

# Woods Community Fire Entrapment

Final Accident Review

October 6<sup>th</sup>, 2010 Newton County Texas



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### Investigation Team Members

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## Executive Summary

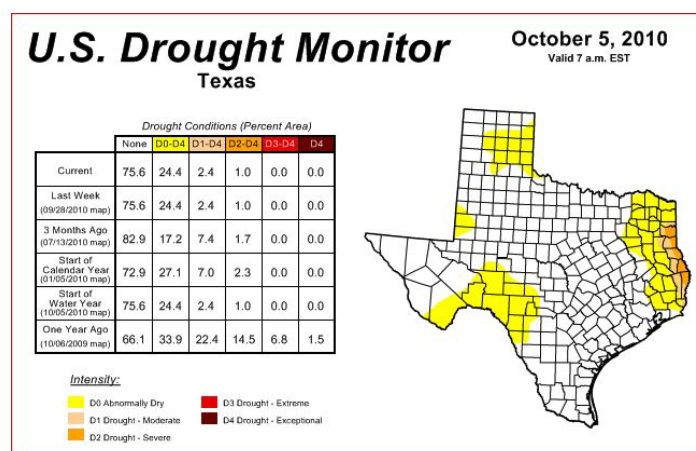
On October 6<sup>th</sup>, 2010 at about 1620 hours, a Texas Forest Service tractor-plow operator was entrapped during initial attack operations on a wildland fire in Newton County Texas about 5 miles southeast of the town of Newton. The tractor-plow operator was entrapped when active crown fire occurred near the position of the tractor-plow and cut off the planned escape route. The tractor-plow operator managed to escape through unburned fuels back to the black but sustained second and third degree burn injuries during the entrapment. The tractor plow unit was lost to the fire. The tractor-plow operator has recovered from the injuries and has returned to work.

The *NWCG Glossary of Wildland Fire Terminology* defines an entrapment as “a situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes or safety zones are absent, inadequate, or compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include near misses”

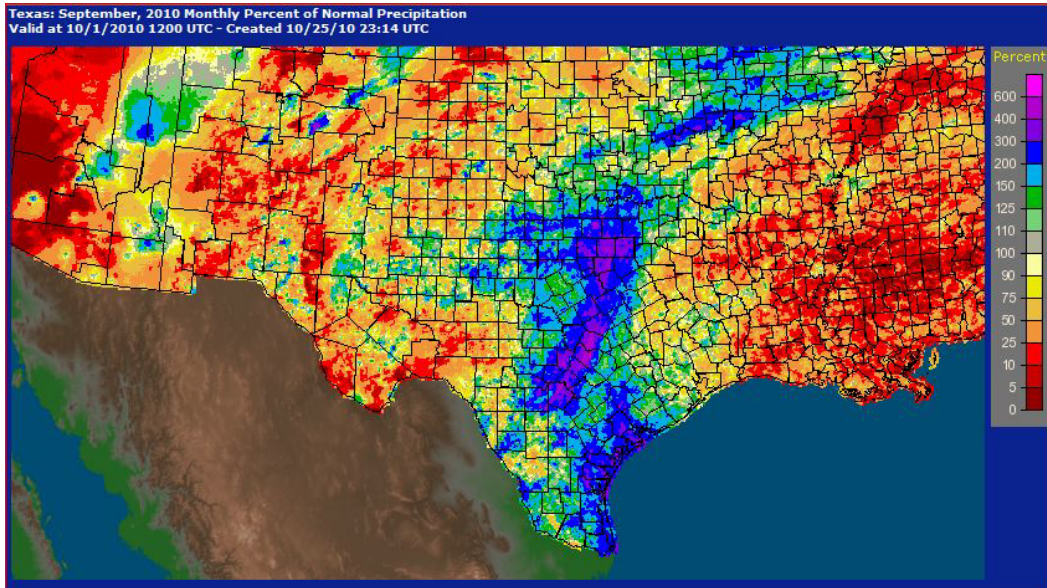
The Texas Forest Service Resource Protection Division delegated the Woods Community Fire investigation to an interagency team. This team used the significant accident investigation process as outlined in the *USDA 2005 Edition Accident Investigation Guide* to identify the factors resulting in the entrapment. Formal investigations look at human factors, equipment factors, and environmental factors that contributed to or were causal to the accident. The team identified these factors in an effort to help the greater wildland fire community learn from this incident and help prevent accidents of this kind in the future. Team members visited the site, interviewed the individuals associated with the incident, reviewed records of weather and fuel conditions, and examined the record of events leading up to and immediately following the entrapment.

## Narrative

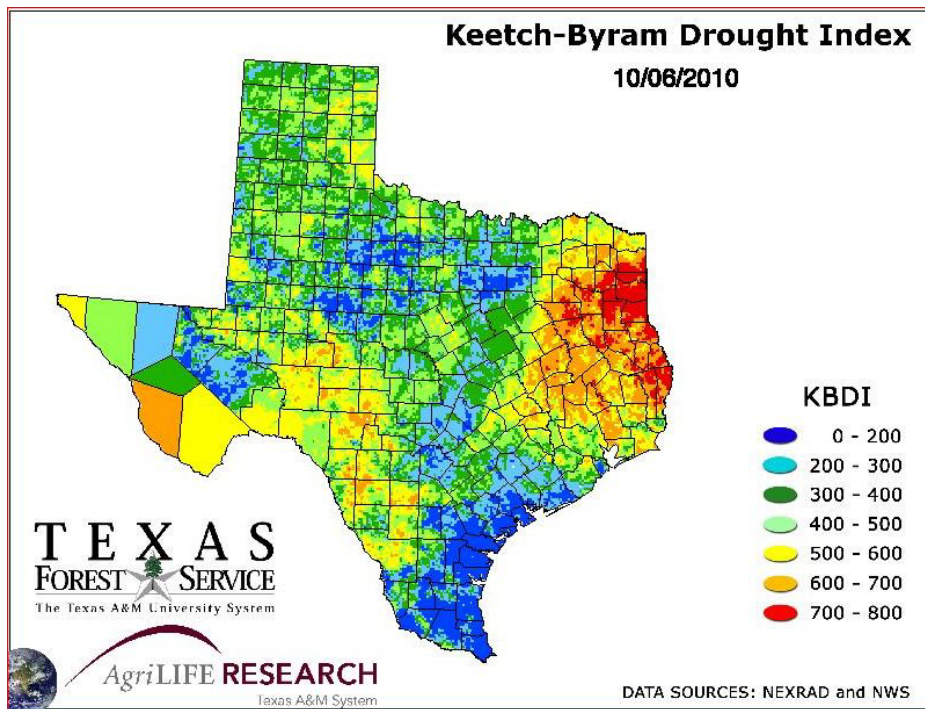
Environmental conditions in southeast Texas and Newton County had been trending dry for the 90-day period prior to the Woods Community Fire. The Drought Monitor finalized its weekly drought map on October 5<sup>th</sup> that showed the northern half of Newton County in a D-2 or severe drought category.



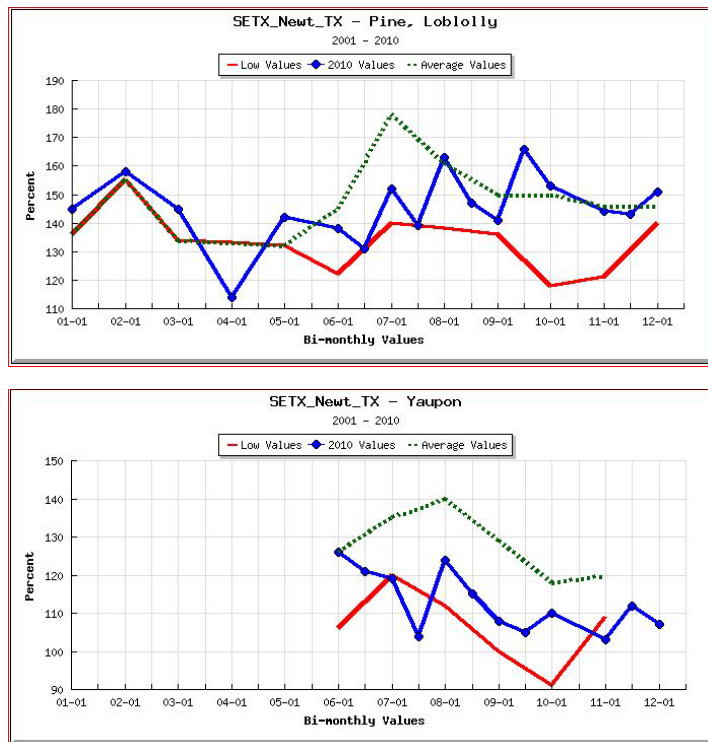
30-day rainfall deficits in the fire area were running between 25 and 50% of normal.



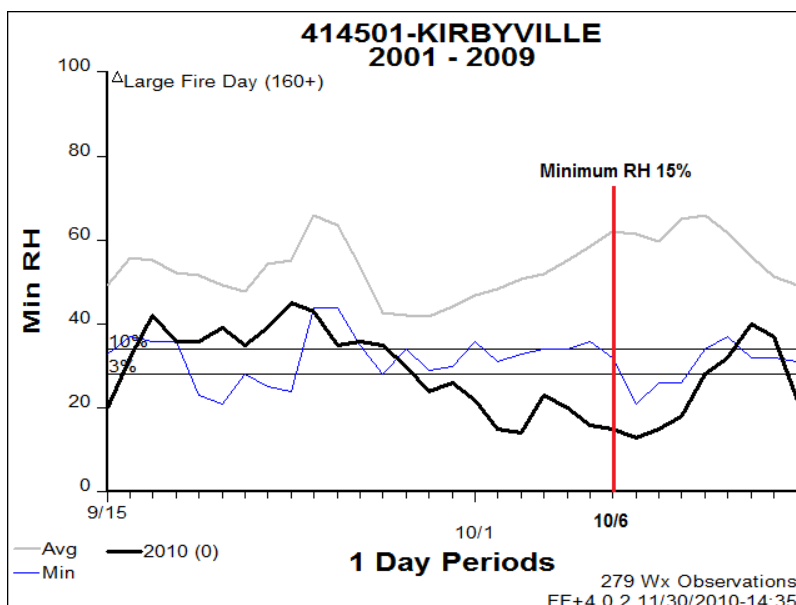
KBDI values in northern Newton County were between 700 and 800.



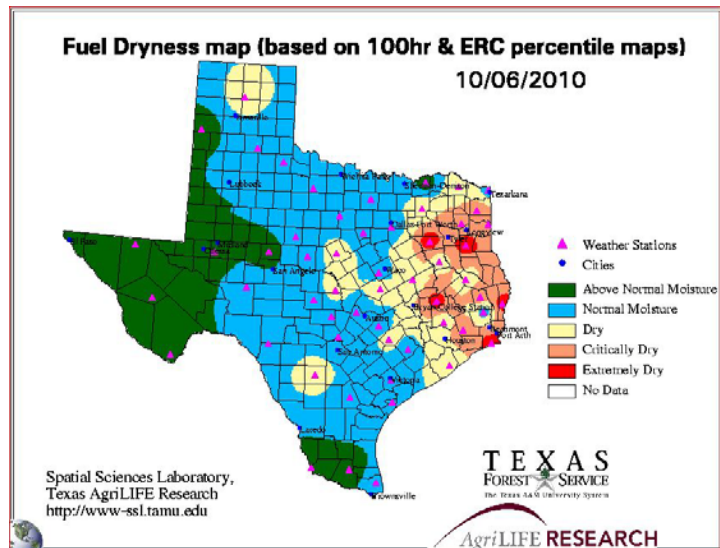
Live foliar moisture measured in Yaupon and Loblolly pine on October 1<sup>st</sup> in Newton County indicated slightly above normal moisture in pine and below normal moisture in Yaupon.



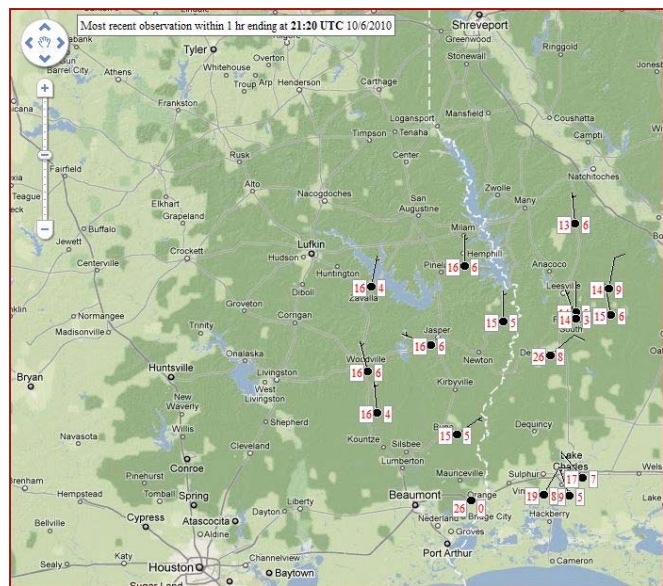
The Kirbyville RAWS recorded minimum RH observations of 26% or less for the eight days preceding the Woods Community Fire. It is unusual for RH to dip below 25% in southeast Texas. It is very rare when there are eight consecutive days of minimum RH below 26%. The Fire Family Plus graph below shows that the observed minimum RH at Kirbyville was below the 8-year historical minimum recorded at this RAWS for this time period.



All of the indicators were in agreement that northern Newton County was experiencing both long and short term drying. The Texas Forest Service (TFS) uses a fuel dryness index based on the Energy Release Component (ERC) and 100-hr Fuel Moisture which are both outputs of the NFDRS. The TFS uses percentile rankings of ERC and 100-hr FM to describe an adjective level of fuel dryness from *above normal moisture* to *extremely dry*. The fuel dryness level calculated at the Kirbyville RAWS on October 6<sup>th</sup> was *extremely dry*. The only way to achieve this fuel dryness level is that the ERC must exceed the 97<sup>th</sup> percentile and the 100-hr FM must be below the 3<sup>rd</sup> percentile. The extremely dry level of fuel dryness was a result of the increasing rainfall deficits and long term drying trend and the extremely dry environment over the short term due to the historically low minimum RH observed over an eight day period.



The October 6<sup>th</sup> 1600 hour observed weather from several weather stations in the fire area showed temperatures ranging from 83 to 87 degrees, RH ranging from 15-16% and sustained windspeed from the north 4-6mph with gusts at 11-18mph.



## Significant Fire Potential

To the right is a matrix that uses ERC and BI to determine the daily significant fire potential. The observed ERC-G at the Kirbyville RAWS on October 6<sup>th</sup> was **43**. The observed BI-G at Kirbyville was **42**. The combination of ERC and BI observed on October 6<sup>th</sup> indicated a very high potential for significant fire occurrence. The National Weather Service Lake Charles office did not produce a NFDRS forecast for October 6<sup>th</sup>.

Kirbyville RAWS		Preparedness Level Energy Release Component G (ERC)			
		1 0-24	2 25-29	3 30-34	4 35+
Dispatch Level Burning Index G (BI)	1 0-25	Very Low	Low	Low	Moderate
	2 26-34	Low	Low	Moderate	Moderate
	3 35-41	Moderate	Moderate	High	High
	4 42+	Moderate	Moderate	High	Very High

Recent fire activity in the Kirbyville response area included 23 fires over the past 30 days leading up to the October 6<sup>th</sup> Woods Community Fire. No significant fires had occurred but the initial attack crew on the Woods Community Fire had worked a 25 acre fire on October 3<sup>rd</sup> burning in plantation fuels that exhibited higher resistance to control due to torching and short range spotting across control lines.

On the morning of October 6<sup>th</sup> the Woods Community Fire initial attack crew came to work expecting to be dispatched to a wildfire. They told an office visitor that day that they expected the call to come around 1500 hours as that was the time the dispatches had been occurring recently. The crew had downloaded the National Weather Service fire weather forecast from Lake Charles, reviewed it and posted it on the bulletin board in the office. Later that afternoon the crew accessed the Mesowest surface observation map and noted the 1400 hour observations on October 6<sup>th</sup> showing the conditions in the Kirbyville response area to include temperatures from 82-85, RH 15-17%, and 6-8mph winds from the N-NE.

The initial attack crew was dispatched from Kirbyville to the Woods Community fire at 1535. The crew reported arriving at 1600 just west of the intersection of state highway 190 and county road 4002 about 5 miles southeast of Newton Texas. The crew traveled together in the suppression unit and talked/speculated about what they might encounter. The crew discussed initial reports from the fire departments that the fire cause was arson. The crew knew this area of the county had a high incidence of arson and that arson sets usually occurred in pine plantations and were set to maximize the effects of the prevailing winds. The crew reported seeing the smoke from the fire and given their local knowledge of the area speculated that this fire could be a “good one” meaning a fire that exhibits above average resistance to control.

The initial attack crew arrived at the Woods Community fire at 1600. They spoke with the local fire department on scene. The fire department could only access the portion of the fire burning

by the county road. The fire was burning in pine plantation fuels with a thick understory that included Yaupon. The plantation was bedded and machine planted in rows. Tree DBH ranged from 6-10 inches with tree heights near 30 feet. The plantation had not been thinned and the canopy was closed.



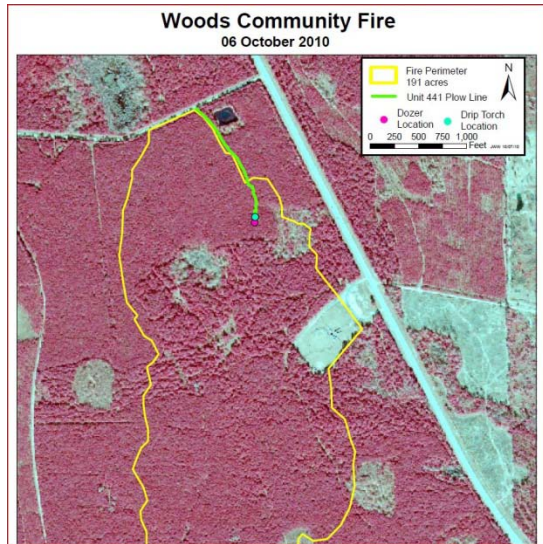
The initial attack crew conducted their size-up based on the fire behavior they were seeing at the rear near their planned anchor point and the smoke column they were observing. There was no detection plane on site to provide additional information. The crew reported seeing a surface fire with 2-3 foot flame lengths and estimated the fire size at 10 to 20 acres burning in the plantation fuels described above. The two firefighters briefly discussed their tactical plan. The ground person or swamper was the more experienced firefighter and assumed the role of ICT 5.

The crew decided to implement what they described as a textbook tactic for this situation. They would anchor and flank while burning out to bring the black with them. It was understood between them that the black would serve as their safety zone and the plowed firebreak would serve as their escape route. The crew decided to anchor on county road 4002 and build indirect line up the left flank with the ICT 5 burning out behind the tractor plow as the line construction progressed. The ICT 5 recommended to the tractor plow operator to find a comfortable distance from the fire edge to establish the indirect line. This distance turned out to be about 70-80 feet. The tractor plow operator followed the space between tree rows to establish the plowed line as this space was the path of least resistance for the John Deere 450G tractor-plow. The crew began suppression operations 5-10 minutes after arrival or around 1610 hours. The crew had established radio communications between themselves on their local tactical channel. They did not monitor the local fire department frequency due to the very high amount of traffic on this frequency. The ICT 5 served as the lookout for the tractor-plow operator.

The line construction and burnout progressed without incident for the first 1000 feet. The ICT 5 lagged 60-120 feet behind the tractor plow with the burnout. The ICT 5 reported no torching or containment issues with the burnout. The ICT 5 also reported seeing no group torching or crown fire activity during the burnout operation.



The last approximately 250-300 feet of constructed line starts making a gradual turn to the right as can be seen on the map below showing the location of the entrapment and the location of the dropped drip torch (where the ICT 5 initiated escape).



from the crew indicate that the tractor-plow operator was most likely on the left shoulder of the fire and beginning to turn across the head of the Woods Community Fire. At approximately 1620-1625 both the ICT 5 and the tractor plow operator saw the initiation of crown fire on the fire edge. The ICT 5 was trailing the tractor-plow 60-120 feet saw the crown fire initiate on the fire edge ahead and to the right of the ICT 5's position. (See photo below)



The ICT 5 radioed the tractor-plow operator and warned the operator to get out (retreat to the black). The tractor-plow operator heard the warning and saw what the operator described as a curtain of fire raising up on the fire edge. The tractor-plow operator began maneuvering the tractor with the intent of returning back along the constructed firebreak to the black that had been secured or built by the burnout. While trying to escape the JD 450G tractor plow became stuck between several trees.



The tractor-plow operator struggled for a short time to free the tractor and escape but was not able to dislodge the tractor-plow unit from between the trees before the environment in the cab of the tractor-plow became too hot to remain in. The operator reported debris (mostly pine needles and small twigs) that had collected in the cab during line construction ignited. Burning debris on the floor board caused burns on the back of the operator's legs. The tractor-plow operator reported that the fire was closing in on the tractor-plow. The operator looked back down the plowed line and saw that the fire had crossed and compromised this escape route. The operator opened the seatbelt after a brief struggle to open the latch with thick gloves. The tractor-plow operator reported taking a deep breath and holding it before exiting the tractor-plow through the left side. The operator ran to the left through the unburned plantation and eventually circled back to the plowed line. The operator was able to escape the advancing fire and met up with the ICT 5 on the plowed line in the black approximately 3-5 minutes after exiting the tractor plow. The ICT 5 communicated to an inbound supervisor that the tractor plow operator had been burned. The inbound supervisor requested the local EMS. When the crown fire initiated, the ICT 5 was able to escape back down the plowed line to the safety zone in the black. After reuniting on the fireline in the safety zone, the operator and ICT 5 walked out to the county road. They emerged on the road at approximately 1630 to 1635. The local EMS arrived shortly after the crew emerged on the county road. The EMS personnel examined the burns on the operator and transported the operator to the hospital in Jasper. The operator was treated for second and what were later determined to be third degree burns over 25-30% of the body. The operator was released from the Jasper Hospital later that night, October 6<sup>th</sup> but was not released to return to work for more than three weeks.

The fire was declared a Type 3 incident just after the entrapment. The Woods Community Fire was contained at 2300 on October 6<sup>th</sup> and controlled the evening of October 7<sup>th</sup> after burning 180 acres.

## Findings

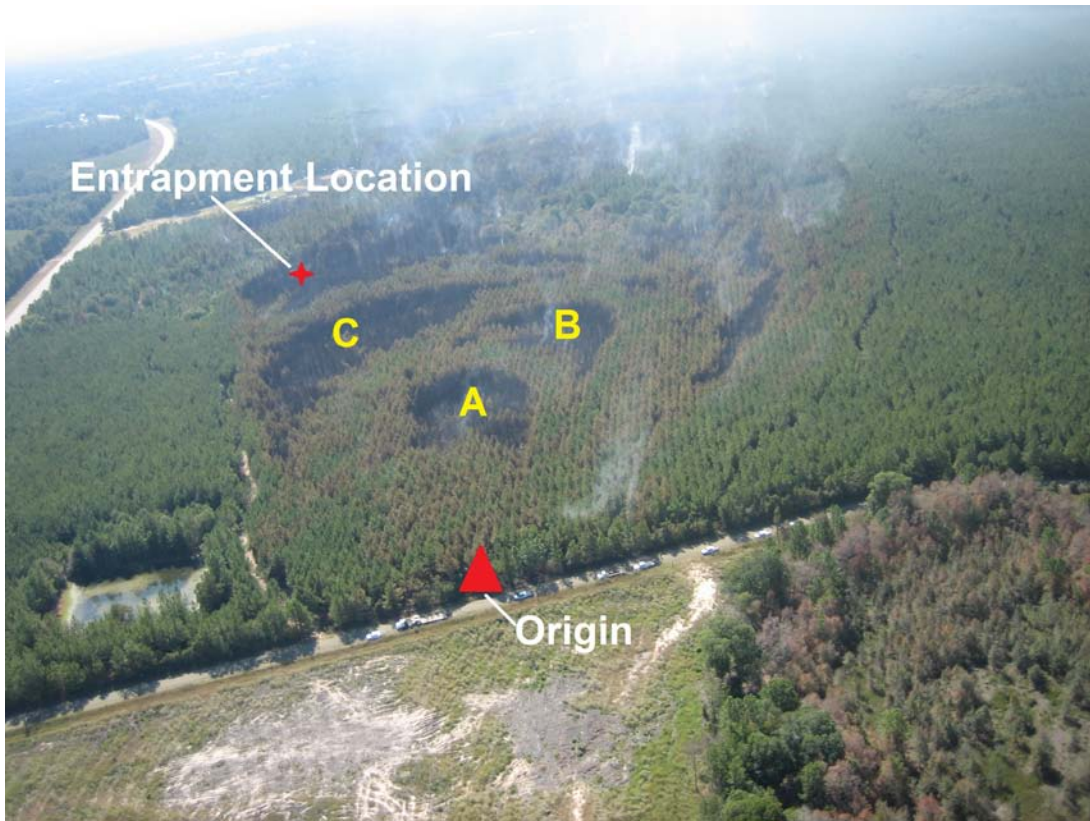
Findings are discovered through the processes of interviews, on-site visits, and examination of existing documentation.

- Finding 1**      **Fuels and fire weather combined to produce active crown fire.**  
Fuel, weather and fire behavior were documented in the narrative section.
  
- Finding 2**      **The distribution and size of the trees in the plantation restricted the movement or agility of the John Deere 450 G tractor plow.**
  
- Finding 3**      **Crew members were wearing all required personal protective equipment (PPE).**

- Finding 4**      **The tractor-plow became wedged between trees during the escape.**  
The operator could not say exactly how much time passed while the operator worked to free the tractor-plow and escape the fire. The operator stated that it seemed like a long time but it was probably just a few minutes.
- Finding 5**      **There was a gap of 60 to 120 feet between the tractor-plow and ICT 5 during line construction.**
- Finding 6**      **The senior crew member assumed the role of IC.**  
This is a standard practice between crew members.
- Finding 7**      **The training received by this crew promoted an indirect tactic of anchor, flank, and bring the black with you.**  
The crew referred to their indirect attack as a textbook example of the tactics they had been taught. When asked about specific training, the crew referred to a number of sources including annual refreshers, S-130, local tractor-plow training, and local mentoring.
- Finding 8**      **There was no detection aircraft assigned or on scene.**
- Finding 9**      **There was minimal discussion between crew members on size-up, tactics, and LCES.**  
Though not discussed, the crew reported that it was understood between them that the black would be the safety zone and the plowed lined would be the escape route.
- Finding 10**     **The Crew did not maintain or monitor communications with the fire departments.**
- Finding 11**     **The crew was on a 25 acre pine plantation fire three days earlier where torching and short range spotting contributed to control problems.**
- Finding 12**     **The tractor-plow operator had difficulty unlatching the non-retractable 2 inch seat belt when exiting the cab.**
- Finding 13**     **The ICT 5 knew a supervisor was en route and speculated that this supervisor would likely change the current tactic.**  
The ICT 5 made this speculation based on past assignments they had worked together.
- Finding 14**     **The crew employed indirect attack tactics and burned out along the line as line construction progressed.**

**Finding 15**     **The crew observed surface fire with 2-3 foot flame lengths on the rear and flank. They did not observe any crown fire until just before the entrapment.**

Although the crew did not see any crown fire prior to the entrapment it appears likely that crown fire had been occurring prior to this time. Aerial photographs taken the next morning appear to show at least two areas of crown fire that were behind the entrapment location and toward the county road.



The position of these areas would suggest that crown fire occurred prior to the crown fire observed by the crew. It is very likely that the area labeled “A” crowned before the entrapment but the crew was unable to observe this activity due to the limited visibility from their position. The same could be said for the area labeled “B”. Both of these areas are far enough away from the left flank to be blocked from view. Area “C” shows crown fire activity close to the left flank containment line. The crew stated they saw no crown fire activity close to the containment line prior to the entrapment. It is unlikely that they would not have seen this crown fire activity that close to their control line, however, the specific location of the initial attack crew cannot be confirmed at the time area “C” crown fire occurred. Based on crew statements, it is likely that the area “C” crown fire initiated more to the center of the fire and progressed out to the flank and eventually interacted with the burnout to create the pattern above.

- Finding 16** The lookout for the crew was the ICT 5.
- Finding 17** The escape route for the tractor-plow operator was compromised by fire.
- Finding 18** The tractor-plow operator took a breath and held it when exiting the dozer during the escape.
- Finding 19** The tractor-plow operator's fire shelter was in a fire pack stored behind the operator's seat.  
No attempt was made to retrieve the fire pack during the abandonment of the tractor-plow. The operator's choice was to out run the fire rather than deploy in the fire shelter.
- Finding 20** Both crew members saw the crown fire at the same time and communicated to each other to retreat.
- Finding 21** Debris that collected in the tractor-plow during line construction operations ignited before the flame front reached the tractor plow.
- Finding 22** The tractor-plow operator's safety glasses partially melted but the operator suffered no eye injury.
- Finding 23** The tractor-plow operator's escape route circled out into the unburned fuel then back to the fireline.
- Finding 24** The ICT 5 was very familiar with the Hancock property on which the Woods Community Fire occurred.

## **Causal Factors**

A causal factor is any behavior, omission, or deficiency that if corrected, eliminated or avoided probably would have prevented the accident.

### **Causal Factor 1**

**Given the existing fuels and fire weather, the indirect tactics were improperly planned and executed.**

The default indirect tactic that the initial attack crew executed did not provide safe operating margins in the closed canopy pine plantation fuel type on a high risk day. Indirect tactics executed in closed canopy pine plantations on a high risk day require thorough size-up, adequate resources, planning and a coordinated execution.

## **Causal Factor 2**

### **Existing training and mentoring does not provide initial attack crews the decision tools to identify and manage complex or potentially complex fires.**

This investigation group determined that this initial attack crew had not received the training to identify, manage and transition complex fires such as the Woods Community Fire and believes that the same could be said for all TFS initial attack crews with but a few exceptions.

## **Recommendations**

### **Recommendation 1**

#### **Use direct attack tactics when possible.**

Direct tactics do not put unburned fuel between the tractor-plow and fire edge which provides quick access to the black. Direct tactics in high risk fuels that burn intensely may only be possible on the rear and flanks and may slow line construction but is an effective tactic that can be used until there is enough time to size-up and plan other tactics.

### **Recommendation 2**

#### **Experienced fire supervisors should be used to plan and execute indirect tactics in high risk fuels on high risk days.**

Indirect tactics require thorough size-up, planning, and coordination to execute safely.

### **Recommendation 3**

#### **There is a need for statewide oversight and coordination of local or supplemental training for firefighters.**

This could include identifying training needs, course development, mentoring guidelines, peer review and delivery of training.

### **Recommendation 4**

#### **Significant fire potential determination and fire complexity typing should become a routine part of initial attack size-up.**

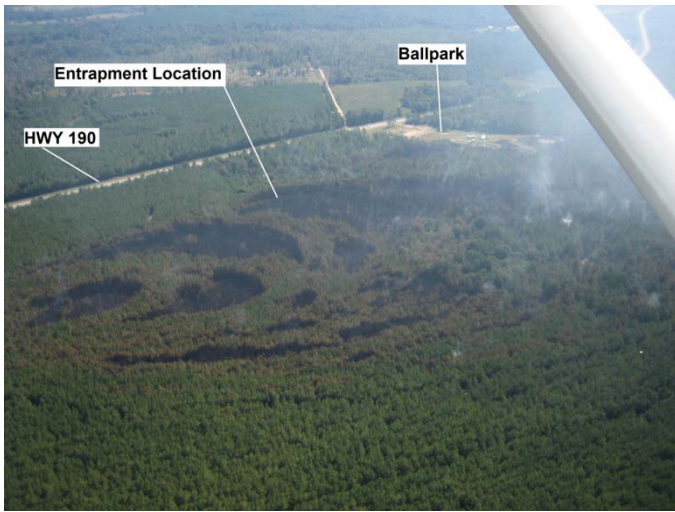
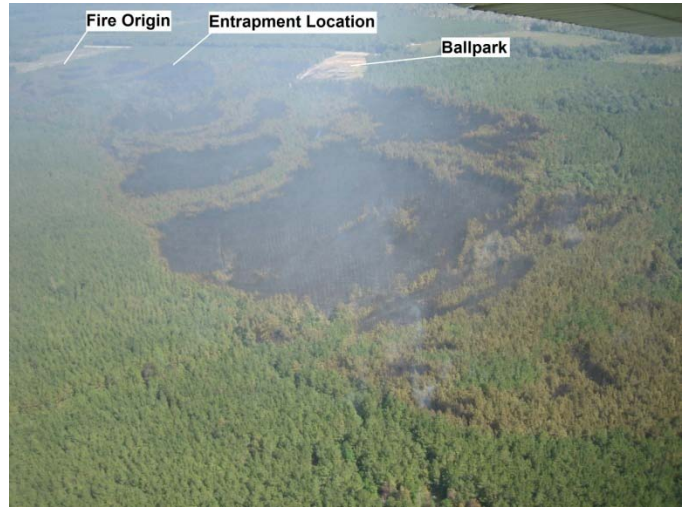
Initial attack crews should have the ability to recognize potentially complex fires. Initial attack crews should be able to combine fuel conditions and forecast weather to determine significant fire potential. Significant fire potential is an important factor in fire complexity typing. This increased situational awareness is needed for tactical and resource decisions.

# Appendix

## Pictures

The following 4 pictures were taken in sequence over a three minute period as the suppression resource approached the Woods Community Fire from about 1½ to 2 miles out. The time of the photos are posted on the photos.





Plowed line down the middle of planted rows



Flagging marks dropped drip torch location





Entrapment Location



Operator's seat with fire shelter



Melted drip torch on left



Needle drape in plantation



Plantation fuels



Closed Canopy

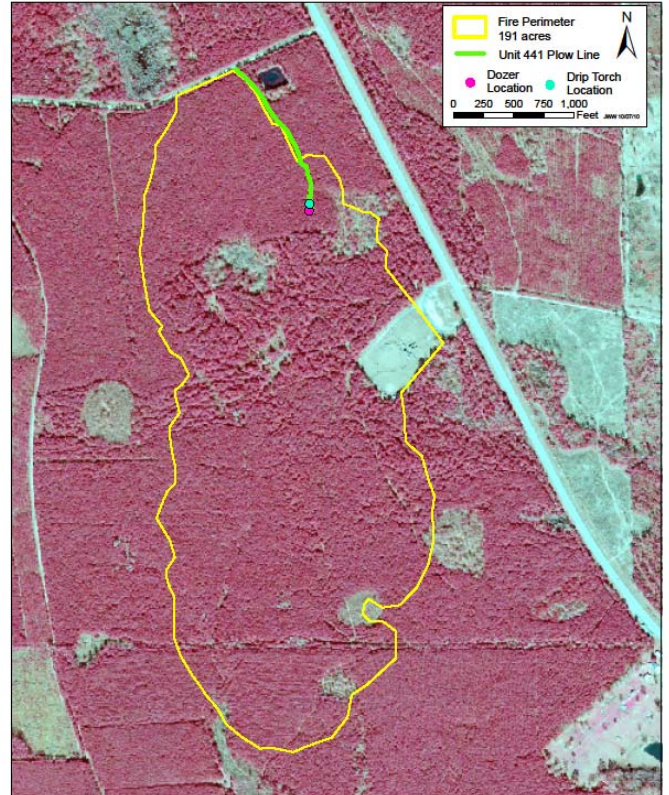


# Maps

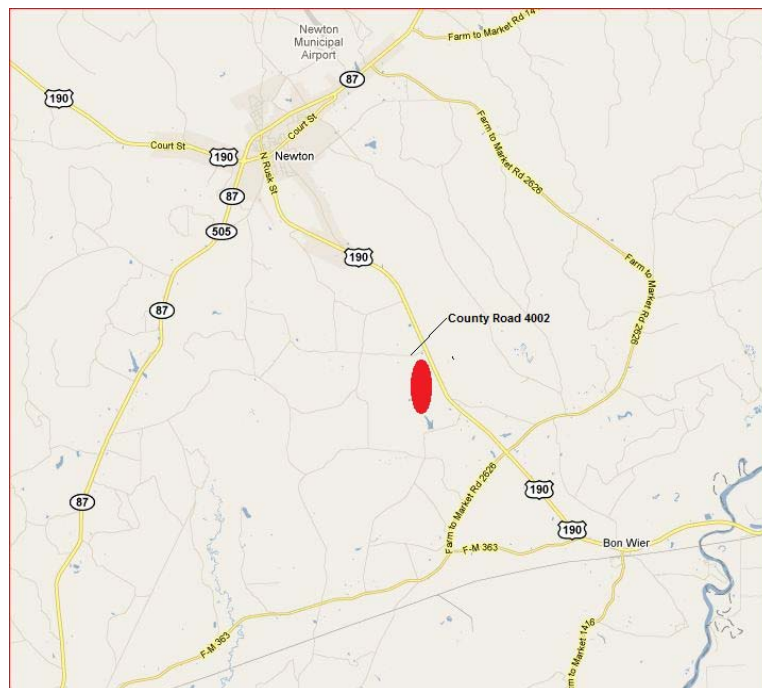
**Woods Community Fire**  
06 October 2010



**Woods Community Fire**  
06 October 2010



## Woods Community Fire Location



# Weather

## Lake Charles Fire Weather Planning Forecast for Newton County October 5<sup>th</sup> 1530 hours

FNUS54 KLCH 052032

FWFLCH

FIRE WEATHER PLANNING FORECAST FOR SOUTHEAST TEXAS  
AND SOUTHWEST AND CENTRAL LOUISIANA FOR LOUISIANA  
NATIONAL WEATHER SERVICE LAKE CHARLES LA  
332 PM CDT TUE OCT 5 2010

...HIGH FIRE THREAT WILL CONTINUE INTO TOMORROW...

ALL THE PARISHES IN LOUISIANA ARE UNDER A BURN BAN.

JASPER...NEWTON...HARDIN...AND TYLER COUNTIES IN SOUTHEAST  
TEXAS ALSO REMAIN UNDER A BURN BAN.

.DISCUSSION...

A DOME OF HIGH PRESSURE OVER THE CENTRAL UNITED STATES WILL  
DRIFT OFF TO THE SOUTHWEST AND SETTLE OVER TEXAS/LOUISIANA  
BY WEDNESDAY AFTERNOON. THIS WILL CONTINUE THE COOL DRY  
WEATHER INTO THE WEEKEND. RELATIVE HUMIDITY IS EXPECTED TO  
RANGE FROM 20 TO 30 PERCENT TOMORROW AFTERNOON THEN GRADUALLY  
CREEP UPWARDS HAS THE AIR OVER THE REGION BEGINS TO MODIFY.  
THERE IS A SLIGHT CHANCE OF A SHOWER TOWARDS THE MIDDLE OF  
NEXT WEEK. ALTHOUGH THIS EVENT IS NOT EXPECTED TO BRING MORE  
THAN 1/4 TO 1/2 INCH TO ANY ONE LOCATION. THIS POSSIBLE RAIN  
EVENT WILL NOT CHANGE DROUGHT CONDITIONS THAT THE REGION IS  
CURRENTLY EXPERIENCING.

TXZ180>182-201-061130-

TYLER-JASPER-NEWTON-HARDIN-

332 PM CDT TUE OCT 5 2010

	TONIGHT	WED	WED NIGHT	THU
CLOUD COVER	CLEAR	CLEAR	CLEAR	CLEAR
PRECIP TYPE	NONE	NONE	NONE	NONE
CHANCE PRECIP (%)	0	0	0	0
TEMP (24H TREND)	43 (0)	85 (+6)	46	86
RH % (24H TREND)	86 (-1)	18 (+1)	85	21
20FTWND-VAL/AM(MPH)		LGT/VAR		LGT/VAR
20FTWND-RDG/PM(MPH)	LGT/VAR	LGT/VAR	LGT/VAR	LGT/VAR
PRECIP AMOUNT	0.00	0.00	0.00	0.00
PRECIP DURATION				
PRECIP BEGIN				
PRECIP END				
MIXING HGT(M-AGL/MSL)	0	1547	0	2181
MIXING HGT(FT-AGL/MSL)	0	5077	0	7157
TRANSPORT WND (M/S)	NE 6	NE 3	N 2	N 2
TRANSPORT WND (MPH)	NE 14	NE 6	N 5	N 3
CATEGORY DAY	1	3	1	3
DISPERSION	POOR	GOOD	POOR	GOOD
LAL	NO TSTMS	NO TSTMS	NO TSTMS	NO TSTMS
VENT RATE (M/S-M)	0	4641	0	4362
KEETCH-BYRAM	601-700	601-700	601-700	601-700
REMARKS...NONE.				

**Lake Charles Fire Weather Planning Forecast for Newton County October 6<sup>th</sup> 0400 Hours**

FNUS54 KLCH 060850

FWFLCH

FIRE WEATHER PLANNING FORECAST FOR SOUTHEAST TEXAS

AND SOUTHWEST AND CENTRAL LOUISIANA FOR LOUISIANA

NATIONAL WEATHER SERVICE LAKE CHARLES LA

350 AM CDT WED OCT 6 2010

.DISCUSSION...

THE LARGE DOME OF HIGH PRESSURE OVER THE CENTRAL AND EASTERN UNITED STATES WILL CONTINUE TO DOMINATE OUR WEATHER THE NEXT SEVERAL DAYS. AFTERNOON RELATIVE HUMIDITIES WILL BOTTOM OUT IN THE 18-22% RANGE FROM THE I-10 CORRIDOR NORTHWARD...AND 25-30% ALONG THE COASTAL COUNTIES AND PARISHES FOR WEDNESDAY AND THURSDAY. EXPECT SLIGHTLY HIGHER RELATIVE HUMIDITY VALUES FOR FRIDAY AS THE AIRMASS BEGINS TO MODIFY. NORTHEAST WINDS WILL BE A BIT LIGHTER TODAY AND THURSDAY...RANGING BETWEEN 5 TO 10 MPH. NEVERTHELESS...OUR REGION REMAINS IN MODERATE DROUGHT. THUS...AN ELEVATED FIRE DANGER WILL PERSIST THROUGH FRIDAY. GRASSES AND OTHER SHRUBS WILL BE PARTICULARLY SUSCEPTIBLE TO IGNITION. BURN BANS ARE CURRENTLY IN EFFECT FOR ALL PARISHES OF LOUISIANA... AS WELL AS JASPER...NEWTON...HARDIN...AND TYLER COUNTIES IN SOUTHEAST TEXAS.

TXZ180>182-201-062245-

TYLER-JASPER-NEWTON-HARDIN-

350 AM CDT WED OCT 6 2010

	TODAY	TONIGHT	THU
CLOUD COVER	CLEAR	CLEAR	CLEAR
PRECIP TYPE	NONE	NONE	NONE
CHANCE PRECIP (%)	0	0	0
TEMP (24H TREND)	83 (+3)	42 (-1)	88
RH % (24H TREND)	18 (-14)	89 (0)	18
20FTWND-VAL/AM(MPH)	LGT/VAR		LGT/VAR
20FTWND-RDG/PM(MPH)	LGT/VAR	LGT/VAR	LGT/VAR
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION			
PRECIP BEGIN			
PRECIP END			
MIXING HGT(M-AGL/MSL)	1704	46	1878
MIXING HGT(FT-AGL/MSL)	5591	150	6160
TRANSPORT WND (M/S)	NE 3	N 3	N 3
TRANSPORT WND (MPH)	NE 6	N 6	N 6
CATEGORY DAY	3	1	3
DISPERSION	GOOD	POOR	GOOD
LAL	NO TSTMS	NO TSTMS	NO TSTMS
VENT RATE (M/S-M)	5112	138	5634
KEETCH-BYRAM	601-700	601-700	601-700
REMARKS...NONE.			

October 5<sup>th</sup> PLST Report from WIMS for Kirbyville RAWS (no forecast issued by LCH)

Observation Data

24 records found

Station	Obs	Ob	O	Dry	M	HC	Wind	10	Temp	%RH	Y FHC								
IDName	Date	Tm	T	W	Tmp	RH	L	Rsk	Dir	SP	Hr	Max	Min	Max	Min	Dur	Amt	L	Rsk
414501 KIRBYVILLE	05-Oct-10	23	R		55	60	0	0	35	6		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	22	R		57	54	0	0	22	6		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	21	R		57	57	0	0	11	6		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	20	R		60	51	0	0	35	5		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	19	R		63	37	0	0	34	4		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	18	R		69	27	0	0	27	5		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	17	R		77	18	0	0	50	5		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	16	R		81	17	0	0	59	5		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	15	R		83	16	0	0	44	6		83	44	82	16	0	00	0	
414501 KIRBYVILLE	05-Oct-10	14	R		82	17	0	0	65	5		82	44	82	17	0	00	0	
414501 KIRBYVILLE	05-Oct-10	13	O	0	80	20		0	27	6		80	44	82	20	0	0	0	
414501 KIRBYVILLE	05-Oct-10	12	R		80	22	0	0	43	5		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	11	R		74	27	0	0	42	6		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	10	R		69	32	0	0	91	7		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	9	R		65	43	0	0	105	5		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	8	R		51	70	0	0	78	4		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	7	R		45	82	0	0	46	5		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	6	R		44	82	0	0	37	6		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	5	R		44	82	0	0	28	6		80	44	82	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	4	R		45	79	0	0	22	5		80	45	79	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	3	R		46	78	0	0	57	6		80	45	79	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	2	R		47	78	0	0	41	5		80	45	79	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	1	R		49	77	0	0	39	5		80	45	79	21	0	00	0	
414501 KIRBYVILLE	05-Oct-10	0	R		50	71	0	0	27	4		80	45	79	21	0	00	0	

NFDRS Data for Observation

2 records found

Station	Obs	Ob	O																		
IDName	Date	Tm	T	MSGC	WS	WDY	HRB	1H	10	HU	TH	IC	SC	EC	BI	FL	SL	R	KBDI		
414501 KIRBYVILLE	100510	13	O	8	G1	P3	6	124	103	3	5	11	19	37	7	41	40	28	4	H	694
414501 KIRBYVILLE	100510	13	O	7	G1	P3	6	143	109	3	5	11	19	32	5	36	33	23	3	M	694

Forecast Data

0 records found

Station	Fcst	Dry	A	Wind	10	Temp	RH%	T								
IDName	Date	Tm	W	Tmp	RH%	L	Dir	SP	HR	Max	Min	Max	Min	Dur1	Dur2	L

NFDRS Data for Forecast

0 records found

Station	Obs	Ob	O																
IDName	Date	Tm	T	MSGC	WS	WDY	HRB	1H	10	HU	TH	IC	SC	EC	BI	FL	SL	R	KBDI

October 6<sup>th</sup> PLST Report from WIMS for Kirbyville RAWS

Observation Data

23 records found

Station	Obs	Ob	O	Dry	M	HC	Wind	10	Temp	%RH	Y	FHC							
ID Name	Date	Tm	T	W	Tmp	RH	L	Rsk	Dir	SP	Hr	Max	Min	Max	Min	Dur	Amt	L	Rsk
414501 KIRBYVILLE	06-Oct-10	23	R		54	59	0	0	356	3		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	22	R		57	55	0	0	354	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	21	R		61	43	0	0	16	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	19	R		66	32	0	0	4	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	18	R		72	23	0	0	5	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	17	R		80	16	0	0	355	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	16	R		86	16	0	0	25	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	15	R		87	15	0	0	57	5		87	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	14	R		86	15	0	0	45	5		86	45	79	15	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	13	O	0	85	17	0	0	48	6		85	45	79	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	12	R		83	19	0	0	26	5		83	45	79	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	11	R		79	24	0	0	41	5		83	45	79	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	10	R		73	30	0	0	83	5		83	45	79	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	9	R		67	47	0	0	80	5		83	45	79	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	8	R		52	76	0	0	23	4		83	45	79	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	7	R		45	78	0	0	359	4		83	45	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	6	R		45	79	0	0	24	5		83	44	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	5	R		46	78	0	0	17	5		83	44	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	4	R		45	75	0	0	20	5		83	44	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	3	R		46	76	0	0	349	4		83	44	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	2	R		48	65	0	0	11	4		83	44	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	1	R		51	64	0	0	31	5		83	44	82	16	0	0	0	0
414501 KIRBYVILLE	06-Oct-10	0	R		53	63	0	0	39	5		83	44	82	16	0	0	0	0

NFDRS Data for Observation

4 records found

Station	Obs	Ob	O
ID Name	Date	Tm	T
414501 KIRBYVILLE	100710	13	F 8G1P3
414501 KIRBYVILLE	100710	13	F 7G1P3
414501 KIRBYVILLE	100610	13	O 8G1P3
414501 KIRBYVILLE	100610	13	O 7G1P3

Forecast Data

1 records found

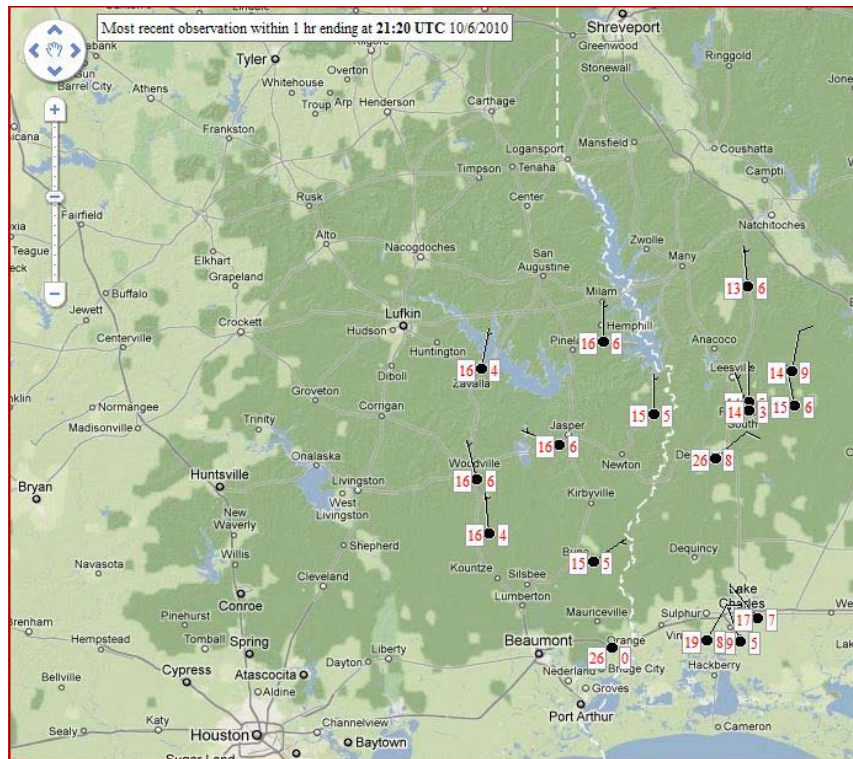
Station	Fcst	Dry	A	Wind	10	Temp	RH%	T								
ID Name	Date	Tm	W	Tmp	RH%	L	Dir	SP	HR	Max	Min	Max	Min	Dur1	Dur2	L
414501 KIRBYVILLE	07-Oct-10	13	0	82	23	1360	4	0	82	45	84	19	0	0	0	1

NFDRS Data for Forecast

2 records found

Station	Obs	Ob	O
ID Name	Date	Tm	T
414501 KIRBYVILLE	100710	13	F 8G1P3
414501 KIRBYVILLE	100710	13	F 7G1P3

## October 6<sup>th</sup> 1600 Observations for RH and Windspeed



## October 6<sup>th</sup> 1700 Observations for RH and Windspeed

