

February 23, 2000

To: D. R. Stephens
From: D. E. Beach & J. F. Piper
Subject: Tire Durability Meeting

Introduction:

Tire Durability has been identified as our #1 Technical Objective for 2000. Tire durability was identified as our #1 objective because of our desire to provide a continuous performance improvement to the durability of our product based upon our own internal testing. On Friday February 18th, a meeting was held to address the objective. The purpose of the meeting was to identify areas where our tire durability performance could be improved; identify both the short-term and long-term action items that need to be accomplished to provide the desired improvements; and to determine how the current durability teams can best work together to accomplish our objectives.

The meeting attendees were as follows:

Ron Arthur	Dave Baker #	Tony Brinkman # +
Dowey Beach	Bill Eckert +	Rita Feczner
Mike Graham #	Jim Kelly	Jennifer Kinn +
Will Mars #	Dave Moyers #	George Ouyang
Mark Panning	Jim Piper	Dennis Powell
Ken Rueille +	Jeff Schroeder	Jeff Schumaker
Rob Stechschulte	Al Wanstedt +	

Members of Passenger Tire Durability Team
+ Member of LT Tire Durability Team

In addition, John Ebert and Steve Cramer attended the first part of the meeting to present updated information on tire adjustments. This information was used to supplement our internal test data to determine areas where the continuous improvement philosophy could be applied to our product.

Executive Summary:

During our discussions, the group operated under the assumption that continuous improvements needed to be made to passenger, P-metric LT, and LRC, LRD and LDB LT tires. The following sizes were identified as target sizes: P205/65-15, P205/70-15, P215/70-15, LT225/75-16, LT235/85-16 and LT245/75-16.

Based upon our discussions, we identified continuous improvement opportunities as belt/belt separations that occurs in all tire lines when the tires are subjected to a combination of high ambient temperatures and high operating speeds.

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P1106

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[REDACTED] our discussions, the group identified 3 key short-term recommendations that could be made to make improvements in this area. These recommendations are:

[REDACTED]

3) Implement the use of belt edge gum strips into selected tire lines and specifications. [REDACTED]

[REDACTED] P-metric LT tires was identified as a tire line where the use of belt edge gum strips could be implemented on an as needed basis into selected tire specifications. A specification review needs to be conducted to determine the individual specifications that would be affected by this change. (JFS/ADW/KJR)

[REDACTED]

[REDACTED]

With regard to the 3rd recommendation, Cooper has prior experience, which has indicated that the use of belt edge gum strips can improve tire durability. The use of belt edge gum strips would decrease plant efficiencies and would require additional capital to implement.

Separate proposals for each recommendation, which outline the tradeoffs associated with each of the recommendations, will be submitted under separate cover.

Additional information regarding these three recommendations can be found in the body of this report. The report also contains additional short-term and long-term action items that will be evaluated as a means of addressing the continuous improvement tire durability issues.

[REDACTED]

[REDACTED]

Based upon these discussions, we identified continuous improvement opportunities as belt/belt separations that occur in all tire lines when the tires are subjected to a combination of high ambient temperatures and high operating speeds.

[REDACTED]

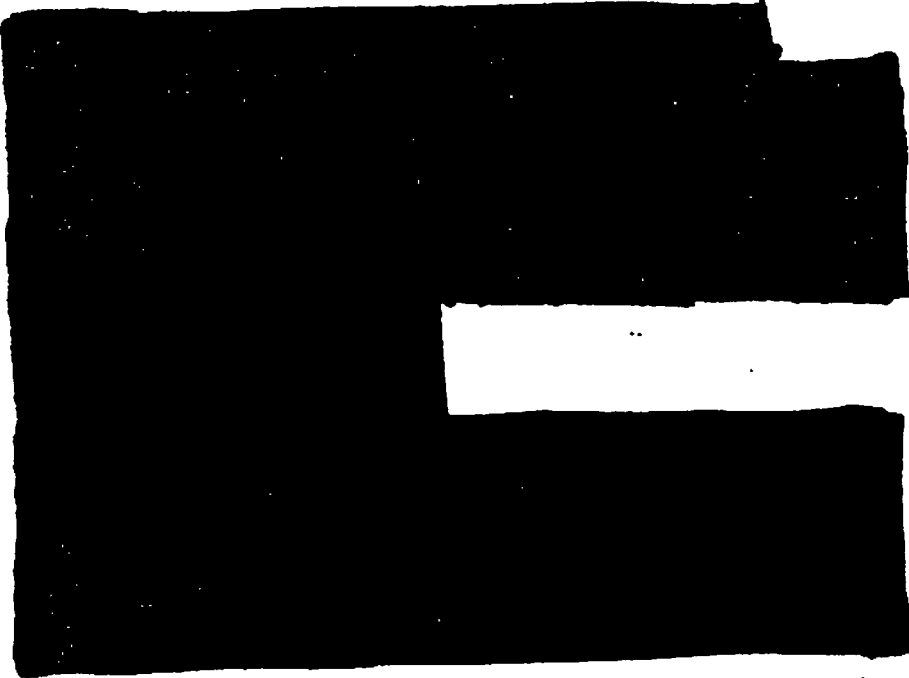
At this point, we divided into 5 separate groups. Each group concentrated their efforts on one of the 4 areas. Everyone was encouraged to rotate among the groups in order to provide their input.

- 1) Identify key material changes that have been observed to impact tire durability.
- 2) Identify key [REDACTED]/design changes that have been observed to impact tire durability.
- [REDACTED]
- 5) Identify key performance and [REDACTED] design information regarding our key competitors.

[REDACTED]

Each group then provided a review of the information that was generated regarding their area of investigation. As a group, all of the information was reviewed. The following short term and long term action items were identified as areas that could potentially impact tire durability as it relates to exposure to high operating speeds and high ambient operating temperatures. The information is subdivided by component.

[REDACTED]



The [redacted] amount of rubber compound between the belts can influence tire durability by reducing the strain energy density at the belt edge.

[redacted] The use of heavier rubber gauge between the belts, especially at the belt edge, can reduce strain energy density and improve durability. The use of belt edge gum strips would decrease plant efficiencies and would require additional capital to implement. Attachment 10 provides a graph, which shows the negative impact of eliminating belt edge gum strips from the LT production in Findlay.



In certain tire lines, nylon cap plies are used to cover the belt package. The purpose of the nylon cap ply is to hold the belt package together under conditions of high centrifugal.

Based upon our discussions, the following short-term action items were identified:



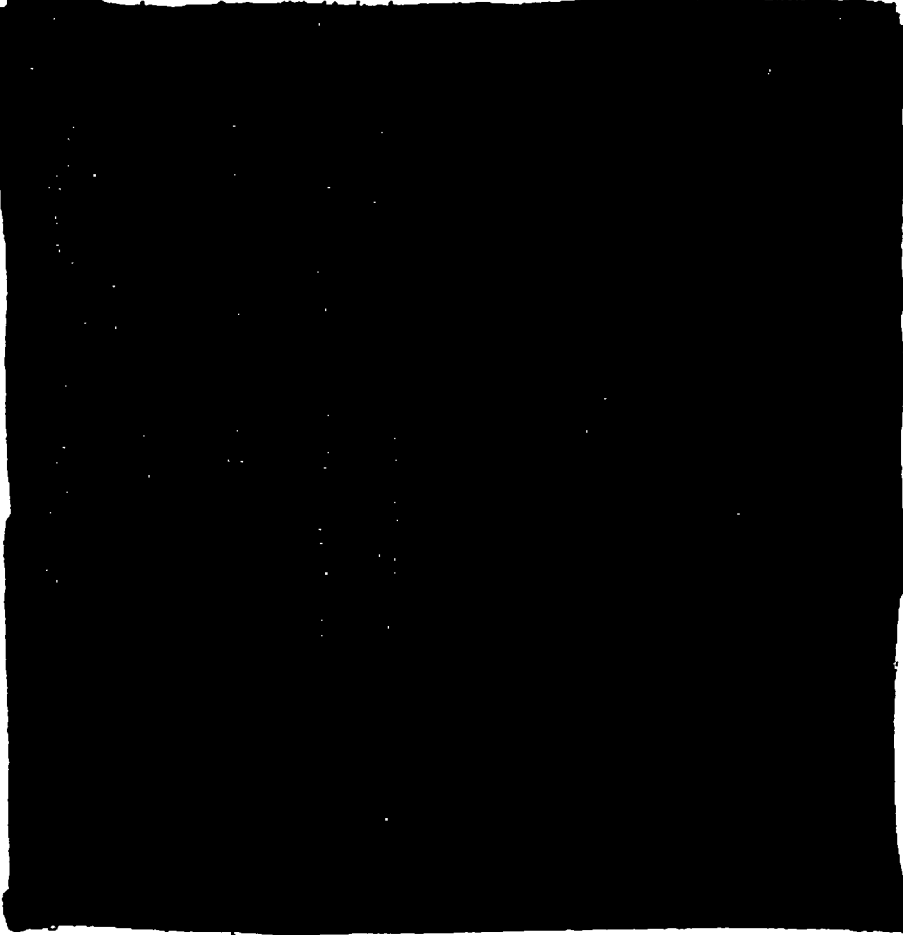
- 2) provide cost effective recommendations to reduce the strain energy density at the belt edge on selected tire specifications and/or tire lines on an as-needed basis through [redacted] calendered gauge of the belt composite (Panning and Schumaker)



Based upon our discussions, the following long-term action items were identified:



- 3) provide a cost effective recommendation to implement the use of belt edge gum strips into selected tire lines and specifications on an as-needed basis (Schroeder, Wanstedt and Rueille)
- 4) evaluate the use of nylon cap ply as a means of improving tire durability under conditions of high speed and high ambient operating conditions (Kinn and Wanstedt)

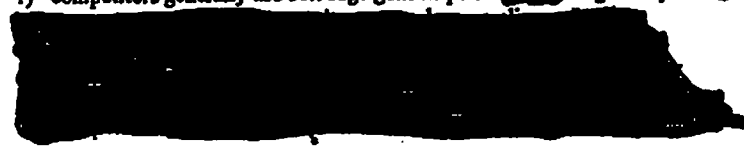




Competition:

Key information that evolved from the competitor assessment were:

- 1) competitors generally use belt edge gum strips on [redacted] large size passenger tires



Tire Durability Teams:

Based upon our discussions, it was felt that both durability teams should continue to operate; however, the team leaders (Graham and Wanstedt) need to meet on an on-going basis to outline and review their goals to insure that the teams are not duplicating effort.

The team leaders would then hold a monthly review with Beach, Jones, Piper and Schroeder to review their work and determine priorities.

In addition, it was agreed that the meeting format worked well and that the group would re-convene in May 2000 at an off-site location to review our progress.

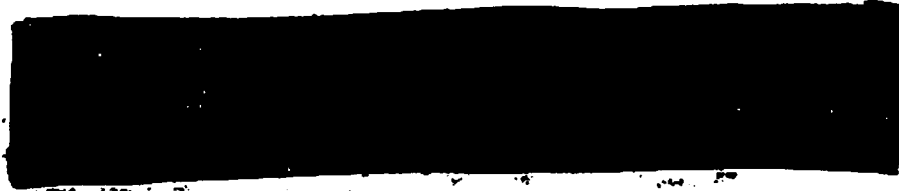
Future Action:

As a result of our discussions, the group identified 3 key short-term recommendations where we should focus our efforts to make improvements in this area. These recommendations are:

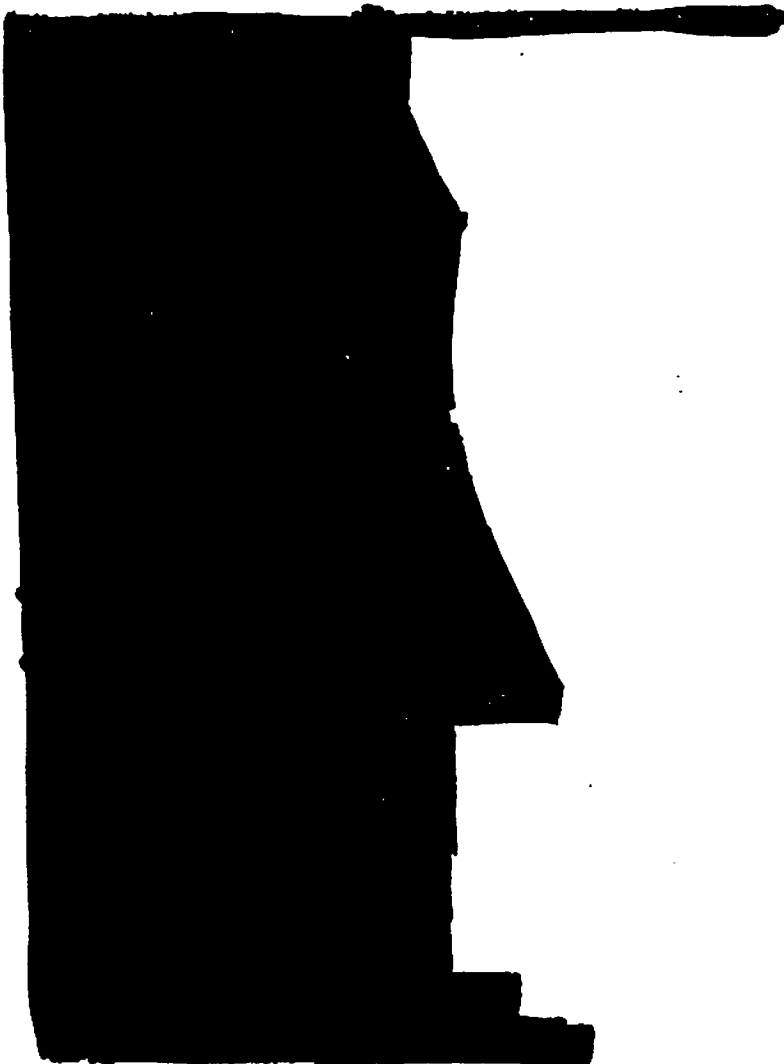


3)

P-metric LT tires was identified as a tire line where the use of belt edge gum strips could be implemented on an as needed basis into selected tire specifications. A specification review needs to be conducted to determine the individual specifications that would be affected by this change. (Schroeder/Wanstedt/Rueille)



Attachment 2



. Make the tire more resistant to oxygen attack



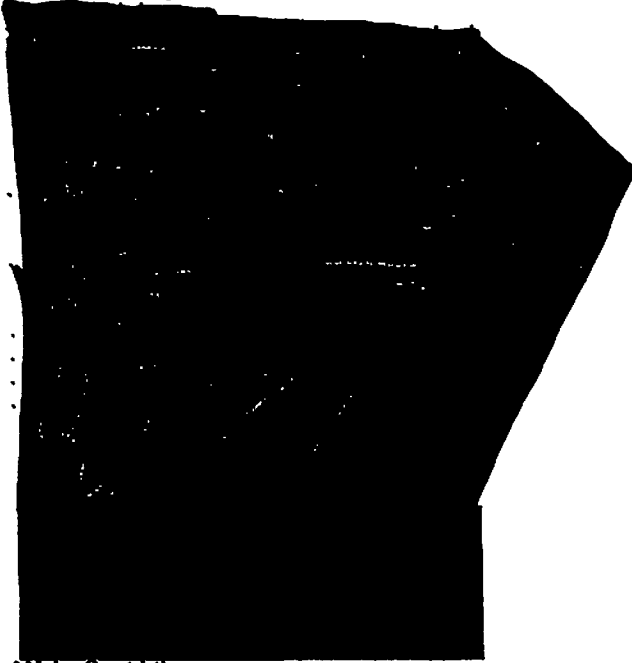
- . reduce stress at belt edge of the tire
- . use a nylon cap ply to hold the tire together

Attachment #3

Materials Effects on Tire Durability



Belt edge gumstrips



Nylon Construction
how much 840 vs 1260
open weave
low epi



Attachment #4

Tire Construction / Design Effects on Tire Durability

Positive effects

[REDACTED]
Nylon overwrap
Belt edge gunstrips -- impact on XX-22 test
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
Lower SED at belt edges -- profile / gunstrip
[REDACTED]
[REDACTED]

Negative effects

[REDACTED]

Attachment #7

Competitive Information

Virtually all [REDACTED] large passenger tires use belt edge gums

[REDACTED]
[REDACTED]
[REDACTED]

BEOS proven in all steel tires

Deficient in durability compared to competition

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



**Organization
Correspondence**

To: W. C. Pnevman (Fin)
D. A. Schlimmoeller (Tup)
J. F. Hoffman (Tex)
E. J. Bunge (Alb)
J. F. Copsan (Mik)

Date: 03/13/00

From: D. A. Powell

[REDACTED]

A meeting was held on February 18th with the purpose being to formulate a plan to improve long term tire durability. Emphasis was to be focused on P Metric and RLT tires. One of the primary reasons to do this at this time is the increased longevity our tires are seeing in the marketplace as other features of tire performance have improved.

From this meeting there were three initial action items that could be addressed fairly quickly. These were;

[REDACTED]

3. The addition of belt edge gum strips in certain tire lines and sizes of tires. This again has been fairly well documented but the equipment issues and effect on productivity has continued to be up for discussion.

Programs to initiate some level of production implementation have been determined for these changes.

[REDACTED]

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P1107

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 ISSUED TO PRODUCTION	12/11/86	10	001	0032.0149	ISSUED	M
02 NOTE:	SP2256 WSW FR WS Y57 TO WS CB57	01/12/87	20	002	0032.0733	WSW DIE	M
02 NOTE:	SP2256 OATW+.2	01/20/87	30	003	0032.2970	OATW	M
02 NOTE:	SP2256 TRD LGTH +.2, TRD END+.4, TRD WT+.22	01/26/87	40	005	0032.4974	TRDLGTH	M
02 NOTE:	SP2256 BSW FR BS AB57 TO BS BC57	02/03/87	50	006	0032.5399	BSW DIE	M
02 NOTE:	SP2256 TRD LGTH-.3	03/03/87	60	009	0032.4337	TRDLGTH	M
02 NOTE:	SP2256 BELT ANGLE-1.0, REMOVE SHIM NOTE, END CEMENT FR 267 TO 221	03/09/87	70	011	0032.4337	BLTANGL	M
02 NOTE:	SP2256 WSW, BSW WIDS+.2, WSW, BSW SETS-.10, LINER-.3, TRD LGTH+.3	04/06/87	80	018	0032.6514	WSW WID	M
02 NOTE:	SP2256 CURE FR KY165 TO KY155	04/10/87	90	022	0032.6729	CURECHG	M
02 NOTE:	SP2256 TRD.LGTH+.3	05/07/87	100	027	0032.7169	TRDLGTH	M
02 NOTE:	SP2256 LINER WID+.3	05/26/87	110	028	0032.7544	LINRWID	M
02 NOTE:	SP2256 EXP SET-.4, BD FILLER FR BF 029 TO BF 030, BSW RC STOCK FR 7557 TO 7510	07/10/87	120	032	0032.8234	EXP SET	M
02 NOTE:	SP2256 PCI FR 35 TO 30	07/17/87	130	033	0032.8234	PCI CHG	M
02 NOTE:	SP2256 TRD.LGTH-.3	10/06/87	140	045	0032.7794	TRDLGTH	M

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P1169

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 POLY SET+.6	10/08/87	150	047	0032.7794	POLYSET	M
02 NOTE:	SP2256 CHF.WID.+ .1,#1,#2 BLT.WID-. .1	11/16/87	160	051	0032.9101	BLT WID	M
02 NOTE:	SP2256 WSW RC WID-. .1	11/20/87	170	052	0032.9101	WSW REV	M
02 NOTE:	SP2256 WSW,BSW WIDS+. .2,WSW,BSW SETS-. .1	12/07/87	180	053	0033.0695	WSW WIDH	M
02 NOTE:	SP2256 WSW,BSW BLK STOCK FR 678 TO 829,WSW RC WID-. .1	01/25/88	190	056	0033.1067	R 829	M
02 NOTE:	SP2256 WSW,BSW BLK STOCK FR 829 TO 678	02/23/88	200	058	0033.1120	BLKSTCK	M
02 NOTE:	SP2256 WSW DIE FR WS CB61 TO WS DJ61,WSW,BSW SETS-. .1	04/26/88	210	063	0033.0430	WSW DIE	M
02 NOTE:	SP2256 CHANGE CURE CODE KY155 TO KY140	06/14/88	220	071	0033.0211	CUR CHG	M
02 NOTE:	SP2256 REMOVE BELT WEDGE,WSW FR WS DJ61 TO WS CC65,BSW FR BSBC61 TO BS BD65,PLY WIDS-. .1,BELT WIDS-. .1,TRD LGTH+. .4,CIR+. .4	06/27/88	230	073	0032.6726	TRDOVER	M
02 NOTE:	SP2256 ADDED CURE CODES ET145,PT145 AND NRM BLDR. OS5	07/18/88	240	074	0032.6726	CUR CHG	M
02 NOTE:	SP2256 #2 BELT WID-1"	08/09/88	250	075	0032.6426	BLTWIDH	M
02 NOTE:	SP2256 #2BELT COMB FR B2517 60 TO B2517C60,TREAD END CEMENT FR 221 TO 243,2ND STAGE SLIDE REV	08/12/88	260	077	0032.6267	BLTCOMB	M
02 NOTE:	SP2256 CHANGED CURE CODES ET145,PT145 TO ET140,PT140	08/12/88	270	077	0032.6267	CUR CHG	M
02 NOTE:	SP2256 TRD.LGTH,D-CIR +. .3	09/28/88	280	082	0032.6849	TRDLGTH	M

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 DRUM SET+.5", #1 PLY+.5, #2 PLY+.6, LINER+.4, WSW, BSW WIDS+.2 BLT WIDS+.1, FLP, CHF SETS+.2	12/05/88	290	085	0032.8713	DRUMSET	M
02 NOTE:	SP2256 BSW FR BS BD67 TO BS BD66, WSW DIE REV	02/27/89	300	092	0032.8461	WSW DIE	M
02 NOTE:	SP2256 WSW RC WID-.4, BSW FR BS BD66 TO BS T66	03/28/89	310	095	0032.7930	BSW DIE	M
02 NOTE:	SP2256 TRD.LGTH-.5, D-CIR-.4, BLT LGTHS-.6	04/28/89	320	099	0032.7584	TRDLGTH	M
02 NOTE:	SP2256 CHANGED CURE CODE KG165 TO KG155	04/28/89	330	099	0032.7584	CUR CHG	M
02 NOTE:	SP2256 BSW FR BS T66 TO BS BD67, WSW WID+.1, ADJUST COMPONENT LENGTHS	07/26/89	340	104	0032.5083	BSW DIE	M
02 NOTE:	SP2256 ADD O7 B/T DRUM SEG	08/24/89	350	106	0032.5445	SEG I.D	M
02 NOTE:	SP2256 DRUM SET-.25, #1PLY-.2, #2PLY-.3, LINER-.3, BLT WIDS+.2, TRD LGTH+.5, WSW, BSW WIDS-.1, TRD.WT-.33	09/26/89	360	108	0032.2394	DRUMSET	M
02 NOTE:	SP2256 BSW FR BS BD66 TO BS T66	10/05/89	370	109	0032.1156	BSW DIE	M
02 NOTE:	SP2256 WSW RC FR 2.5" TO 2.9"	12/04/89	380	115	0032.1108	WSW RC	M
02 NOTE:	SP2256 ADD R6 T-RING	01/22/90	390	118	0032.0865	T-RING	M
02 NOTE:	SP2256 D-CIR, BLT LGTHS-.5, TRD.LGTH-.5, ADD SEGMENT O-6	02/08/90	400	119	0031.9766	TRDLGTH	M
02 NOTE:	SP2256 PLY COMB FR C7026 50 TO D7026 50	03/09/90	620	120	0031.9800	PLYCOMB	M
02 NOTE:	SP2256 CHANGED PCI TO 20	04/20/90	410	123	0031.9630	CUR CHG	M

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02	SP2256	09/12/90	420	127	0031.9747	CUR CHG	M
NOTE:	REMOVED CURE CODE KY140G						
02	SP2256	11/09/90	430	129	0032.3101	RCSTOCK	M
NOTE:	BSW RC STOCK FR 7510 TO 7557						
02	SP2256	12/06/90	440	133	0032.4639	OATW	M
NOTE:	OATW+.1, WSW, BSW WUDS+.2, WSW "D" LIGHTS+.2						
02	SP2256	01/30/91	450	140	0032.6008	TRD CHG	M
NOTE:	TREAD LENGTH +.5						
02	SP2256	02/18/91	460	142	0032.5904	R 4783	M
NOTE:	REPLACEMENT OF 4783-A WSW COMPOUND WITH EX350-1940. COMPOUND WILL BE DESIGNATED AS 4783-B						
02	SP2256	04/05/91	470	147	0032.5778	VEN CHG	M
NOTE:	VENEER FROM 4688 TO 4691						
02	SP2256	05/13/91	480	149	0032.5469	PLYCOMB	M
NOTE:	PLY COMB FR D7026 50 TO C7026 50, WSW RC STOCK FR 7510 TO 7444, BSW RC STOCK FR 7557 TO 7323, VENEER STOCK TO 4691						
02	SP2256	06/14/91	490	150	0032.2556	REMFLIP	M
NOTE:	REMOVE FLIPPER, BEAD I.C. -.2, BEAD FILLER FR BF 030 TO BF 435, #1 PLY-.2, #2 PLY-.1, CHF SET-.1						
02	SP2256	12/06/91	500	158	0031.9480	CUR CHG	M
NOTE:	CHANGED NRM BLADDER OS5 TO 270						
02	SP2256	03/02/92	510	162	0031.6797	LOADED	M
NOTE:	PLY WID #1 -.4, BSW DIE TO T66, 1ST STAGE SLIDE REV						
02	SP2256	06/10/92	520	176	0031.7135	CUR CHG	M
NOTE:	CHANGED CURE FROM KG155G TO KG150C						
02	SP2256	06/22/92	530	177	0031.7135	EXP SET	M
NOTE:	EXP SET FR 14.70 TO 15.10						
02	SP2256	06/23/92	540	178	0031.7135	RU 7444	M
NOTE:	EXP SET FR 14.70 TO 15.10						
02	SP2256	06/24/92	550	179	0031.7135	SEG I.D	M
NOTE:	CORRECT SEG I.D.						

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256	08/28/92	560	189	0031.2153	PLY CHG	M
	CHANGED PLY COMB. FROM C7026-50 TO C7026R45 CHANGED TO RADIATION PRECURE PLIES						
02 NOTE:	SP2256	10/23/92	570	199	0031.0661	TRDSTCK	M
	TRD CAP STOCK FR 7790 TO 7764, LINER GAUGE FR .060 TO .055						
02 NOTE:	SP2256	01/18/93	580	207	0031.1534	BASESTK	M
	TREAD BASE STOCK FR 678 TO 734						
02 NOTE:	SP2256	02/08/93	590	213	0031.2611	TREADWT	M
	DRUM SET+.25, PLY WIDS+.2, LINER+.3, CHF SET+.1, 1ST STG SLIDE REV						
02 NOTE:	SP2256	02/08/93	600	213	0031.2611	DRUMSET	M
	DRUM SET+.25, PLY WIDS+.2, LINER+.3, CHF SET+.1, 1ST STG SLIDE REV						
02 NOTE:	SP2256	03/19/93	610	219	0031.4016	TRDLGTH	M
	TRD LGTH, D-CIRC+.6, REMOVE O-6 B/T DRUM SEG						
02 NOTE:	SP2256	05/18/93	630	230	0031.4215	EXP SET	M
	EXP SET FR 15.10 TO 15.30						
02 NOTE:	SP2256	06/22/93	640	235	0031.4193	BEADINS	M
	REPLACE 184 RECLAIM BEAD INSULATION STOCK WITH 183 NO-RECLAIM BEAD INSULATION STOCK						
02 NOTE:	SP2256	07/30/93	650	240	0031.4250	CUR CHG	M
	ADDED CURE KY140						
02 NOTE:	SP2256	08/06/93	660	242	0031.4573	LINRWID	M
	LINER WID+.2, 1ST STG SLIDE REV.						
02 NOTE:	SP2256	08/24/93	670	245	0031.3335	WSW DIE	M
	WSW DIE FR WS CC66 TO WS E66						
02 NOTE:	SP2256	08/25/93	680	246	0031.4573	SYSTEM	M
	WSW DIE FR WS E66 TO WS CC66						
02 NOTE:	SP2256	10/22/93	690	254	0031.2901	TREADWT	M
	TREAD WT-.17						
02 NOTE:	SP2256	11/08/93	700	257	0031.1965	TRT CHG	M
	BLT 1 LGTH -.3 TO 80.0, BLT 2 LGTH -.3 TO 80.3, D-CIR -.5 G-CIR -.6, TRD OAW +.2 TRD LGTH -.5, TRD REV TO L.						

SPEC HISTORY
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PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 ADDED CURE CODE ET115B	12/27/93	710	268	0031.2106	CUR CHG	M
02 NOTE:	SP2256 REMOVED CURE CODE ET115B, SCHEDULED= ONLY IN 45" PRESS	12/30/93	720	269	0031.2106	CUR CHG	M
02 NOTE:	SP2256 TRD LGTH+.1,CORRECT BLT LGTHS	01/31/94	730	273	0031.2183	TRDLGTH	M
02 NOTE:	SP2256 LINER WIDTH -.2",SFCL -.10",FIRST STAGE SLIDE REV TO 280	04/28/94	740	280	0031.1545	LINERCH	M
02 NOTE:	SP2256 LINER WID +.2",1ST STG SLIDE REV	05/26/94	750	285	0031.1769	LINRCHG	M
02 NOTE:	SP2256 PLY COMBINATION FROM C7026R45 TO D7026R45 REVISED BEAD FILLER BF 435	07/20/94	760	294	0031.2853	PLY CHG	M
02 NOTE:	SP2256 PLY COMBINATION FROM D7026R45 TO C7026R45	07/21/94	770	295	0031.2853	PLY CHG	M
02 NOTE:	SP2256 PLY COMB FR C7026R45 TO D7026R45	08/02/94	780	298	0031.3284	PLYCOMB	M
02 NOTE:	SP2256 ADDED CURE CODES ET,PT140U AND NRM BLADDER 240 (SCHEDULING REQUEST)	09/28/94	790	307	0031.1410	CUR CHG	M
02 NOTE:	SP2256 CURE CODE FROM ET,PT140U TO ET,PT115B	11/11/94	800	316	0031.0520	CURECHG	M
02 NOTE:	SP2256 ADD WSW SPOTTING NOTE	11/30/94	810	319	0031.0498	NOTECHG	M
02 NOTE:	SP2256 CURE CODES ET,PT115B TO ET,PT115L, ADDED NRM CURE MODEL FACTORS, (CURE MODEL APPROVED)	11/30/94	820	319	0031.0498	CUR CHG	M
02 NOTE:	SP2256 LINER STOCK FR 4133 TO 4161,LINER GA FR .055 TO .050	02/24/95	830	327	0030.8965	LINER	M
02 NOTE:	SP2256 REMOVE SPOTTING NOTE,ADD BELT STITCH NOTE	03/08/95	840	330	0030.8965	NOTE	M

SPEC HISTORY
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PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 TREAD CAP STOCK FR 7764 TO 7805	03/15/95	850	332	0030.9697	TRDSTCK	M
02 NOTE:	SP2256 WSW DIE FR WS CC66 TO WS R66	04/18/95	860	343	0031.0920	WSW DIE	M
02 NOTE:	SP2256 BSW DIE REV	04/26/95	870	345	0031.2159	BSW REV	M
02 NOTE:	SP2256 WSW WID+.1, "D"LIGHT+.1, 1ST STG SLIDE REV	05/04/95	880	346	0031.4430	WSW WID	M
02 NOTE:	SP2256 WSW DIE FR WS R67 TO WS CC66	05/24/95	890	349	0031.4097	WSW DIE	M
02 NOTE:	SP2256 REMOVED CURE CODE KG150C (PLANT REQUEST)	05/24/95	900	349	0031.4097	CUR CHG	M
02 NOTE:	SP2256 WING DIE REV	10/05/95	910	368	0031.6417	WINGREV	M
02 NOTE:	SP2256 CURE CODE KY140 REMOVED	11/06/95	920	374	0031.6417	CURECHG	M
02 NOTE:	SP2256 LINER STOCK FR 4161 TO 4117	11/28/95	930	377	0031.6417	LINRSTK	M
02 NOTE:	SP2256 WSW VENEER WID-.2	01/11/96	940	382	0031.6366	VEN WID	M
02 NOTE:	SP2256 WSW FR WS CC66 TO WS R66	03/12/96	950	394	0031.4005	WSW DIE	M
02 NOTE:	SP2256 WSW FR WS R66 TO WS CC66	04/03/96	960	399	0031.3589	WSW REV	M
02 NOTE:	SP2256 DRUM SET+.25, PLY WIDS+.2, LINR+.3, CHF SET+.15, WING WIDS +.1, 1ST STG SLIDE REV	05/23/96	970	410	0031.8046	DRUMSET	M
02 NOTE:	SP2256 BEAD FR 47.4 05 05 TO 47.4 05 06, BEAD FILLER FR BF 435 TO BF 040	06/11/96	980	413	0031.9834	BEAD	M

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PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 PLY WIDS+.2,1ST STG SLIDE REV	06/19/96	990	414	0032.0294	PLYWIDS	M
02 NOTE:	SP2256 ADD WING SPLICE NOTE	07/10/96	1000	416	0032.0294	WSWNOTE	M
02 NOTE:	SP2256 EXP SET+.2	07/24/96	1010	418	0032.0294	EXP SET	M
02 NOTE:	SP2256 ADD CURE CODE AT115L,REMOVE BOM 465 BLADDER	07/29/96	1020	419	0032.0213	CURECHG	M
02 NOTE:	SP2256 #2 PLY WID-.2,1ST STG SLIDE REV	08/21/96	1030	424	0031.9946	PLYWIDH	M
02 NOTE:	SP2256 WSW DIE REV	09/04/96	1040	425	0031.7934	WSW REV	M
02 NOTE:	SP2256 # 2 PLY WID+.2,1ST STG SLIDE REV	09/10/96	1050	426	0031.8124	PLY CHG	M
02 NOTE:	SP2256 LINER GAUGE+.003	11/07/96	1060	433	0031.9183	LINERGA	M
02 NOTE:	SP2256 CORRECT DRUM SET	11/08/96	1070	434	0031.9183	CORRECT	M
02 NOTE:	SP2256 CHANGE WSW SPLICE NOTE	01/09/97	1080	438	0031.9267	WSWNOTE	M
02 NOTE:	SP2256 WSW REV FROM Y TO Z, BSW REV FROM J TO , FIRST STAGE SLIDE REV. TO 439	01/16/97	1090	439	0031.9267	WNG CHG	M
02 NOTE:	SP2256 CORRECTION: WSW FROM REV. Y TO Z, BSW FROM REV. J TO F, 1ST STAGE SLIDE REV. TO 439	01/17/97	1100	440	0032.0763	WNG CHG	M
02 NOTE:	SP2256 WSW WHITE WID-.2,"D"LIGHT-.2,1ST STG SLIDE REV	01/30/97	1110	442	0032.0168	WSW REV	M
02 NOTE:	SP2256 WSW WHITE WID-.2,"D"LIGHT-.2,1ST STG SLIDE REV,WSW,BSW WIDS-.1	01/31/97	1120	443	0031.9343	CARCCHG	M

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02 NOTE:	SP2256 CORRECT WING WIDS	01/31/97	1130	443	0031.9343	WINGWID	M
02 NOTE:	SP2256 WING DIES FR WS CC67 TO WS PT67,FR BS T67 TO BS PT67	02/26/97	1140	448	0031.9424	WINGDIE	M
02 NOTE:	SP2256 CORRECT WING DIE NO'S	02/27/97	1150	449	0031.9424	CORRECT	M
02 NOTE:	SP2256 WSW FR WS PC67 TO WS CC67,BSW FR BS PT67 TO BS T67	03/24/97	1160	452	0031.8495	WINGDIE	M
02 NOTE:	SP2256 WSW FR CC67 TO PC67,BSW FR T67 TO PT67,TRD. TO REV N	04/02/97	1170	455	0031.9587	TRD GHG	M
02 NOTE:	SP2256 WSW FR PC67 TO PC68,BSW FR PT67 TO PT68	05/01/97	1180	458	0031.9794	WINGREV	M
02 NOTE:	SP2256 WSW CORRECTION	05/02/97	1190	459	0031.9794	WSW CHG	M
02 NOTE:	SP2256 DRUM SET-.25,PLY WIDS-.2,LINER-.3,WSW,BSW WIDS-.1,1ST STG SLIDE REV	05/19/97	1200	464	0031.9082	RU 20	M
02 NOTE:	SP2256 # 2 PLY WID-.2,WING WIDS-.1,WSW "D"LIGHT-.1,1ST STG SLIDE	06/02/97	1210	469	0031.8427	PLY WID	M
02 NOTE:	SP2256 TREAD REV. TO 0.	06/23/97	1220	472	0031.7729	TRD CHG	M
02 NOTE:	SP2256 BD FILLER FR BF 040,435 STOCK TO BF 744, 7554 STOCK	10/15/97	1230	488	0031.7538	BDFILLR	M
02 NOTE:	SP2256 TREAD WIDTH -.2, TO 12.0	11/17/97	1240	493	0031.6705	TRDLGTH	M
02 NOTE:	SP2256 LINER WID-.1,SLIDE REV	12/09/97	1250	497	0031.6630	LINRWID	M
02 NOTE:	SP2256 BEAD I.C. FR 47.4 TO 47.5	01/14/98	1260	501	0031.6664	BEAD IC	M

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02	SP2256	07/22/98	1270	516	0031.7693	WIDHCHG	M
NOTE:	TRD LGTH,D-CIRC+.5,BLT LGTHS+.5						
02	SP2256	01/29/99	1280	545	0031.7964	BLTCOMB	M
NOTE:	BELT COMB FR B2517C60 TO A2516 60						
02	SP2256	02/16/99	1290	550	0031.7316	WSW CHG	M
NOTE:	WSW DIE REV						
02	SP2256	02/16/99	1300	551	0031.7316	WSW REV	M
NOTE:	WSW DIE REV						
02	SP2256	03/03/99	1310	554	0031.8509	WSW CHG	M
NOTE:	WSW DIE REV						
02	SP2256	03/09/99	1320	555	0031.8509	CURECHG	M
NOTE:	CURE CODE AT,ET,PT115L TO AK,EK,PK125A,REMOVE CURE MODEL						
02	SP2256	05/28/99	1330	567	0031.8509	CURECHG	M
NOTE:	CURE CODE AT,ET,PT125A TO AK,EK,PK130A						
02	SP2256	06/18/99	1340	568	0031.8509	CURECHG	M
NOTE:	CURE CODE AK,EK,PK130A TO AK,EK,PK130M,ADD CM FACTORS						
02	SP2256	08/04/99	1350	576	0031.8607	LNRSTEP	M
NOTE:	LINER EDGE STEP-DOWN FR 1.0" TO 0.5"						
02	SP2256	09/13/99	1360	580	0031.8476	PLYWIDH	M
NOTE:	2ND PLY -.1, CHAPER SFCL -.05						
02	SP2256	10/18/99	1370	585	0031.8512	CURECHG	M
NOTE:	CURE CODE AK,EK,PK130M TO AT,ET,PT115L						
02	SP2256	11/16/99	1380	591	0031.5778	PLYCOMB	M
NOTE:	PLY COMB FR D7026R45 TO D7726R43						
02	SP2256	11/17/99	1390	592	0031.5778	LOADED	M
NOTE:	CURE CODE AT,ET,PT115L TO AK,EK,PK130M						
02	SP2256	12/23/99	1400	598	0031.5775	CUR CHG	M
NOTE:	BD RED 12/28/99 A-.3, E-.3, K-.8, P-.3						

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
02	SP2256	03/06/00	1410	609	0031.4923	BLTWIDS	M
NOTE:	#1 BLT WID-.2,#2 BLT WID-.1						
02	SP2256	03/29/00	1420	612	0031.4766	PLYWIDH	M
NOTE:	#2 PLY WID-.2						
02	SP2256	04/17/00	1430	616	0031.4789	CURECHG	M
NOTE:	CURE CODE AK,EK,PK127M TO AT,ET,PT117L						

[REDACTED] M

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] M

[REDACTED]

[REDACTED]

SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
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N [REDACTED]

N [REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

N [REDACTED]

[REDACTED]

[REDACTED]

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SPEC HISTORY
TEXARKANA PLANT

PLT	IM-KEY	DATE	SEQ #	REV	REF STD UN	REF CHG ID	FILE
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[REDACTED]

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North American Operations
Engineering Center

Date: 18 February, 1998
Subject: Potential Supplier Assessment of Cooper Tire & Rubber Co.
From: Tire-Wheel System Assessment Team
To: R.E. Socia - World Wide Purchasing

A team including Tire-Wheel Systems and World Wide Purchasing representatives traveled to Cooper Tire and Rubber Company's Findlay, OH headquarters and their Albany, GA tire production facility the week of January 26, to perform a potential supplier assessment. Cooper was advised in December, 1997 of the areas that the team would cover - Leadership, Technology, Manufacturing, and Quality.

The following points summarize the Team's overall assessment.

- Research and Development has a few capabilities that are contemporary with the rest of the tire industry; however, overall technical capability is very limited. Significant testing, analysis, and modeling capability would have to be installed to meet current OE tire performance requirements and competitive performance levels.
- Cooper's manufacturing capability, while contemporary, lags the current OE industry level of automation, control, precision and efficiency.
- Cooper's quality philosophy is dated significantly, relying on repeated inspections and repair much more heavily than root cause analysis, corrective action and continuous improvement.

Cooper's declared current position is to be a "fast follower" in the aftermarket. This has resulted in the need for minimal investment in technology in the areas of design, modeling, test and analysis. Therefore they lack both the tools and the personnel to compete in the OE market. Their manufacturing and process technology has been similarly structured, and thus needs similar upgrades to produce original equipment tires with the quality and uniformity levels required by General Motors.

We conservatively estimate that with full commitment of resources, Cooper will require 5 years plus to develop and supply properly optimized and tuned original equipment tires to General Motors.

N.T. Connolly
Director
Tire-Wheel Systems Center

cc: KJM, KLO, [REDACTED], RDO, DLW, T. Ossman, L. Flerens