Report of the
Texas Forest Service
Accident Investigation Team
Hildreth Pool Road
Bull Dozer Accident

Montague County
February 9, 2006

Final Report

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I. INTRODUCTION

This accident investigation is the Hildreth Pool road fire analysis of the dozer accident located in Montague County Texas on February 9, 2006. Our purpose is to determine the causal factors and make recommendations to reduce the potential high risk associated with night time fire fighting working around dozers.

The investigation team consisted of the following individuals:

Bob Scheel	**Safety Officer, Texas Forest Service**
Mark Ilg	**Safety Officer, Texas Forest Service**
Bob Yeager	**Safety Officer, Kisatchie National Forest**
Jamie Rittenhouse	**Safety Officer, Florida Division of Forestry**
Kenneth Meyer	**Safety Officer, Umatilla National Forest**

We appreciate the photographs of the accident site by David Cadle LEO National Grassland included in this report.

II. SUMMARY

The injured party, employee of United States Forest Service (USFS) from the Deschutes National Forest was in Texas assisting with the fire season of 2006. He was ordered up as Field Observer (FOBS) and assigned to Decatur Group. A request for Assistance was made to Granbury Incident Command Post (ICP) from the Montague County Judge. The injured party was dispatched at 1530 and arrived on location at 1615. FOBS tied in with the local Incident Commander (IC) on the fire at 1630, and completed traversing (GPS) at 1800, determining the fire was 50.7 acres. Division Supervisor (DIVS), Safety Officer (SOF2), and Task Force 7 were dispatched at 1604 and arrived at 1716. Task Force 7 consisted of; Task Force Leader (TFLD) Dozer E-287 with Swamper, Dozer E-346 with Swamper, and Engine E-345.

The fuels consisted of dense pockets of Cedars, Post Oak, Elm, and Green Briar (vines with thorns) with openings of short grass. The temperature was 61 degrees, humidity 30 percent and winds 11 miles per hour gusting to 18. The fire was approximately 80 percent contained by local resources prior to arrival of crews. Witness statements indicate fire behavior was; intermediate torching, with heavy fuels burning in the interior. The predicted weather indicated for a cold front to enter the area with high winds expected. If the fire reignites, it could move at 240 feet/minute with 6 to 7 foot flame lengths in the grass fuel types and 120 feet/minute with 20 foot flame lengths. Probability of ignition in both fuel types is 40-50% (see ICS-209 Att 1). Official sunset for that day was 1810.

The two dozer units were assigned to put in a fire break starting along the east flank working toward the north in tandem. Dozer unit E-287 was the lead dozer with dozer E-346 improving line behind him. Swamper E-346 was leading dozer E-287 along the north flank and Swamper E-287 was trailing dozer E-346. A decision was made by TFLD to have dozer E-346 back track the east flank mopping up. When the task was completed; dozer E-346 was directed by the DIVS to return and remain at the staging area (see map Att 2). Swamper E-287 remained behind to help engine E-345 mop up hot spots on the east flank.

Present at the staging area were: DIVS, SOF2, TFLD, dozer E-346, and FOBS (injured party). At approximately 1830, DIVS and TFLD directed dozer E-346 to improve line that a local dozer had put in on the west flank. According to witness statements FOBS stated since he had been around the fire twice, he knew where the existing dozer line and fence were located, and would show dozer E-346 where to start. FOBS had stopped E-346 near the dry creek to find a crossing. FOBS radioed E-346 to come toward the light (on his helmet) and wait for him on the dozer line. According to witness statements, after crossing the creek bed, FOBS directed dozer E-346 to create a new line instead of improving the old line. Dozer E-346 decided to knock the brush down to the fence and then improve the line back to the north. The brush was very thick consisting of post oak, cedar, elm and green briar. FOBS was directing the dozer through the brush from the front of the dozer.

According to witnesses at approximately 1930 dozer E-346 received a radio transmission from FOBS to again, come toward the light. E-346 dozer started in first gear toward FOBS helmet light. Dozer E-346 operator indicated that the light appeared intermittent either from the thickness of the brush or from FOBS turning his head. E-346 dozer lost sight of FOBS light and thought FOBS had cleared the area. E-346 dozer proceeded forward approximately 25 feet then stopped and called for FOBS, since he had no visual contact. Dozer E-346 operator turned and saw a light on the ground behind the dozer, and got off the dozer to look for FOBS. Dozer E-346 operator found the helmet belonging to FOBS and noticed FOBS lying on his back approximately ten (10) feet behind the dozer. At approximately 1943 dozer E-346 operator broadcasted the emergency via radio and requested assistance. SOF and TFLD arrived at 1945, 911 was notified by TFLD.

The first responder from E-345 (Engine) arrived at the accident scene and monitored vital signs until EMS arrived at approximately 2010. After assessment by EMS, Life Flight was requested. Shortly after Life Flight arrived patient was loaded and departed by approximately 2040.

According to witness statements and evidence at the scene, the investigation team concluded that the injured party passed underneath the dozer between the tracks.

III. Analysis of Potential Causal and Contributing Factors

The following factors were evaluated in terms of possible causes or contributors to the accident occurring:

ELEMENT	Did not Contribute	Influenced	Contributed Significantly	Unknown
#1 – Human Factors				
Duties			**X**	
Management (Incident Command Team)	**X**			
Compliance (deviation from policy)			**X**	
#2 Risk Management				
Job Hazard Analysis (JHA)	**X**			
#3 Weather				
Wind		**X**		
Temperature		**X**		
Relative Humidity		**X**		
Fuel Moisture		**X**		
Drought		**X**		
#4 Environmental Factors				
Terrain		**X**		
Vegetation/Canopy			**X**	
Slope	**X**			
Elevation	**X**			
Soil Condition	**X**			
Rock	**X**			

ELEMENT	Did not Contribute	Influenced	Contributed Significantly	Unknown
#5 Organization, Control (on-site)				
Supervision		**X**		
Communications		**X**		
Chain of Command	**X**			
Briefing / Tailgate Session	**X**			
#6 Qualifications, Training, Certification(s)				
CPR/First Aid	**X**			
S-232 Dozer Boss			**X**	
Dozer Operations	**X**			
TFLD	**X**			
DIVS	**X**			
SOF2	**X**			
#7 PPE				
Gloves	**X**			
Hardhat	**X**			
8” Leather, Non-skid Boots	**X**			
Eye Protection	**X**			
Equipment Noise			**X**	
Illuminating Devices (night usage)			**X**	

ELEMENT	Did not Contribute	Influenced	Contributed Significantly	Unknown
#8 Condition of Personnel Involved				
Work-Rest Ratio	**X**			
Shift Lengths	**X**			
Number of Consecutive On-Duty Days	**X**			
#9 Decisions/Actions Taken by Involved Personnel				
DIVS---Decisions/Actions	**X**			
SOF2---Decisions/Actions	**X**			
TFLD--Decisions/Actions	**X**			
FOBS--Decisions/Actions			**X**	
DOZO--Decisions/Actions		**X**		
Lookout			**X**	
Situational Assessments/Awareness			**X**	
Escape Routes (Dozer Operations)			**X**	
#10 Equipment				
Maintenance	**X**			
Dozer Lights	**X**			

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IV. FINDINGS

Below is the team analysis of the findings that contributed and influenced their investigation.

#1. The decision to lead the dozer through the brush instead of the edge of the burn to show the operator where to start, compromised qualifications and training due to FOBS not having Dozer Boss qualification.
#3. Due to the forecasted weather, decisions were made to complete mop up and put in a complete fire break around the perimeter.
#4. The thick brush, green briar and terrain played a major role in not keeping a safe distance between the dozer and ground personnel. The green briar and heavy vegetation created a potential entanglement, slow movement and tripping environment.
#5. Briefing between FOBS and dozer operator should have been conducted to determine signals and procedures. Communication may not have played a direct role in the accident but through the investigation it was determined that the dozer operators had a difficult time hearing their portables over the dozer noise.
#6. Acting as Dozer Boss without the proper training and qualifications could have contributed to the spacing and visibility problems between the dozer and ground personnel.
#7 Equipment noise reduced the ability to hear verbal communication. Nighttime visibility, illumination and depth perception played a major role in this accident.
#9 The following decisions and actions could have contributed to the accident:

- The failure to maintain the 100 feet recommended distance.(PMS-410-1 Fireline Handbook)
- Not flagging the route
- Not being Dozer Boss qualified.
- Awareness of the environment at night.
- Escape routes may not have been identified and utilized.
- The operator did not stop after visibility was lost of ground personnel.

V. RECOMMENDATIONS

1. Ensure proper illumination is available for ground personnel.

2. Ensure hearing devises are available to assist dozer operators with communication.

3. Ensure proper qualifications are adhered to.

4. Ensure ground personnel are visible to operator at all time when working around equipment. If visibility is lost stop equipment and locate personnel.

5. Ensure the facts and findings of this report are made available to all interested personnel.

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Attachments

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Incident Status Summary (ICS-209)

1: Date	2: Time	3: Initial | Update | Final	4: Incident Number	5: Incident Name
02/09/2006	2025	XX | |	TX-TXS-066036	Hildreth Pool Road

6: Incident Kind	7: Start Date Time	8: Cause	9: Incident Commander	10: IMT Type	11: State-Unit
Wildland Fire	02/09/2006 1510	Under Investigation	Paul Hannemann	2	TX-TXS

12: County	13: Latitude and Longitude	14: Short Location Description (in reference to nearest town):
Montague	Lat: 33° 38′ 59" Long: 97° 46′ 9" Ownership: TX-TXS	Between cities of Montague and Bowie

Current Situation

15: Size/Area Involved	16: % Contained or MMA	17: Expected Containment Date/Time	18: Line to Build	19: Costs to Date	20: Declared Controlled Date/Time:
26 ACRES	100 Percent	Date: 02/09/2006 Time: 1715			

21: Injuries this Reporting Period:	22: Injuries to Date:	23: Fatalities
1	1	0

25: Threat to Human Life/Safety:
Evacuation(s) in progress ----
No evacuation(s) imminent --
Potential future threat -------- XX
No likely threat ----------

24: Structure Information

Type of Structure	# Threatened	# Damaged	# Destroyed
Residence	11	0	0
Commercial Property	1	0	0
Outbuilding/Other	2	0	1

26: Communities/Critical Infrastructure Threatened (in 12, 24, 48 and 72 hour time frames):
12 hours:
24 hours:
48 hours:
72 hours:

27: Critical Resource Needs (kind & amount, in priority order):
1.
2.
3.

28: Major problems and concerns (control problems, social/political/economic concerns or impacts, etc.) Relate critical resources needs identified above to the Incident Action Plan.
Due to predicted cold front moving into the area, high wind conditions are expected. If the fire reignites, it could move at 240 feet/minute with 6-7 foot flame lengths in the grass fuel types and 120 feet/minute with 20 foot flame lengths. Probability of ignition in both fuel types is 40-50%.

29: Resources threatened (kind(s) and value/significance):
Eleven homes, one shop, one fifth wheel, and one oil well were threatened and saved. One travel trailer was destroyed.

30: Current Weather Conditions
Wind Speed: 11G18 mph Temperature: 61
Wind Direction: SE Relative Humidity: 30%

31: Resource benefits/objectives (for prescribed/wildland fire use only):

32: Fuels/Materials Involved: 1 Short grass (1 Foot)
Patches of Live Oak, Fuel Model 6

33: Today's observed fire behavior (leave blank for non-fire events):
Not reported.

34: Significant events today (closures, evacuations, significant progress made, etc.):
The incident had one injury today at around 1930 hours.

Outlook

35: Estimated Control Date and Time:	36: Projected Final Size:	37: Estimated Final Cost:	38: Tomorrow's Forecasted Weather Wind Speed: **15-20G33** mph Temperature: **49-53** Wind Direction: N Relative Humidity: **24-28%**

39: Actions planned for next operational period:
Initial planned actions included major mop-up operations tonight with one TFS Engine to monitor fire activity tomorrow. Due to the reported injury at about 1930 hours, all resources are standing down pending results of an accident investigation. Suppression activities will continue tomorrow with replacement resources.

40: Projected incident movement/spread during next operational period:
General fire behavior predications indicate that strong North winds will likely push any new reignitions to the South.

41: For fire incidents, describe resistance to control in terms of:

1. Growth Potential - **Medium**

2. Difficulty of Terrain - **Low**

42: How likely is it that containment/control targets will be met, given the current resources and suppression/control strategy?

43: Projected demobilization start date:

44: Remarks:
Initially a 209 was not needed on this incident, however, due to an injury at about 1930 hours this 209 was prepared. Will update tommorrow. Resources assigned to the incident were: Task Force 7, Safety Officer Type 2, Division Supervisor, Air Attack and a Type 1 Helicopter.

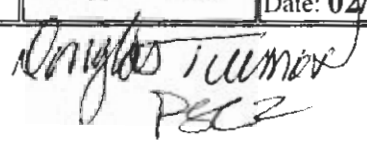
45: Committed Resources (Supplemental Committed Resources follow the first block)

Agency	CRW1		CRW2		HEL1	HEL2	HEL3	ENGS		DOZR		WTDR	OVHD	Camp Crews	Total Personnel
	SR	ST	SR	ST	SR	SR	SR	SR	ST	SR	ST	SR	SR		
ST										1					2
BLM										1					2
FWS								1							3
USFS													1		1
Total	0	0	0	0	0	0	0	1	0	2	0	0	1	0	8

Total personnel by agency are listed in the first section of committed resources.

Agency	C215	C415	BMDR	TPL1	TPL2	TPL3	TPL4	VANS
	SR	SR	SR	SR	SR	SR	SR	SR
ST								
BLM								
FWS								
USFS								
Total	0	0	0	0	0	0	0	0

46: Cooperating and Assisting Agencies Not Listed Above: **See main incident 209.**		
Approval Information		
47: Prepared by: **Dena Sickels, SITL(T)**	48: Approved by:	49: Sent to: **TICC** by: **Dena Sickels, SITL(T)** Date: **02/09/2006** Time: **2230**



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North Central Texas Initial Attack
Hildreth Fire
Incident Accident
02/09/2006
50.7 Acres
33 38.963 X 97 46.234

0 0.05 0.1 0.2 Miles

Medivac Site

Attachment 3 (7 Photographs)

Photograph showing the thickness of the under store

Photograph showing clearance under dozer

UNITED STATES DEPARTMENT OF AGRICULTURE
NATIONAL FORESTS AND GRASSLANDS IN TEXAS
INCIDENT PHOTOGRAPH RECORD

1. Location:	2. System Area	3. Date of	Month	Day	Year	Case/File Number
Hildreth Pool Road	Private Land	Occurrence:	02	09	2006	7526619

5. Nature of Incident: Bull Dozer accident on wildfire	6. Offense:

7. Date / Photo:	8. Location of Photo:	9. Camera Type:
02-10-2006	Hildreth Pool Road fire	Sony, digital camera

10. Time / Photo:	11. Investigated by:	12. Photographed by:	13. Film Type:
13:34 p.m.	David Cadle	David Cadle	3 inch disk

14. Description: photo of the tree where the victim was located. Note the areas on the tree where the flagging is located, these are track marks left by the dozer

Incident Type:

15. DOB:
SSN:
Race/Sex/Height/Weight:

15. Status: x Open ☐ Suspended	16. Closed By: ☐ Arrest ☐ Exception ☐ Unfounded	
17. Reporting Officer: Date:	18. Assisting Officer: Date:	19. Supervisor: Date:

UNITED STATES DEPARTMENT OF AGRICULTURE
NATIONAL FORESTS AND GRASSLANDS IN TEXAS
INCIDENT PHOTOGRAPH RECORD

1. Location:	2. System Area	3. Date of Occurrence:	Month	Day	Year	Case/File Number
Hildreth Pool Road	Private Land		02	09	2006	7526619

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7. Date / Photo:	8. Location of Photo:	9. Camera Type:
02-10-2006	Hildreth Pool Road fire	Sony, digital camera

10. Time / Photo:	11. Investigated by:	12. Photographed by:	13. Film Type:
13:34 p.m.	David Cadle	David Cadle	3 inch disk

14. Description: overall photo of where the victim was located after the accident

Incident Type:

15. DOB:
SSN:
Race/Sex/Height/Weight:

15. Status: x Open ☐ Suspended	16. Closed By: ☐ Arrest ☐ Exception ☐ Unfounded

17. Reporting Officer:	18. Assisting Officer:	19. Supervisor:
Date:	Date:	Date:

UNITED STATES DEPARTMENT OF AGRICULTURE
NATIONAL FORESTS AND GRASSLANDS IN TEXAS
INCIDENT PHOTOGRAPH RECORD

1. Location: Hildreth Pool Road	2. System Area Private Land	3. Date of Occurrence:	Month 02	Day 09	Year 2006	Case/File Number 7526619
5. Nature of Incident: Bull Dozer accident on wildfire			6. Offense:			
7. Date / Photo: 02-10-2006	8. Location of Photo: Hildreth Pool Road fire					9. Camera Type: Sony, digital camera
10. Time / Photo: 13:32 p.m.	11. Investigated by: David Cadle	12. Photographed by: David Cadle				13. Film Type: 3 inch disk
14. Description: photo of resting place of the victim. The number 6 in the photograph represents the victims head 15. DOB: SSN: Race/Sex/Height/Weight:						Incident Type:

15. Status: x Open ☐ Suspended	16. Closed By: ☐ Arrest ☐ Exception ☐ Unfounded	
17. Reporting Officer: Date:	18. Assisting Officer: Date:	19. Supervisor: Date:

UNITED STATES DEPARTMENT OF AGRICULTURE
NATIONAL FORESTS AND GRASSLANDS IN TEXAS
INCIDENT PHOTOGRAPH RECORD

1. Location: Hildreth Pool Road	2. System Area Private Land	3. Date of Occurrence:	Month 02	Day 09	Year 2006	Case/File Number 7526619
5. Nature of Incident: Bull Dozer accident on wildfire			6. Offense:			
7. Date / Photo: 02-10-2006	8. Location of Photo: Hildreth Pool Road fire					9. Camera Type: Sony, digital camera
10. Time / Photo: 11:29 a.m.	11. Investigated by: David Cadle	12. Photographed by: David Cadle				13. Film Type: 3 inch disk
14. Description: photo of the scene of the resting place of the victim. Note the tree in the photograph. 15. DOB: SSN: Race/Sex/Height/Weight:						Incident Type:

15. Status: x Open ☐ Suspended		16. Closed By: ☐ Arrest ☐ Exception ☐ Unfounded
17. Reporting Officer: Date:	18. Assisting Officer: Date:	19. Supervisor: Date:

UNITED STATES DEPARTMENT OF AGRICULTURE
NATIONAL FORESTS AND GRASSLANDS IN TEXAS
INCIDENT PHOTOGRAPH RECORD

1. Location:	2. System Area	3. Date of	Month	Day	Year	Case/File Number
Hildreth Pool Road	Private Land	Occurrence:	02	09	2006	7526619

5. Nature of Incident: Bull Dozer accident on wildfire	6. Offense:

7. Date / Photo:	8. Location of Photo:	9. Camera Type:
02-10-2006	Hildreth Pool Road fire	Sony, digital camera

10. Time / Photo:	11. Investigated by:	12. Photographed by:	13. Film Type:
11:22 a.m.	David Cadle	David Cadle	3 inch disk

14. Description: Overall photo of dozer

Incident Type:

15. DOB:
SSN:
Race/Sex/Height/Weight:

15. Status: x Open ☐ Suspended	16. Closed By: ☐ Arrest ☐ Exception ☐ Unfounded	
17. Reporting Officer: Date:	18. Assisting Officer: Date:	19. Supervisor: Date:

This is a copy of the original interview document omitting the injured party's name.

Interview with Injured Party
April 28, 2006

Questions to Injured Party from Bob Yeager:

Q. Did you receive an in-briefing and IAP when you arrived at the assignment in Texas?

A. Yes, I received an IAP and very good briefing from Charisse at Granbury, another briefing by the DIVS and IC in Decatur, and by the IC on the fire.

Q. Do you feel the fuels or vegetation were unusual or different than you were accustomed to?

A. No nothing unusual, I had worked in the same type of vegetation before.

Following are bullet statements from Injured Party during the re-cap of the accident:

- I had been given orders from the previous day to go to Abilene and had to be there by 08:30 for the morning briefing so I left Granbury at 06:00. I was two miles from Abilene when Charisse called and said they didn't want me and to return to Granbury. I arrived back in Granbury around 11:00.
- I received a briefing and IAP from Charisse in Granbury.
- I traveled to Decatur for the assignment.
- I received a briefing at the Ramada Inn at Decatur from the DIVS and IC right before going out for lunch.
- I arrived at the fire and tied in with the IC.
- The IC married me up with a guy from the volunteer fire department to be my assistant and an extra set of eyes. The rest of the strike team arrived at this time.
- Tow Sikorsky (S-61) helicopters were working the fire, the fire was almost contained, one of the helicopters dropped a load of water in our proximity where there wasn't any smoke or fire (NE corner), we were able to get out of the way but some of the trailing portion of the load landed on the two of us. It was dark looking water. This safety issue was addressed right away. Soon afterward the helicopters left the fire.
- I walked around the fire using GPS to map it, while we were walking the fire line when we ran across a dozer on the back line (north end). We waited at a distance until the operator saw us, he stopped, and motioned for us to pass by.
- We finished walking around the fire and turned in our findings to the IC.
- I tried to call the report in to Charisse, but had bad cell phone, and radio, coverage at the fire site, so I went to a hill about 5 miles away where I was able to talk.
- I turned in the fire report to Charisse and then went back to the fire.
- I was asked by the DIVS to go to the southwest corner of the fire to determine the best place to put in a piece of line. I knew it was going to be a dozer line since there weren't any crews on the fire.
- I called the DIVS and told him where the line should go. I turned around and moved a few feet and was knocked to the ground by a falling tree, I could not get back up, I was pinned to the ground by the tree.
- I tried calling over and over on my radio but did not get a response. I was screaming to the dozer operator and calling over and over on the radio.

- I never saw the dozer, I didn't see any lights, and I thought the dozer had backed over me.

Injured Party's opinions:
I've worked where there were dozers being used on fires before, they always had a dozer boss assigned to each dozer. Why didn't they have a dozer boss assigned to this dozer? Why was the dozer moving without someone assigned to direct?

I didn't see the dozer and undoubtedly he didn't see me which put both of us in the wrong place at the wrong time.

Injured Party's suggestions to possibly prevent future accidents:
1. Assign a dozer boss to every dozer.
2. More lighting on the dozers.
3. Better communication capability with dozers.