

# Ordered Removal of Southern/ABC Wheels

Todd Snyder – Dir Adv Frt Car Engr – former Chairman AAR/WABL



September 17, 2009 – Chicago – MARTS Technical Conference



**BUILDING AMERICA®**

# Timeline – What Happened

- July 2004 – WABL Investigation (Docket Item TW 210.3)
- Feb 2005 – '95 SO CH36 removal on Repair Track (Rule 41)
- May 2005 – '95 SO CH36 scrapped at Wheel Shop
- Jan 2006 – '80, '89, '93 scrapped at Wheel Shop
  - Docket Item TW 210.6 opened for all wheels ( All Mfgs )
    - Web-Based MD115 required (Jan 2009)
- Oct 2006 – '91, '92, '96 scrapped at Wheel Shop
- Feb 2007 – all C(H/J)36 SO wheels scrapped at Wheel Shop
- May 2008 – '93-'97 CH36 on Repair Track



# Why it Happened

- Jan 2004 – Whitby, Ontario derailment ('88 SO CH36)
  - TSB Rail Safety Advisory Letter

## • Growing RR Failure Data

July 2004 – WABL Investigation

{ Feb 2005 – '95 SO CH36 on RIP  
 May 2005 – '95 SO CH36 Wheel Shop }

Jan 2006 – '80, '89, '93 Wheel Shop  
 TW 210.6 all wheels ( All Mfgs )

Web-Based MD115

Oct 2006 – '91, '92, '96 Wheel Shop

Feb 2007 – ALL C(H/J)36 SO Wheel Shop

May 2008 – '93-'97 CH36 RIP

MFG	Year	Wheel Size	Wear type	Plate Type	Failures per mil	Number of Failures	Number in Service
SOU	1969	36	2W	HT-CP	7837.26	1	127.6
...	...	...	...	...	...	...	...
SOU	1979	36	1W	HT-CP	2938.97	5	1701.28
SOU	1993	36	2W	HT-CP	1567.45	5	3189.89
SOU	1994	36	1W	HT-CP	2038.96	8	3923.57
SOU	1981	36	1W	HT-CP	692.65	9	12993.49
SOU	1986	36	2W	HT-CP	516.97	9	14588.43
SOU	1983	36	2W	HT-CP	1502.24	10	6656.24
SOU	1995	36	1W	HT-CP	2234.78	12	5369.65
...	...	...	...	...	...	...	...
SOU	1993	33	1W	HT-CP	388.7	22	56599.3
SOU	1991	36	1W	HT-CP	270.69	23	84968.06
SOU	1994	33	1W	HT-CP	554.85	24	43254.92
SOU	1994	36	1W	HT-CP	278.07	24	86307.82
SOU	1980	36	1W	NHT-CP	1854.24	25	13482.61
SOU	1999	33	1W	HT-CP	954.61	27	28283.7
SOU	1990	36	1W	HT-CP	400.99	28	69826.71
SOU	1992	36	1W	HT-CP	304.73	29	95165.08
SOU	1996	36	1W	HT-CP	321.89	29	90093.16
SOU	1993	36	1W	HT-CP	452.28	33	72963.44
SOU	1995	36	1W	HT-CP	702.7	80	113847.21
Total						753	1848584.4

**Exhibit A**

MFG	Year	Size	Type	Plate	FPM	Failures	Population
SOU	1995	36	1W	HT-CP	703	80	113847
NOT SOU	1991	36	1W	HT-CP	472	84	177953
NOT SOU	1990	36	1W	HT-CP	478	78	163110
SOU	1993	36	1W	HT-CP	452	33	72963
NOT SOU	1994	33	1W	HT-CP	388	32	105032
NOT SOU	1987	36	1W	HT-CP	6	31	50953
NOT SOU	1996	33	1W	HT-CP	2	30	126054
SOU	1992	36	1W	HT-CP	305	29	95165
SOU	1996	36	1W	HT-CP	322	29	90093
NOT SOU	1988	36	1W	HT-CP	388	29	74686
NOT SOU	1997	33	1W	HT-CP	199	28	140472
NOT SOU	1993	33	1W	HT-CP	270	28	103661
SOU	1990	36	1W	HT-CP	401	28	69827
SOU	1999	33	1W	HT-CP	955	27	28284

**Exhibit B**

# Exhibit A – MD115 Failure Data (Southern/ABC)

MFG	MFG Year	Wheel Size	Wear type	Plate Type	Failures per mil	Number of Failures	Number in Service
SOU	1969	36	2W	HT-CP	7837	1	127
...	...	...	...	...	...	...	...
SOU	1979	36	1W	HT-CP	2938	5	1701
SOU	1993	36	2W	HT-CP	1567	5	3189
SOU	1994	38	1W	HT-CP	2038	8	3923
SOU	1981	36	1W	HT-CP	692	9	12993
SOU	1986	36	1W	NHT-CP	616	9	14588
SOU	1983	36	2W	HT-CP	1502	10	6656
SOU	1995	38	1W	HT-CP	2234	12	5369
...	...	...	...	...	...	...	...
SOU	1993	33	1W	HT-CP	388	22	56599
SOU	1991	36	1W	HT-CP	270	23	84968
SOU	1994	33	1W	HT-CP	554	24	43254
SOU	1994	36	1W	HT-CP	278	24	86307
SOU	1980	36	1W	NHT-CP	1854	25	13482
SOU	1999	33	1W	HT-CP	954	27	28283
SOU	1990	36	1W	HT-CP	400	28	69826
SOU	1992	36	1W	HT-CP	304	29	95165
SOU	1996	36	1W	HT-CP	321	29	90093
SOU	1993	36	1W	HT-CP	452	33	72963
SOU	1995	36	1W	HT-CP	702	<b>80</b>	113847
<b>Total</b>						<b>753</b>	<b>1848584</b>

**Conclusion:  
1995 worst**



# Exhibit B – MD115 Failure Data - ALL

MFG	Year	Size	Type	Plate	FPM	Failures	Population
SOU	1995	36	1W	HT-CP	703	80	113847
NOT SOU	1991	36	1W	HT-CP	472	84	177953
NOT SOU	1990	36	1W	HT-CP	478	78	163110
SOU	1993	36	1W	HT-CP	452	33	72963
NOT SOU	1994	33	1W	HT-CP	305	32	105032
NOT SOU	1987	36	1W	NHT-CP	608	31	50953
NOT SOU	1996	33	1W	HT-CP	238	30	126054
SOU	1992	36	1W	HT-CP	305	29	95165
SOU	1996	36	1W	HT-CP	322	29	90093
NOT SOU	1988	36	1W	HT-CP	388	29	74686
NOT SOU	1997	33	1W	HT-CP	199	28	140472
NOT SOU	1993	33	1W	HT-CP	270	28	103661
SOU	1990	36	1W	HT-CP	401	28	69827
SOU	1999	33	1W	HT-CP	955	27	28284

**Conclusion: SO 1995 Worst, Most Significant  
Other Decisions Inconclusive, Data Integrity Issues  
CRB and MD115 Inconsistent**



# Other Supporting Evidence

- **Hydrogen Cracking Believed to be Cause**
  - Small chance of a non-destructive testing solution
- **2-5 times as many broken wheels as other Mfgs**
  - RR Specific, Normalized
- **Higher Percentage Result in Expensive Derailments**
  - Catastrophic Failures versus Carman Found Broken Wheels



Manufacturer	Derailments	Total Removals	Percent Derailments
A	64	673	9.5
Southern	56	472	11.9
B	17	417	4.1
C	3	62	4.8
D	2	38	5.3
E	2	23	8.7
F	0	36	0
G	0	18	0
Other	X	X	X
Total	144	1739	8.3