

Federal Railroad Administration Office of Safety Headquarters Assigned Accident Investigation Report HQ-2005-75

Burlington Northern Santa Fe (BNSF) Mesler, Missouri September 7, 2005

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 OF TRANSPORTATION ERA FACTUAL RAILROAD ACCIDENT DEDODT FRA File # HO.2005.75																					
DEFAN INTENT OF TRAINSPORTATION       FRA FACTUAL RAILROAD ACCIDENT REPORT       FRA File # HQ-2005-75         1 Name of Railroad Operating Train #1       Is Also budget for the second accident/Insident No.																					
1.Name of Railroad 0	1a. Alphabetic Code 1b.					1b. 1	<ul> <li>Railroad Accident/Incident No.</li> </ul>														
BNSF Rwy Co. [B]	BNSF						SF0905111														
2.Name of Railroad C	2a. Alphabetic Code2b.						. Railroad Accident/Incident														
Union Pacific RR G	UP						0905SL005														
3.Name of Railroad R	3a. Alphabetic Code3b						. Railroad Accident/Incident No.														
Union Pacific RR G	UP						SF0905111														
4. U.S. DOT_AAR G	5. Date of Accident/Incident 6. 7						Fime of Accident/Incident														
		Month		Day	Y eau	5	12:30: AM / PM														
7 Type of Accident/		7	7. Hwy-rail crossing 10. Explosion-detonation 13. Other																		
(single entry in co	4. Side c 5. Rakin	collision	'n	8.	. RR grade	crossi	ng 11.	. Explo . Fire/v	iolent rupt	ent rupture (describe in											
(****g-1 ***) *** 1 *		3. Rear e	nd col	lision	6. Broke	n Train co	ollision	9.	9. Obstruction 12. Other impacts narrative)												
8 Cars Carrying		9 HAZMA	AT Car	rs	10. Cars Releasir					11	People		1		12 D:-			04			
HAZMAT	AZMAT 0 Damaged/Derailed				d 0 HAZMAT				0	Ev	acuated			0	12. DIV	151011	St Louis				
0					U 14 Milanast									Ů			Dr Douio				
13. Nearest City/Tow	vn				14. Milepost (to nearest					15. S	tate Abbr	Co	le 16	. County							
	]	Mesler			(to hearest				4		N/A	M	10		STODDARD						
17. Temperature (F)		18. Visit	oility	(sing	gle entry)	Code	19. W	Veath	er (singl	le entry	r)	Ċ	ode	20. Type of Track				Code			
(specify if minus)	(specify if minus) 1. Dawn			3.E	3.Dusk			1. Clear 3. Ra			5.Sleet	1		1. Main 3. Siding			ng	1 1			
87	F	2.	Day	4.1	4.Dark 2				udy 4. F	og	6.Snow		2	2. Ya	2. Yard 4. Industr			1			
21. Track Name/Num	ıber				22. FRA Track				Code 23. Annual Trac			ck Den	sity	24. Time Table Direction			ction East	Code			
	Main		-) 	5	1	nillions)	, 111	96.	1. INOTUL 5. East			. Last	2								
OPERATING TRAIN #1																					
OPERATING TRAIN #1 25 Type of Equipment 1 Eraight train 4 Work train 7 Vard/avitabing A Saga MoW Equip Code 126 Was Equipment Code 127 Train Name of Control 1																					
Consist (single er		Att					ended?														
3. Commuter train 6. Cut of cars 9. Maint/inspect.car   1   1. Yes 2. No   1   GTIAGAT													AT904								
28. Speed (recorded	speed, if	available)	Code	e 30	. Method(s)	of Operati	on (	ente	r code(s)	that a	pply)			30a. Rem	otely C	ontro	lled Loco	omotive?			
R - Recorded	block	m.Sp	1-	0 = Not a2+25 southly downessled																	
E - Estimated	E - Estimated 11 MPH R b. Auto train control h. Curren										le/train orders o Positive train control						1 = Remote control portable				
29. Trailing Tons	(gross to	nnage,		d	. Auto trair l. Cab	i stopii	. Track w	able/t /arrar	arrant control p. Other (Specify in parrative)						2 = Remote control tower 3 = Remote control						
excluding power units) e Traffic k Direc									raffic control Code(s)					transmitter - more than one							
	nits	e n N/A N/A N/A rer						control	transı	mitter	0										
31 Principal Car/Uni	t	a Initial	and N	umber	h Positio	n in Trai		L oad	ed(mailma)	22	II I			d for derio	-/a1aaba	1 1 1 1 1 1					
(1) First involved		u. Indu		unioer	0. I Oshic	in in Trui		Loud	eu(yes/110)		enter the	numbe	r that were	e positive i	n	use,	, Alcohol	Drugs			
(derailed, struck, e	etc)		N/A		1				N/A the appropriat				box.	•			0	0			
(2) Causing (if med	chanica	1	0			0		,	T/A	33	. Was this	consis	t transport	ing passen	gers? (	(/N)					
cause reported	)		0		0			ľ					1	51	Č (	,		N			
34. Locomotive Units a. Head			Mid 7	Frain	Re	ar End		35. Cai	rs			Lo	aded		Emp	oty					
		End	b. Ma	anual	c. Remote	d. Manua	1 c. Rei	mote					a. Freight	D. Pass.	c. Frei	gnt	d. Pass.	e. Caboose			
(1) Total in Train	n	2		0	0	0	2		(1) Tota	l in Eq	uipment C	onsist	110	0	0		0	0			
(2) Total Deraile	d	2		0	0	0	0		(2) Tota	1 Derai	led		3	0		,	0	0			
36. Equipment Dama	age		ļ	27 Tr	ak Signal V	Vou			28 Drim	or Co	1160			20 Cont	ributing	Con	60				
This Consist	37. II. &	Structure Da		Code	iary Ca	luse	Н	221	Code H605												
		Numbe	r of Ci	ew Me	embers				Length of Time on Duty												
40. Engineer/	41. Fii	remen		42. Conductors   43. Brakemen					44 Engineer/Operator					45. Conductor							
Operators N/A		0			1		0				Hrs 10		0		Н	rs	10	Mi 0			
Casualties to:	46 Pail	road Emple	WAAS .	47 T	: D	48.04			49 EOT	vice?			50 Was EOT Device Properly Armed?				Armod?				
Casuallies to.	40. Kan	troad Employees 47. Train Passengers 48. O						1 Yes 2 No 1					1								
Fatal	0				0 0			51 Caboos Occurried by Course													
Nonfatal NI/A				0			1 Vas 2 N					? • • • •	0 I N/A								
													IN/A								
						0	PERAT	ΓING	G TRAI	N #2											
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 entry) 2. Passenger train 5. Single car 8. Light loco(s).									Attende					?				A07			
5. Commuter train 6. Cut of cars 9. Maint./inspect.car 1 1. Yes 2. No 1 KMNOAO/																					
R - Recorded speed, II available) Code 57. Method(s) of Operation									enter code(s) that apply)						5/a. Remotely Controlled Locomotive?						
K - Kecorded     a. ATCS     g. Auto       F - Estimated     0     MPH     R     A								hatic l	atic block in Special Instructions n. Other than main track						U = 1 Not a remotely controlled 1 = Remote control portable						
E - Esuillateu				t	. Auto train	control f	. Curren	n of t	Tattic						Sie con	nor b	orable				

DEPARTME FEDERAL R	ENT OF AILROA	TRAN AD AD	NSPOR' MINIS'	TATI FRAT	ION FION	FRA F.	ACTUA	LRAIL	ROAD AC	CCIE	DENT 1	REPO	ORT	F	RA File #	<u>HQ-200</u>	<u>5-75</u>				
56. Trailing Tons (gross tonnage, excluding power units)						. Auto trai . Cab . Traffic	n stop i. j. k	/train orders	in orders o. Positive train control control p. Other (Specify in narrative) Code(s)					2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter							
59 Principal Car/Unit o Initial and Nu					f.	Interlockin	g l. ion in Troi	Yard limits		e N/A N/A N/A N/A											
36. Fincipal Car/Unit a. Initial and Nu					Number	D. Post	10n 1n 1 rai	n c. Loa	ided(yes/no)	<sup>20</sup> (yes/no) 59. If railroad employee(s) tested for drug/alcohol enter the number that were positive in						se, Alcohol	Drugs				
(derailed, struck, etc) DDTX7265					26516		85		yes	the appropriate box. N/A							N/A				
(2) Causing (if mechanical cause reported) 0							0		N/A	60. Was this consist transporting passengers? (Y/N)							N				
61. Locomotive	Units	a. Head End b. Mar				Train c. Remote	Re d. Manua	ear End l   c. Remot	e 62. Cars	62. Cars Lo a. Freight					oadedEmptytb. Pass.c. Freightd. Pass.						
(1) Total in Train			3	3 0		0	0	0	(1) Total i	(1) Total in Equipment Consist			91	0	0	0	0				
(2) Total D	otal Derailed 0		0	0 0		0	(2) Total I	(2) Total Derailed			2	0	0	0	0						
63. Equipment I This Cons	uipment Damage 6 Fhis Consist 10318					ack, Signal, Structure D	Way, amage	516000	65. Prima Code	65. Primary Cause Code H221 66. Contributing Cause Code						use	H605				
			Numbe	er of C	Crew Me	embers				Length of Time on Duty											
67. Engineer/	6	8. Firei	men		69. Co	onductors	70. Bi	akemen	71. Engin	eer/O	perator			72. Con	ductor		Mi ao				
Operators	erators 1 0					1		0		Hrs	3	Mi	30		Mi 30						
Casualties to	p: 73.	. Railro	ad Empl	oyees	74. Tra	in Passenge	rs 75. Ot	her	76. EOT I	Device	?		77. Was l	7. Was EOT Device Properly Ar							
Fatal			0			0		0	1. 1	es	2. No		1	1.	Yes	2. No	1				
Nonfatal			0			0		0		ose Oc	cupied b Yes	y Crew	r? 2. No		N/A						
			Highw	vay U	ser Inv	olved		Ū	Rail Equipment Involved												
79. Type	ruck Troil	lor 5			LOI	N	• 1	Code	83. Equip	83. Equipment											
A. Auto D. Pi	J. Other K. Pede	r Motor Vel estrian	ncle	1.Train(units pulling) 4.Car(s) (moving) 7.Light(s) (standing)								ioving) g)	1								
B. Truck E. V	an	Н	. Motorc	ycle	M. Oth	er (spec. in	narrative)	N/A	N/A 2.Train(units pushing) 5.Car(s) (standing) 8.Other (specify in narrative)												
80. Vehicle Sp	geograph	ical)	I N/A	84. Positic	on of C	Car Unit i	n Trair	1	N/A												
82. Position	1.140	Jui 2.5	outil 5.Eas	4. West	Code	85. Circun	85. Circumstance														
1.Stalled or	n Crossing	g 2.Sto	opped on	Cross	sing 3.N	Aoving Ove	r Crossing	NI/A	1. Rail E	quipm	ent Struc	k High	way User								
4. Trapped		alwad			2. Rail E	quipm	ent Struc	k by H	ighway Use	er hv			N/A								
in the imp	act trans	porting	hazardo	us ma	terials?	olveu		Code	800. was	lifere a	nazaruo	us mai	errais reieas	e Uy			Code				
1. Highway User 2. Rail Equipment 3. Both 4. Neither N/A 1. Highway User 2. Rail Equipment 3. Both 4. Neither														N/A							
86c. State here t	the name a	and qua	antity of	the ha	zardous	materials r	eleased, if	any.													
N/A 87 Type of 1 Gates 4 Wig Wage 7 Crossbucke 10 Elagged by craw 98 Signaled Crossing Warning Code 90 Whigth Day Code																					
Crossing	2.Cantile	ever FL	S 5.Hw	y. tra	ffic sign	als 8.Stop	signs 1	1.Other (spe	ec. in narr.)	(S	ee instru	ctions	for codes)	code	1. Ye	s	code				
Warning	warning     3.Standard FLS     6.Audible       Code(a)     N/A     N/A					9.Wate	hman 1	2.None							2. No 3. Un	known					
Code(s)	N/A	N	N/A	N/	A	N/A	N/A	N/A	N/A	N/A IV/A							N/A				
1. Both Sides								Highway S	ignals	u	Code	92.0	Lights or S		Code						
2. Side of Vehicle Approach								l. Yes		I			1. Yes 2 No								
5. Opposite Side of Venicle Approach						N/A	3		N/A 3. Unknown												
93. Driver's 94. Driver's Gender Code 95						iver Drove	Behind or	Frain Cod	ain Code 90. Driver 1. Drove around or thru the Gate 4 Stopped on Crossing												
0 Age	1. N 2. F	1. Male     and Str       2. Female     N/A					was Struct 2. No	3. Unknow		2. Stopped and then Proceeded         5. Other (specify in narrative)           N/A         3. Did not Stop         narrative)							N/A				
97. Driver Passed Standing Code 98. View of Track Obscured by (primary obstruction)													Code								
rignway venicle     1. Permanent Structure     3. Passing Train     5. Vegetation     7. Other     (specify in narrative)       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						Taina 1	99. Drive	r Was	ography 0.	115110	Cod	e	100. Was I	. Was Driver in the Vehicle?							
Crossing Users Killed					d	Injured	1. Killed	12.Injured 3	. Uninjured	Uninjured N/A				1. Yes 2. No							
0 0 102. High									'ehicle Property Damage     103. Total Number of Highway-Rail C       damage)     0							Rail Cross	ing Users				
104. Locomotiv	104. Locomotive Auxiliary Lights?     Code     105. Locomotive Auxiliary Lights Operational?													Code							
1. Ye	es		2. N	0				N/A	1.	Yes			2. No				N/A				
106. Locomotive Headlight Illuminated?								Code	107. Loco	107. Locomotive Audible Warning Sounded?						Code					
1. Yes 2. No									1.	1. Yes 2. No							N/A				

108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED. 75.bmp



## 109. SYNOPSIS OF THE ACCIDENT

On September 7, 2005 at 12:30 p.m. CST southbound BNSF Railway Company (BNSF) freight Train Symbol G-TIAGAT9-04A proceeded by a red absolute signal and out the south end of Mesler Siding, striking stopped Union Pacific Railroad Company (UP) freight Train Symbol KMNOA 07 occupying the main track. The side-collision accident occurred near Mesler, Missouri, on the UP St. Louis Service Unit, Chester Subdivision, at milepost 148.4.

The 11 mph impact resulted in derailing 2 cars of the UP freight train and the 2 lead locomotives and head 3 cars of the BNSF freight train. There were no injuries to any crew members. Monetary damages to the BNSF equipment totaled \$129,975. The monetary damages incurred by the UP were \$10,318 to equipment and \$516,000 to track and signal.

At the time of the accident it was daylight and overcast with a temperature of 87 °F.

The accident cause is H221, failure of the BNSF crew to comply with an automatic block signal or interlocking signal displaying a stop indication. It is also determined to be appropriate to indicate the contributing cause of H605, failure to comply with restricted speed in connection with the restrictive indication of a block or interlocking signal.

# 110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railroad Administration.

Circumstances Prior to Accident

Train Symbol G-TIAGAT9-04A

The crew of southbound BNSF freight Train Symbol G-TIAGAT9-04A included an engineer and conductor. They first went on duty at 2:30 a.m., September 7, 2005, at the BNSF Lindenwood Yard in St. Louis, Missouri. This was the away terminal for both crew members and both received more than the statutory, off-duty period prior to reporting for duty.

Their assigned freight train consisted of 4 locomotives, with 2 on the head end and 2 on the rear in DPU mode, and 110 loaded, covered hoppers of corn. It was 6,869 feet long and weighed 15,296 tons. It had originated in Templeton, lowa on September 4, 2005 where a BNSF train crew had performed the Class 1 brake test and it was en route to Galveston, Texas.

They departed Madison, Illinois at 4 a.m. on the Terminal Railroad Association of St. Louis (TRRA) Westbound Track and proceeded about 10 miles to Valley Junction. They were then routed onto UP Track 1 at milepost 0 on the Chester Subdivision, en route to Dexter, Missouri, milepost 171. There were delays at milepost 112 and milepost 123. As they departed milepost 123 at 12 noon the dispatcher said they would take the siding at Mesler where UP freight Train KMNOA 07 was waiting on the main.

As the southbound BNSF train approached the accident site, the locomotive engineer was seated at the controls on the west (right) side of the lead locomotive. The conductor was seated on the east (left) side of the lead locomotive. About miles prior to arriving at the north end of Mesler Siding they observed a Flashing Yellow Aspect (Advance Approach) and the train was slowed from 50 mph to 30 mph. They observed a Red over Yellow Aspect at the siding (Diverging Approach) and entered the siding at milepost 146.9.

### Train Symbol KMNOA 07

The crew of northbound UP freight Train Symbol KMNOA 07 included an engineer and conductor. They first went on duty at 9 a.m. September 7, 2005 at the Dexter Yard Office and both received more than the statutory, off-duty period prior to reporting for duty. Their assigned freight train consisted of 3 lead locomotives and 99 loaded TOFC cars. It was 7,775 feet long and weighed 4,829 tons. The maximum authorized speed for this train is 70 mph. They departed Dexter, milepost 168, at 11:45 a.m. en route to Dupo, Illinois on Track Number 1 and entered the single main track at milepost 160 about 12 noon. They proceeded to milepost 146.9 and stopped on the main track, waiting for the southbound BNSF train to arrive and take siding. Mesler Siding is only 7,315 feet long so the rear of their train extended beyond the south end power switch.

As the southbound BNSF train entered the siding at milepost 146.9, the UP conductor was standing to the right side of the track to inspect their train, but no communication between trains.

The track grade from milepost 145 to milepost 149 is basically flat. There is a southbound 0.06 descending grade at milepost 146. In the area southward from milepost 146, then at milepost 147.1 there is a 1-degree 0-minute left-hand curve. Approaching the accident site at milepost 148.1 there is a right-hand 2-degree 0-minute curve. There is about 1,900 feet of preview to the signal involved. The railroad timetable direction and geographical direction are both south.

#### The Accident

At 12:30 p.m., September 7, 2005, Train Symbol G-TIAGAT9-04A was traveling southbound at 27 mph in the limits of a siding. The maximum authorized speed in the siding is 30 mph, as designated in the current UP timetable. The engineer was seated at the control stand. The conductor was seated on the left side at his normal position as nearing milepost 148.3 when he yelled that the signal was red. The engineer initiated an emergency air brake application. The train slowed to 11 mph before running through the Mesler Siding south end power switch and striking the 85th head car of stopped northbound UP freight train at milepost 148.4. The accident resulted in the two lead locomotives and three head cars of the proceeding BNSF train derailing. The 86th and 87th head cars of the stopped UP train were also derailed. The weather was daylight and cloudy with a temperature of 87 °F. Visibility was unrestricted approaching the accident area.

Analysis and Conclusions

Analysis

The event recorder was analyzed by the BNSF and FRA which did determine train handling was the cause of the accident.

The BNSF locomotive engineer involved signed a Notification of Certificate Suspension on September 7, 2005 for failure to control a locomotive or train in accordance with a signal indication that requires a complete stop before passing it.

Post-accident toxicology test of the BNSF crew conducted. Results were negative.

FRA made observations of the derailed equipment, track, and signal damages. They also interviewed the crew.

FRA obtained and reviewed the work history of the crew involved.

No FRA tests or inspections of the non-derailed equipment conducted.

A UP mechanical manager inspected the non-derailed cars of the BNSF freight train the day of the accident.

The non-derailed cars remained in the siding for days because the south end power switch was destroyed. BNSF locomotives and crew were sent from Chaffee, Missouri to the accident location on September 9, 2005. The crew performed a brake test before leaving, with no exceptions being noted.

#### Conclusions

The BNSF engineer involved was qualified on this route, had made 48 trips in the last years, and the responsibility for the accident.

Probable Cause

The accident cause is H221, failure of the BNSF crew to comply with an automatic block signal or interlocking signal displaying a stop indication. It is also determined to be appropriate to indicate the contributing cause of H605, failure to comply with restricted speed in connection with the restrictive indication of a block or interlocking signal. The FRA concurs with the findings.