

Federal Railroad Administration Office of Safety Headquarters Assigned Accident Investigation Report HQ-2005-57

Dakota, Minnesota & Eastern (DME) Pierre, South Dakota July 31, 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       FRA FACTUAL RAILROAD ACCIDENT REPORT       FRA File # HQ-2005-57         FEDERAL RAILROAD ADMINISTRATION       FRA FACTUAL RAILROAD ACCIDENT REPORT       FRA File # HQ-2005-57																	
1.Name of Railroad Operat	ting Train #1				1a. Alphabeti	1b. 1	. Railroad Accident/Incident No.										
Dakota, Minnesota & Ea	astern RR [D]	ME ]			0 41 1 1 7	DME		21. 5	2005132								
2.Name of Railroad Operat	ing Train #2				2a. Alphabeti			20. F	Railroad Accident/Incident								
3.Name of Railroad Respon	nsible for Trac	k Mainte	enance:		3a. Alphabeti	c Code		3b. 1	Railroad A	ccident/l	ncident No.						
Dakota, Minnesota & Ea	astern RR [D]	ME ]			-			2005132									
4. U.S. DOT_AAR Grade	Crossing Ident	ification	Number		5. Date of Ac	cident/Incident		б. Т	ime of Ac	cident/In	cident						
					Month 07	Day	Year	5									
7. Type of Accident/Indice	7. Hwy-rail	. Hwy-rail crossing 10. Explosion-detonation 13. Other															
(single entry in code box	x) 2. Head o	n collisi	on 5. Raking	g collision	ı	8. RR grade	8. RR grade crossing 11. Fire/violent rupture (describe in narrative)										
	3. Rear er	nd collis	ion 6. Broke	n Train co	ollision	9. Obstructi	9. Obstruction 12. Other impacts narrative)										
8. Cars Carrying	9. HAZMA	T Cars		10. Cars	Releasin	ıg	11. People			12. Division			-				
HAZMAI 0	Damaged/I	iged/Derailed 0			.1	0	Evacuated	Evacuated				System	I				
13. Nearest City/Town				14. Mile	epost		15. State	State Abbr Code 10									
	Pier	re		(to r	nearest to	enth) 472.7	N/A	A   S	D		HU						
17. Temperature (F)	18. Visib	ility	(single entry)	Code	19. W	Veather (singl	e entry)	C	ode	20. Typ	e of Trac	k	Code				
(specify if minus)	specify if minus) 1. Dawn 3.Dusk				1	. Clear 3. R	ain 5.Sleet	1	1	1. M	ain 3. S	1 1					
96 F	2.1	Day	4.Dark		2	. Cloudy 4. F	og 6.Snow		1	2. Yard 4. In		ndustry					
21. Track Name/Number		Clas	s (1-9, 3	Code ()	(gross to	ns in	sity	24. 11m	1. North	3. East	Code						
		Ma	in			3	3 millions) 3.23										
					OPER	ATING TRA	AIN #1										
25. Type of Equipment 1. Freight train 4. Work train 7. Yard/switching A. Spec. MoW Equip. Code 26. Was Equipment Code 27. Train Num												mber/Symbol					
Consist (single entry)	<ol> <li>Passenger</li> <li>Commute</li> </ol>	train : r train e	5. Single car 8.	:0(s). Ispect ca	r	1	1. Yes	s 2. No 1 MHUR									
28. Speed (recorded speed	l, if available)	Code	30. Method(s)	of Operati	on (	enter code(s)	that apply)		30a. Remotely Controlled Locomotive?								
R - Recorded			a. ATCS	. Autom	atic block	tic block m.Special instructions					0 = Not a to should y to we she a						
E - Estimated 38	MPH	R	b. Auto train	. Curren	t of traffic	ble/train orders o Positive train control					1 = Remote control portable 2 = Remote control tower						
29. Trailing Tons (gross	Track w	arrant control	p. Other (Spe	arrative)	2 = Remote control tower 3 = Remote control												
excluding power unit	. Direct	traffic control	Cod	le(s)	intuit(c)	transmitter - more than one											
	1834	4	f. Interlocking	Yard lin	nits	j N/A	N/A N/	/A N/A	remote control transmitter 0								
31. Principal Car/Unit	a. Initial a	and Nun	nber b. Positio	on in Trair	n c. l	Loaded(yes/no)	32. If railroa	d employ	/ee(s) teste	ed for drug	g/alcohol	use,					
(1) First involved		N/A		32			no enter the nu			positive i	n	Alcohol	Drugs				
(derailed, struck, etc)	iaa1							· · · ·	юл.		0.01		N/A				
cause reported)	ical	0		0		N/A	33. Was th	is consist	transport	ing passen	gers? (Y/	N)	N				
34. Locomotive Units a. Head			/lid Train	Re	ar End	35. Car	s		Lo	ade	I I	Empty					
	End	b. Man	ual c. Remote	d. Manua	l c. Rei	mote			a. Freight	b. Pass.	c. Freig	ht d. Pass.	e. Caboose				
(1) Total in Train	3	(	) 0	0	0	(1) Tota	in Equipment	Consist	3	0	48	0	0				
(2) Total Derailed	0	0	0	0	0	(2) Total	Derailed		1	0	21	0	0				
36. Equipment Damage		37	. Track, Signal, V	Way,		38. Prim	ary Cause	•		39. Cont	ributing (	Cause					
This Consist	167560		& Structure Da	16721	Code T109 Code H606												
40 Engineer/ 41	Number	r of Crev	w Members	1 43 Br	akaman	44	Length of	t Time on Duty 45. Conductor									
40. Engineer/ Operators N/A 0			42. Conductors 43. Braken			44. Eng	52	45. Con	Hrs	s 4	Mi 52						
N/A Complianto: 46 P	oilroad Emplo	NO06 47	т : р	40.0	24	40 EOT	Device?	52	50 Was EOT Device Properly Armed?								
Casuallies to. 40. K		yees 47	. Train Passenger	s 48. C	Jtner		1. Yes 2. No   1										
Fatal 0			0 0			51 Cab											
Nonfatal	N/A		0 0							N/A							
OPERATING TRAIN #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)	_	Attended?					<b>N</b> /	A									
55. Speed (recorded speed	if available)	Code	57 Method(s)	of Operation	on (	enter code(s)	that apply)	<b>`</b>	1. Yes	2. NO 57a. Rem	otely Co	ntrolled Loc	omotive?				
R - Recorded	g. Autom	atic block		0 = Not a remotely controlled													
E - Estimated     0     MPH     N/A     a. $11 \text{ Cos}$ a. $11 \text{ Cos}$ a. $11 \text{ Cos}$ b. Auto train control     h. Current of traffic     n. Other than main track     1 = Remote control port										ol portable							

DEPARTMENT FEDERAL RAII	Г OF TR. LROAD A	ANSPOI ADMINI	RTATI STRAT	ION FION	FRA FA	ACTUAI	L RAILR	OAD AC	CIE	DENT I	REPO	ORT	F	RA File #	<u>HQ-200</u>	<u>5-57</u>	
56. Trailing Tons (gross tonnage, excluding power units)					. Auto train . Cab . Traffic	Time table/t Frack warran Direct traffi	rain orders of t control I c control	o. Pos o. Oth	itive train er (Spec Code	i contro ify in n (s)	ol arrative)	2 = Remo 3 = Remo transmit remote c	N/A				
58. Principal Car/Unit a. Initial and Nu				I. Number	h. Posit	5 I. I	i aiu illilits	ed(vee/pa)	1V/A	f railroad	empl	VA 1VA	d for drug				
(1) First involved			united	0.1030	0			- 59.1	enter the	numb	er that were	positive i	Drugs				
(derailed, struck, etc)						•		N/A		the appro	opriate	box.		N/A			
(2) Causing (if mechanical cause reported) 0					0		60. Was this consist transporting passengers? (Y/N)						[)	N/A			
61. Locomotive Un	its	a. Head End	l b. N	Mid Ianual	Train c. Remote	Rea d. Manual	ar End	62. Cars Loa a. Freight				ade b. Pass.	Err c. Freight	npty d. Pass.	e. Caboose		
(1) Total in Tr	(1) Total in Train 0		0	) 0		0	(1) Total i		n Equipment Consist 0			0	0	0	0		
(2) Total Dera	iled	0		0 0		0	0	(2) Total Derailed			0	0	0	0	0		
63. Equipment Damage 63. Equipment Damage 64. 65. 66. 66. 66. 66. 66. 66. 66. 66. 66					ack, Signal, Structure Da	Way, amage	0	65. Primar Code	65. Primary Cause Code N/A Code 66. Contributing Cause						luse	N/A	
	1 10 10	Num	ber of (	Crew Mo	embers	1 = 2 = 2		Length of Time on Duty									
67. Engineer/ Operators 0	68. Fi	remen 69 0			0 Conductors 70		0	/1. Engineer/Operator     /2. Conductor       Hrs     0       Hrs     0						0	Mi 0		
Casualties to:	73. Rai	lroad Em	ployees	74. Tra	4. Train Passengers		ier	76. EOT Device? 77. Was EOT De						EOT Devic	e Properly	Armed?	
Fatal		0			0		0	1. Yes 2. No N/A 1. Yes 2. No							2. No	N/A	
Nonfatal		0			0		0	/8. Caboose Occupied by Crew?       1. Yes     2. No									
		High	way U	ser Inv	olved						Rail I	Equipment	t Involved	ł			
79. Type C. Truck A. Auto D. Pick-	icle	Code	de         83. Equipment         6.Light Loco(s) (moving)           1.Train(units pulling)         4.Car(s) (moving)         7.Light(s) (standing)														
B. Truck E. Van	narrative)	N/A Code	IN/A         2.Train(units pushing)         5.Car(s) (standing)         8.Other (specify in narrative)           Code         84 Position of Car Unit in Train								N/A						
(est. MPH at	(cal) 4.West	N/A	84. Positio	0													
82. Position		Code	85. Circum	85. Circumstance													
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossi 4. Trapped							N/A	N/A 2. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User								N/A	
86a. Was the highway user and/or rail equipment involved							Code	86b. Was t	here a	hazardo	us mat	erials releas	se by			Code	
in the impact		I N/A	1. Highway User 2. Rail Equipment 3. Both 4. Neither														
1. Highway User       2. Rail Equipment       3. Both       4. Neither       N/A       1. Highway User       2. Rail Equipment       3. Both       4. Neither         86c. State here the name and quantity of the hazardous materials released if any													10/11				
		1 5				,	N/A										
87. Type of     1.Gates     4.Wig Wags     7.Crossbucks       Crossing     2.Cantilever FLS     5.Hwy. traffic signals     8.Stop signs       Warning     2.Stopdord FLS     6.Auditle     0.Wathematical							.Flagged by .Other (spec	crew . in narr.)	88. S (S	ignaled C ee instru	Crossin ctions	g Warning for codes)	Code	89. Whis 1. Ye 2. No	tle Ban s	Code	
Code(s) N	N/A	N/A N/A N/A N/A				N/A	N/A	N/A	N/A 3. Unkr							N/A	
90. Location of Wa 1. Both Sides	ation of Warning Code 91. Croc Both Sides w							y Warning Interconnected Code 92. Crossing Illuminated by Street ighway Signals Lights or Special Lights							Code		
2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach							. Yes . No		NI/A		1. Yes 2. No						
						in Code 96. Driver							N/A				
Age 1. Male 2. Female					<ol> <li>Driver Drove Benind or in Front of Tra and Struck or was Struck by Second T</li> <li>Yes 2. No 3. Unknown</li> </ol>				'rain     1. Drove around or thru the Gate     4. Stopped on Crossing       2. Stopped and then Proceeded     5. Other (specify in								
									N/A 3. Did not Stop narrative)							N/A	
97. Driver Passed S Highway Vehic	cured by	<ul><li>(primary obstruction)</li><li>3. Passing Train 5. Vegetation</li><li>7. Other (specify in narrative)</li></ul>								Code							
1. Yes 2. No 3. Unknown         N/A         2. Standing Railroad Equipment 4. Topography         6. Highway Vehicle         8. Not obstructed										icted	,		N/A				
101. Casulties to Highway-Rail Crossing Users Killed				ed	Injured	Code         100. Was Driver in the Vehicle?           Uniniured         N/A         1. Yes         2. No								Code N/A			
0					0	102. High	way Vehicle	Property Damage 0 (include driver) 0							ing Users		
104. Locomotive A	uxiliary Li	ights?				(est. c	Code	105. Locoi	notive	e Auxilia	ry Ligł	ts Operatio	mal?		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-57-Sketch.jpg

### 109. SYNOPSIS OF THE ACCIDENT

An eastbound Dakota Minnesota and Eastern Railroad Corporation (DME) freight train derailed on July 31, 2005, at 2:52 p.m., CDT. The accident occurred approximately 8 miles east of Pierre, South Dakota on a single main track, at milepost 472.7, on the System Division, Pierre Subdivision.

The train consisted of three locomotives, three loaded cars and 48 empty cars. The 29th car behind the locomotives derailed as it was passing over a compound curve (2-degree traversing to a 3.05- degree). The following 21 cars in the train derailed in the full body of the compound curve.

There were no injuries to the train crew and no hazardous materials involved.

The railroad estimated that there was track damage of \$167,212 and equipment damage of \$167,560, with no damage to signals or structures.

At the time of the derailment it was 96° F and clear.

The probable cause of the accident was "track alignment irregular (buckled/sunkink). A probable contributing cause was the engineer operating the train at excessive speed.

# 110. NARRATIVE

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

Circumstances prior to the Accident

The crew of Train Symbol MHURC-31 consisted of a locomotive engineer and conductor. They first went on duty at 10 a.m., CDT, July 31, 2005, at Huron, South Dakota, the home terminal for the crew. Prior to reporting for duty, both received a statutory off duty period.

The assigned freight train consisted of three locomotives, three loaded cars, 48 empty cars, 1834 trailing tons, and was 3162 feet in length. It was a mixed freight train scheduled to travel from Huron to Pierre, South Dakota, a distance of 117.7 miles. On July 31, 2005, an initial terminal air brake test and daily locomotive inspection was conducted at Huron. The train departed Huron at 10:50 a.m. on July 31, 2005.

As the train approached the derailment area, the locomotive engineer was seated at the controls on the right (north) side of the leading locomotive. The conductor was seated on the left (south) side.

Interviews conducted by the Federal Railroad Administration (FRA) revealed the trip was uneventful prior to the derailment.

Approaching the derailment site from the east traversing westward, there is tangent track approximately 1.6 miles in length, followed by a 1-degree curve to the right approximately 1,050 feet in length, followed by tangent track approximately 300 feet in length, followed by a 1-degree curve to the right approximately 1,600 feet in length, followed by tangent track approximately 250 feet in length to the point of derailment. The derailment occurred in a compound curve (2-degree curve traversing to a 3.05-degree curve), approximately 1,470 feet in length, to the left. The track is tangent beyond the accident site for approximately 1.2 miles. The approach to this curve has a descending grade of 0.60-percent.

The transition point in the compound curve is the probable Point of Derailment (POD), milepost 472.7.

#### The Accident

Train MHURC-31 was traveling timetable and geographical direction west on single main track at a recorded speed of 38 mph while approaching the POD. The speed was recorded by the event recorder of the controlling locomotive. The maximum authorized speed for the Pierre Subdivision is 40 mph, as designated by the current DME Timetable No. 5, dated April 3, 2005.

DME's timetable page 56 also lists temperature restrictions for all subdivisions, which states between "90 to 100 degree - reduce speed by 10 mph, but not below 25 mph". At the time of derailment the temperature was 96° F. Prior to the derailment DME's dispatcher notified the train crew of the temperature. The crew failed to comply with this timetable restriction.

The head end of the train passed through the body of the curve, which would later be the POD. Both the engineer and the conductor stated they did not see or feel anything out of the ordinary while proceeding around the curve at MP 472.7. Soon after the head end of the train was out of the curve a train line induced emergency brake application occurred.

After coming to a stop, the engineer notified the train dispatcher of the emergency brake application and the conductor walked back to inspect the train. Further

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examination of the scene noted that 22 cars had derailed, all of which remained upright.

Investigation of the derailment determined that the POD was at milepost 472.7 in the left hand compound curve.

The Pierre, South Dakota fire department responded to the derailment because of right of way fires started by the derailment. The fires were controlled in a short time, with only grass and weeds being burnt.

The two person train crew did not report any injuries. There were no hazardous materials involved, and no evacuations were required.

The railroad estimated track damage of \$167,212 and equipment damage of \$167,560.

# Analysis and Conclusions

The accident did not meet the criteria for FRA Post Accident Toxicology Testing, as required under Title 49 CFR, Part 219, Subpart C. The railroad did test the crew under their authority. The results were negative.

An inspection of the data print out from the locomotives event recorders indicated that the train was being operated at 38 mph in a location where it should have been operated at 30 mph due to a temperature restriction.

Two different DME track inspectors inspected the location of the derailment, by hi-rail, on July 26 and July 30 and noted no defective conditions.

Interviews were conducted with both track inspectors, which revealed that the track in the derailment area had been surfaced approximately 30 days prior.

The DME states in their derailment investigation report that this area had tight steel, anchor and tie movement and inadequate ballast. None of these conditions were noted on track inspections reports for this area prior to derailment

Although the track at the POD was destroyed, the rail before and after the POD was inspected and found to be boxed anchored every other tie, which is in compliance with DME's continuous welded rail (CWR) procedures. New rail (115lb. CWR) and ties were installed in this area in 1996.

### Probable Cause

The probable cause of the derailment was "track alignment irregular (buckled/sunkink). A probable contributing factor was the train operating at excessive speed. The FRA concurs with the findings.