

Federal Railroad Administration Office of Safety Headquarters Assigned Accident Investigation Report HQ-2006-77

Burlington Northern Santa Fe Crawford, TX September 19, 2006

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

DEPARTMENT	F TP A	NSPORT		)N			_			-									
FEDERAL RAILRO	DAD A	DMINIST	RATI	ON	FRAFA	ACTUA	LRA	ILRO	AD A	CCID	ENT F	REPOI	RΤ		FRA Fi	le #	<u>HQ-200</u>	6-7	7
1.Name of Railroad Operating Train #1									1a. Alphabetic Code1b.					. Railroad Accident/Incident No.					
BNSF Rwy Co. [BNS	BNSF						TX0906110												
2.Name of Railroad Op	2a. Alphabetic Code 2b					2b. F	. Railroad Accident/Incident												
N/A	N/A						N/A												
3.Name of Railroad Res	3a. Alphabetic Code 3						Railroad A	Acciden	t/Incio	dent No.									
BNSF Rwy Co. [BNS	BNSF							TX090	6110										
4. U.S. DOI_AAR Gra	5. Date of Accident/Incident 6.						Time of Accident/Incident												
									10nth 09	10	9	2006		06:13: AM 🗸 PM					
7. Type of Accident/Inc	ollision		7. Hw	vy-rail c	crossing	10.	Explosi	on-deton	ation 13										
(single entry in code	e box)	2. Head of	on colli	sion	ion 5. Raking collision				8. RR grade crossing 11. Fire/vi					lent rupture (describe in					
		3. Rear e	nd colli	ision	6. Broker	n Train co	llision	9. Ob	structio	n	12.	Other in	npacts		narra	tive)			01
8. Cars Carrying	1	9. HAZMA	AT Cars	s	10. Cars Releasing				ig 11. People						12. Division			-	
HAZMAT 12	AZMAT 12 Damaged/Derailed				d 7 HAZMAT				1 Evac				350		Texas				
					14 Milepost								Country						
13. Nearest City/Town		G	c 1		(to nearest te			enth)	nth)			. State Abbr Code							
		Craw	ford					249.		N/A TX				MCLENNAN					
17. Temperature (F)		18. Visib	oility	(sing	le entry)	Code	19. W	Veather	her (single en			Co	le	20. Type of Track			C/		Code
(specify if minus)	F	1.1	Dawn Dav	3.Dusk 4 Dark   2			1	1. Clear 3. Rain 5 Cloudy 4 Eog			5.Sleet			1. Main 3.			. Siding		1
21. Treads Name (Nearth or					di K	22 FP A	2 Track	Cloudy	4. F0	23 Ann	0.5now			2. Tatu 4. Int			ction		Celle
21. Track Name/Number						() (COC	(gross tor			in	.y	1. North 3. East			East		Code		
Single Main Track 4 millions) 53.68													4						
	OPERATING TRAIN #1																		
25. Type of Equipment	t 1.	Freight tra	ain	4. Wo	ork train 7.	Yard/swi	tching	A. Sp	ec. Mo	W Equip.	Code	26. W	as Equip	oment (	Code	27. 1	Frain Nur	nber	/Symbol
Consist (single entry) 2. Passenger train 5. Single car 8. Light loco(s).									At					nded?					
3. Commuter train 6. Cut of cars 9. Maint./inspect.car 1 1. Yes 2. No 1 HTPLT																			
28. Speed (recorded sp	peed, if	available)	Code	30.	Method(s) of	of Operation	on (	enter co	ode(s)	that app	oly)			30a. Ren	otely C	ontro	lled Loco	mot	ive?
R - Recorded	atic bloc	Traffic n. Other than main track					U = NOt a - a - a - a - a - a - a - a - a - a												
E - Estimated	Time ta	able/train	orders	o. Positi	ve train	control		2 = Remote control tower											
29. Trailing Tons (gross tonnage, d. Cab j.Track								arrant co	ontrol	p. Other	(Speci	fy in nar	rative)	tive) 3 = Remote control					
excluding power units) e. Traffic							Direct	traffic co	ontrol		Code(	(s)		transmitter - more than one					
4946 f. Interlocking 1. Yard limits $e N/A N/A N/A$ remote control transmitter 0														0					
31. Principal Car/Unit	-	a. Initial	and Nu	mber	b. Positio	on in Trair	c. l	Loaded(y	/es/no)	32. If r	ailroad	employe	e(s) teste	ed for drug	g/alcoho	ol use,	,	-	
(1) First involved			N/A			6		no		en	ter the 1	number t	hat were	positive i	n		Alcohol		Drugs
(derailed, struck, etc	c)		IN/A			0		110		th	e approp	priate bo	х.				N/A		N/A
(2) Causing (if mech	nanical	GAT	FX537:	54		6		no		33. W	as this	consist t	ransport	ing passen	igers? (	Y/N)		I.	N
cause reported)					Aid Train Rear E								Lo	ade	1	Empty			11
34. Locomotive Units		a. Head End	h Ma	Mid Ti nual	c Remote	d. Manua	c. Ret	mote 3	35. Cars	8		a.	Freight	b. Pass.	c. Fre	ight	d. Pass.	e. (	Caboose
(1) Total in Train		2		0	0	0	0	(1	) Total	in Equip	ment Co	onsist	27	0	45	2	0		0
(-)	_	-		<u> </u>	Ŭ			(-	,								•		
(2) Total Derailed		0		0	0	0	0	(2	2) Total	Derailed			11	0	1	3	0		0
36. Equipment Damag	e		3	37. Trac	ck, Signal, V	Vay,		38	8. Prima	ary Cause	;			39. Cont	ributing	g Cau	se		
This Consist	97000		Code E46C Code									N//	A						
	w Members					Ler					h of Time on Duty								
40. Engineer/ Operators 41. Firemen			42. Conductors 43. Brake			kemen	44. Engineer/C			er/Operator			45. Conductor						
N/A N/A			1			N/A		Hrs 2			Mi	45		Н	lrs	2	M1	45	
Casualties to: 4	6. Railr	oad Emplo	yees 4	7. Trai	n Passenger	s 48. C	Other	49	9. EOT	Device?				50. Was	EOT D	evice	Properly	Arn	ned?
Fatal		0			0		0	1. Yes 2. No 1						1. Yes 2. No 1					
							51. Caboose Occupied by Crew?						· · ·						
Nonfatal		N/A			0				1. Yes				2. No						N/A
						01	PERAT	LING T	RAIN	1 #2									
52. Type of Equipment	52 Type of Equipment 1. Freight train 4. Work train 7. Yard/switching A Spec MoW Equip Code 53. Was Equipment Code 54 Train Number/Symbol																		
Consist (single entr	y) 2.	Passenger	train	5. Sing	gle car 8.	Light loco	o(s).	opt		=quip.	2000	Att	ended?			1			
	3.	Commuter	train	6. Cut	of cars 9.	Maint./in	spect.ca	r			N/A		. Yes	2. No N	√A		N//	4	
55. Speed (recorded sp	peed, if	available)	Code	57.	Method(s)	of Operation	on (	enter co	nter code(s) that apply)						57a. Remotely Controlled Locomotive?				
R - Recorded a. ATCS g. Au							Autom	atic block m.Special instructions						0 = Not a remotely controlled					
E - Estimated 0	J	MPH	1 <b>N</b> /A	b.	Auto train c	control h	. Curren	t of traff	ïc	n. other	undir IIli	an udek		I = Rem	ote con	trol p	ortable		

DEPARTMENT FEDERAL RAILF	OF TRA ROAD AI	NSPORT DMINIST	TATI RAT	ON ION	FRA FA	ACTUAI	LRAILR	OAD AC	CII	DENT I	REPO	ORT	F	RA File #	<u>HQ-200</u>	<u>6-77</u>		
56. Trailing Tons (gross tonnage, excluding power units)				с. d. e.	c. Auto train stop i. Time table/tr d. Cab j.Track warrant e. Traffic k. Direct traffic				ain orders o. Positive train control control p. Other (Specify in narrative) c control Code(s)					2 = Remote control tower 3 = Remote control transmitter - more than one				
N/A				f.	f. Interlocking 1. Yard limits				N/A	N/A 1	N/A N	N/A N/A	remote c	N/A				
58. Principal Car/Unit a. Initial and Nu				Jumber	mber b. Position in Train c. Load				59.	If railroad	l emplo	oyee(s) teste	ed for drug	/alcohol us	se,			
(1) First involved 0						N/A		N/A	enter the number that were positive in Alcohol							Drugs		
(2) Causing (if mechanical							_								N/A	N/A		
cause reported) 0						N/A	]	N/A	I/A 00. Was this consist transporting pass						)	N/A		
61. Locomotive Units	5	a. Head End b. Mar			Mid Train anual   c. Remote d		r End c. Remote	62. Cars				Lo a. Freight	ade b. Pass.	Err c. Freight	npty d. Pass.	e. Caboose		
(1) Total in Trai	otal in Train 0			0 0		0	0	(1) Total in	in Equipment Consist 0 0 0					0	0	0		
(2) Total Deraile	(2) Total Derailed 0		0	) 0		0	(2) Total Derailed				0	0	0	0	0			
63. Equipment Damage 6 This Consist 0					ack, Signal, Structure Da	Way, amage	0	65. Primar Code	65. Primary Cause Code N/A Code						use	N/A		
		Numbe	r of Ċ	rew Me	embers				Length of Time on Duty									
67. Engineer/ Operators N/	68. Firemen 6 N/A				nductors N/A	70. Bra	kemen N/A	71. Engineer/Operator72. ConductorHrs0Hrs0						0	Mi 0			
Casualties to:	73. Railr	oad Emplo	oyees	74. Tra	in Passenge	rs 75. Othe	75. Other		76. EOT Device? 77. Wa						as EOT Device Properly A			
Fatal		0			0		0	I. Yes       2. No       N/A       I. Yes       2. No         78       Caboose Occupied by Crew?										
Nonfatal		0 0					0		1. Yes 2. No									
		Rail Equipment Involved																
79. Type C. Truck-7	Frailer. F		J. Other	Motor Veh	icle	Code	Code 83. Equipment 3.Train (standing) 6.Light Loco(s) (moving)											
A. Auto D. Pick-U B. Truck E. Van	strian er (spec. in i	narrative)	1.Train(units pulling)       4.Car(s) (moving)       7.Light(s) (standing)         N/A       2.Train(units pushing)       5.Car(s) (standing)       8.Other (specify in narrative)									N/A						
80. Vehicle Speed		81. Di	irection	geograph	ical)		84. Position of Car Unit in Train Ν/Δ											
(est. MPH at in	npact)	1011	1.N0	rth 2.50	outh 3.East	4.west	Code	85. Circum	85. Circumstance									
1.Stalled on Cros	loving Over	r Crossing		1. Rail Equipment Struck Highway User A 2. Rail Equipment Struck by Highway User														
4. Trapped 86a. Was the highw		Code	86b. Was t	here a	a hazardo	us mat	erials releas	e by			Code							
in the impact tr			ι N/Δ	1 High	way I	User 2	Rail E	auinment	3 Both	4 Neithe	r	N/A						
1. Highway User 86c. State here the na	2. Rail E	Equipment	3. he ha	Both zardous	4. Neither materials re	leased if a		1. High		2.0	Itun E	quipinent	5. Dom	4. I telule.		10/14		
	ine una qu	unity of t		Luiuous	indicitais it	incuscu, ir u	N/A											
87. Type of 1.Gat Crossing 2.Cat Warning 2.Sto	bucks 10. signs 11.	Flagged by Other (spec	crew . in narr.)	88. S (S	Signaled C See instru	Crossin ctions t	g Warning for codes)	Code	89. Whis 1. Ye 2. No	tle Ban s	Code							
Code(s) N/A	) N/A N/A N/A			A	N/A	N/A	N/A	N/A					N/A	3. Un	known	N/A		
90. Location of Warn 1. Both Sides	J. Location of Warning   Code   91. Crossin     1. Both Sides   with F								nterconnected Code 92. Crossing Illuminated by Street Lights or Special Lights									
2. Side of Vehicl 3. Opposite Side	1. 2.	Yes No	N/A				1. Yes 2. No	1. Yes 2. No										
02 Driverto 04 Driverto Conden Codo 05						·		N/A 06 Driver		3. Unkn	own	N/A						
Age 1. Male 2. Female 1. Yes 2. No							by Second Train 3. Unknown 2. Stopped and then F					d or thru th then Proce	the Gate 4. Stopped on Crossing beeded 5. Other (specify in					
U       N/A       N/A       3. Did not Stop       nar         07. Driver Bened Stort diag       08. View of Track Observed have a state       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1											rrative)	N/A						
97. Direct rassed standing Highway Vehicle   Code   98. view of frack Obscured by 1. Permanent Structure   (primary obstruction)     7. Other   (specify in narrative)													Code					
1. Yes 2. No 3. Unknown N/A 2. Standing Railroad Equipment 4. Topography 6. Highway Vehicle 8. Not obstructed													N/A					
101. Casulties to Highway-Rail   Killed   Injured   99     Crossing Users   Killed   Injured   99					99. Driver	Was 2.Injured 3.	Uninjured	Code       100. Was Driver in the Vehicle?         Jninjured       N/A       1. Yes       2. No							Code N/A			
0					0	102. Highw	vay Vehicle	Property Damage 0 103. Total Number of Highway-Rail Cros						Rail Cross	ing Users			
104. Locomotive Aux	iliary Lig	hts?				(cst. d	Code	105. Locoi	notiv	e Auxilia	ry Ligł	ts Operatio	nal?		0	Code		
1. Yes		2. No	)				N/A	1. Yes 2. No							N/A			
106. Locomotive Headlight Illuminated?							Code	107. Locomotive Audible Warning Sounded?						Code				
1. Yes			N/A	1.	1. Yes 2. No							N/A						



108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED. HQ-77-2006.jpg

#### 109. SYNOPSIS OF THE ACCIDENT

A Northbound BNSF freight train, H-TPLTUL1-19, traveling at a recorded speed of 52 mph, derailed twenty four (24) cars piling up and casting cars to the right and left sides of the main track, on September 19, 2006, at 6:15 pm. The accident occurred at milepost 249.6 of the BNSF, Texas Division, Fort Worth Subdivision in the downtown area of Crawford, Texas.

Seven (7) of the derailed cars were carrying hazardous materials. Tank car DOWX 40077 was punctured in the derailment and released 20,840 gallons of Ethanolamine, STCC NUMBER 4935665, UN 2491.

The Crawford Fire Chief ordered a ½ mile radius general precautionary evacuation at 6:20 pm. The evacuation effected 350 people. The evacuation order was lifted at 10:00pm 09/19/2006 by the Crawford Fire Chief. There have been three (3) claims of non life threatening injuries submitted to the BNSF claims department by civilians resulting from the accident and hazardous material release.

The Fort Worth Subdivision is an Amtrak route, Passengers on Amtrak train A-21-1-18 were removed from the train at Valley Mills, Texas and bused to San Antonio, Texas. Amtrak train A-21-1-18 was reversed at Manhattan, Texas and moved back to Fort Worth, Texas.

Total estimated damage was \$1,213,246 (\$1,116,246 to equipment, 97,000 to track and structures)

The weather at the time of the accident was daylight, clear with 0 mph wind. It was 88°F.

The cause of the accident was determined to be, Truck Bolster Stiff, Improper swiveling, E46C on Tank car GATX 53754.

### 110. NARRATIVE

#### Circumstances Prior to the Accident:

The crew of train H-TPLTUL1-19 included a locomotive engineer and a conductor. They first went on duty at 3:30 pm CST, September 19, 2006 at Temple Yard in Temple, Texas.

Temple is an away from home terminal for both crew members. Both crew members had received more than the statutory off duty rest period, prior to reporting for duty.

The train crew's assigned freight train consisted of two locomotives, twenty seven (27) loaded and forty eight (48) empty cars of mixed types. The train was four thousand four hundred seventy five (4,475) feet long and weighted four thousand nine hundred sixty four (4964) tons. The train was scheduled to travel from Temple, Texas to Tulsa, Oklahoma with no set outs and no pick ups en route. The train received a Class 1 Train Air Brake test at Temple at 2:50 pm September 19, 2006 by Qualified Mechanical Inspectors.

As the Northward train approached the accident area, the locomotive engineer was seated at the controls on the North side of the leading locomotive. The conductor was seated on the South side of the leading locomotive.

Topography:

In this area of the railroad there is zero (0) degree ,fifty nine (59) minute right hand curve becoming tangent track with a point fifty six degree (.56%) ascending grade at the point of derailment.

The railroad time table direction of the train was West. The geographic direction of the train was North. The Timetable directions will be used throughout this report

Method of Operation:

As indicated by BNSF Railway Timetable the method of operation at mile post 248 of the Texas Division, Fort Worth Subdivision was CTC, Centralized Traffic Control.

### Weather:

The weather was reported as daylight, clear, no wind. The temperature was 88°F.

## The Accident:

The train was being operated at 52 mph approaching the accident area. This speed was recorded by the event recorder of the lead locomotive. The maximum authorized speed for this segment of track is 50 mph per General Track Bulletin # 23045 page 7 of 25 item 32 restriction # 5429. The train was in full dynamic brake at the time of the accident.

DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION

# FRA FACTUAL RAILROAD ACCIDENT REPORT

The engineer stated that he was operating the locomotive in full dynamic braking and as the train was descending the train started dragging down. The train went into emergency application due to air hose separation . When the train stopped the conductor dismounted the locomotive and walked back about 200 feet and found the derailed cars. The engineer notified the dispatcher that train had derailed and it appeared that ten(10) or more cars were derailed. It was discovered that twenty four (24) cars had derailed and one (1) car containing Hazardous Material was leaking. The Crawford fire and police departments were notified by local residents that a train had derailed and lerailed and the dispatcher that train car was leaking. The Crawford fire and police departments were notified by local residents that a train had derailed and erailed. The local Fire Chief was notified by the train crew that the train had hazardous materials and one (1) car was leaking. The Crawford fire and police departments were notified by local residents that a train had derailed as was the train street crossing at mile post 250. at 6:20 pm CST. The evacuation effected three hundred fifty (350) residents of Crawford. The McLennan/Waco Haz-Mat emergency team was called as was the BNSF Haz-Mat specialist in Fort Worth. The accident site was secured by the Haz-Mat Teams and the leaking car was identified as the DDDX 40077, a tank car loaded with ETHANOLAMINE, a corrosive, Placard UN2491, STCC 4935665. Total product loss was twenty thousand eight hundred forty gallons (20,840) gallons. When it was determined by the HAZ-MAT Teams from Waco and the BNSF that there was no impending danger to the general public from the leaking car or the other six (6) derailed cars carrying hazardous materials, the accident site was released to allow re railing and clearing of the main track to start. The Crawford fire chief lifted the evacuation order at 10:00 pm CST.

During the inspection of the accident and the derailed cars it was found that one (1) car had been ejected toward the South side of the main track and had struck a unoccupied parked tractor trailer cab and a grain storage bin. The damage to the truck was estimated to be twenty thousand dollars (\$20,000) and the grain storage bin was estimate to be sixty thousand dollars (\$60,000).

Analysis:

Investigation into the cause of the accident determined that the center plate and trucks of the A-end of the GATX 53754 were worn and would not allow the truck to swivel properly.

I inspected the trucks of the GATX 53754 and found them worn in the body bolster and truck side friction wear plate areas.

The cars carrying hazardous materials were trans loaded into trucks. The empty cars were loaded onto trailers and transported to Temple, Texas for disposition. All other damaged cars at the site were transported to Temple by truck for disposition.

The area effected by the hazardous material spill was remediated by contractors and BNSF employees.

Conclusions:

An investigation by the FRA determined that the cause of the accident was "Truck Bolster Stiff, Improper swiveling" Code E46C, not allowing the lead truck of the GATX 53754 to align to the rail and setting off to the west side #4 leading wheel at mile post 246.8 and being followed by remaining twenty three (23) cars.