a non-emergency reason. After communication with their Operations Chief who was in contact with Jax-5, it was then understood that there was an emergency (Mayday as commonly used by the Fire Department) and the Fire Department personnel moved in on foot and found the two FFS Firefighters. If there was a clear distress call made, it could have led to a faster response.
 - **Recommendation #1 – All Fire Personnel should become familiar with the important changes already made to the Emergency Communications Procedures which now include both Dispatch-initiated and Field-initiated procedures to be used in the event of an emergency or critical incident. (P&P 412.300)**

- *It will also be important to practice these procedures in addition to sharing them with our cooperators to ensure they understand what is happening in the event these procedures are implemented.*
- **All FFS firefighters should have a portable radio on their person during fire suppression** - The two FFS firefighters left their equipment and escaped to safety on foot having their fire shelters in hand, but leaving their portable radios behind. This caused them to have no communications during their escape to safety. This left the remaining crews unaware of their exact location and made rescue efforts difficult. If they would have had communications it could have expedited their rescue.
 - **Recommendation #2 – FFS firefighters should have portable radios on their person at all times during fire suppression.**
 - *Many crews wear various types of harnesses to ensure that both their fire shelter and portable radio is on their person at all times. Our agency understands that each firefighter has different preferences and for that reason a specific type of harness has not been required; however, it is imperative that each firefighter find what works for them to ensure that the necessary PPE and equipment are readily available.*
- **All FFS dispatch centers should train on alternative methods for improving incident communications (such as the Florida Interoperability Network, FIN)** – Although it did not directly affect this event, there were issues with communications between ground crews and dispatch. It is understood that we have areas of our state that make communications between ground crews and dispatch difficult. There are tools available that have the potential to solve these issues, such as the FIN.

- **Recommendation #3 - Each Field Unit Manager should work closely with the unit Telecommunications Specialist to ensure that all avenues are considered and personnel receive training to utilize these tools, which should be practiced on a routine basis.**
- **Transfer of Command** - After reviewing the incident card and conducting the After Action Review, the Review Team noticed that there was no formal transfer of command from Jax-53 to Jax-5. For the safety of all Florida Forest Service, Fire Department and Out of District fire personnel, there needs to be a recognized Incident Commander. Although there was no confusion on this fire as to who was in command (all crews had the understanding that Jax-5 took over as Incident Commander upon his arrival); the transfer of command should be formal and announced over the radio for the benefit of everyone on scene. Dispatch should be informed as well.
- **Local Area Factors** – During the After Action Review, firefighters stated that “This was a bad area but we didn’t know how bad” and “We have never fought fire here before”. It was also pointed out that a St. Johns River Water Management District employee later advised that the winds shift each day around that time in this area (possibly related to the proximity of the River and being close to the coast as well). All Fire personnel should familiarize themselves with local factors and areas that have a history of extreme fire behavior/high fire occurrence. This will lead to safer decision making while fighting fire in these areas.
- **Winching Operations** - It was identified that the first attempt to free Jax-53 was by hooking the blade of Jax-57 to the plow of Jax-53 using a chain and attempting to free Jax-53 by backing out. This method did not work and resulted in a loss of valuable time; ultimately sticking Jax-57 in the process. Had the operator backed in and hooked the winch cable of Jax-57 to the plow of Jax-53 and pulled forward while free spooling the winch until he reached more stable ground, it may have resulted in freeing Jax-53 or not sticking Jax-57.

- **Abandonment Procedures** – Shortly after the event, it appeared that Jax-53 and Jax-57 received only minor damage; however, upon further inspection it was discovered that the engine of Jax-53 sustained significant damage and will require replacement. This is the result of the engine running during the burnover.

As addressed in the recent Florida Suppression Tactics Training, there are procedures that should be followed when abandoning a dozer/plow unit in an effort to protect the unit from damage. The following should be considered in the event that a burnover is imminent and if time permits:

- Point the blade of the dozer towards the oncoming fire and lower the blade to the ground. (In most cases, this will not be possible as the unit will not be mobile)
 - Turn the water protection system to the belly pan on.
 - Ensure that the master switch is left on.
 - Turn the air conditioner off.
 - Turn the engine off.
 - Turn the emergency fuel shut-off valve off.
 - Take your portable radio and PPE with you.
 - Close the doors before making your escape.
- **Recommendation #4** – All crews should discuss the previous four topics (Transfer of Command, Local Area Factors, Winching Operations and Abandonment Procedures) to ensure that everyone understands procedures and factors as they relate to suppression operations within their area.

The Review Team would like to thank everyone involved in this process for their cooperation and willingness to share open and honestly. Our hope is that we can all learn from this event and use this review as a tool to prevent future occurrences. To that end, please share and discuss these valuable lessons learned with all FFS Firefighters and Cooperators.