EA02-025

FORD 10/27/03

APPENDIX N

BOOK 33 OF 61

PART 1 OF 6

Subject: Deactivation Switch Experiment With Brake Fluid Contamination

Test Items:

Five Deactivation Switches F2VC-9F924-AB date coded 8280

Supplier: Texas Instruments, Attleboro, Massachusetts

DOT3 Fluid

Purpose:

Show Brake Fluid (without salt water) contamination causes electrical short circuit of test item.

Conclusion:

Brake Fluid contamination does cause electrical short circuits and result in **FIRE** in the Texas Instrument switch test item.

Results:

ALL four switches contaminated with brake fluid developed short circuits between the moving terminal and the hexport.

The fifth switch was a control sample without brake fluid and did not develop a short circuit.

Fire resulted from a short circuit in switch #3.

3713 9126

Originator: S. Reimers/sreimers
C:\WINDOWS\TEMP\Report.doc

Porter
EXHIBIT NO. 1

Issued: 11/03/2000
Date Revised:

Discussion:

Switch #3 developed a 0.6-ohm short circuit between the internal electrical components and the sensor assembly after 28 days. The switch was then moved to fire-safe fixture that included a power supply capable of providing current similar to the in-vehicle circuit. The hole was not plugged from this time onward. The switch current limit was then increased to 14.5 amps. The voltage between the moving terminal and the hexport was ranged from 1.18 to 2.22 volts dc. Therefore the switch was dissipating between 17 and 32 watts of power. Dense white smoke came out of the base for some time. When the smoke had significantly abated it was possible to see a glowing element inside the switch cavity. A hand mirror was positioned to allow video recording the glowing. It became quite bright just before the plastic body ignited. After approximately 37 minutes at 14.5 amps, a flame was observed. The current dropped from 14.5 amps to 200 milliamps within 10 seconds. In the following 7 minutes the fire consumed the plastic base and extinguished itself. A videotape recording was made of switch #3 igniting with the voltage and current monitors visible.

The switch without brake fluid had less than 1 micro amp of leakage current throughout the test and never caught fire.

The presence of brake fluid inside the four switches caused leakage current to flow from the moving terminal at 14 volts to the hexport at ground potential. It took approximately 30 days for a short circuit to develop that would conduct sufficient current to result in a flaming plastic switch body produced by Texas Instruments Attleboro, Massachusetts.

The videotape shows that a switch would emit dense white smoke when conducting excessive leakage current. When the base was sealed, as would occur in a vehicle, it was observed, on another switch, that the wire seal grommet was pushed out of the connector by internal pressure from the vaporized brake fluid heated by the switch short circuit. A displaced grommet permits the possibility of road contaminants getting inside the switch cavity.

Figures 1 through 5 show the plots of recorded values of leakage current from moving terminal through the hexport to ground.

3713 9127

Table 1 through 5 shows the recorded micro Amp values of leakage current from the moving terminal through the hexport to ground.

Table 6 through 10 shows the recorded ohms values of the resistance between the moving terminal and ground.

The power supplies were limited to 100 milliamps so that they may run unattended 24 hours a day with a low risk of fire.

Switch #2 was submitted for analysis of cause of short circuit. Results to be covered in a separate report.

Switch #4 developed a short circuit, melted and fell apart.

Switch #5 developed a short circuit between the moving terminal and the hexport.

Procedure:

1. Mount 5 switches at 45-degree angle similar to vehicle installation with connector positioned upward.
2. Rotate switches to place spring arm elbow at the following position viewed from connector end:
    a. #1 at 6 o'clock
    b. #2 at 8 o'clock
    c. #3 at 6 o'clock
    d. #4 at 6 o'clock
    e. #5 at 4 o'clock
3. Put DOT 3 brake fluid in the switch cavity via a hole drilled in the plastic base and plug the hole. Put NO fluid in #1. Add fluid to #2, #4, and #5 until the insulation resistance drops to < 40 mega-ohms. Add fluid to #3 sufficient to observe it rising into the terminal cavity.
4. Apply +14 volts dc limited to 100 milliamps to the moving terminal continuously (24hr/7days).
5. Connect the hexport to ground (low side of 14 volt dc supply).
6. Connect a resistor (approx 5 mAmp load) between the stationary terminal and ground.
7. Monitor the leakage current from the moving terminal through the hexport to the ground and resistance from terminals to hexport.
8. Add brake fluid as needed to maintain a leakage current in #2 thru #5 and record volume added.
9. Select a switch that has reached the 100 milliamp current limit and increase the current limit to 14.5 Amps. Record results.

3713 9129

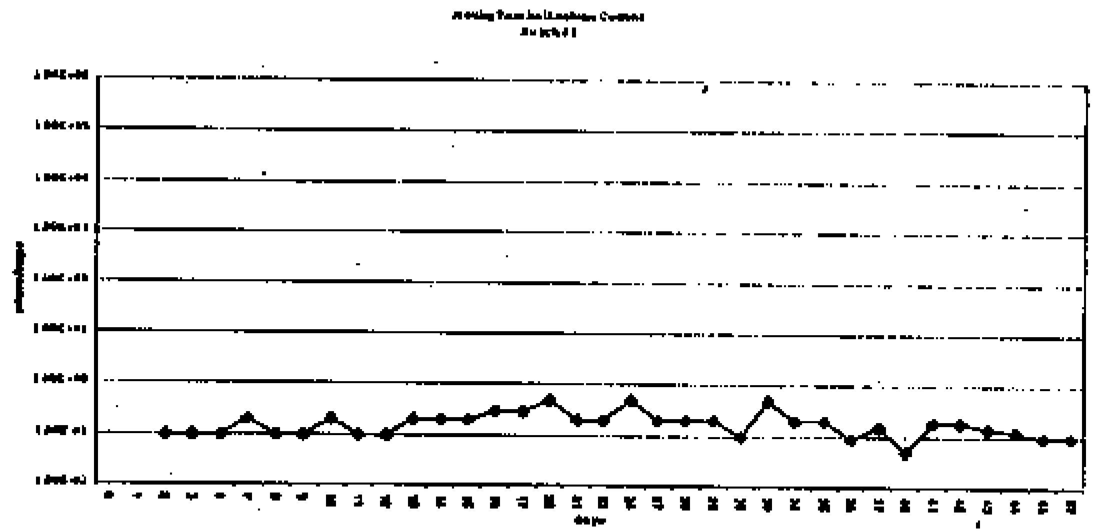

Figure 1 Switch #1 leakage current

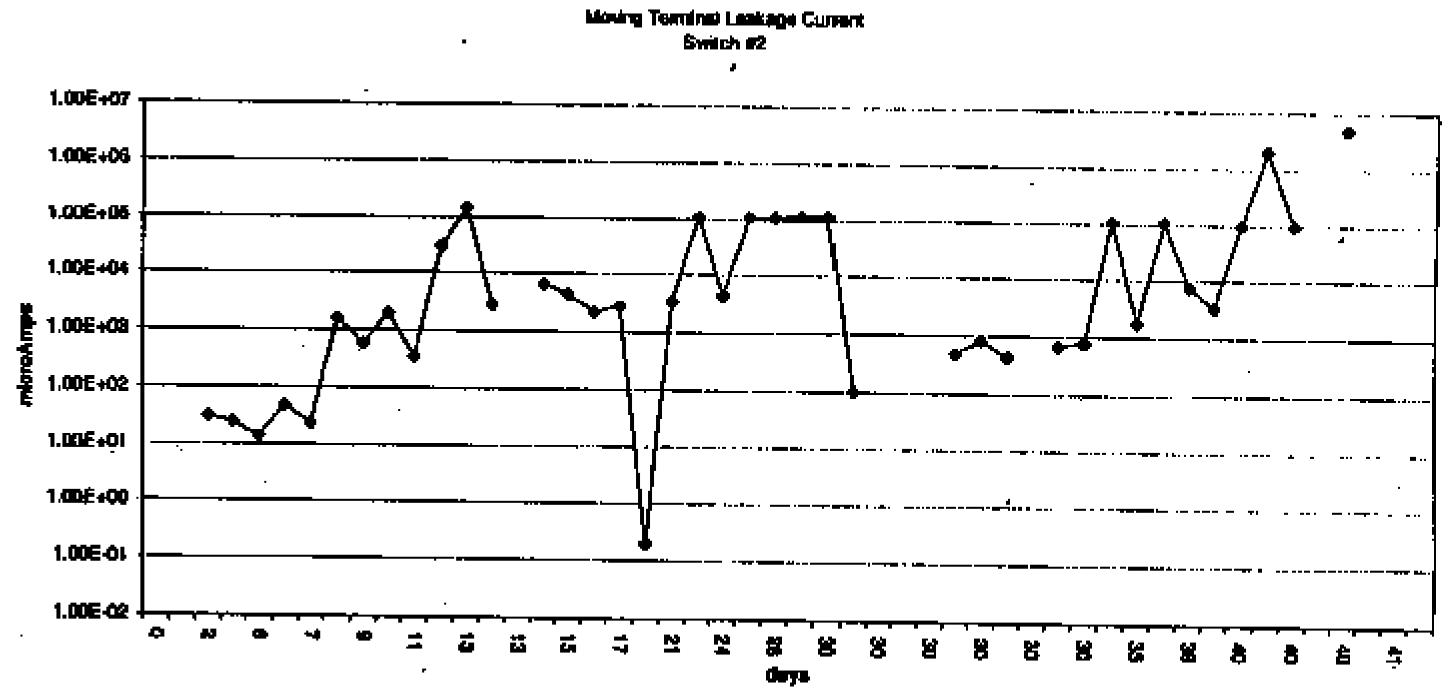

Figure 2 Switch #2 Leakage current

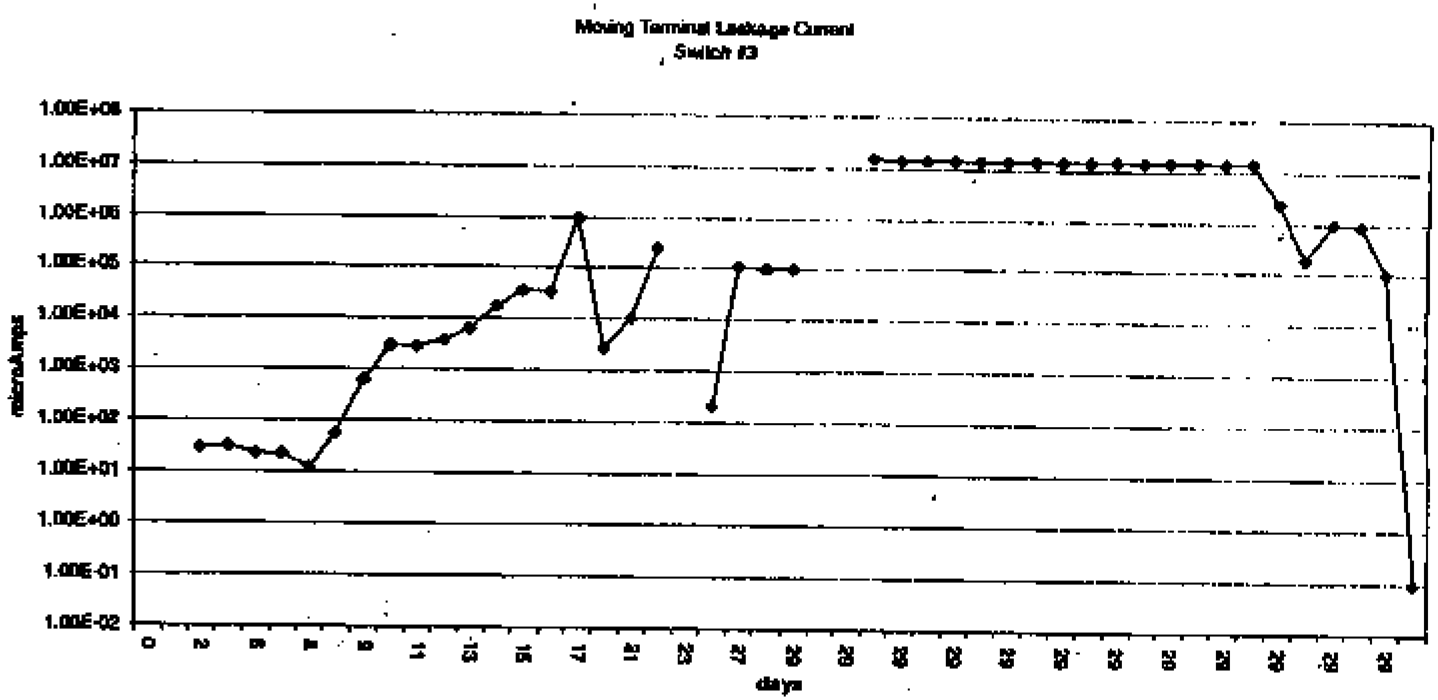

Figure 3 Switch #3 Leakage current

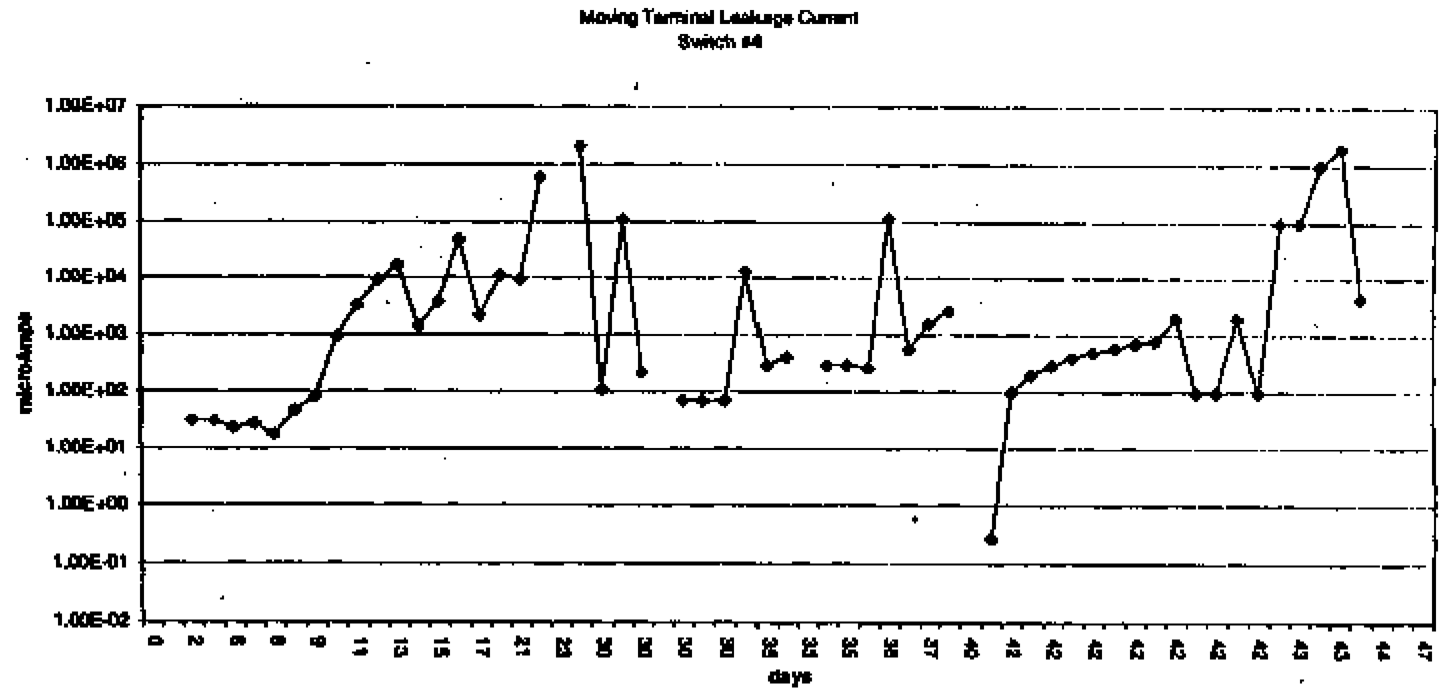

Figure 4 Switch #4 Leakage current

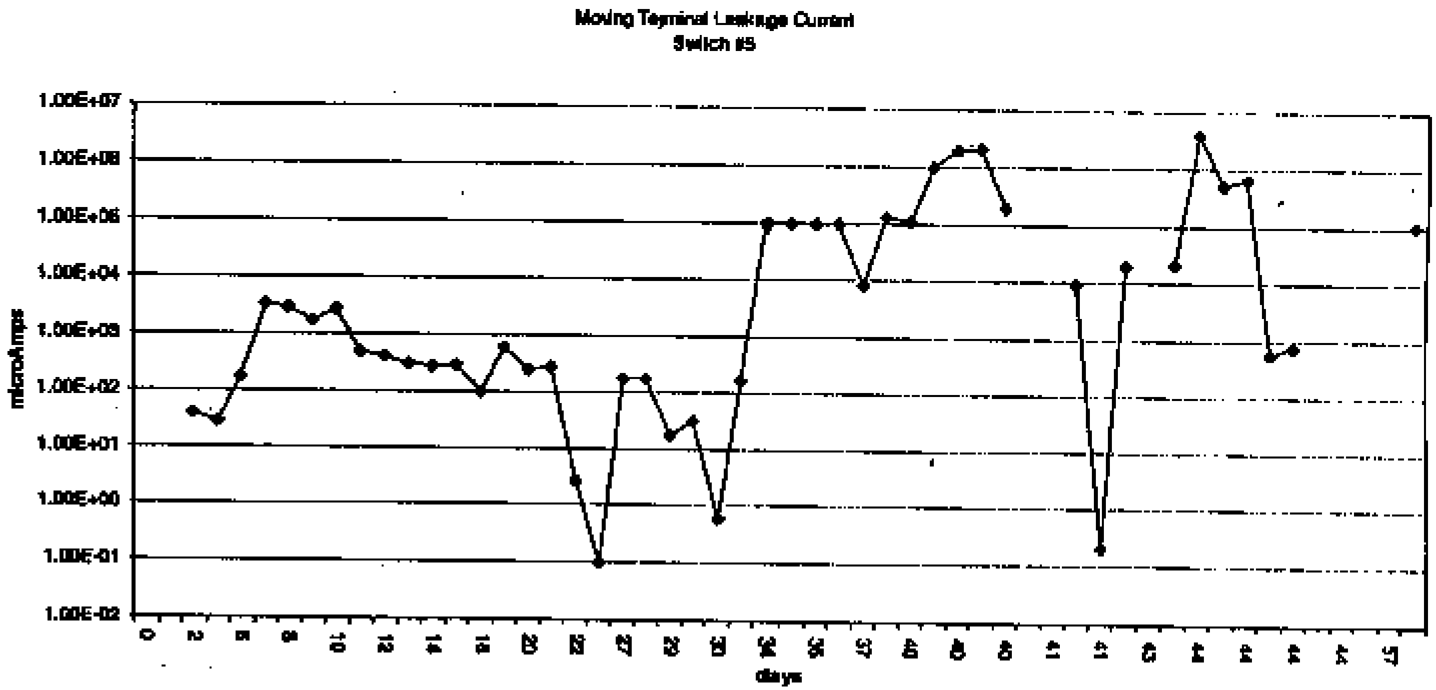

Figure 5 Switch #5 Leakage current

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Switch number	Days	Leak micro Amps Moving Terminal
1	0	
1	1	
1	2	0.1
1	3	0.1
1	6	0.1
1	7	0.2
1	8	0.1
1	9	0.1
1	10	0.2
1	11	0.1
1	12	0.1
1	13	0.2
1	14	0.2
1	15	0.2
1	16	0.3
1	17	0.3
1	20	0.5
1	21	0.2
1	22	0.2
1	24	0.5
1	27	0.2
1	28	0.2
1	29	0.2
1	30	0.1
1	30	0.5
1	34	0.2
1	35	0.2
1	36	0.09
1	37	0.15
1	40	0.05
1	41	0.19
1	42	0.19
1	43	0.14
1	44	0.13
1	44	0.1
1	57	0.1

Table 1 Switch #1 Leakage current data

3713 9136

Switch number	Days	Leak micro Amps Moving Terminal
2	0	
2	1	
2	2	32
2	3	25
2	6	14
2	6	50
2	7	23
2	8	1560
2	9	585
2	10	1990
2	11	360
2	12	30420
2	13	145000
2	13	2870
2	13	
2	14	6770
2	15	4590
2	16	2300
2	17	2820
2	20	0.2
2	21	3500
2	22	112200
2	24	4570
2	27	108100
2	28	112400
2	29	114600
2	30	114600
2	30	104
2	30	
2	30	
2	30	
2	30	500
2	30	850
2	30	460
2	30	
2	30	700
2	30	800
2	34	108600
2	35	1760
2	35	109000
2	36	7430
2	37	3370
2	40	100000
2	40	2112000
2	40	100000
2	40	
2	40	5000000

Table 2 Switch #2 Leakage current data

3713 9137

Switch number	Days	Leak micro Amps Moving Terminal
3	0	
3	1	
3	2	30
3	3	31
3	6	22
3	7	22
3	8	11.7
3	8	57
3	9	640
3	10	3000
3	11	2840
3	12	3900
3	13	6320
3	14	17620
3	15	35700
3	16	35370
3	17	1000000
3	20	2850
3	21	10470
3	22	256900
3	23	
3	24	208
3	27	108500
3	28	100900
3	29	100800
3	29	
3	29	
3	29	16100000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	14500000
3	29	2400000
3	29	200000
3	29	1000000
3	29	900000
3	29	100000
3	29	0.1

Table 3 Switch #3 Leakage current data

3713 9138

Switch number	Days	Leak micro Amps Moving Terminal
4	0	
4	1	
4	2	31
4	3	32
4	6	24
4	7	28
4	8	17
4	8	48
4	9	85
4	10	966
4	11	3350
4	12	9760
4	13	16770
4	14	1410
4	15	4100
4	16	47800
4	17.	2280
4	20	11670
4	21	9730
4	22	634000
4	23	
4	30	2108000
4	30	109
4	30	109100
4	30	220
4	30	
4	30	70
4	30	70
4	30	70
4	34	13530
4	35	300
4	35	415
4	35	
4	35	300
4	35	300
4	36	260
4	36	114800
4	37	550
4	37	1640
4	40	2730
4	40	
4	41	0.28
4	42	100
4	42	200
4	42	300
4	42	400
4	42	500
4	42	600
4	42	700
4	42	800
4	42	2000
4	42	100
4	42	100
4	42	2000
4	42	100
4	42	100000
4	43	100000
4	43	1000000
4	43	2000000
4	44	4600

Table 4 Switch #4 Leakage Data

3713 9139

Switch number	Days	Leak micro Amps Moving Terminal
5	0	
5	1	
5	2	40
5	3	28
5	6	176
5	7	3400
5	8	3083
5	9	1759
5	10	2790
5	11	510
5	12	420
5	13	314
5	14	286
5	15	300
5	16	100
5	17	624
5	20	250
5	21	280
5	22	2.7
5	24	0.1
5	27	180
5	28	180
5	29	17.8
5	30	31.5
5	30	0.6
5	30	168
5	34	98000
5	35	98000
5	36	99000
5	37	99250
5	37	8400
5	37	128000
5	40	106900
5	40	1000000
5	40	2000000
5	40	2144000
5	40	200000
5	41	
5	41	
5	41	9700
5	41	0.21
5	42	21000
5	43	
5	43	22000
5	44	4000000
5	44	520000
5	44	640000
5	44	600
5	44	800
5	44	
5	44	
5	47	
5	57	
5	57	104000

Table 5 Switch #5 Leakage current data

Switch number	Days	Resistance mov to hex
1	0	>40,000,000
1	1	>40,000,000
1	2	>40,000,000
1	3	>40,000,000
1	6	>40,000,000
1	7	>40,000,000
1	8	>40,000,000
1	9	>40,000,000
1	10	>40,000,000
1	11	>40,000,000
1	12	>12,000,000
1	13	>40,000,000
1	14	>40,000,000
1	15	>40,000,000
1	16	>40,000,000
1	17	>40,000,000
1	20	>40,000,000
1	21	>40,000,000
1	22	>40,000,000
1	24	>40,000,000
1	27	>40,000,000
1	28	>40,000,000
1	29	>40,000,000
1	30	>40,000,000
1	30	>21,000,000
1	34	>40,000,000
1	35	>40,000,000
1	36	>40,000,000
1	37	>40,000,000
1	40	>40,000,000
1	41	>40,000,000
1	42	
1	43	
1	44	
1	44	
1	44	
1	47	
1	57	
1	57	>40,000,000
1	57	
1	58	
1	58	>40,000,000

Table 6 Switch #1 Resistance

Switch number	Days	Resistance mov to hex
2	0	>40,000,000
2	0	30,000,000
2	1	>20,000,000
2	1	>40,000,000
2	2	>40,000,000
2	3	>40,000,000
2	6	
2	6	>24,000,000
2	7	>20,000,000
2	8	>2,000,000
2	9	>10,000,000
2	10	1642
2	11	1400
2	12	>2,500,000
2	13	>600,000
2	13	3030
2	13	
2	14	3780
2	15	3590
2	16	1580
2	17	10320
2	20	3.4
2	21	10830
2	22	4.8
2	24	173000
2	27	13.9
2	28	11.2
2	29	8.4
2	30	6.4
2	30	5
2	30	
2	30	6.7
2	30	
2	30	
2	30	
2	30	
2	30	
2	30	
2	30	1975
2	34	50000
2	35	
2	35	15000
2	36	108700
2	37	128200
2	40	8.5
2	40	
2	40	
2	40	4.5
2	40	
2	40	
2	41	1
2	41	1

Table 7 Switch #2 Resistances

Switch number	Days	Resistance mov to hex
3	0	>40,000,000
3	0	10,000,000
3	1	>40,000,000
3	2	>40,000,000
3	3	>40,000,000
3	6	>40,000,000
3	7	>40,000,000
3	8	
3	8	>40,000,000
3	9	>40,000,000
3	10	>2,400,000
3	11	>1,000,000
3	12	2900
3	13	
3	14	1540
3	15	845
3	16	4670
3	17	1066
3	20	51600
3	21	1140
3	22	5.8
3	23	
3	24	3.7
3	27	4
3	28	3.2
3	29	.6
3	29	.7
3	29	0.6
3	29	
3	29	.6

Table 8 Switch #3 Resistance

3713 9143

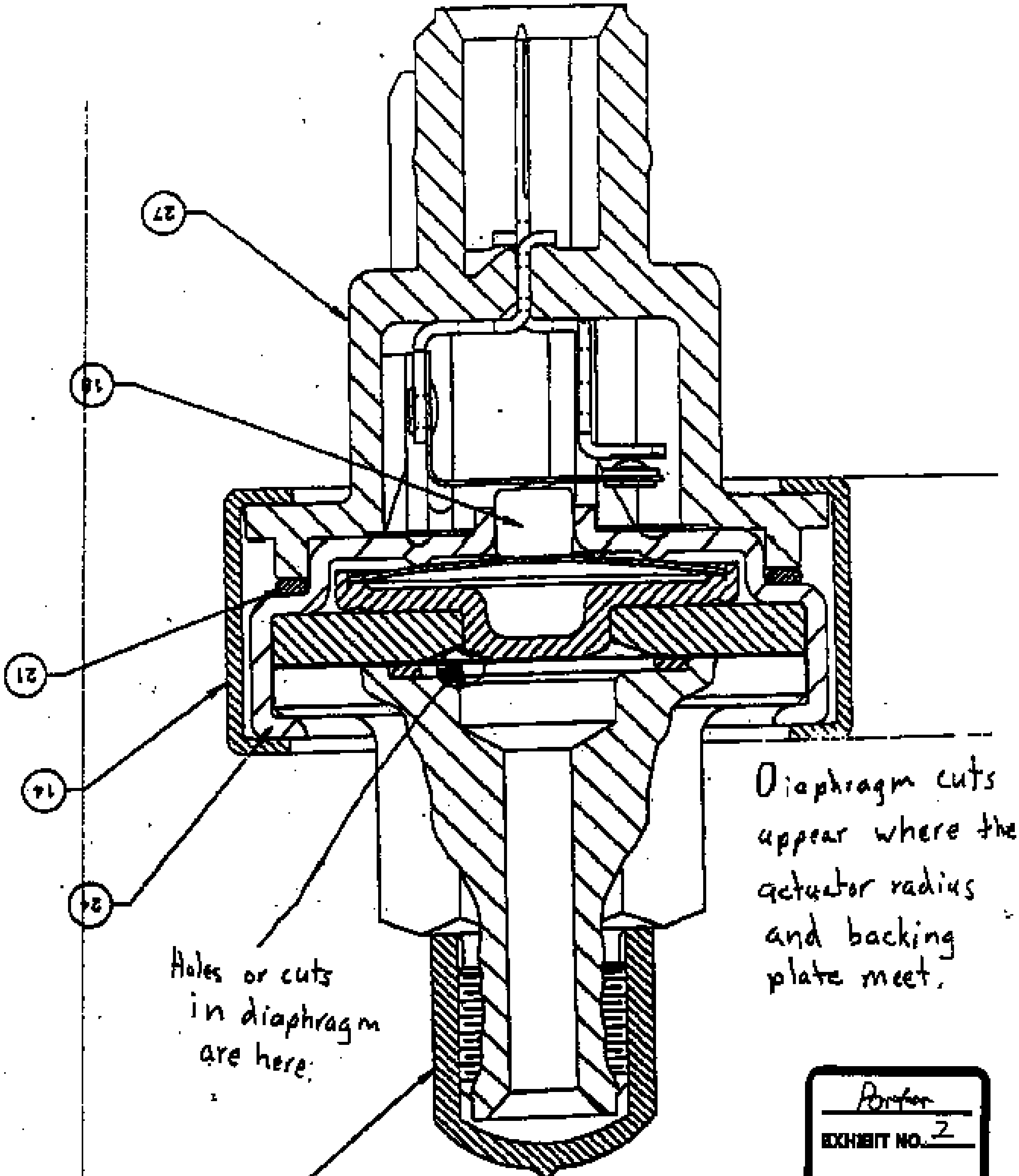
Switch number	Days	Resistance mov to hex
4	0	>40,000,000
4	0	22,000,000
4	1	>20,000,000
4	1	>40,000,000
4	2	>40,000,000
4	3	>40,000,000
4	6	>40,000,000
4	7	>40,000,000
4	8	>40,000,000
4	8	
4	9	>40,000,000
4	10	>700,000
4	11	26000
4	12	5400
4	13	2230
4	14	41100
4	15	2523
4	16	19720
4	17	8770
4	20	3937
4	21	9010
4	22	3.3
4	23	
4	30	2.0
4	30	2.4
4	30	2
4	30	
4	30	
4	30	
4	30	
4	30	
4	34	3,100,000
4	35	
4	35	1,400,000
4	35	
4	35	
4	36	
4	36	
4	36	1530000
4	37	990000
4	37	
4	40	23350
4	40	
4	41	13800
4	42	

Table 9 Switch #4 Resistance

Switch number	Days	Resistance mov to hex
5	0	>40,000,000
5	0	27,000,000
5	1	>20,000,000
5	1	>40,000,000
5	2	>40,000,000
5	3	>40,000,000
5	6	>10,000,000
5	7	9300
5	8	>7000
5	9	>10,000,000
5	10	5620
5	11	27000
5	12	52000
5	13	81100
5	14	92800
5	15	422000
5	16	23560
5	17	50900
5	20	476000
5	21	53700
5	22	2650000
5	24	179000
5	27	186800
5	28	193100
5	29	>6,000,000
5	30	>2,000,000
5	30	1,500,000
5	30	
5	34	67.8
5	35	236
5	36	4530
5	37	12.5
5	37	
5	37	
5	40	
5	40	
5	40	3.83
5	41	3.8
5	41	4
5	41	3048
5	41	2730
5	42	
5	43	
5	43	
5	44	
5	44	
5	44	
5	44	
5	44	
5	44	
5	44	
5	47	
5	57	
5	57	0.4

Table 10 Switch #5 Resistance

Exhibit 2



Porter
EXHIBIT NO. 2

3713 9124

Hi-Stat
A Stoneridge Company
Lexington, Ohio
Pressure Products Group

Date: September 27, 2000

Prepared By: Roger Nieter
Product Engineer

Product Engineering Test Report: Ford Brake Switch Test to Failure

Hi-Stat P/N:	N/A	Description:	Cruise Control Deactivation Switch
Project No.:	1-200-03-04-073 DV	Customer:	Ford
Date Code:	N/A	Customer P/N:	F2VC-9F924-AB
Life Test No.:	29600		

PURPOSE:

Test to failure the TI Cruise Control Deactivation Switch P/N F2VC-9F924-AB on the impulse test in ES-F2VC-9F924-AA

SCOPE:

Ford Brake Switch.

TEST PROCEDURE:

15 F2VC-9F924-AB parts were serialized so that each parts performance could be tracked throughout the entire test.

The parts were tested per the following impulse test procedure

Test the switch for a total of 500,000 cycles. Cycle pressure between a low of 0 to 40 psi and a high of 1450 ± 50psi. Run trace current to monitor function. Brake fluid temperature to be 135 ± 14°C and ambient temperature to be 107°C min. Cycle rate of approximately 60 – 100 cycles per minute. Switch must open and close each cycle.

Received 10/3/2000 from Bob Melenorsky (Hi-stat Rep). S. Reimers

3713 9122

Porter
EXHIBIT NO. 3

C:\TEMP\Test Report-ford CCDS teardown.doc
Form Rev X2

Hi-Stat
A Stoneridge Company
Lexington, Ohio
Pressure Products Group

Date: September 27, 2000

Prepared By: Roger Nieter
Product Engineer

Product Engineering Test Report: Ford Brake Switch Test to Failure

DATA:

Part	Initial Open	Close	mv Drop	Final Count	Failure Type	Failure Mode
29600-1	137	74	7.60	557,676	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-2	139	63	8.60	398,500	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-3	140	79	28.30	180,793	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-4	145	65	9.60	158,643	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-5	152	62	16.60	164,571	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-6	149	68	26.90	87,085	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-7	146	82	10.20	193,520	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-8	141	61	20.00	155,831	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-9	145	68	7.90	180,401	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-10	144	73	23.60	169,998	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-11	140	71	33.10	196,000	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-12	156	69	8.70	158,831	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-13	152	66	8.90	156,482	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-14	151	63	18.40	156,484	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
29600-15	150	67	14.69	178,182	Leaked Out Top Of Insulator	All 3 Diaphragms Cut
X Bar	145.7	69.9	16.22	203,533.0		
R	18	22	25.50	490,591.00		
STDEV	5.8	7.0	8.49	119,094.2		

RESULTS:

Only 1 of the samples lasted the entire 500,000 cycles before failing at 557,676 cycles. All of the failures were leakers with cuts in all 3 diaphragms.

CONCLUSION:

Since all of the failures were leakers due to diaphragm failures, it appears that there is a possible problem area where the actuator and backing meet that can cause the diaphragms to be cut.

ACTION TAKEN:

Submit report to the customer.

EQUIPMENT USED:

Pressure Switch Station 30	HS12059
Millivolt Tester	HS12279
Honeywell Chart Recorder	HS11971

3713 9123

Hi-Stat
A Stoneridge Company
Lexington, Ohio
Pressure Products Group

Date: May 12, 2000

Prepared By: Roger Nieter
Product Engineer

Product Engineering Test Report: Ford Brake Switch Benchmarking

Hi-Stat P/N:	4011-008	Description:	Cruise Control Deactivation Switch
Project No.:	1-200-03-04-073 OV	Customer:	Ford
Date Code:	N/A	Customer P/N:	F2AC-9F924-AA & F2VC-9F924-AB
Life Test No.:	13500		

PURPOSE:

To report the failure modes of the TI parts for test # 13500.

SCOPE:

Ford Brake Switch.

TEST PROCEDURE:

20 Parts(10 — F2AC-9F924-AA & 10 — F2VC-9F924-AB) were serialized so that each parts performance could be tracked throughout the entire test.

The parts were tested per the following modified test procedure

Test the switch for a total of 1,500,000 cycles. Cycle pressure between a low of 0 to 40 psi and a high of 1450 ± 50psi. Run trace current to monitor function. Ambient and fluid temperature to be 85°C min. Cycle rate of approximately 80 – 100 cycles per minute. Switch must open and close each cycle.

Porter
EXHIBIT NO. 4

3713 9119

Hi-Stat
A Stoneridge Company
Lexington, Ohio
Pressure Products Group

Product Engineering Test Report: Ford Brake Switch Benchmarking

DATA:

Failure Analysis of 11 parts run at a constant 82°C

Part	Scribe	Failure Mode	Cause	
F2AC-9F924-A	13500-1	None	NA	
F2AC-9F924-A	13500-2	Open Switch	Actuator Stuck in Down Position	800,000
F2AC-9F924-A	13500-3	None	NA	
F2AC-9F924-A	13500-4	None	NA	
F2AC-9F924-A	13500-5	Leaked	All 3 Diaphragms Cut	1,310,551
F2AC-9F924-A	13500-6	None	NA	
F2AC-9F924-A	13500-7	None	NA	
F2AC-9F924-A	13500-8	Leaked	All 3 Diaphragms Cut	1,500,000
F2AC-9F924-A	13500-9	Leaked	All 3 Diaphragms Cut	1,310,551
F2AC-9F924-A	13500-10	None	NA	
F2VC-9F924-A	13500-21	None	NA	
F2VC-9F924-A	13500-22	None	NA	
F2VC-9F924-A	13500-23	None	NA	
F2VC-9F924-A	13500-24	None	NA	
F2VC-9F924-A	13500-25	None	NA	
F2VC-9F924-A	13500-26	None	NA	
F2VC-9F924-A	13500-27	None	NA	
F2VC-9F924-A	13500-28	None	NA	
F2VC-9F924-A	13500-29	None	NA	
F2VC-9F924-A	13500-30	Leaked	All 3 Diaphragms Cut	1,500,000

RESULTS:

The first part that failed was part # 2. It would not open at 800,000 cycles. After tear down it was unclear as to what caused the switch to not function properly.

The next two failures were part # 5 and 9. They both leaked at 1,310,551 cycles. After tear down it was determined that both switches leaked because all 3 diaphragms were cut at the actuator radius near the interface with the backing plate.

The last two failures were part # 8 and 30. They both leaked at 1,500,000 cycles. After tear down it was determined that both switches leaked because all 3 diaphragms were cut at the actuator radius near the interface with the backing plate.

CONCLUSION:

Since there was four failures that were leakers due to diaphragm failures, it appears that there is a possible problem area where the actuator and backing meet that can cause the diaphragms to be cut.

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Hi-Stat
A Stoneridge Company
Lexington, Ohio
Pressure Products Group

Prepared By: Roger Nieter
Product Engineer

Product Engineering Test Report: Ford Brake Switch Benchmarking

ACTION TAKEN:

Submit report to the customer.

EQUIPMENT USED:

Pressure Switch Station 30	HS12059
Millivolt Tester	HS12279
Honeywell Chart Recorder	HS11971

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FIELD REVIEW COMMITTEE

To: (North America)
Secretary, FRC
Suite 785
Diagnostic Service Center II
Ford Customer Service Division — North America

To: (Europe)
Secretary, FRC
Room GB-1/329,
Ford Customer Service Division — Europe

The attached Evaluation Paper is being forwarded for review by the Field Review Committee. Copies have been submitted for review to:

Office of the General Counsel:	YES	☐	NO	☐
Vehicle Environmental Engineering:	YES	☐	NO	☐
Automotive Safety Office:	YES	☐	NO	☐
VC Purchasing Director	YES	☐	NO	☐

Subject: 1992 & 1993 Town Car Speed Control Deactivation Switch

Vehicle Line Director	*Vehicle Center Engineering Director*
Date	Date

Note: Both signatures are required prior to Review by the Field Review Committee

Porter
EXHIBIT NO. 5

3713 6132

1. **PROBLEM DESCRIPTION** (what/when/extent)

   A. NHTSA opened PE 98-055, dated November 24,1998, into "...21 reports of engine compartment fires in 1992 and 1993 Lincoln Town Cars." Our investigation into these reports indicates the speed control deactivation switch may be involved in some of the reports.

   Ford introduced the speed control deactivation switch on the 1992 Town Car in November 1991, as part of the Electronic Speed Control system. The 1992 Crown Victoria and Grand Marquis introduced the same speed control deactivation switch in February 1992. The switch wiring and packaging location are similar on all three vehicles.

   Internal brake fluid leakage is one of the reasons service technicians remove speed control deactivation switches. Internal corrosion of the electrical switch components is observed in speed control deactivation switches with brake fluid leakage. Chlorine is not evident in these switches.

   B. The speed control deactivation switch, F2VC-9F924-AB (service part F2VY-9F924-A) is the redundant speed control deactivation switch (CPSC 060605) for the Electronic Speed Control that is standard on all Town Cars built between November 1991 and Job #1 MY1998 and is an option on Crown Victoria and Grand Marquis.

   C. Vehicles Affected —

Model Year (s)	Vehicle Lines	Vehicle Volume	Variants	Other Limiting Factors
1992, 1993	Town Car	123,310	all	none
1992, 1993	CV/GM	155,335	all	With Electronic Speed Control

   D. Markets Affected: All markets.

   E. Corporate Product Systems Classification (CPSC) code(s): 06.06.05

2. DEFINE ROOT CAUSE

A. We have not identified the root cause. Speed control deactivation switches appear to be susceptible to brake fluid leaks and corrosion that may create a conductive path in the switch resulting in overheating. Analysis performed on field samples of the speed control deactivation switches involved in underhood fires has not allowed us to conclude that the speed control deactivation switch was the cause of the fires. Analysis performed on speed control deactivation switch field samples not involved in fires suggests brake fluid enters some of the switch cavities through cracks in distorted, localized brittle portions of the internal Kapton diaphragm or other contaminants through the electrical connector seals. This contamination in the presence of a continuous electrical potential is favorable to causing corrosion. Corrosion products inside the speed control deactivation switch cavity could create a conductive path between the uninterrupted battery power and ground. During lab testing, intended to create internal corrosion, it was observed that a conductive path to ground carried an increasing leakage current of 1 to 2 amps average at 14 volts, with transients of 10 amps at 14 volts. These laboratory conditions were capable of melting or igniting the speed control deactivation switch plastic bases in a 3 hour controlled environment (see attachment 5).

In normal operation, the expected switch leakage current is less than 0.0001 amps. The switch contacts normally conduct up to 0.75 amps to the speed control clutch with the speed control engaged and 0.005 amps when not engaged. A 15 amp fuse limits the current into the switch. This circuit is always energized.

B. The Ford process intended to prevent the diaphragm leakage and connector seal contamination is the engineering specification (ES-F2VC-9F924-AA) which requires:

- electrical current leakage to the housing (ground) not to exceed 0.0001 amps;
- proof test... no evidence of fluid leakage, seepage, or drop in test pressure greater than 62 psi (in 30 seconds) is permitted;
- 500,000 impulse cycles at 224° F ambient using 275° F brake fluid;
- 80 hours of humidity cycling;
- 72 hours of Salt spray; and
- in-process testing to control the quality of the component.

C. The design process did not prevent this issue because DV testing did not evidence any leaking diaphragm or connector seal leakage or internal switch corrosion. The potential effect of creating a conductive path caused by contaminants on the internal switch metallic components was not anticipated in the speed control deactivation switch design FMEA. ES durability testing did not evidence a leaking diaphragm nor connector seal leakage nor internal switch corrosion.

D. Please check the applicable item(s) in each category:

- Type: ☐ Design ☐ Manufacturing ☐ Vehicle Assembly
  ☐ Other (If other, specify __)

- System: ☐ Body ☒ Chassis ☐ Cooling ☐ Fuel ☒ Electrical ☐ Engine
  ☐ Glass ☐ Restraints ☐ Transmission/Axle
  ☐ Vehicle Label/Publications ☐ Emissions Control
  ☐ OBD ☐ Other (If other, specify __)

- Symptom: ☐ Brake Control ☐ Emission Compliance
  ☐ Other Regulatory Compliance ☐ Driveability/No Start
  ☐ Engine Speed Control/Unexpected Movement ☒ Fire
  ☐ Steering Control ☐ Occupant Restraint ☐ Personal Injury
  ☐ Visibility ☐ Warranty Avoidance/Customer Satisfaction
  ☒ Other (If other, specify Speed Control Inoperative)

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3. PROBLEM INVESTIGATION/VERIFICATION DATA

A. Lab Test

Lab experiments were performed to reproduce ignition or melting as suggested by analysis of field returns and data. (see Attachment 4) These tests were done with a variation of brake fluid concentrations, water and salt to develop a model to understand the factors contributing to thermal events. These tests did not result in a melting or ignition with brake fluid or water. A salt water solution procedure reliably produced melted switches and some ignited plastic switch bases. This is shown in attachment 4 test 6b.

The test parameters used to create melting or ignition in an accelerated lab environment are:

Voltage:	14 volts dc
Current Limit:	15 amps
Solution:	5% NaCl and tap water
Orientation:	connector 45° from vertical (in-vehicle orientation)

Procedure: Apply voltage between the switch contact components and the switch metallic base (normal operating condition). Inject salt water solution into the pressure switch cavity through the connector body. Repeat injection as water boils away. In 2 to 3 hours, the plastic switch bases will begin to melt and some will ignite drawing 1 to 10 amps of switch leakage current to ground.

Attachment 4 below lists tests that shows test details.

B. Vehicle tests: Vehicle tests were performed on a 1992 Town Car to determine the pressure applied to the speed control deactivation switch. Maximum pressure seen in these tests did not exceed the maximum test pressure of the engineering specification for the part. No fire or smoke was observed.

C. Plant/Supplier Reports: The Town Car, Crown Victoria and Grand Marquis assembly plants no longer used this part after November 1997. There were no plant reports. In 1991, the Texas Instrument manufacturing process using an auto-crimper was unable to produce parts capable of passing the required number of impulse test cycles. Texas Instruments was allowed to deliver parts made using a manual crimper, that met the requirement, until they began to supply parts, that met the specification, using the auto-crimper in January of 1992 (see attachment 7, Alert A10166193). Parts from the automated process were shipped to Ford in February 1992 after samples passed impulse testing. The increase in reported incidents coincides with this manufacturing process change at Texas Instrument (see attachment 1 & 2).

D. Quality Indicators: 13 of 47 engine off-or-unknown fire incidents reported in MORS and CQIS on 1992 and 1993 Town Cars mention the speed control deactivation switch or a symptom related to a speed control deactivation switch failure. (See attachment 1)

Fire allegations on Town Car, Crown Victoria and Grand Marquis declined for vehicles built after November 1992. (see attachments 1& 2) Based on a review of fire allegations potentially related to the speed control deactivation switch, the trend demonstrates that the affected Town Car population was built between November 1991 and November 1992 and the affected Crown Victoria/Grand Marquis population was built between February 1992 and November 1992.

The accrued mileage at the time of the fire, of the majority of vehicles involved, is 60,000 to 100,000 miles and the time-in-service is 48 to 72 months (see attachment 3). Vehicles built before May 1995, predictably have reached this mileage and time-in-service. The rate of fires in these following model years indicates no recurrence of the rate reported for 1992.

E. Field Reports: Two separate incidents of observed flames on the speed control deactivation switch were reported by mechanics servicing Town Cars.

Additionally, 48 switches from U.S. vehicles have been collected.

The results of examining these follow:

- 30 functioned correctly with no fluid leakage evident.
- 10 are alleged to be involved in fires.
- 6 leaked brake fluid through the Kapton diaphragm. These had black or dark green residue (containing Brake Fluid, Zinc, Copper, Sulfur) on the terminals and/or cup. 4 due to brittle cracks.
- 3 would not open the switch contact
- 1 had high switch contact resistance
- 8 showed transfer of brass contact material to cup (4 fire / 4 leakers)
- 2 missing movable contacts appear corroded away (2 leakers)
- 1 separated movable contact (leaker)

F. Part Sales: Multiple model years and 4 vehicle lines use this service part. Sales for the affected vehicles cannot be segregated for comparison to other vehicle usage.

G. No accidents have been identified attributed to this condition, to date. Two injuries are alleged to be related to this condition, to date.

4. ACTIONS TAKEN IN PRODUCTION; INTERIM (CONTAINMENT) AND/OR PERMANENT

The affected production materials were built in the 1992 and 1993 model years. No action is required to be taken in production as these parts are no longer used on Town Car and Crown Victoria and Grand Marquis built after the 1997 model year.

5. VERIFY EFFECTIVENESS OF CORRECTIVE ACTIONS

No corrective action has been implemented in production as this part is no longer used on the Town Car, Crown Victoria or Grand Marquis built after the 1997 model year.

6. ESTIMATED PRODUCTION AND PROBLEM STATISTICS (MAGNITUDE OF CONCERN)

A.

VEHICLES AFFECTED (BY MODEL AND MODEL YEAR)	ASSEMBLY PLANTS (INCLUDING KNOCK DOWN OPERATIONS)	VEHICLE PRODUCTION DATES		POTENTIALLY AFFECTED UNITS	
		FROM	UP TO AND INCLUDING	NUMBER OF UNITS	ESTIMATED PERCENTAGE OF VEHICLES THAT CONTAIN THE CONDITION
Town Car	Wixom AP	11/4/1991	11/30/1992	123,310	unknown
CV/GM	St Thomas AP	2/5/1992	11/30/1992	155,335	unknown

B. The source of the data is a NAVIS report.

7. AFTERMARKET PARTS

A. The speed control deactivation switch is released as an individual service part and as part of assembly F2VY-2B091-B.

B. The affected service stock is presumed to have been exhausted.

8. ASSESSMENT OF EFFECT ON VEHICLE OPERATION

Customers may experience inoperative speed control, difficulty shifting out of park (fuse #12 blown), dead battery, brake warning lamp ON, excessive brake pedal travel and/or smoke or fire on the left hand side of engine compartment.

9. DESCRIPTION OF CONCERN SOLUTION AND PARTS REQUIREMENTS (FIELD SERVICE ACTIONS)

A. Field Modification: The modification will install a recently manufactured speed control deactivation switch and connector. Vehicles brought in for recall before the parts are available will have the harness connector disconnected from the speed control deactivation switch and the connector covered with tape to minimized exposure before the permanent modification is completed. This interim modification will cause the speed control to be inoperative until the permanent modification is installed.

B. Assessment of procedure

- This modification procedure has been installed on a 1992 Town Car.
- The modification procedure was evaluated by FCSD using appropriate tools, equipment, and a representative vehicle.

C.

- Kit name - Brake Pressure Switch Kit.
- 150,000 rework kits will be ready for service by 6/25/99 (8 weeks). WERS concern C10971850 received program authorization 5/15/99. (see attachment 8).
- production part number is not applicable
- service kit part number is XW7Z-9G652-AA
- 1 kit is required per vehicle.

D. No other parts are required.

E. Driveability and Emissions not affected.

10. PROGRAM PARTS SIGN OFF/AVAILABILITY

150,000 speed control deactivation switches have been shipped to FCSD.

11. SUPPLIER INVOLVEMENT

A. TBD

B.

C.

D.

E.

F.

12. FINANCIAL IMPLICATIONS

		Vehicle Volume	Cost Per Unit	Total Cost (000)
A	Program Administration Costs	278,645	$1.20	$334
B	Inspection Costs (Units to be Inspected but Not Modified)	0		0
C	Interim Modification Costs(Units to be Inspected and Modified) • Parts (priced at dealer price plus 40%) ($1.00 (e)) Labor (0.) hours x $58.34 labor rate)	97,525 (35% of 278,645)	$18.50	$1,804
	Permanent Modification Cost(Units to be Inspected and Modified) • Parts (priced at dealer price plus 40%) ($11.20 (e)) • Labor (0.5 hours x $58.34 labor rate)	278,645	$40.37	$11,249
D	Dealer Administration Allowance (for safety and emissions recalls only) [0.1 hours x $58.34 labor rate – N.A.]	278,645	$5.83	1,625
E	Total Cost (total A through D)		5	15,012
F	Percentage of Recommended Supplier Recovery (if applicable or TBD if unknown)			0%
G	Supplier Impact (E * F, if applicable)			0
H	Net FORD Exposure (E-G)			0
I	Potential Warranty Offset			0

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13. PREVENT ACTIONS

A. Review SDS,WCR Brake System Durability and Bench Testing (DVP&R) to examine the effect of contaminated, or aged, or incorrect brake fluid. Update FMEAs and FTAs.

B. ......*generic items or processes impacted*......

C. ... *corporate memory updates* ...

14 REFERENCE DATA

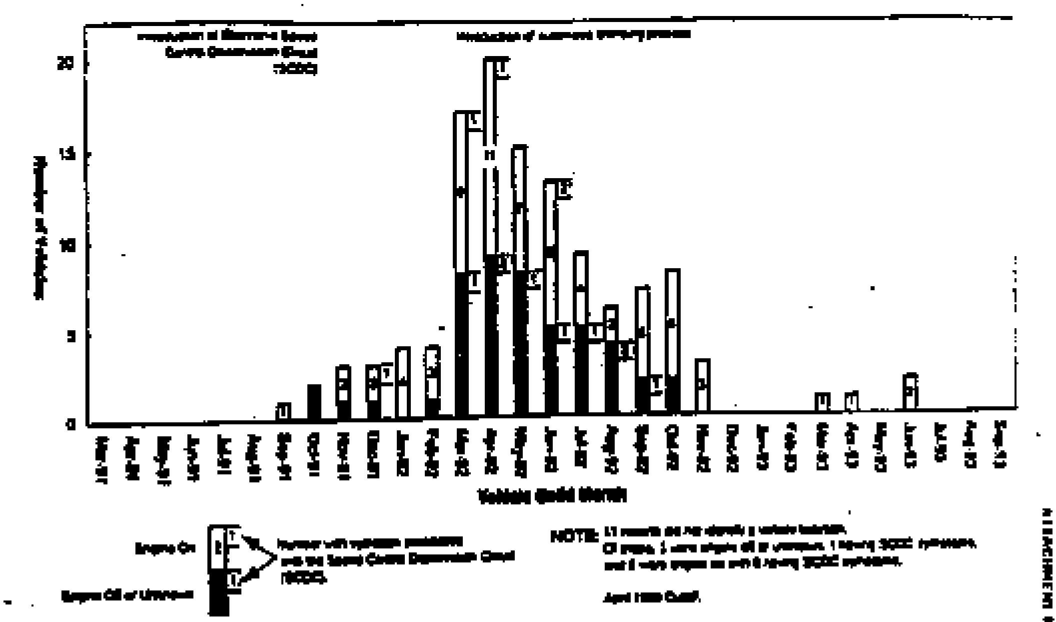
A. Attachments

1 92/93 Town Car Underhood Fire Allegations by Vehicle Build Month.
2 92/93 Crown Victoria/Grand Marquis Underhood Fire Allegations by Vehicle Build Month.
3 92 Lincoln Town Car Reported Incidents Of 40 Vehicles with Engine Off/Unknown
4 9F924 De-activation Switch Test Synopsis
5 Hexport Current vs. Time, Fluid Ingress Experiment
6 Hydraulic Pressure Switch Cross Section
7 WERS Alert A10166193.
8 WERS Concern C10971850

B. T. F. Donovan, Manager
Phone: (313)390-7420
E/E Systems, LVC/TVC OPD & Core Quality
Building 5, 1A043

ATTACHMENT 1

92/93 Town Car Underhood Fire Allegations by Vehicle Build Month



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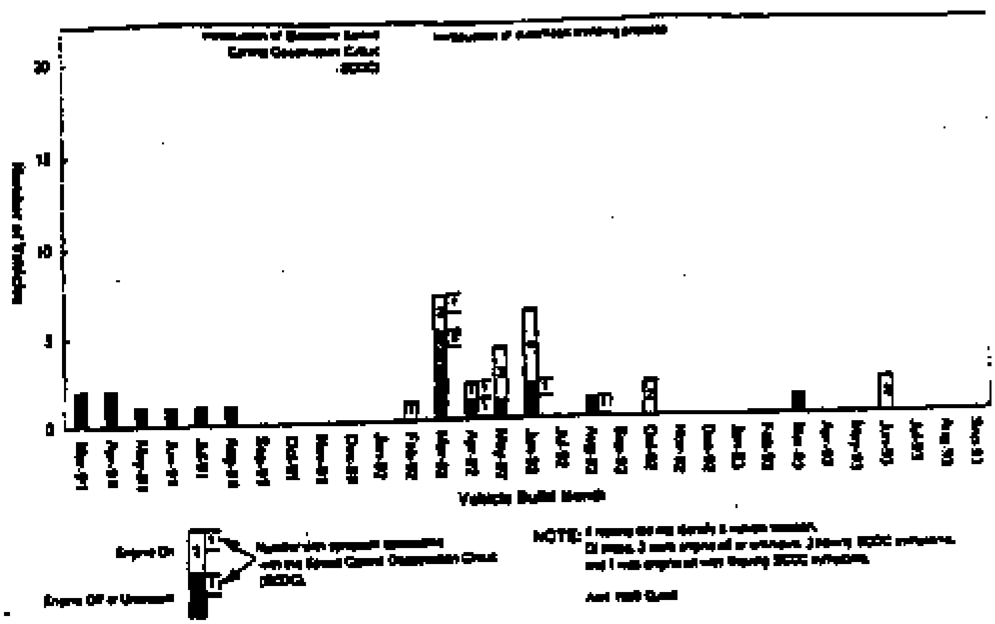
ATTACHMENT 2

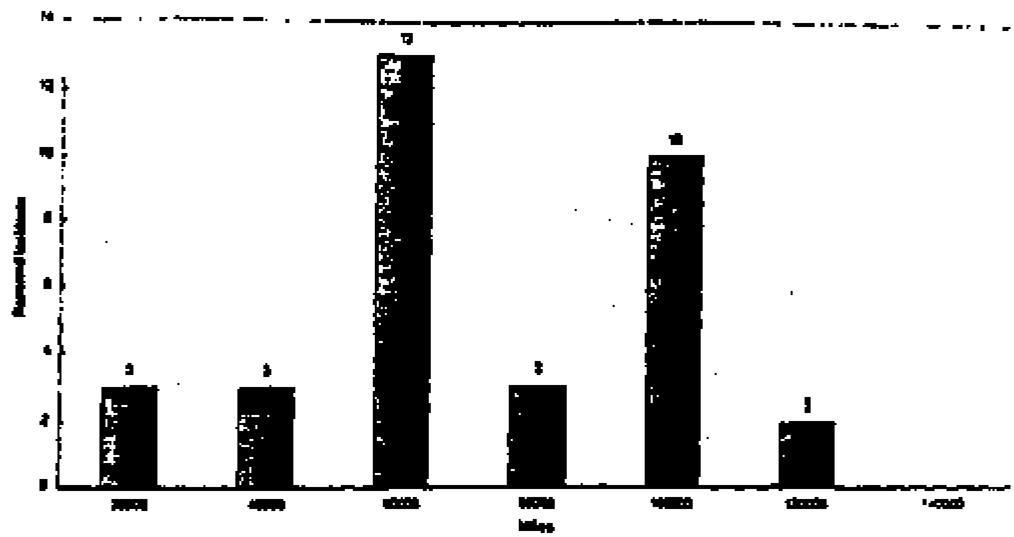
92/93 Crown Victoria/Grand Marquis Underhood Fire Allegations by Vehicle Build Month



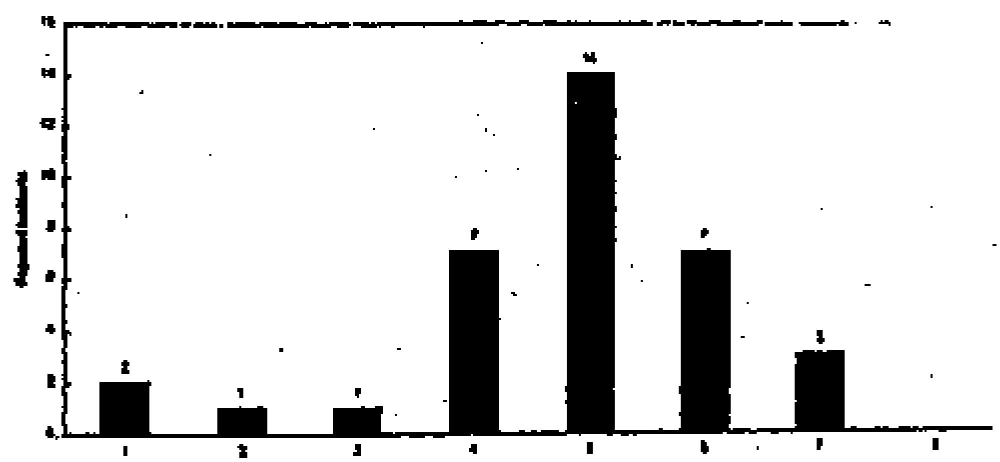
ATTACHMENT 3

92 Lincoln Town Car Reported Incidents Of 40 Vehicles with Engine Off/Unknown

Reported Town Car Incidents by Mileage



Reported Town Car Incidents by Years in Service



Note. There were 3 vehicles with unknown VINS, therefore, years in service were undetermined.
There were 6 vehicles with unknown miles.

ATTACHMENT 4

9F924 De-activation Switch Test Synopsis

This document is a synopsis of tests conducted during the investigation of the 9F924 speed control deactivation switch manufactured by Texas Instruments (P/N 77PS). These tests attempt to reconcile the parameters of the system with alleged field events. The following are the system parameters around the application of the speed control deactivation switch.

I. The switch components are exposed to battery potential continuously after the vehicle is manufactured.
   - A. The hexport of the switch is screwed into the brake proportioning valve that is mounted to the vehicle frame. The vehicle frame is a ground potential.
   - B. Battery voltage is continuously connected to moveable contact. The ignition switch does not modify battery voltage to the speed control deactivation switch.

The intent of this document is to highlight test findings.

Test 1

Objective: Determine if switch ignition can occur under the following conditions:

- Switch contact flooded with brake fluid mixed with varying amounts of % tap water.
- 14 volts applied to one terminal, second terminal electrically floating. (No electrical load across switch terminals).
- Switch hexport electrically grounded.

Test eight samples with the following mixtures:

2 with 4% tap water in brake fluid
2 with 6% tap water in brake fluid
2 with 10% tap water in brake fluid
2 with 75% tap water in brake fluid

Results: No ignition occurred. No significant temperature rise observed. Leakage current to ground ranged from 0.5 mAmps to 5 mAmps over the 250-hour test duration.

Conclusion: While degradation in performance is observed, brake fluid does not develop corrosion or a leakage current path quickly enough to use for laboratory validation testing.

Test 2

Objective: Determine if switch ignition can occur under the following conditions:

- Switch contact flooded with brake fluid mixed with varying amounts of % tap water.
- 14 volts applied to one terminal, second terminal connected to a 14-ohm resistor tied to ground. (1 Amp load across switch terminals).
- Switch hexport electrically grounded.

Results: No ignition occurred. The temperature rise was less than 10°F over the 250-hour duration of the test.

Conclusion: Heat generated by the switch contacts is not sufficient to ignite the plastic base or brake fluid.

ATTACHMENT 4

Test 6

Objective: Determine if switch ignition can occur under the following conditions:

- A heater element installed in contact cavity of the switch.
- Apply power to the heating element until plastic base ignites.
- Apply an external spark to the fumes from the plastic.
- Brake fluid present in the contact cavity (wet device) and not present in the contact cavity (dry device).

Results: Ignition occurred in both wet and dry devices..
Wet device: The internal temperature of a wet device reached 660°F. A hole melted through the base of the switch (close to the heating element). The externally applied spark ignited the fumes and flames engulfed the switch.
Dry device: The internal temperature of a dry switch reached over 1000°F. The switch base flopped over. The externally applied spark ignited the fumes and flames engulfed the switch.

Conclusion: The plastic base with brake fluid can be ignited when 5 Watts of electrical power are dissipated as heat in the switch for 15 minutes, followed by a spark.

Test A

Objective: Identify the interactions of the materials found in the switch returned from the Reddick report by placing a brass and copper electrode in a pool of brake fluid with a 12 volt potential between them.

Results: After 24 hours, a black residue formed on both electrodes. The brake fluid did not ignite.

Conclusion: The material found in the switch returned from the Reddick report was a result of an interaction between brake fluid, the internal switch components and the continuous electrical field present in the vehicle.

Test B

Objective: Show that the speed control deactivation switch is capable of supporting the maximum design current load by applying 15 Amps through the switch contacts until they reach a stable temperature.

Results: The temperature rise stabilized at 35°F after 10 minutes. Vehicle test results show a maximum temperature of 250°F at the left-hand engine mount. This mount is near the speed control deactivation switch. With the temperature rise observed, the maximum temperature the speed control deactivation switch is exposed to is 285°F. This is less than the 433°F melting point of the plastics used in the switch base.

Conclusion: The speed control deactivation switch will not ignite under extreme vehicle environmental conditions. Heat to cause an ignition must come from a source outside of the normal design of the switch. To ignite a switch, either an external source, or an internal short to ground must provide heat.

ATTACHMENT 4

Test 6a

Objective: Determine if corrosive degradation of switch electrical components can cause a decrease in electrical isolation (and thus a source of heat) in the switch that may lead to an ignition. Subject the switch to the following conditions:

- 5% NaCl in tap water solution is injected into contact cavity of a switch.
- 14 Volts is applied to the switch.
- Hexport is grounded.
- Current is limited at 15 Amps.

Results: Of 4 samples tested, over a 2 - 3 hour period, the switch leakage current averaged 1 Amp while reaching peaks of 10 Amps. Near the end of the experiment with leakage current greater than 2 Amps, the switch bases started to melt. 2 of the switches continued to heat until the plastic ignited. The other 2 continued to melt until electrical connection was broken.

Conclusion: Corrosion materials can create a conductive path that may lead to ignition. In this experiment, NaCl was used to accelerate the corrosion in the switch. Other corrosive processes may yield the same results.

Test 7

Objective: Determine if switches meet cycle life specification by running the life cycle test beyond specification until the switch performance is degraded.

Results: The first sample developed a leak in the kapton seal after 728,000 cycles. The mean time to developing leaks was determined to be 1,200,000 cycles.

Conclusion: The kapton seal exceeds design specification of 500,000 cycles.

Test 15a

Objective: Determine if long time switch exposure to brake fluid can lead to an ignition.

Results: Test is ongoing. Results to date show no increase in conductivity of both new and used brake fluid. At 350 hours of testing, current draw on each device is less than 20 mAmps.

Conclusion: 350 hours of brake fluid exposure is not sufficient to cause ignition. At 350 hours of testing, current draw remains below the levels needed to create ignition as simulated in laboratory experiments.

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ATTACHMENT 4

Test 6b

Objective: Understand the ignition process, determine the current path and establish a repeatable ignition method.

Results: Multiple attempts at ignition, via injection of a 5% NaCl in tap water into the contact cavity of switches, has resulted in a repeatability rate of approximately 50%. Plots of hexport current vs. time show an increase in leakage current until the point of ignition in 2 to 3 hours.

Conclusion: A repeatable laboratory method for switch ignition has been established. Based on hexport current measurements, the current path is from switch terminals to hexport body. When a NaCl in tap water solution is repeatedly injected into the contact cavity of powered switches, electrolytic corrosion of the switch terminals results in an increase in terminal resistance and a conductive path to the sensor housing. When sufficient power is drawn through the terminal and conductive path, the materials inside the switch heat. These materials may begin to glow red hot. A hole melts through the switch base and ignition occurs. There is arcing visible throughout the corrosion process that may provide the spark necessary for ignition.

Test 13a

Objective: Compare various fluids in the established ignition method.

Results: A switch filled with 5% NaCl in tap water resulted in an ignition when average hexport leakage current exceeded 2.5 Amps during a 3 hour test. Switches that were filled with tap water and rainwater drew less than 10 mAmps during a 3-hour test and showed little signs of corrosion. Switches filled with new and used brake fluids, with water and without water, all had less than 3 mAmps leakage current and showed no signs of accelerated corrosion.

Conclusion: NaCl in tap water is the most effective method for creating a short-term corrosion to produce heat in the switch. While brake fluid is not as effective in producing corrosion for a lab test, it does produce corrosion when introduced into the switch cavity.

Test 18

Objective: Compare the burn characteristics of various plastics that have the potential to be used as switch base materials. Plastics tested have melting and flowing characteristics compatible with the molding process of the switch base.

Results: When 5% NaCl in tap water was injected into switches with different base materials, the following results were obtained: Celanex 4300 ignited 3 out of 5 attempts. Noryl ignited 2 out of 6 attempts. Zytel ignited 1 out of 5 attempts.

Conclusion: Different plastics exhibit different ignition characteristics. None of the plastics tested guaranteed protection against ignition.

ATTACHMENT 4

Test 15b

Objective: Compare: 1) the probability of switch ignition in the vertical position (connector up) versus a 45° orientation and 2) the probability of switch ignition as a function of rotational angle (about the switches length axis) in the 45° orientation.

Results: Switch ignitions in the lab occurred with the switches mounted both vertically and 45° from vertical. In addition, switch ignitions in the lab occurred at various rotational angles.

Conclusion: Switch ignition does not appear to be sensitive to vertical orientation vs. 45° orientation nor to rotational angle in the 45° orientation.

Test 16

Objective: To test proposed relay circuit.

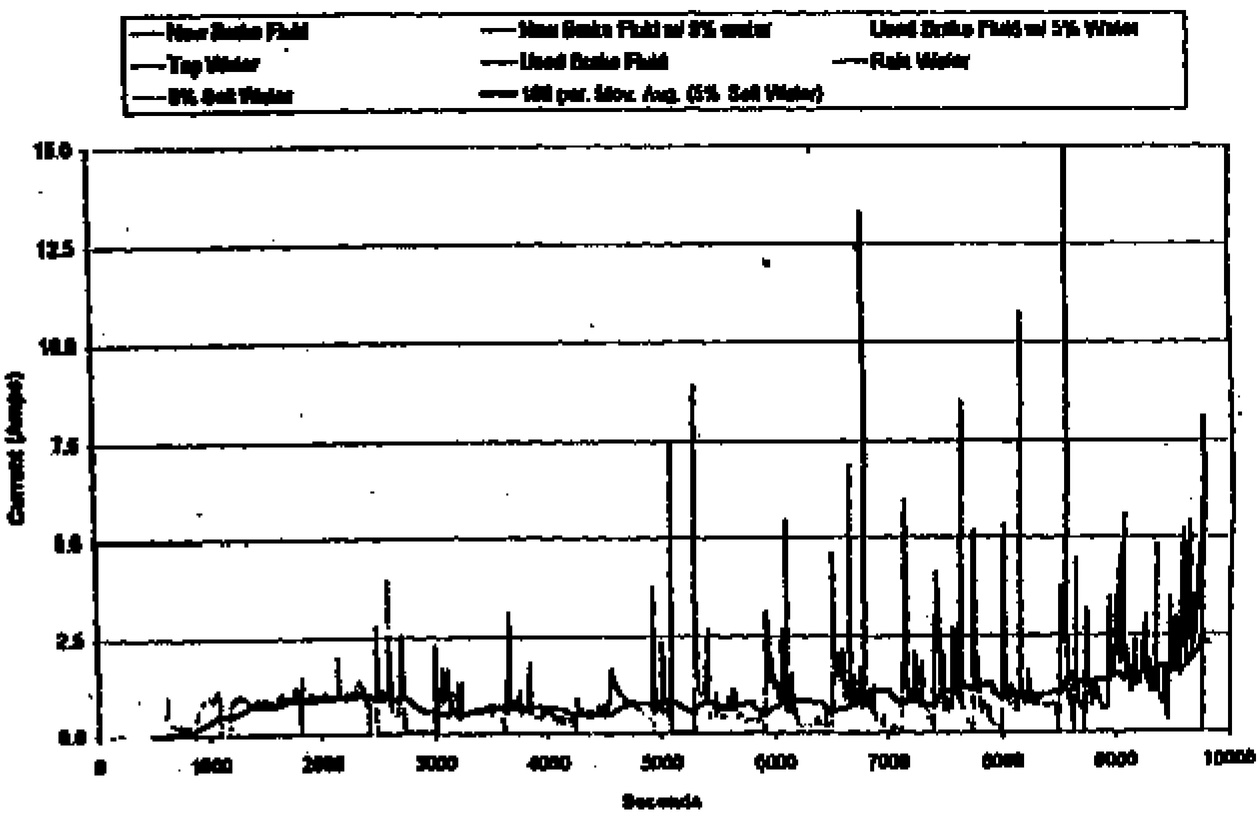
Results: A switch was injected with 5% NaCl in tap water solution and placed in a proposed current limiting circuit for 48 hours. The current draw remained constant at 180 mAmps throughout the test. There was no thermal activity observed and the contact arm remained intact.

A switch was brought to a high leakage current condition using the established ignition method. An impending burn is a condition where a corrosive resistance has built up in the switch and an ignition is imminent as determined by observing leakage current. The switch was placed in the proposed relay circuit for 18 hours where it drew 180 mAmps, showed no visible thermal activity and did not result in a burn. Because the proposed relay circuit acts as a resistor that limits current to the switch, the maximum power to the switch is limited to 0.75 Watts. A resistive wire was wrapped around the base of the switch and 0.75 Watts of power was applied to the wire. The wire became warm to the touch but had no effect on the switch.

Conclusion: 0.75 Watts, the maximum power in the proposed circuit design, is not enough power to cause switch terminal heating sufficient for ignition. In previous tests, using a resistor as the heating element, approximately 5 Watts of power was necessary to create an ignition. There is not enough power in the proposed circuit to create ignition.

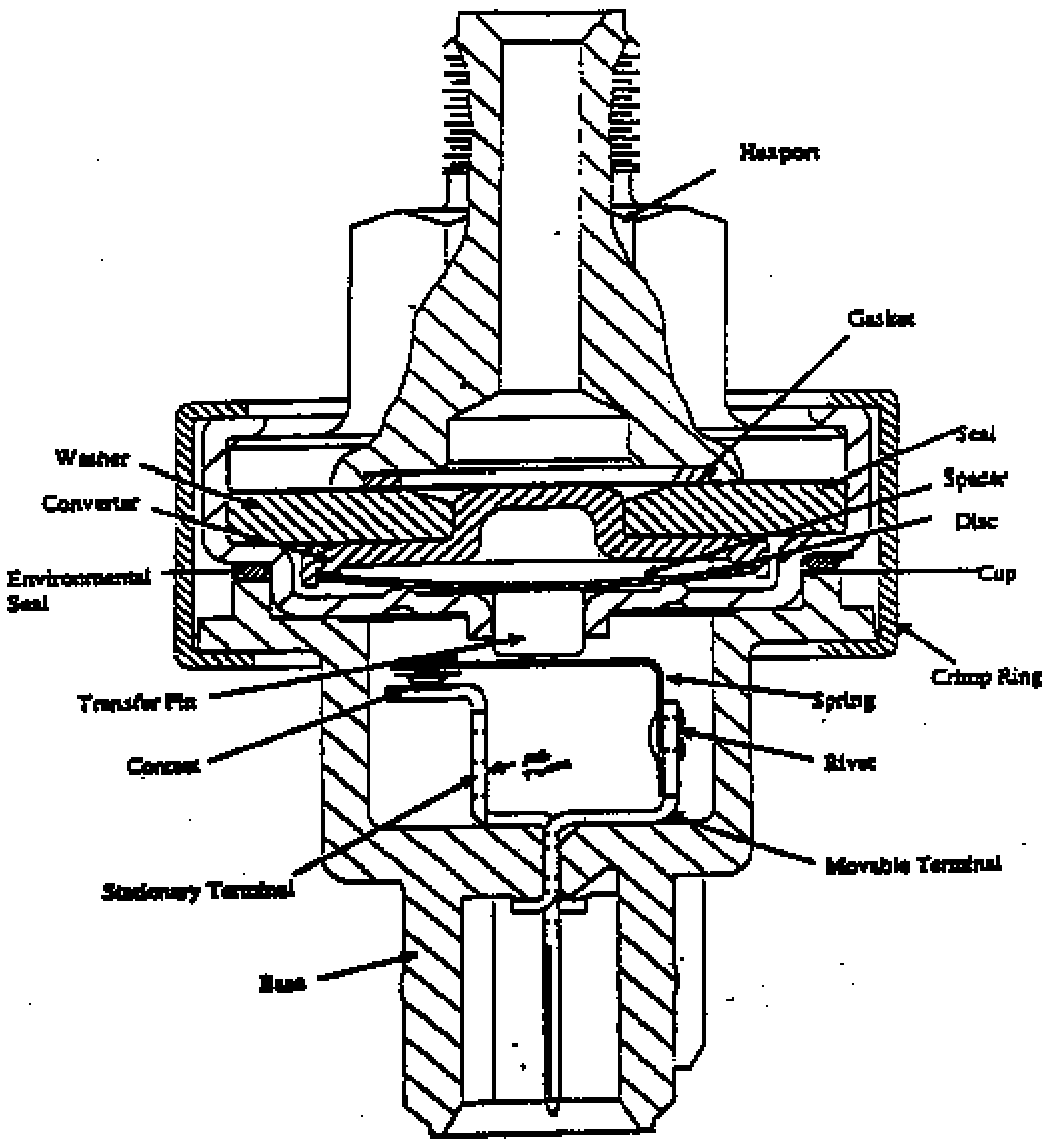
ATTACHMENT 5

Hexport Current vs. Time
Fluid Ingress Experiment



ATTACHMENT 6

Hydraulic Pressure Switch Cross Section



ATTACHMENT 7

[illegible]

BPS MANUAL V AUTO CRIMP ALERT

ATTACHMENT 7

[illegible]

Draft of 5/13/99

1992 & 1993 Town Car, Crown Victoria and Grand Marquis Speed Control Deactivation Switch

ATTACHMENT 7

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Draft of 5.28.99

1992 & 1993 Town Car, Crown Victoria and Grand Marquis Speed Control Deactivation Switch

ATTACHMENT 7

ALERT DETAIL

PRINT DATE/TIME: [illegible]

ALERT NUMBER [illegible]

[illegible]

APPROVALS

[illegible]

3713 6155

ATTACHMENT 7

ALERT DETAIL

STATUS: C

APPROVALS

[illegible]	[illegible]	[illegible]	ACTIVITY	APPROVER'S NAME	DATE APPROVED	APPROVAL
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

-END-

printed [illegible] AM

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Draft of 5.29.99

1992 & 1993 Town Car, Crown Victoria and Grand Marquis Speed Control Deactivation Switch

ATTACHMENT B

CONCERN DETAIL

[illegible]

-...-

-more-

Draft of 5.23.99

1992 & 1993 Town Car, Crown Victoria and Grand Marquis Speed Control Deactivation Switch

ATTACHMENT 8

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ATTACHMENT 8

ATTACHMENT 8

[illegible]

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ATTACHMENT 6

[illegible]

October 1998

October 1998							
	S	M	T	W	T	F	S
40					1	2	3
41	4	5	6	7	8	9	10
42	11	12	13	14	15	16	17
43	18	19	20	21	22	23	24
44	25	26	27	28	29	30	31

November 1998							
	S	M	T	W	T	F	S
45	1	2	3	4	5	6	7
46	8	9	10	11	12	13	14
47	15	16	17	18	19	20	21
48	22	23	24	25	26	27	28
49	29	30					

Monday	Tuesday	Wednesday	Thursday	Friday
			October 1	2 [redacted]
5	6 [redacted]	7	8	9
12	13	14	15	16
19 [redacted]	20	21	22	23 [redacted]
26	27	28 [redacted]	29	30 [redacted]

Porter EXHIBIT NO. 6

November 1998

November 1998

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December 1998

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Monday	Tuesday	Wednesday	Thursday	Friday
November 2	3 [redacted]	4	5 [redacted]	6
9	10	11 [redacted]	12	13
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23	24	25 [redacted]	26	27
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Porte, ed (F.J.)

3/22/00

E082-025-A 12211

PRODUCED BY FORD

3716 9463

December 1998

December 1998 / January 1999

Monday	Tuesday	Wednesday	Thursday	Friday
	December 1	2	3	4
7 [redacted]	8	9 [redacted]	10	11
14	15	16	17 [redacted]	18
21 [redacted]	22	23 [redacted]	24 [redacted]	25
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EP02-025-A 12212

PRODUCED BY FORD

3716 9464

January 1999

January 1999						
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February 1999						
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Monday	Tuesday	Wednesday	Thursday	Friday
				January 1, 99
4	5	6	7	8
11	12	13	14 [redacted]	15
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EA82-B25-A 12213

PRODUCED BY FORD

3716 9465

February 1999

February 1999

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March 1999

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March 1999

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March 1	2	3 [redacted]	4	5
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29 [redacted]	30	31		

April 1999

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May 1999							1
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Monday	Tuesday	Wednesday	Thursday	Friday
			April 1 8:00am 10:00am 4/1/99 42V Weekly Open 8:00am 9:30am Safety, Security, 10:30am 11:00am Quality Database 11:00am 12:00pm Discuss Integrated 1:00pm 2:00pm FN145 Speedo 2:45pm 4:45pm BA 203	2 10:00am 11:00am Section Mtg (BLS3A019 - AVT: Conf Rm 3A019,3rd Fl West 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status Meeting (Quality
5 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 10:00am 12:00pm V184 Air 3:30pm 4:00pm 1992-93 Town Car 4:00pm 5:00pm Ernie	6 7:30am 8:30am Speed Control Deact. Switch 11:00am 12:00pm Unconditional Exit from Diagnostics (1:00pm 2:00pm Subsystem 2:00pm 3:00pm Air Suspension 3:00pm 4:00pm U231 rear whl spd	7 7:30am 8:00am Speed Control 8:00am 9:00am Air Suspension 8:30am 9:30am BLI Project 9:00am 11:00am GAP Core Team 9:30am 11:30am Teves software 10:30am 12:30pm DKG Staff Meeting 11:00am 12:30pm FFGL Officers	8 [redacted] 8:00am 10:00am Martin Baber - 42 volts 3:00pm 4:00pm One on One (#5, 2A019)	9 10:00am 11:00am Section Mtg (BLS3A019 - AVT: Conf Rm 3A019,3r 1:00pm 2:00pm EE Quarterback Reps Monthly M 1:00pm 2:00pm FN145 Speedo Drop-out Conf Call
12 8:30am 10:00am Electrical 8:30am 10:00am S/A Forum 9:00am 10:00am Chassis & 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 4/12 (Mon) 1-3pm 2:30pm 3:30pm RTDA Evolution	13 9:00am 10:00am Chassis Electronics (Video conference room, Dearborn: #5, rm 2C062) 2:00pm 3:00pm Air Suspension Mtg (PDC 2H# 14)	14 7:00am 8:00am Reschedule of the 8:00am 11:00am BLI Project 8:00am 9:00am Air Suspension 9:00am 11:00am GAP Core Team 9:30am 11:00am WINDSTAR IVD 10:00am 12:00pm Speed Control 11:00am 12:00pm FN145 Speedo	15 10:00am 12:00pm Speed Control De-Activation Switch (T. Donovan's Office 3:00pm 4:00pm ABS Diagnostic and EOL Test Issues (PDC 2B	16 10:00am 12:00pm Speed Control De-Activation 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status 2:30pm 3:00pm Pollack Tire
19 [redacted] 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm V184 Air 10:00am 11:00am Speed Control 1:00pm 3:00pm 42V Weekly Open 3:30pm 4:30pm Technical Review	20 12:00pm 1:00pm P207 Diagnostics 2:00pm 3:00pm Air Suspension Mtg (PDC 2H# 14)	21 [redacted] 8:00am 9:00am Air Suspension 9:00am 11:00am GAP Core Team 9:00am 10:00am Chassis E/E SDS 10:30am 12:30pm DKG Staff Meeting	22 1:00pm 2:00pm FN145 Speedo Drop-out Conf Call (334) 240-1633 c 2:00pm 3:30pm UN93 Compressor Noise Improveme 3:00pm 4:00pm One on One (#5, 2A019)	23 7:30am 12:00pm All Hands Meeting (World Headquart 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:30pm 3:30pm Mentor Program Checkpoint Meet 5:00pm Private
26 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 42V Weekly Open 1:00pm 2:00pm Proposed 3:30pm 4:30pm Technical Review	27 [redacted] 7:00am 8:00am KLT (Key Life 9:00am 10:00am Chassis Electronics 10:00am 11:00am Cost/Quality/Speed 10:00am 11:00am Tues 4/27 FN145 1:00pm 2:00pm Chassis 2:00pm 3:00pm Air Suspension	28 [redacted] 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:00am 11:00am GAP Core Team 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting 2:00pm 4:00pm Brake Pressure	29 8:00am 9:30am Security, Safety & Chassis EE-Subsystems Meeting (Merkenc 4:00pm 4:45pm RTDA Add/Delete Criteria (Bldg. #5, Conf. Rm. 2A055)	30 8:30am 9:30am '92-'93 Underhood TownCar Deact Switch (Bldg#5 - 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status

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May 1999

May 1999 — June 1999

Monday	Tuesday	Wednesday	Thursday	Friday
May 3 8:00am 9:00am UN93 Software change 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm V184 Air 1:00pm 3:00pm 42V Weekly Open 3:30pm 4:30pm Technical Review	4 9:00am 10:00am Closing 1:00pm 3:00pm 42V EHPS Steering system (BLS3A047 - AVT: Conf Rm 3 2:00pm 3:00pm Air Suspension Mtg (PDC 2N8 14) 7:00pm 8:00pm Franklin America	5 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 8:00am 9:00am EOL Diagnostics 9:00am 11:00am GAP Core Team 1:00pm 2:00pm Ford-Teves 2:00pm 4:00pm Brake Pressure	6 11:00am 12:00pm Notice of a meeting (La 1:00pm 2:30pm FN145 Speedo Drop-out Conf Call 3:00pm 4:00pm One on One (#5, 2A019) 3:30pm 4:30pm Technical Review	7 9:00am 12:00pm Continental-Teves Mk20a Overview 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:00pm One on One (#5, 2A019) 3:00pm 4:30pm Contingency
10 8:30am 10:00am Electrical 8:30am 10:00am Systems 9:00am 10:00am CHASSIS E/E SDS 9:00am 10:00am P131 ABS/EOL 10:00am 12:00pm Air Suspension 12:30pm 1:00pm Decision Monies 3:30pm 4:00pm 1992-93 Town Car	11 8:00am Chris Ride 9:00am 10:00am Chassis Electronics (Video conference 11:00am 12:00pm Roles & 1:00pm 2:00pm MCR Chassis 2:00pm 3:00pm Air Suspension 7:30pm 9:00pm Private	12 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:00am 11:00am GAP Core Team 10:30am 12:30pm DKG Staff Meeting 1:00pm 2:00pm Chassis E/E 2:00pm 4:00pm Brake Pressure 4:00pm 4:30pm RTDA Renewal	13 3:45pm 5:00pm Chassis Electronic Interface Requirements (Building #5, 3A017)	14 8:00am 9:00am Direction for the requirements in 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:30pm FN145 Speedo 1:00pm 2:30pm RTDA Bi-Weekly 1:00pm 2:00pm EE Quarterback
17 8:30am 10:00am Electrical Quarterback Meeting (Bldg. #5, 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 10:00am 12:00pm V184 Air Suspension Mtg	18 7:00am 8:00am Electric Hydraulic Powersteering (B 9:00am 10:30am EPB Design Review 10:00am 11:00am BOSCH MONTHLY 1:00pm 2:00pm Howard 2:00pm 3:00pm Air Suspension	19 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:00am 11:00am GAP Core Team Weekly Meeting 10:30am 12:30pm DKG Staff Meeting (BLS2C062 - AVT: 2:00pm 4:00pm Brake Pressure	20 11:00am 12:00pm **Rescheduled** (Tullio's) 1:00pm 2:00pm Meeting with VDO for Yaw Rate/Acc Combo Sensor (B 2:30pm 3:30pm One on One (#5, 2A019)	21 8:00am 9:00am Audio w/John Joyce & Europe 10:00am 11:00am Section Mtg (BLS3A019 - AVT: Conf Rm 3A019,3r 1:00pm 2:00pm Notice of a meeting (Q
24 8:30am 10:00am Electrical 8:30am 9:30am E/E system 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 42V Weekly Open 1:00pm 2:00pm U222/U228	25 7:30am 8:30am Speed Control Wiring/Fusing 9:00am 10:00am Chassis Electronics (Video conference 10:00am 11:00am Clarify Ford RR for 1:00pm 2:00pm 1992-1993 Town 2:00pm 3:00pm Air Suspension	26 7:15am 8:00am Chassis & 8:00am 9:00am Air Suspension 9:00am 11:00am GAP Core Team 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting 1:00pm 2:30pm ABS (Bldg #5 2:00pm 4:00pm Brake Pressure	27 1:00pm 2:00pm Introduce Frank V. To Fred. (Fred Porter's Desk)	28 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 12:30pm 1:30pm New FRIDAY FN145 Speedo 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status
31 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 10:00am 12:00pm V184 Air 1:00pm 3:00pm 42V Weekly Open				

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June 1999

June 1999							
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26	27	28	29	30			

July 1999							
	S	M	T	W	T	F	S
26					1	2	3
27	4	5	6	7	8	9	10
28	11	12	13	14	15	16	17
29	18	19	20	21	22	23	24
30	25	26	27	28	29	30	31

Monday	Tuesday	Wednesday	Thursday	Friday
	June 1 [redacted] 8:00am 9:00am B226 EHPAS meeting - phone 12:30pm 2:00pm U231 EPB 2:00pm 3:00pm Air Suspension Mtg (PDC 2HB 14) 2:00pm 3:00pm E/E system	2 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:00am 11:00am GAP Core Team Weekly Meeting 10:30am 12:30pm What to STOP doing? (BL52C062 2:00pm 4:00pm Brake Pressure	3 8:30am 9:00am TVC CCRG 9:00am 11:00am Mark Hoffman 2:00pm 3:00pm One on One (#5, 2A019)	4 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West 2:00pm 3:00pm E/E system Integration (Bldg 5, 2A055)
7 7:00am 7:00pm Out of Office 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 10:00am 11:00am E/E system 1:00pm 3:00pm 42V Weekly Open 1:00pm 2:00pm GIS/Geographic &	8 [redacted] 7:00am 7:00pm Out of Office 9:00am 10:00am Chassis Electronics (Video conference room, Dearborn: 2:00pm 3:00pm Air Suspension Mtg (PDC 2HB 14)	9 7:00am 7:00pm Out of Office 7:00am 8:00am Chassis & 8:00am 9:00am Air Suspension 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting 2:00pm 4:00pm Brake Pressure 6:00pm 7:00pm Church Council	10 [redacted] 7:00am 7:00pm Out of Office 8:00am 9:30am Safety, Security, Chassis PicTel 2:00pm 3:00pm E/E system Integration (Bldg	11 7:00am 7:00pm Out of Office 10:00am 11:00am Section Mtg (BL53A019 - AVT: 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status 1:00pm 2:00pm EE Quarterback Reps Monthly M
14 [redacted] 7:00am 7:00pm Out of Office 8:30am 10:00am Electrical 8:30am 10:00am System 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm V184 Air	15 7:00am 7:00pm Out of Office 2:00pm 3:00pm Air Suspension Mtg (PDC 2HB 14)	16 7:00am 7:00pm Out of Office 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 10:30am 12:30pm DKG Staff Meeting (BL52C062 - AVT: 2:00pm 4:00pm Brake Pressure Switch (Bldg 5	17 7:00am 7:00pm Out of Office 1:00pm 2:00pm E/E system Integration (Bldg 5, 2A005) 1:00pm 2:00pm One on One (#5, 2A019)	18 7:00am 7:00pm Out of Office 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3r 1:00pm 2:30pm Electrical Quarterback Reps. Meeting (Bldg. 5,
21 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BL53A019 - AVT: 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 42V Weekly Open 2:00pm 3:00pm E/E systme	22 9:00am 10:00am Chassis Electronics (Video conference room, Dearborn: 1:00pm 3:00pm GEM Sneak Path Analysis (Quality 2:00pm 3:00pm Air Suspension Mtg (PDC 2HB 14)	23 7:00am 8:00am Chassis & 7:40am 11:25am Continental 8:00am 9:00am Air Suspension 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting 12:30pm 1:00pm SSI 3:00pm 4:00pm Brake Pressure	24 [redacted] 8:00am 9:30am Safety, Security, Chassis PicTel 12:00pm 5:00pm Bosch 2:00pm 3:00pm E/E system Integration (bldg5, 2A005)	25 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status Meeting (Quality
28 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm V184 Air 10:00am 11:00am E/E system 10:00am 10:45am Underwood Town 1:00pm 3:00pm 42V Weekly Open 2:00pm 3:00pm Bosch ABS KLT	29 8:00am 8:45am ABS connector (Bldg #5 3A017) 8:45am 9:30am UP207 EMC test (Bldg #5 3A017) 10:00am 12:00pm Review our Spirit 11:00am 12:00pm E/E system 2:00pm 3:00pm Air Suspension	30 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 8:30am 4:30pm U231 CVSA Module Design 11:00am 12:00pm DKG Staff Meeting (BL52C062 - AVT: 2:00pm 4:00pm Brake Pressure		

July 1999

Monday	Tuesday	Wednesday	Thursday	Friday
			July 1 7:00am 8:00am E/E Systems Integration 11:30am 1:00pm Infineon - Keith Barber 1:00pm 5:00pm Visit with 1:00pm 2:00pm One on One (#5,	2 10:00am 11:00am E/E system Integration (Bldg 5, LO82) 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West
5 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BL53A019 - AVT: 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 42V Weekly Open	6 8:15am 9:00am Vehicle Speed Outputs (VSO) 9:00am 10:00am Chassis Electronics 10:00am 10:45am Underhood Town 11:30am 1:00pm HiStat - 2:00pm 3:00pm Air Suspension	7 4:00am 12:00pm Steering sensor 8:00am 9:00am Air Suspension 9:30am 11:00am WINDSTAR IVD 9:30am 10:30am P131 U137 LV ABS 10:30am 12:30pm DKG Staff Meeting	8 8:00am 9:30am Safety, Security, Chassis PicTel 10:00am 1:00pm EOL Meeting 10:00am 11:30am Quarterback Reps. Meeting (Bldg. 5, Lobby Conf Rm. # 2)	9 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3r 1:00pm 2:00pm EE Quarterback Reps Monthly Meeting (Bldg. 5,
12 8:30am 10:00am Electrical 9:00am 10:00am Chassis 10:00am 12:00pm V184 Air 10:00am 11:00am Underhood Town 1:00pm 3:00pm 42V Weekly Open 3:00pm 3:30pm Adaptive Cruise 3:30pm 4:30pm CAL-2 Systems	13 12:30pm 1:30pm 1A007/Bldg. 5 - Adaptive Cruise 1:00pm 2:00pm E/E system Integration 2:00pm 3:00pm Air Suspension Mtg (PDC 2HB 14) 7:30pm 8:30pm Finance	14 8:00am 9:30am Air Suspension Mtg (PDC 1J H30) 9:30am 11:00am WINDSTAR IVD (13C002 - LVC 10:00am 11:00am XLT review with 10:30am 12:30pm DKG Staff Meeting 1:00pm 3:00pm OPen	15 7:30am 9:00am Thomas Arndt - 9:00am 10:00am E/E system 9:00am 10:00am McGuirk 11:30am 1:00pm HiStat-Melenovsky 1:00pm 2:00pm One on One (#5, 2:00pm 3:00pm Reliability/Quality 3:00pm 4:00pm Lincoln LS ABS	16 8:00am 9:00am Karen Boehk @ here 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West 2:00pm 3:00pm One on One
19 7:00am 7:30am Adaptive Cruise 7:35am 7:50am Gary 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 42V Weekly Open 1:00pm 2:00pm *Adaptive Cruise	20 7:30am 9:00am Thomas Arndt 9:00am 10:00am Chassis Electronics 10:30am 11:30am TownCar 12:00pm 2:00pm Micro 12:30pm 1:30pm E/E system 2:00pm 3:00pm Suspension Mtg 6:00pm 8:00pm Church Council	21 7:00am 8:00am Chassis & 8:00am 9:00am Air Suspension 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting 10:30am 12:00pm V227 Electrical 1:00pm 2:00pm Lincoln LS ABS 2:30pm 3:30pm SREA for Bosch	22 8:00am 9:30am Safety, Security, Chassis PicTel 8:15am 10:15am Core Subsystems Review - Restraints (Bldg 5 3:00pm 4:00pm E/E system integration	23 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3r 11:00am 1:00pm Section Lunch (House of India 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status
26 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BL53A019 - AVT: 10:00am 12:00pm V184 Air 10:00am 11:00am E/E system 1:00pm 3:00pm 42V Weekly Open	27 8:00am 9:00am Discuss System Integration Effort 10:00am 11:00am Fusing for IVD/ABS for 2:00pm 3:00pm Air Suspension Mtg (PDC 2HB 14)	28 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 10:30am 12:30pm DKG Staff Meeting 1:00pm 2:30pm ABS ECU issues 2:00pm 3:00pm Subsytem 2:00pm 3:00pm System Spec 3:00pm 4:00pm TWA Training	29 1:00pm 2:00pm One on One (#5, 2A019) 2:00pm 3:00pm Krysten PR	30 8:00am 9:00am E/E system integration (BL52A011 - AVT: 9:00am 10:30am P131 EOL/Diagnostic 10:00am 11:00am Section Mtg (BL53A019 - AVT:

August 1999

August 1999

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September 1999

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Monday	Tuesday	Wednesday	Thursday	Friday
August 2 [redacted] 6:00am 7:00pm Vacation 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 1:00pm 3:00pm 42V Weekly Open	3 6:00am 7:00pm Vacation 9:00am 10:00am Chassis Electronics (Video conference 2:00pm 3:00pm Air Suspension Mtg (PDC 2H8 14) 2:00pm 3:00pm E/E system integration	4 6:00am 7:00pm Vacation 7:00am 8:00am Chassis & Restraints Issues 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting	5 6:00am 7:00pm Vacation 8:00am 9:30am Safety, Security, Chassis PicTel 10:00am 11:30am P131 EOL/Diagnostic 3:00pm 4:00pm E/E system integration	6 6:00am 7:00pm Vacation 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3r 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status Meeting (Quality
9 8:30am 10:00am Electrical Quarterback 8:30am 10:00am System 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm V184 Air 1:00pm 4:00pm Lucas Varity ABS 1:00pm 3:00pm 42V Weekly Open	10 9:00am 10:00am E/E system integration (BL52A015 - AVT: Conf Rm 2A015,2nd Fl Wes 2:00pm 3:00pm Air Suspension Mtg (PDC 2H8 14)	11 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:00am 10:00am GEESS Bi-Weekly Team Mtg. (CR 2 10:30am 12:30pm DKG Staff Meeting 11:00am 12:00pm Quality, Cost & 1:00pm 2:00pm One on One (#5,	12 9:00am 10:00am E/E system integration (BL52A015 - AVT: Conf Rm 2A015,2nd Fl West) 11:30am 1:00pm SSI / John Borbi	13 7:00am 9:00am 42V Followup Meeting w/ SI 8:00am 10:00am System Engineering Matrix 10:00am 11:00am Section Mtg 1:00pm 2:00pm EE Quarterback 2:30pm 3:30pm Alex Greene
16 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 10:30am 12:00pm EPB Review 11:00am 12:00pm ABS boot delete 1:00pm 3:00pm 42V Weekly Open	17 9:00am 10:00am Chassis Electronics (Video conference room, Dearborn 10:00am 11:00am E/E syste integration 2:00pm 3:00pm Air Suspension Mtg (PDC 2H8 14)	18 [redacted] 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 9:30am 11:00am WINDSTAR IVD OPEN ISSUES 1:00pm 2:30pm EMC-open items (Bldg #5 2A093)	19 8:00am 9:30am Safety, Security, Chassis PicTel 1:00pm 2:00pm E/E system integration (BL52A015 - AVT: Conf Rm 2A015,2nd Fl Wes	20 8:00am 12:30pm Contiteves SDW-DEW98 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3r 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status
23 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS 9:30am 10:30am TAF audio w/Matt 10:00am 12:00pm V184 Air 1:00pm 4:00pm Ford/LV Test Plan 1:00pm 3:00pm 42V Weekly Open	24 8:00am 11:00am First Step Preparation 9:30am 10:00am McGuirk 1:00pm 2:00pm E/E system integration 2:00pm 3:00pm Air Suspension Mtg (PDC 2H8 14)	25 8:00am 9:00am Air Suspension Mtg (PDC 1J H30) 10:00am 11:00am Review info from First Step Visit (11:00am 1:00pm Rust 30 Year Celebration 3:00pm 4:00pm C264 EPB @	26 8:00am 9:00am F-Series & 325 10:00am 11:00am E/E system integration (BL52A011 - AVT: 1:00pm 2:00pm 2001 U204 Service Manual Co-authoring Secti	27 9:00am 10:00am Material Cost Reductions for Chassis Brake HCU 10:00am 11:00am Section Mtg (BL53A019 - AVT: 1:00pm 2:00pm IL-FTPT Issues (F. Porter Ofc.)
30 8:30am 10:00am Electrical Quarterback 9:00am 10:00am Chassis & Restraints Issues 9:00am 10:00am CHASSIS E/E SDS (BL53A019 - AVT: 1:00pm 3:00pm 42V Weekly Open	31 [redacted] 8:00am 9:00am IL-FTPT Open Issues (ABC4321 - 9:00am 10:00am Chassis Electronics (Video conference 1:00pm 2:00pm E/E system 2:00pm 3:00pm Air Suspension			

September 1999

September 1999						
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October 1999						
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Monday	Tuesday	Wednesday	Thursday	Friday
		September 1 8:00am 9:00am Air Suspension Mtg (POC 1J H30) 9:30am 11:00am WINDSTAR IVD OPEN ISSUES W/LUCAS- NOTE NEW CONF. ROOM (13C002 - LVC 13	2 8:00am 9:30am Safety, Security, Chassis PicTel	3 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status Meeting (Quality
6 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BL53A019 - AVT: 1:00pm 3:00pm 42V Weekly Open Issues Meeting (C	7 2:00pm 3:00pm Air Suspension Mtg (POC 2HB 14)	8 8:00am 9:00am Air Suspension Mtg (POC 1J H30) 8:30am 9:30am Town Masters 10:30am 12:30pm DKG Staff Meeting 1:30pm 2:30pm E/E system Integration/ Tier 2 3:30pm 4:30pm SCP capability for	9 8:00am 4:00pm U231 CVSA Meeting 8:00am 11:00am Community Service Project 8:15am 10:15am Core subsystem review - Subsyst 1:00pm 2:00pm One on One (#5,	10 8:00am 10:00am LTCC FMEA review (Bldg #5, room 3A019) 10:00am 11:00am Section Mtg (BL53A019 - AVT: 1:00pm 2:00pm EE Quarterback Reps Monthly M
13 8:30am 10:00am Electrical Quarterback 8:30am 10:00am System 9:00am 10:00am CHASSIS E/E SDS 9:00am 10:00am EPB/ES Brake 12:00pm 1:00pm Source RF Tire 1:00pm 3:00pm 42V Weekly Open	14 9:00am 10:00am Chassis Electronics (Video conference 10:30am 12:00pm Electrical Role in 1:00pm 1:45pm Technical Review 2:00pm 3:00pm Air Suspension 7:30pm 8:30pm Finance Meeting 7:30pm 8:30pm Finance Meeting	15 7:00am 8:00am Chassis & Restraints Issues 8:00am 9:00am Air Suspension 9:00am 12:00pm TRW FMEA 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DKG Staff Meeting 1:00pm 1:15pm 30 Year	16 8:00am 8:30am Pre Volvo Meeting 10:00am 11:00am U152 EMC (Bldg #5 lobby conf ro 1:00pm 2:00pm V-184/5 Air Suspension 3:45pm 4:45pm Electrical Quarterback	17 9:00am 10:00am Unexpended Warranty Status - 10:00am 11:00am Section Mtg (BL53A019 - AVT: 11:00am 3:00pm Lucas-Varity FMEA Review 1:00pm 2:30pm RTDA Annual
20 7:00am Cougar Service 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 11:00am EMC Issues on 1:00pm 3:00pm 42V Weekly Open 2:00pm 3:00pm Teleconference	21 8:00am 10:00am EE Methods Team Meeting (Bldg 5, CR#2C062) 12:00pm 4:00pm Brand to Product Workshop	22 9:00am 10:00am Electric Park Brake EE Design Status & Resource Allocation (Bldg 5 CR 2a015) 10:15am 11:00am Software Compliance	23 9:00am 10:00am CT HBCC Phase Out	24 10:00am 11:00am Section Mtg (BL53A019 - AVT: 11:00am 12:00pm CT HBCC Status 12:00pm 2:00pm TS Conference Breakout Session 1:00pm 4:30pm VDC Software FMEA
27 8:00am 5:00pm CVSA FMEA Review 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 11:30am EPB Meeting 1:00pm 3:00pm 42V Weekly Open 2:00pm 3:00pm Teleconference	28 9:00am 10:00am Chassis Electronics (Video conference 11:30am 12:30pm EESE ISO Audit WEB Information 2:00pm 3:00pm Air Suspension Mtg (POC 2HB 14)	29 8:00am 5:00pm Community Service 8:00am 9:00am Air Suspension Mtg (POC 1J H30) 9:30am 11:00am WINDSTAR IVD OPEN ISSUES W/LUCAS- NOTE	30 8:00am 9:30am Safety, Security, Chassis PicTel 8:30am 9:30am Jordan - Design Link 10:00am 11:00am Ernie Mounin 3:00pm 4:00pm DEW98 Bldg 3 Cafeteria	

October 1999

October 1999	S	M	T	W	T	F	S
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November 1999	S	M	T	W	T	F	S
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Monday	Tuesday	Wednesday	Thursday	Friday
				October 1 9:00am 10:00am Jordan - Design Link 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status
4 8:30am 10:00am Electrical Quarterback 8:30am 10:00am System 9:00am 10:00am CHASSIS E/E SDS 11:15am 1:00pm Joe Ferris 1:00pm 3:00pm 42V Weekly Open 2:00pm 3:00pm Teleconference	5 8:00am 10:00am C3P ECAD Methods (Bldg 5, CR 2C062) 11:00am 12:00pm Section lunch (Hero's on Allen Road in Allen Park)	6 8:00am 5:00pm Tech Specialist Conference 9:00am 10:00am CAL1 Design Review 9:30am 10:30am 2001 WIN126 10:30am 12:30pm DICG Staff Meeting	7 8:15am 10:15am Core Subsystem Review - Module 1:00pm 2:00pm One on One (#5, 2A019) 2:30pm 3:00pm E/E system integration (Fred's 3:00pm 4:00pm ELECTRIC PARK	8 8:00am 12:00pm ISO Audit (BLS2A015 - AVT: Conf Rm 2A015,2 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:00pm EE Quarterback Reps Monthly M
11 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm Air Suspension 10:00am 11:00am Derek 1:00pm 3:00pm 42V Weekly Open 1:00pm 2:00pm Eliminating Burn-in 2:00pm 3:00pm Teleconference	12 9:00am 10:00am Chassis Electronics (Video conference room, Dearborn: 1:00pm 2:00pm D186 FFV TC Proveout 4:00pm 5:00pm Switch Study	13 7:00am 8:00am Chassis & Restraints Issues 9:30am 11:00am WINDSTAR IVD OPEN ISSUES 10:30am 12:30pm DICG Staff Meeting 1:30pm 2:30pm Barb McKeehan 3:00pm 4:00pm Interview	14 8:00am 9:30am Safety, Security, Chassis PicTel 1:00pm 1:30pm E/E system integration	15 7:30am 4:30pm Spirit of Ford Summer Cascade (FTDC, Rooms 110 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status
18 6:00am 12:15pm 4 Wheel Steer on 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 1:00pm 3:00pm 42V Weekly Open 2:00pm 3:00pm Teleconference 3:00pm 4:00pm Interview 6:30pm 8:00pm Finance	19 8:00am 10:00am C3P Commodities & Data Mgt Methods (Bldg 5, 9:00am 10:30am 99MY RASH-EVO Failures (BLS3A0 11:30am 1:00pm SSI	20 8:30am 9:00am Traction Control on 2001 D186 10:30am 12:30pm DICG Staff Meeting (BLS2C062 - AVT: Conf Rm 2C062,2nd Fl Ctr) 11:00am 2:00pm Wayne County	21 7:30pm 8:30pm Charge Conference	22 9:00am 10:00am P131 Review 10:00am 11:00am Section Mtg (BLS3A019 - AVT: Conf Rm 3A019,3rd Fl West)
25 8:30am 10:00am Electrical Quarterback Meeting (Bldg. #5, 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 1:00pm 3:00pm 42V Weekly Open Issues Meeting (C	26 9:00am 10:00am Chassis Electronics (Video conference 10:00am 11:00am HBCC Meeting 12:00pm 4:00pm PD Capability 7:00pm 9:30pm Building Committee 7:00pm 9:30pm Building	27 7:00am 8:00am Chassis & Restraints Issues 9:00am 10:00am Reschedule of the 9:30am 11:00am WINDSTAR IVD 10:30am 12:30pm DICG Staff Meeting 7:30pm 8:30pm Charge Conference 8:11pm PROFS DATA	28 8:00am 12:00pm PD Capability 8:00am 9:30am Multimedia Core Subsystem Review 8:00am 9:30am Safety, Security, 4:00pm 5:00pm FCG Interview 7:00pm 8:30pm Architect	29 10:00am 11:00am Section Mtg (BLS3A019 - AVT: Conf Rm 3A019,3r 1:00pm 3:00pm EPB schematic diagram to be 1:00pm 2:30pm RTDA Bi-Weekly Planning & Status

November 1999

November 1999 S M T W T F S

December 1999 S M T W T F S

Monday	Tuesday	Wednesday	Thursday	Friday
November 1 8:00am 12:00pm PD Capability 8:00am 8:05am Cougar Service 8:30am 10:00am Electrical 8:30am 10:00am System 9:00am 10:00am CHASSIS E/E SDS 9:00am 10:00am EPB Subsystem 12:30pm 2:00pm Pre-review of	2 [redacted] 8:00am 10:00am C3P ECAD Methods (Bldg 5, 9:30am 11:00am 2001 P131 EMC Test Results (20 1:00pm 2:00pm 1:00 K-PTPT Meeting in CR	3 [redacted] 8:00am 12:00pm PD Capability 8:00am 8:05am Taurus Service 10:30am 12:30pm DKG Staff Meeting (BLS2C062 - AVT: 12:00pm 4:00pm LV 325 System 2:30pm 3:30pm 2003 UP207	4 7:00am 6:00pm Fuel Pressure Sensor Review @ North Penn	5 [redacted] 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 2:00pm 3:00pm GOLD TO TIN PINS ON DEW ABS 3:30pm 4:00pm Preparation for Resource Meeting
8 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 10:00am 10:30am Windstar 1:00pm 3:00pm 42V Weekly Open 2:30pm 4:30pm 2001	9 8:30am 10:00am PRS-CPE SIGNOFF 9:00am 10:00am Chassis Electronics 10:30am 11:30am U231 CVSA Part II 1:00pm 1:30pm SNEA for brake 1:30pm 2:00pm Information 2:00pm 3:00pm One on One (#5, 6:30pm 8:00pm Finance Committee	10 7:00am 7:30am Chassis & Restraints Issues 9:30am 11:00am WINDSTAR IVD OPEN ISSUES 10:30am 12:30pm DKG Staff Meeting 1:00pm 5:00pm Chassis PD 1:00pm 3:00pm Teves meeting	11 [redacted] 8:00am 9:30am Safety, Security, Chassis PicTel 11:30am 12:30pm Chassis 1:00pm 3:00pm ABS/TC /ATW/DRP 2:00pm 3:00pm Generic EPB	12 8:00am 10:00am HOT--Meeting with Pi Technologies (BI 10:00am 11:00am Section Mtg (BLS3A019 - AVT: 1:00pm 2:30pm RTDA Bi-Weekly 1:00pm 2:00pm EE Quarterback 3:00pm 3:30pm Carol Johns Phone
15 [redacted] 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 1:00pm 3:00pm 42V Weekly Open	16 8:00am 10:00am C3P Commodities & Data Mgt Meth 8:00am Martin Sultana Starts FCG 10:00am 11:00am Chassis E/E 1:00pm 2:00pm Follow-up 6:30pm 7:30pm Ad Council	17 9:30am 10:30am 2001 WIN126 Stability Control 10:00am 10:30am Subsystem Presentation/Mana 10:30am 12:30pm DKG Staff Meeting (BLS2C062 - AVT: 3:00pm 4:00pm Elec Park Brake	18 [redacted] 8:00am 8:30am Pre-review of E/E 10:00am 11:00am Tour EESE (Fred's 10:30am 11:30am Bosch Qback 1:00pm 2:00pm Generic Chassis 1:00pm 2:00pm One on One (#5, 2:30pm 3:30pm Subsystem	19 10:00am 11:00am Section Mtg (BLS3A019 - AVT: Conf Rm 3A019,3rd Fl West) 11:30am 1:00pm Derek Zoon 2:00pm 3:00pm PR Critique
22 8:00am 10:00am EPB CHASSIS ELECTRICAL 8:00am 8:05am Get Tech Specialist 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 3:30pm EPB CHASSIS 1:00pm 3:00pm 42V Weekly Open	23 9:00am 10:00am Chassis Electronics (Video conference 11:15am 12:45pm HI Stat 1:00pm 2:00pm Updated: Height Sensors for 2003 6:30pm 7:30pm Private Appointment	24 7:00am 8:00am Chassis & Restraints Issues 9:30am 11:00am WINDSTAR IVD OPEN ISSUES 10:30am 12:30pm DKG Staff Meeting (BLS2C062 - AVT: 2:00pm 4:00pm Reschedule	25 [redacted]	26 [redacted]
29 8:30am 10:00am Electrical Quarterback 9:00am 10:00am CHASSIS E/E SDS (BLS3A019 - AVT: 10:00am 12:00pm V184 Air Suspension Mtg 1:00pm 3:00pm 42V Weekly Open	30 8:00am 10:00am C3P EE Methods Meeting (Bldg 5, 10:00am 11:30am Presentation by Freudenberg NOK 2:00pm 3:00pm DEW98 FMEA Review (Building 5 7:00pm 8:00pm Building			

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BM2-025-A 12223

PRODUCED BY FORD

December 1999

December 1999						
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January 2000						
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Monday	Tuesday	Wednesday	Thursday	Friday
		December 1 9:00am 10:00am Part I testing of the ECU + issues + resolutions....... (bldg# 5; Conf Room 3a104B (east end of the bldg))	**2** 11:00am 12:30pm T402 Recruiting (Pizza Hut, Van Born Rd.) 11:00am 11:30am PD Capability (#5, 2A019) 1:00pm 2:00pm One on One (#5, 2A019)	**3** 10:00am 11:00am Section Mtg (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West)
6 8:30am 10:00am Electrical 8:30am 10:00am System 9:00am 10:00am CHASSIS E/E SDS 1:00pm 3:00pm 42V Weekly Open 2:00pm 2:30pm System 3:00pm 3:30pm Air Suspension 3:30pm 4:00pm PD Capability	**7** 9:00am 10:00am Chassis Electronics (Video conference 1:00pm 2:00pm IVD Objectives 2:00pm 3:00pm Rescheduled - 2nd 3:00pm 4:00pm FW: ICD review 7:00pm 8:00pm Building	**8** 7:00am 8:00am Chassis & 9:30am 12:00pm Managers Offsite 9:30am 11:00am WINDSTAR IVD 12:00pm 12:30pm Gene Golbiw SREA 12:30pm 1:30pm Motor Presentation 1:30pm 3:30pm Mentor Program 6:00pm 8:00pm Speakeasy - Laurel	**9** 8:00am 9:30am Safety, Security, Chassis PicTel 10:00am 1:00pm EPB Module FMEA (bldg 5 3a019)	**10** 8:30am 9:30am Under hood Town 10:00am 11:00am Section Mtg 11:00am 1:00pm EESE Luncheon 1:00pm 2:30pm RTDA Bi-Weekly 1:00pm 2:00pm EE Quarterback 1:00pm 2:00pm Review Chassis 2:00pm 4:00pm operating modes &
13 8:30am 10:00am Electrical 9:00am 10:00am CHASSIS E/E SDS 10:00am 12:00pm VHM Air 11:00am 12:30pm DKG Special Staff 12:30pm 2:00pm V227 ABS Health 1:00pm 3:00pm 42V Weekly Open 2:00pm 2:30pm Speed control	**14** 8:00am 10:00am C3P EE Methods Meeting (Bldg 5, 10:00am 11:30am Spirit of Ford 2:00pm 2:30pm Teves SWAK 2:30pm 3:00pm Ford/Teves weekly 3:00pm 4:00pm U152 EMC review 6:30pm 7:30pm Finance	**15** 9:30am 10:30am Masters Opportunities (Fred's Desk Bldg 11:00am 1:30pm Siemens Automotive 2:00pm 5:00pm Bosch ECU FMEA Review (Bosch H	**16** 1:00pm 2:00pm EPB status (fred's desk) 6:30pm 9:30pm Building Committee	**17** 10:00am 11:00am Section Mtg (BL53A019 - AVT: 11:30am 1:00pm SSI w/ Stuart 1:00pm 2:00pm 1999/2000 1:00pm 2:00pm Travel to 2:00pm 5:00pm DEW 98 FMEA
20 9:00am 10:00am CHASSIS E/E SDS (BL53A019 - AVT: Conf Rm 3A019,3rd Fl West 1:00pm 3:00pm 42V Weekly Open Issues Meeting (Conf. Room #2A	**21** 9:00am 10:00am Chassis Electronics (Video conference room, Dearborn: #5, rm 2C062)	**22** 7:00am 8:00am Chassis & Restraints Issues [Teleconference] (#5, 2A019) 10:30am 12:30pm DKG Staff Meeting (BL52C062 - AVT: Conf Rm 2C062,2	**23** 8:00am 9:30am Safety, Security, Chassis PicTel	**24**
27	**28**	**29**	**30**	**31**

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PRODUCED BY FORD

ER02-025-R 12224

January 2000

Monday	Tuesday	Wednesday	Thursday	Friday
January 3 8:00am 8:30am Cougar 30,000 Service 2:00pm 3:00pm Electric Parking Brake Design Alternative (Bld-5 1st Fl Lob C/R 1 (35))	4 1:00pm 2:00pm TRW KLT (Building 5 - 3A017) 3:00pm 5:00pm Updated: DFMEA review of the rear	5 [redacted] 10:30am 12:30pm T402 Staff Meeting (Blg 5 - 2:00pm 3:30pm Ford/Teves action items (Bldg #5 3A 3:00pm 4:00pm Updated: 2003 UP207 ABS/IVD	6 9:00am 11:30am V184/5 Air Suspension 1:30pm 3:00pm IVD FMEA/DVP REVIEW (13C002) 4:30pm 5:30pm FW: Grand	7 10:30am 12:00pm Spirit of Ford - 90 Day Follow-up (#5, 2C062) 1:00pm 2:00pm Speed Control Deactivation Switch Migration Plan (Building 5 -
10 7:30am 9:00am Brake Quality Improvement Task 10:00am 11:00am EPB Follow Up Meeting (Bld-5 1st 2:00pm 2:30pm Safety Stand-Down (WHQ	11 8:00am 10:30am Rear Sensor DFMEA U231 (PDC 10:00am 12:00pm FW: UN93 11:15am 1:00pm Joe Ferris-Yaw 11:30am 12:30pm WW at Work 12:00pm 1:00pm Electric Park Brake 6:30pm 7:30pm Finance	12 8:00am 9:00am Visteon IL-FTPT Critical Issue (AEC 1:00pm 2:00pm NEC Relays w/Harry Devletian 2:00pm 3:00pm Warranty Sharing 3:00pm 4:00pm Updated: 2003 6:30pm 8:00pm Ad Council	13 9:30am 11:30am Impact of Block III changes to yaw ra 1:00pm 2:00pm Chassis E/E Section Meeting 1:00pm 2:00pm One on One (#5, 2:00pm 5:00pm EPB ECU Module 7:00pm 8:00pm Dave Stebnicki	14 [redacted] 8:00am 4:30pm Objectives setting for 2000 (Dearborn Inn, De 10:00am 11:30am FW: BOSCH MUSTANG ABS WARRANTY RE
17 [redacted]	18 7:30am 11:00am EESE All Hands Meeting (WHQ 11:30am 12:30pm WW at Work Meetings (Bldg5 12:00pm 4:00pm FW: WCR 3:00pm 5:00pm TRW Timing 7:00pm 8:00pm Ad Board	19 11:30am 12:30pm Section Lunch [Chassis Electronics] (B 2:00pm 3:00pm Mentor Training (PDC Learning C 3:00pm 4:00pm Updated: 2003 UP207 ABS/IVD	20 8:00am 10:00am Core Subsystem Review - Subsystems TDRs (Building #5 - 2C062, Dunton 10, Merk 10)	21 9:00am 10:30am IL-FTPT: EMC Review (Bld-5 3A017 3rd Fl West(2d)) 2:00pm 2:30pm Meeting w/ Fred
24 11:00am 12:30pm IL-FTPT Critical Issue: EMC Issue (AEC400S)	25 9:00am 11:30am Jeff Marsika phone call 11:30am 12:30pm WW at Work Meetings (Bldg5 Lobby CR 2)	26 10:30am 12:30pm T402 Staff Meeting (Blg 5 - 1:00pm 2:00pm PR - Larry Roller (Bld-5 3A017 3rd 2:00pm 3:00pm PR - Anita (Bld-5 3A017 3rd Fl We 3:00pm 4:00pm Updated: 2003	27 8:00am 9:30am Systems/Architectu & Software Forum 10:00am 11:00am Mentor Interview w/P. Edwards (bl 1:00pm 2:00pm One on One (#5, 2:00pm 3:00pm PR - Mike (Bld-5 3:00pm 4:00pm PR - John (Bld-5	28 9:00am 10:30am Truck Speed Control Deac 10:30am 11:30am Warranty Review Meeting - Bosch (1:00pm 2:00pm Control Devices sensor technolo 2:00pm 3:00pm PR - Leonid (Bld-5
31 11:00am 12:00pm PR - Steve (Bld-5 3A017 3rd Fl Wes 1:00pm 2:00pm PR - Kevin (Bld-5 3A017 3rd Fl Wes 2:00pm 3:00pm PR - Allen (Bld-5 3A017 3rd Fl We 3:00pm 4:00pm Discuss and				

, Fred (F.J.)

3/22/00

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ER02-025-A 12225

PRODUCED BY FORD

February 2000

Monday	Tuesday	Wednesday	Thursday	Friday
	February 1 8:30am 4:30pm Meet with Jeff (22E01) 11:30am 12:30pm WW at Work Meetings (Bldg5 Lobby CR 2) 2:00pm 3:00pm Updated: Warranty Review	2 [redacted] 8:00am 5:00pm Meet with Jeff 9:00am 10:30am Warranty Review 10:30am 12:30pm T402 Staff 1:00pm 2:00pm Brake Pressure 3:00pm 4:00pm Meet w/Gary 3:00pm 4:00pm Updated: 2003	3 8:00am 10:00am Core Subsystem Review Meeting 10:00am 11:00am 2001 Taurus and 2001 Continental 1:00pm 2:00pm Section Meeting (Bld-5 3A047 3rd 2:30pm 3:00pm Review Documents	4 [redacted] 11:30am 1:00pm Salmens with Ray Berg (Bld 5 Lobby) 1:00pm 2:00pm DRL for the U-213 program (Bld-5 3A019 3rd Fl West End (20))
7 12:30pm 1:30pm 1992-93 Town Car Speed Deactivation Switc 1:00pm 2:30pm Warranty Review Meeting - Tokico 2:30pm 4:00pm Review audit of Thermodisc soft	8 9:30am 11:00am Updated: HBD Sub-system H 9:30am 10:00am Discuss EESE Support for S 11:30am 12:30pm WW at Work Meetings (Bldg5 3:30pm 4:00pm Updated: Chassis	9 7:15am 8:00am Updated: Chassis/Restraints Issues (Audio) 10:30am 12:30pm T402 Staff Meeting (Blg 5 - 3:00pm 4:00pm Updated: 2003 UP207 ABS/IVD	10 9:00am 12:00pm Jeff Manske phone call 9:00am 10:00am Discuss 10:00am 11:00am Discuss EPB Part 1:00pm 2:00pm One on One (#5, 2:00pm 3:00pm Conti-Teves (Bld-5 3:00pm 3:30pm Bosch SREA	11 10:30am 3:30pm Review TRW New 440 Module Design w/ Ed Benkert (TRW Tech 3 Bldg in Liv
14 [redacted] 7:00am 12:00am Out of Office	15 [redacted] 11:30am 12:30pm WW at Work Meetings (Bldg5 Lobby CR 2)	16 [redacted] 10:30am 12:30pm T402 Staff Meeting (Blg 5 - 3:00pm 4:00pm Updated: 2003 6:30pm 7:30pm Ad Council	17 [redacted]	18 12:00am 7:00pm Out of Office 9:00am 12:00pm FW: Department Meeting (BLS 2C062)
21 [redacted] 11:00am 12:00pm Section Meeting (Bld-5 3A019 3rd 3:00pm 4:00pm Merit review (Deepak's office) 4:00pm 5:00pm Gonzalez v. Ford /	22 8:30am 5:30pm Jeff Manske 11:30am 12:30pm WW at Work Meetings (Bldg5 Lobby CR 2) 4:00pm 6:00pm Updated: SC Pressure Switch (GTDC Formula I	23 7:15am 8:00am Updated: 8:30am 12:00pm Jeff Manske 9:00am 10:00am Updated: Generic 10:30am 12:30pm T402 Staff 12:00pm 5:00pm Meeting with J. 3:00pm 4:00pm FW: 2003 ABS 3:00pm 4:00pm Updated: 2003	24 8:00am 9:30am Systems/Architectu & Software Forum 8:30am 10:00am Brake Pressure 12:30pm 2:00pm IL-FTPT: ENC and 1:00pm 2:00pm One on One (#5, 2:30pm 3:30pm Hi-Stat Switch 3:30pm 4:00pm One on One w/	25 [redacted] 1:00pm 2:00pm U152 RR Wheel Speed Sensor [2:30pm 3:30pm 2000 Town Car ABS connector 3:00pm 4:00pm Unreconciled Chassis Electrical
28 9:00am 10:00am Review Teves DV test plan for MK25 ABS ECU (Bld-5 3 1:00pm 2:00pm FW: Discuss EESE Chassis Plan Devel 3:00pm 4:30pm Updated: SIT and department organ	29 10:30am 11:30am FW: Updated: Department R 11:30am 12:30pm WW at Work Meetings (Bldg5 1:00pm 2:00pm Re-schedule of Teves DV test plan 7:00pm 8:00pm Building			

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April 2000						
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Monday	Tuesday	Wednesday	Thursday	Friday
		March 1 10:30am 12:30pm T402 Staff Meeting (Big 5 - 1:00pm 3:00pm Ford/Teves action items (Bld-5 3A0 2:00pm 3:00pm FW: Adv. Proj. 20000333 - Ch 3:00pm 4:00pm Updated: 2003	2 8:00am 10:00am Core Subsystem Review - Wipers (Building) #5 - 2C062, Dunton 10, 8:30am 9:30am Magnet Source SREA w/Golbiw and Lit (Bld-5 3	3 [redacted] 9:00am 10:00am Use of ILD on 10:00am 11:00am Updated: Review 11:00am 12:00pm IL-FTPT 2:00pm 4:00pm Tele-con bmich 2:05pm 5:05pm telecon with JM 2:30pm 3:30pm ABS connector
9:00am 12:00pm Jeff Manske phone call 1:00pm 2:00pm First Meeting (Bld-5 3A017 3rd Fl West(20)) 6:00pm 7:00pm Jim Wideman	10:30am 11:30am Bruce Pinke of Blonic w/Duncan Wang 11:30am 12:30pm WW at Work Meetings (Bldg5 Lobby CR 2)	9:00am 4:00pm SAE 3:00pm 4:00pm Updated: 2003 UP207 ABS/IVD PAT (PDC 2H-B66)	9 1:00pm 2:00pm One on One (#5, 2A019) 2:30pm 5:00pm Speed Control Pressure Switch (Bld-5 3A017 3rd	10 8:15am 8:45am EPRNDL (Bld-5 3E004) 8:45am 9:00am Mark w/Deepak 10:00am 11:00am Meet with Sunny 11:00am 12:00pm Performance 1:00pm 3:00pm FW: 2003 FN145 1:00pm 2:30pm U152 ABS Sensor
13 10:00am 11:00am TRW P131 ABS Module FMEA R 1:00pm 2:00pm P131 EPMT Meeting (PDC 4:00pm 5:00pm chicago police cars (wheel speed sens 4:00pm 5:00pm P131 CPE Review	14 8:00am 12:00am Connector (tbd) 8:30am 5:30pm Jeff Manske 8:30am 9:00am EPB Engineering Specifications in relation to WCR 11:30am 12:30pm WW at Work Meetings (Bldg5	15 12:00am 6:30pm Connector (tbd) 10:00am 12:00pm 2003 UP207 MUX issues meeting (P 10:00am 11:00am p-273 TDR prep 10:30am 12:30pm T402 Staff 3:00pm 4:00pm Updated: 2003 6:00pm 7:00pm Dinner w/Manske	16 8:00am 10:00am Gonzalez v Ford (PTW 1400 - Conf A)	17 [redacted] 1:00pm 5:00pm Updated: Technical design review (bf52a093) 2:00pm 3:00pm EPB Issues (Bld-5 3E004)
20 8:00am 9:00am EPB/ABS strategy for the DEW & Jaguar program (1:00pm 2:00pm Sharing Rollover sensor with vehicle 2:00pm 3:00pm HiStat Issues (Bld-5 3E004)	21 10:00am 11:00am Design review for the EPB module. 11:00am 12:00pm Electric Park Brake Cost Meeting w/ D 11:30am 12:30pm WW at Work Meetings (Bldg5 12:30pm 2:00pm Cycloid Pump	22 9:00am 10:00am Section Meeting (Bld-5 3A019 3rd 10:00am 11:00am Talid (Bld-5 3A079 3rd Fl Center (11)) 12:30pm 2:30pm IL-FTPT: DVP&R and BD Review (3:00pm 4:00pm Updated: 2003	23 8:00am 12:00pm TRW P131/U137/F53 8:00am 9:30am Systems/Architecture & Software Forum 1:00pm 2:00pm Canceled: One on One (#5, 2A019) 3:00pm 4:00pm FW: FW: U251	24 8:00am 9:00am 2003 UP207 MUX PAT (PDC, Conf R 9:00am 11:00am Chassis PD Capability - Brakes 11:00am 12:00pm Section Lunch 1:00pm 2:00pm Standards for 2:45pm 4:00pm High Warranty
27 11:00am 12:30pm EPB Module Status review (Bld-5 3A019 3rd Fl West End (20)) 2:30pm 4:30pm Larry Stack	28 8:00am 5:00pm OGC 11:30am 12:30pm WW at Work Meetings (Bldg5 Lobby CR 2) 1:00pm 3:00pm FW: Delphi Presentation (Bld5 3104A (East End))	29 [redacted] 8:00am 5:00pm OGC 10:30am 12:30pm T402 Staff Meeting (Big 5 - 11:00am 12:00pm EPB/ ABS interface Meeting 2 (Bld-5 3:00pm 4:00pm Updated: 2003	30 8:00am 5:00pm TRW Automotive 2004 U/F254 Tec 11:00am 12:30pm Deepak Goel's Team Lunch (1:00pm 4:00pm FW: WCR Processors and 3:00pm 4:00pm FW: FW: U251	31

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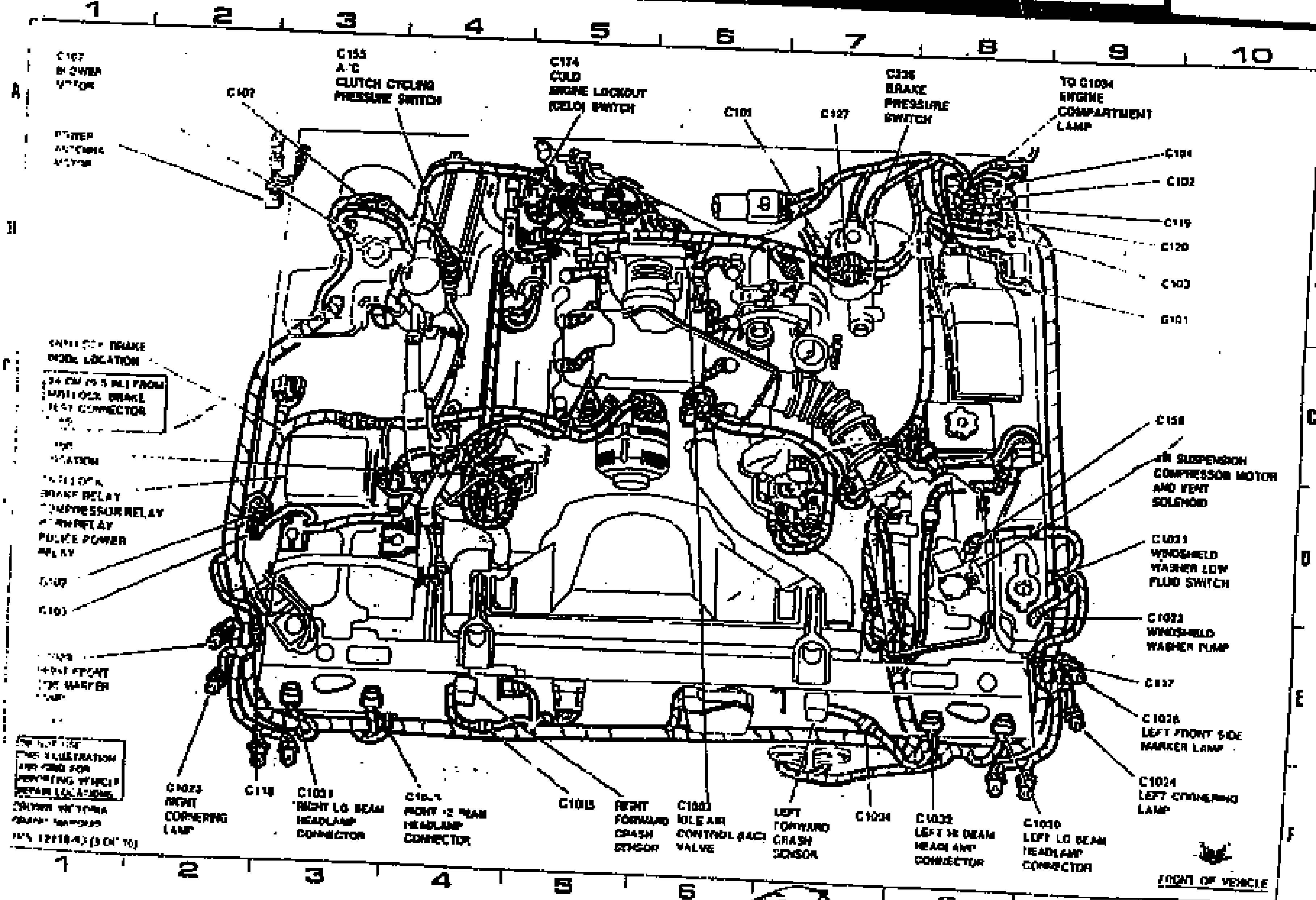
EXHIBIT NO. 7



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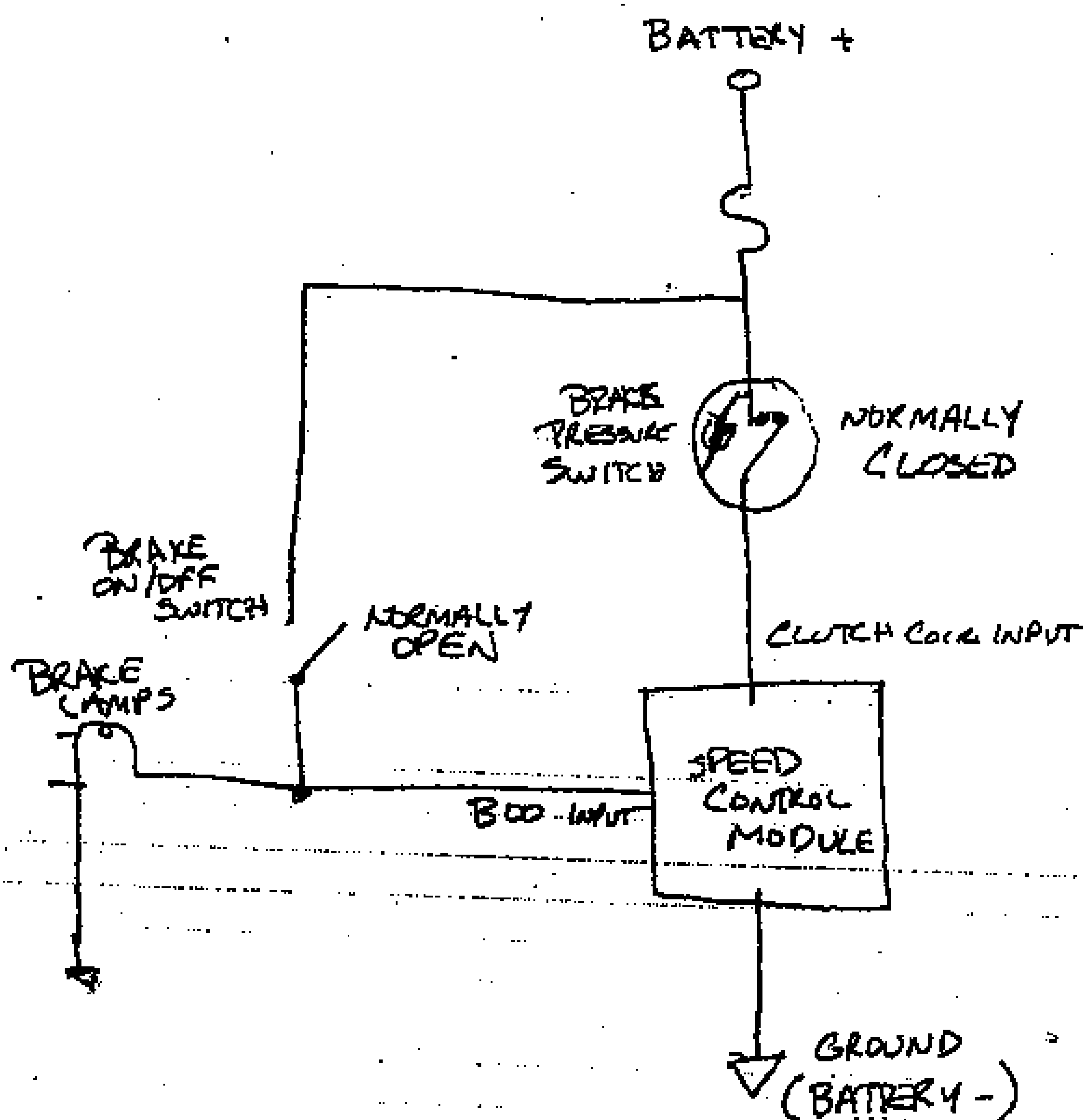

IN THE CIRCUIT COURT OF JACKSON COUNTY, MISSISSIPPI

OUIDA CAMPBELL AND JAMES R. CAMPBELL	PLAINTIFFS
VERSUS	CASE NO. CI-99-0211(3)
FORD MOTOR COMPANY, D&L, INC. OF COLLINS F/K/A D&L FORD, INC., WOOLWINE FORD LINCOLN-MERCURY, INC., SUCCESSOR IN INTEREST TO D&L FORD, INC., E.I. DU PONT DE NEMOURS AND COMPANY, AND TEXAS INSTRUMENTS INCORPORATED	DEFENDANTS

ORAL DEPOSITION OF

FREDERICK JAMES PORTER

NOVEMBER 15, 2000

Volume 1

THE ORIGINAL OF THIS TRANSCRIPT
WILL BE IN THE CUSTODY OF:

MICHAEL JOLLY, ESQUIRE
1018 PRESTON
4TH FLOOR
HOUSTON, TEXAS 77002
TEXAS BAR NO. 10856910

COPY

ORAL DEPOSITION of FREDERICK JAMES PORTER, produced as a witness at the instance of the Plaintiffs, and duly sworn, was taken in the above-styled and numbered cause on the 15th day of November, 2000, before C. Lee Parks, Certified Shorthand Reporter in and for the State of Texas, reported by computerized stenotype machine, at the offices of Feeney, Kellett, Wienner & Bush, P.C., 35980 Woodward Avenue, Bloomfield Hills, Michigan 48304-0934, pursuant to the Mississippi Rules of Civil Procedure and the provisions stated on the record or attached hereto.

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EXHIBITS

* * *

FREDERICK JAMES PORTER,

having been first duly sworn, testified as follows:

THE COURT REPORTER: Stipulations?

MR. JOLLY: We're taking this deposition pursuant to the Mississippi Rules and we're going to have a 20-day period for the witness to read and sign.

Is that agreeable with everybody?

MR. MANSKE: That's agreeable.

E X A M I N A T I O N

Q. (BY MR. JOLLY) Could you state your name, please?

A. Frederick J. Porter.

Q. And where do you work?

A. Ford Motor Company.

Q. And you were the -- Tell us about your job capacity with regard to the investigation of the defects having to do with the speed control deactivation switch.

A. I am supervisor in electrical engineering and was the lead for the team that was investigating the brake pressure switch on the '92, '93 Town Cars.

Q. You were the leader of the group that was to determine what the root cause is or was of the switch -- switches that were causing the fires?

A. To determine, first of all, if the switch could've caused the fire and potentially what the root cause would be.

Q. Now, what did you group do to determine -- First off, has you group determined what the root cause is or root causes is of the defects in the switches?

A. The defect in the switches has been determined, yes.

Q. And can you just give us a brief summary of what that -- what your determination of the root cause or causes?

A. That the Kapton leaks.

Q. And is that root cause, the Kapton leaking, is that a root cause or the -- is that the only root cause?

A. Kapton leaking is the only consistent cause associated with brake pressure switches that are -- have been found to cause fires.

Q. Okay. What about the other causes, if any, that Ford has determined may cause leaks and/or fires with regard to the speed control deactivation switches?

A. There were other factors that were considered to be potential -- other factors that were potentially part of that. But in the review of the data that we had, both from the field and the field returns and the trend data that was found in fires in the town car, leaking Kapton was the only one.

Q. What other factors did Ford look at or come across?

A. Other factors that were considered were a potential for a connector leaking.

Q. Let me stop you there. Are you talking about environmental -- from the environment into the electrical side?

A. Yes.

Q. Okay. Go on. I'm sorry.

A. The -- The circuitry with which the brake pressure switch is used. There were some others that I don't recall off the top of my head.

Q. What circuitry concerns or what did y'all look at with regard to circuitry?

A. Specifically, that the switches, part of the brake clamp circuit and that there is power available to the switch -- or to the switch at all times.

Q. Power?

A. Available power.

Q. Okay. Did -- Also the amount of power, like in the amps or anything like that?

A. We looked at the amount of power, but we were never able to determine exactly how much power was necessary to start a fire.

Q. Okay. What did Ford do under your leadership to determine what the root cause was?

A. We put together a team of engineers from a variety of areas, including design analysis, automotive safety office, the Vehicle Center Engineering Group and Texas Instruments. And there may have been some other people also.

Q. All right. This team of engineers was assembled under your guidance?

A. Basically.

Q. And the team of engineers was assembled shortly after -- Or tell us when the team of engineers was assembled.

A. The assembly started in late 1998 shortly after the NHTSA notified Ford of the investigation of under hood fires.

Q. And the team of engineers, you've named off three different areas where the engineers were pulled --

A. Yes.

Q. -- from?

A. Yes.

Q. Who was the head of each one of those specific groups?

A. Design Analysis, we had Norm LaPointe; the Automotive Safety Office was Bill Abramczyk. I forget -- What were the other ones that I listed?

Q. Vehicle --

A. Oh, Vehicle Center was Joe Neme.

THE COURT REPORTER: Spell those last names, please.

THE WITNESS: Neme is N-E-M-E. I'm not sure is somehow to spell Mr. Abramczyk's last name.

MR. MANSKE: Lee, it's A-B-R-A-M-C-Z-Y-K. LaPointe is L-a-P-o-i-n-t-e.

Q. All right. Now, what -- Tell us what each of the groups did or the entire team did as far as testing. And you can start at the beginning, what kind of tests were conducted up to present.

A. It -- At first we were trying to just understand if the brake pressure switch could cause a fire. Shortly after the team was formed we were made aware of an incident that happened in Memphis, Tennessee where the service people reported that they saw a switch under hood that was burning like on a candle. Ford and T -- Or Ford received that switch from the dealership and worked with T.I. to develop a process to investigate the switch. And I believe it was early January that the switch was disassembled at Texas Instrument in Attleboro and the various pieces were -- were looked at at that point.

Q. That was the Memphis switch?

A. That would be the Memphis switch, yes.

Q. Okay.

A. In addition to that we asked Texas Instrument to run a variety of tests. In particular, we asked them to run impulse testing on switches that were -- had been recently built, so they would've been probably '98, '99 time frame switches, to see to see what that life was on those. We also asked Texas Instrument to run some tests to design -- really, to insert contamination into the switch to see if the switch could start fire at all. There was, in addition to that, review of data of customer descriptions as to whether or not things -- things that might be around the fire that would happen with the brake pressure switch and categorizing all of that information. We also looked at, after it was confirmed with the laboratory testing at T.I. that a switch could catch fire, what factors we might consider implementing to keep that from -- to stop that from happening. There may have been more things that we did, but slips my minds right now.

Q. Okay. Under the category of Ford trying to determine if a fire could actually occur within a switch, what did Ford do with regard to testing to determine that?

A. At that point in time, basically, we asked Texas instrument to run some tests. And what we came up with was a test to inject contamination into the switch compartment and have it powered and, you know, see if there could be enough heat generated that would start something on fire.

Q. And do you know what the result of that test was?

A. A fire could be started.

Q. And the conditions under which that test was run were exemplar of what was expected in a Panther platform vehicle when the switch was stalled on the vehicle?

A. No. It would've been excessive of what would be expected on a Panther platform. The contamination was injected into the -- into the switch cavity; actually, quite a lot, saltwater was injected and the volume of saltwater probably would not be something that we expected on the Panther vehicle, on the Panther platform.

Q. So it wasn't a real world test?

A. It would not have been a real world test.

Q. And why was that test conducted?

A. Purely to identify if we could get a switch to start fire. At the beginning of the investigation it was not clear to us that that was even a possibility.

Q. Okay. And once it became apparent that it was a possibility that a switch could catch fire, then was there any kind of change in direction in the team's effort at Ford to determine the root cause of fires?

A. Well, we started to look at what kinds of things might be special about these switches in particular that would allow them to have or cause them to have contamination under the switch cavity that -- that we hadn't noticed in other applications and why it's might be only confined to the 1992, '93 Town Car.

Q. All right. And the direction of

contaminants, what did Ford determine or what tests were conducted to determine which direction the contaminants were getting into the switch electrical side?

A. Basically, what we did was, we did a review of -- starting with the Memphis switch. There were a couple other switches that came back from the field that had been involved in thermal events; not necessarily all fire; that were disassembled and reviewed. And in all of those cases the brake fluid would come through a crack in the Kapton.

Q. All right. So a determination was made by your team that contaminants which entered the electrical side of the switch came through the brake fluid side?

A. That was the determination at that time and that's been bolstered with subsequent data.

Q. Okay. And that determination has not changed?

A. Correct.

Q. What is -- What are the contaminants in brake fluid that come through the Kapton side of the switch into the electrical side?

A. The brake fluid itself would be considered a contaminant since it shouldn't be in the electrical switch portion -- or the portion of the electrical switch.

Q. So when brake fluid is in that side of the switch, that is, it's -- by definition, a contaminant?

A. Correct.

Q. All right.

A. There may be other things in brick fluid that -- that over time, it's collected. Water in particular is something that -- that gets collected into the brake fluid.

Q. Okay. Any other components that were analyzed for in brake fluid to determine what the possible contaminants were?

A. There were other materials that were analyzed that have been listed in various reports, but I don't really recall them off the top of my head at this moment.

Q. I mean, were there any other contaminants in the brake fluid that were considered important to your study or your determination of the root cause?

A. Not really, no.

Q. Just recently Ford conducted -- or Ford retained Hi-Stat, a company called Hi-Stat --

A. Uh-huh.

Q. -- H-i-S-t-a-t, to conduct -- looks like some tests and I got the results from Jeff the other day. Are these some of the test results you're talking about with regard to brake fluid contamination testing?

A. I guess, can I take a look at the report?

Q. Yeah.

MR. JOLLY: We'll call that Exhibit 1.

(Exhibit No. 1 marked.)

A. This is not a Hi-Stat report.

Q. Yeah. I was looking at another document when I said that. But that test was done by Ford, right?

A. Correct.

Q. And that was the brake fluid contamination test?

A. Yes.

Q. And tell us what that test was -- why that test was conducted.

A. Previously we didn't have any test that showed that brake fluid itself as a contaminant would cause a fire. The only test that had been previously been run to cause fires were run with saltwater.

Q. And Ford did this test because Ford, through its -- through -- under your guidance found out that contaminants were coming through the Kapton side?

A. Yes.

Q. Now, how can brake fluid get from the brake fluid side of the switch into the electrical side of the switch?

A. The only manner that I -- that I know of that would be consistent with the data that we have from the trend data would be through the Kapton.

Q. All right. And how does brake fluid get through Kapton? Do you know?

A. There would have to be a hole.

Q. All right. And your -- the studies done by Ford or done for Ford in the switches that you looked at in your investigation at Ford, did you find some kind of trend when looking at the Kapton membranes that evidenced some kind of failure on the part of the Kapton?

A. The Kapton all had leak paths through them that would allow brake fluid to pass.

Q. Can you give us some kind of numbers, just statistically, or maybe just raw numbers of how many switches Ford looked at its investigation and how much of them actually had actual holes through the Kapton?

A. Of the switches that we know were involved in thermal events that we could identify the state of the Kapton -- And I think that number is on the order of 15 to 20 -- all of those switches had leaks through the Kapton.

Q. And when Ford looked at this -- these -- the Kapton as removed from these switches, I mean, can you tell or was there any kind of an assumption made of why or how the hole was made in the Kapton?

A. There's some ideas that we have. We certainly don't understand all of the physics of -- of how the Kapton is moved inside the switch. But one of theories would be that it's a stress related crack.

Q. Are you talking -- What kind of stress?

A. I guess, a work stress. I mean --

Q. Mechanical stress?

A. A mechanical stress.

Q. Probably not a chemical degradation?

A. Again, that's not something that I'm really familiar with. Now, it could be a chemical degradation. But I mean, there's on a whole lot of possibilities what could cause that leaking Kapton.

Q. After Ford found out that the Kapton was the source -- or holes through the Kapton was the source or the path for the brake fluid to get into the electrical side, did Ford do anything to determine why or how the Kapton developed holes?

A. We asked for T.I.'s help on identifying what that -- what might've caused that.

Q. All right. And can you tell us what Ford has asked for from T.I. to determine -- to help determine or try to determine why the Kapton has holes in it?

A. We've asked for a description of all of their process changes that occurred in the '91, '92 time frame to identify, you know, what things may have had an effect on the Kapton.

Q. And based on -- Well, did T.I. respond --

A. Yes, they did.

Q. -- to the request? And based on what T.I. supplied Ford, could Ford make a determination of what it is that T.I. was doing or wasn't doing in developing or producing the switches was -- was a cause or a possible cause of the holes in the Kapton?

A. Based on what was provided, we could not.

Q. Any theories?

A. There are a variety of things that -- that we learned from reviewing some T.I. documents that might have an effect in that area. The -- The pressure was a concern that T.I. identified in -- in their system, the way the brake pressure was -- the way the crimp was applied. Another item that was of concern from their documentation was the installation of the -- a gasket seal. Those are two things that may have had an effect. There certainly could've been others.

Q. What is it about the installation of the gasket seal, as far as you know?

A. Again, all I know is from what was written in the Highlights and I believe that it says something to the effect that a slight misplacement could have a degradation on the Kapton life.

Q. And these are Highlights that -- or documents that were maintained by Texas Instruments?

A. Yes.

Q. And do you know about what the date of those statements within those documents were?

A. The -- The gasket statement was about in August of 1992.

Q. All right. And did that statement lead to any -- any communication between T.I. and Ford about further development or inquiry about how to solve any problems that may arise because of the gasket placement?

A. Not that I'm aware of.

Q. Any communications from T.I. back when that statement was made direct to Ford to inform Ford of a possible problem in the manufacturing of the switch?

A. Not that I'm aware of.

Q. All right. Th3 20 switches or so that you mentioned a while ago that Ford found had Kapton failures from the field, is that where they were obtained, the switches?

A. Yes.

Q. And can you give us a date range of production of the switches?

A. They -- In general, I guess I'd have to look at the reports that were associated with those, but early 1992.

Q. And was that -- did that comport with any of the concerns that Ford had about the crimping pressure on the assembly line at the T.I. facility?

A. They weren't Ford's concerns about the crimping pressure. Those were -- That concern was raised by the -- the internal documents. Ford's -- or -- But yes, I mean, the -- the first crimping pressure -- Well, the -- the crimp pressure concern that I was referring to was made in January of 1992.

Q. All right. And what about the production date of the switches that Ford observed to have failures in the Kapton?

A. It would've consistent with that time frame.

Q. Any switches analyzed or looked at by Ford that was outside of the crimping pressure range or the date productions which may indicate that some other problem may be responsible for the Kapton failure?

A. The -- The trend data that we have for the brake pressure switches and other applications shows that it's constrained to that time period.

MR. MAYER: I'm sorry. I didn't hear what you said. Is what?

MR. JOLLY: Constrained to that time period.

MR. MAYER: Constrained.

Q. You mentioned switch disassembly. Is that -- The switch disassemblies that were conducted by Ford in this investigation, was that mainly the switches that were date coded within this crimping pressure area?

A. They would've been switches that were within the time period fo the recall; and yes, the time period that -- Well, the -- it was -- crimp pressure and the gasket placement.

Q. During its investigation, did Ford come across something that's called teardrop formation on the Kapton?

A. A teardrop formation was observed on some Kapton.

Q. Can you describe what the teardrop formation is and what it means to Ford when it sees the Kapton membrane that looks like it has what's called teardrop formation?

A. There -- The Kapton normally forms a -- a cylindrical -- not cylindrical -- but circular formation consistent with the washer internal to the switch. On some switches we've identified -- we've seen that there is a bulge outside that circular formation. On some switches were two bulges that -- that extrude -- Extrude may not be the right word -- but extend past the -- that circular formation. That would be -- You know, I guess, to us it does not seem like that would be a normal kind of thing, although there may be a possibility that it's -- that it's frequently.

(Exhibit No. 2 marked.)

Q. I'm going the show you what I marked as Exhibit 2, which is a cross section of the switch. That one arrow that goes up there and is sort of highlighted or dark -- it's darker, I guess, where I highlighted, is that the area where you're talking about where the teardrops form?

A. The one that's labeled "Holes or cuts in diaphragm are here"?

Q. Yes, sir.

A. Yes.

Q. And is that also where Ford observed holes or cuts in diaphragms, or just one specific switch diaphragm?

A. That would be -- Generally speaking, that would be the area that -- that the cuts and holes would've been seen.

Q. And in the 20 or so switches that Ford observed from the field that had failed Kapton?

A. Yes.

Q. Okay. Did Ford look at other switches that were outside a date range, like maybe produced in late '93 or late 92 or '94, even, to see if the that trend for teardrop formation and/or cuts in the Kapton is only limited to that area?

A. Ford Hasn't done that. I understand T.I. did.

Q. Has that been communicated to Ford, the results of that investigation?

A. We've been told that, yes.

Q. And what have you learned from what they've told you about that?

A. Well, they've said that there are teardrop formations in subsequent parts.

Q. Okay. Any -- Any Kapton failure in subsequent parts?

A. Not from what we've been able to observe.

Q. And how about brake fluid migrating to the electrical side of the switch through the Kapton?

A. Not that we've observed.

Q. Outside the recalled switches, you're talking about?

A. Right.

Q. But the group of switches that were recalled, what about those switches that were in -- within the group that were recalled, but not produced around the time period where we have a -- a -- the crimping pressure problem? Or am I getting my time periods a little bit overlapped?

A. Well, I guess -- It's difficult -- The recall perfected was selected based on the trend data that -- that -- that we were seeing fires in. Okay. The issue on the crimp pressures, we don't know what -- what changes occurred when. You know, we only know that that was something that was of an ongoing discussion in the Highlights.

Q. Do you know what that date code is of production of the switch that was on Ouida Campbell's car?

A. No.

Q. Do you know if it was in the recalled area?

A. I don't know.

Q. Do you know the date code on the Ouida Campbell car?

A. No.

Q. Do you know if Ford has looked at the Ouida Campbell car speed control switch to determine if it is within the recalled switches?

A. I have -- And I'm not real familiar with the Campbell case.

Q. What about, are you familiar with the Franks' case out of Waco, Texas?

A. No, I'm not.

Q. Any other -- Did you look at any of the cases that were in Texas, any of the fire cases, the switches?

A. No, I have not.

Q. Anyone at Ford under your investigation team?

A. Not as parts of my investigation team.

Q. That would've been done by who, someone outside of Ford, retained by Ford?

A. Again, I'm not really familiar with the process of dealing with individual cases.

Q. Okay. What else -- Besides the speed control deactivation switch, did your team look at any other causes Lincoln Town Car fires?

A. No, we did not. No.

Q. Now, with regards to the speed control deactivation switch circuitry, tell us what Ford looked at with regard to the way it is and the way -- any considered alterations and what the results were of those considerations.

A. When we were investigating the -- the possibility of fire with the understanding that the NHTSA might be requiring some action be taken before we understood any part of the root cause, we looked at a possibility of putting a relay in that would disrupt the power or disconnect the power from the speed control clutch coil when the ignition was off. Again, upon reviewing the data from other vehicle lines where that same configuration is used and it was determined that that continuous power was not -- was not by itself a cause.

Q. Continuous power by itself is not a cause --

A. Correct.

Q. -- based on Ford's testing? What else -- What else needs to be present for there to be a fire?

A. There needs to be some method that causes a leak path from the electrical components to the ground.

Q. Okay. There has to be a fuel?

A. And there also has to be a fuel.

Q. And maybe some oxygen?

A. Maybe some oxygen, yeah.

Q. Just the basic things?

A. I'm really not a chemist, so I --

Q. Okay.

A. -- that seems to be the three things that go with that.

Q. So we've got to have -- we've got to have electricity for a fire, right --

A. Uh-huh.

Q. -- in this switch, we've got to have electricity?

A. Right.

Q. Is there a current amount that may be necessary to create a fire within the switch?

A. There would -- There would require to be some amount of current that would produce power to be dissipated in the switch --

Q. Uh-huh.

A. -- to cause it to create a fire, yes.

Q. All right. That dissipation would be heat?

A. The dissipation would be heat.

Q. And -- Okay. So we need voltage and we need amps, a certain amounts of amps, right?

A. Uh-huh.

Q. And we need fuel?

A. Uh-huh.

Q. Which is what, based on Ford's investigation?

A. There -- Again, without knowing all of the chemistry that would be involved, but I think the two things that contribute most are the fuel and in the plastic housing of the switch and brake fluid.

Q. So those two hydrocarbons being in the area where the heat's generated by the short --

A. Uh-huh.

Q. -- creates the fire?

A. Correct.

Q. And without the electrical current, the voltage, without any voltage we're not going to see a fire, are we?

A. That would be right.

Q. And what about the amperage? I mean, what -- If we're down to like a hundred milliamps, are we going to see fires?

A. I don't know.

Q. Do we know? Has Ford made a determination about what kind of amp range we're looking at that could create a fire and what amount of amp range would be safe and wouldn't cause a fire?

A. No.

Q. So during its investigation Ford didn't look at various current loads to the switch to determine what may be a safe current load?

A. We thought about what might be a safe currents load as -- as to what that could be. But our determination was that we didn't understand physics or the chemistry of the situation well enough to be able to say that a certain current load would not cause a fire.

Q. But since, now --I mean, now, can Ford now look and say, hey, we know a lot more now, we can reduce the current to the switch down to X-amps and it can be okay, it can work like it's supposed to work and it won't be an ignition sources? Has Ford done that?

A. We're still are unable to identify a particular current load to determine that.

Q. Has Ford looked or made any -- done any testing to determine if any current load would be acceptable and also be safe for the operation of these switches?

A. It's been something that we've been trying to do, but we haven't be able to determine a test that would conclusively identify a point that would be safe.

Q. All right. Now, what current has Ford considered?

A. We've -- In -- In this particular case, what -- what -- what we're trying to do is again identify a process that would consistently start a fire that we could identify that current load again. So, you know, we have not been able to do that.

MR. MAYER: Object, nonresponsive.

Q. So Ford hasn't determined what would be a safe current loads for operating one of these switches?

A. No, we have not.

(Exhibit No. 3 marked.)

Q. All right. I just showed you -- I put in front of you Exhibit No. 3. That looks like another test that was conducted by Hi-Stat, right?

A. Uh-huh.

(Exhibit No. 4 marked.)

Q. And I'm going to show you also No. 4, Exhibit 4, which is another Hi-Stat document. Both of those look like tests that were preformed by Hi-Stat as requested by Ford; is that correct.

A. I believe so, yes.

Q. And these were done fairly recently, correct?

A. Yes.

Q. And can you tell us -- start with Exhibit No. 3 and tell us what the test is and why it was conducted and what the results were?

A. Let's see. The purpose of the test as stated here is to test to failure the T.I. cruise control deactivation switch on the impulse test in ES-F2VC-9F924-AA.

Q. All right. Let me stop you right there. What is the impulse test?

A. That's a test that cycles the switch from zero to 1450 psi at 135 degrees C. And in this case two of the switches fails.

Q. Okay.

A. So that's what the purpose of this test was to do.

Q. All right. And the switches that were used in the test, the number you read off?

A. The F2VC-9F924-AAs.

Q. Are those switches that were within the recalled switches?

A. Well, I don't know. These probably were not. These would probably be recent switches.

Q. So these may be switches that came off T.I.'s assembly line after the recalled switches were produced?

A. Yes.

Q. But we don't know?

A. At the front page, I don't know. I don't see a listing of what the date codes are for the different switches.

Q. Okay. So we don't know if these are switches that were produced to be -- and eventually recalled or if these were switches that were produced and then installed on cars that had recalled switches?

A. We don't know what population these came from based on this.

Q. All right. And the other --

A. There may be some other information that has that.

Q. Okay. So you're telling us that there may be a lot more documentation with regard to this test?

A. I'm telling you that I'm not sure what else -- what other documentation is available. This may be all there is.

Q. Okay. The other part number as listed on Page 1 of Exhibit 3, is it the same thing; you don't know the origin of those switches?

A. There is -- There is, in fact, only one part number that's listed here.

Q. Uh-huh.

A. The other number is the specification that the test was to be run to.

Q. Okay. Which one is the specification number?

A. The specification is the ES-F2VC-9F924-AA.

Q. And what was the outcome of that test conducted for Ford by Hi-Stat?

A. The -- The conclusion is that all the -- all -- since all of the failures were leakers due to diaphragm failures, it appears that there is a possible problem area where the actuator and backing meet that can cause the diaphragms to be cut.

Q. Okay. How many switches were tested?

A. Looks like it was 15.

Q. And all 15 failed?

A. Given that the test was designed to run to failure, all 15 did fail, yes.

Q. And what are the specifications for the switch? How many cycles is it supposed to handle?

A. It's supposed to handle 500,000.

Q. How many switches exceeded or equaled what the switch was designed or spec'd to handle?

A. One.

Q. And what was the first failure? How many cycles did it fail at?

A. 67,085.

Q. All right. Now, these cycles, zero to

1450 psi, that's just an open and shut -- shutting of the switch, correct?

A. The 1450 psi is the maximum pressure that the switch would see in normal operating -- in normal driving conditions.

Q. Now, this cycle, is it something that is achieved when someone puts their brake -- their foot on the brake?

A. That cycle would be required for somebody to be pushing probably as hard as they can on the brake.

Q. And that is to achieve 1450 psi.

A. Correct.

Q. Will the switch cycle without reaching 1450 psi?

A. Yes.

Q. About at what psi range would a normal deactivation switch cycle?

A. I don't recall the specification off the top of my head. But it looks like the pressure on these would be in the order of 140 up to a 159 psi.

Q. Do you know if that's a normal pressure achieved in the brake line on these Panther platform vehicles when someone applies their brakes in a normal brake?

A. It would be require braking to that -- for that to occur.

Q. Okay. Just normal braking?

A. Would not be a panic brake.

Q. Okay. Any other events that would occur on the vehicle that would cause a cycle, a switch cycle, besides braking?

A. At this point I can't think of any other events that would.

Q. Okay. Look at Exhibit No. 4 and let's -- tell us why that test was conducted and what the results were.

A. The purpose is to report the failure modes of the T.I. parts for Test Number 13500.

Q. Okay. And what was done on the test?

A. Twenty parts (10 --- F2AC-9F924-AA and 10 --- F2VC-924-AB were serialized so that the parts were performance could be tracked throughout the entire test. The parts were tested per the following modified test procedure: Test the switch a total of a 1,500,000 cycles. Cycle pressure between a low of 0 to 40 psi and a high of 1450, plus or minus 50 psi. Run trace current to monitor function. Ambient and fluid temperature to be 85 degrees C minimum. Cycle rate of approximately 80 to a hundred cycles per minute. Switch must open and close each cycle.

Q. And what happened when those switches were run through that test?

A. It says the first part that failed was Part No. 2. It would not open at 800,000. After tear down it was unclear as to what caused the switch to not function properly. The next two failures, Part No. 5 and 9, they both leaked at 1,000 -- 1,310,551 cycles. After the tear down it was determined that both switches leaked because all three diaphragms were cut at the actuator radius near in interface with the backing plate. The last two failures were Part No. 8 and 30. They both leaked at 1,500,00 cycles. After tear down it was determined that both switches leaked because all three diaphragms were cut at the actuator radius near the interface of the backing plate.

Q. Okay. Did these two tests that are set out or summarized on Exhibit 3 and 4, did that basically support your group's finding about the cause of the problem with the speed control deactivation switches that were recalled?

A. They -- They -- We neither -- Well, the second report, Exhibit No. 4, was consistent with the information that we had received from Texas Instrument on the prior tests that showed that switches built in the 1999 time frame passed the pressure cycle tests.

Q. All right. Exhibit 4 is a test on some switches that were produced outside the recall --

A. Yes.

Q. -- time, right?

A. Yes.

Q. And they faired pretty good?

A. They faired pretty good.

Q. And there's a stark contrast between the results on the switches that were reported on Exhibit No. 3 --

A. Correct.

Q. -- and those that were reported on Exhibit No. 4?

A. Correct.

Q. Going back to the circuit -- circuitry considerations by Ford, can you tell us why it is that the switches are wired hot at all times on the Panther platform vehicles?

A. Yes.

Q. Okay.

A. The design practice for speed control is for a speed control to turn off when the brake pedal is activated for touch; therefore, we used the brake pedal switch as an input to the speed control system for deactivation. If the brake pedal -- Or if the brake amp were to blow, then that input wouldn't come into the speed control deactivation circuit -- or wouldn't come into the circuit, so a driver wouldn't be able to turn off the vehicle or stop the speed control by pressing go on the brake pedal. So a secondary redundant switch, which is the brake pressure switch, was added that would utilize the circuit, the current also from the brake lamp circuit so that the brake lamp -- if the brake lamp fuse did blow, that would by itself deactivate speed control.

Q. When you're going down the road in a Panther platform vehicle and you've got your cruise control on --

A. Uh-huh.

Q. -- and if your brake light fuse is blown --

A. Right.

Q. -- will the cruise control work?

A. No.

Q. Because it's all on the same circuit?

A. Correct.
Q. Is that why there's a 15 amp fuse in that circuit?
A. The 15 amp fuse is to be to be able to take care of the brake lamps as well as the speed control.
Q. What is it on the speed control that requires so much current?
A. It's the brake lamps that require the current.
Q. Brake lamps?
A. Correct.
Q. Is there any law that requires the -- the speed control deactivation switch to wired hot?
A. I don't know that there's a law, no.
Q. Okay. It's an engineering consideration and engineering done by Ford?
A. It's the engineering considerations of the failure modes that could occur if that -- if there was an electrical fault that could result in speed -- or vehicle control issues in this vehicle if those failure modes occurred.
Q. You're sort of losing me.
A. Well, I'm kind of lost too.
Q. Yeah. Because it's seems to me that if