

EA02-025

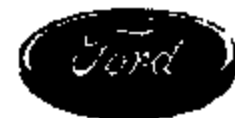
FORD

10/27/03

BOOK 28 OF 61

PART 5 OF 5

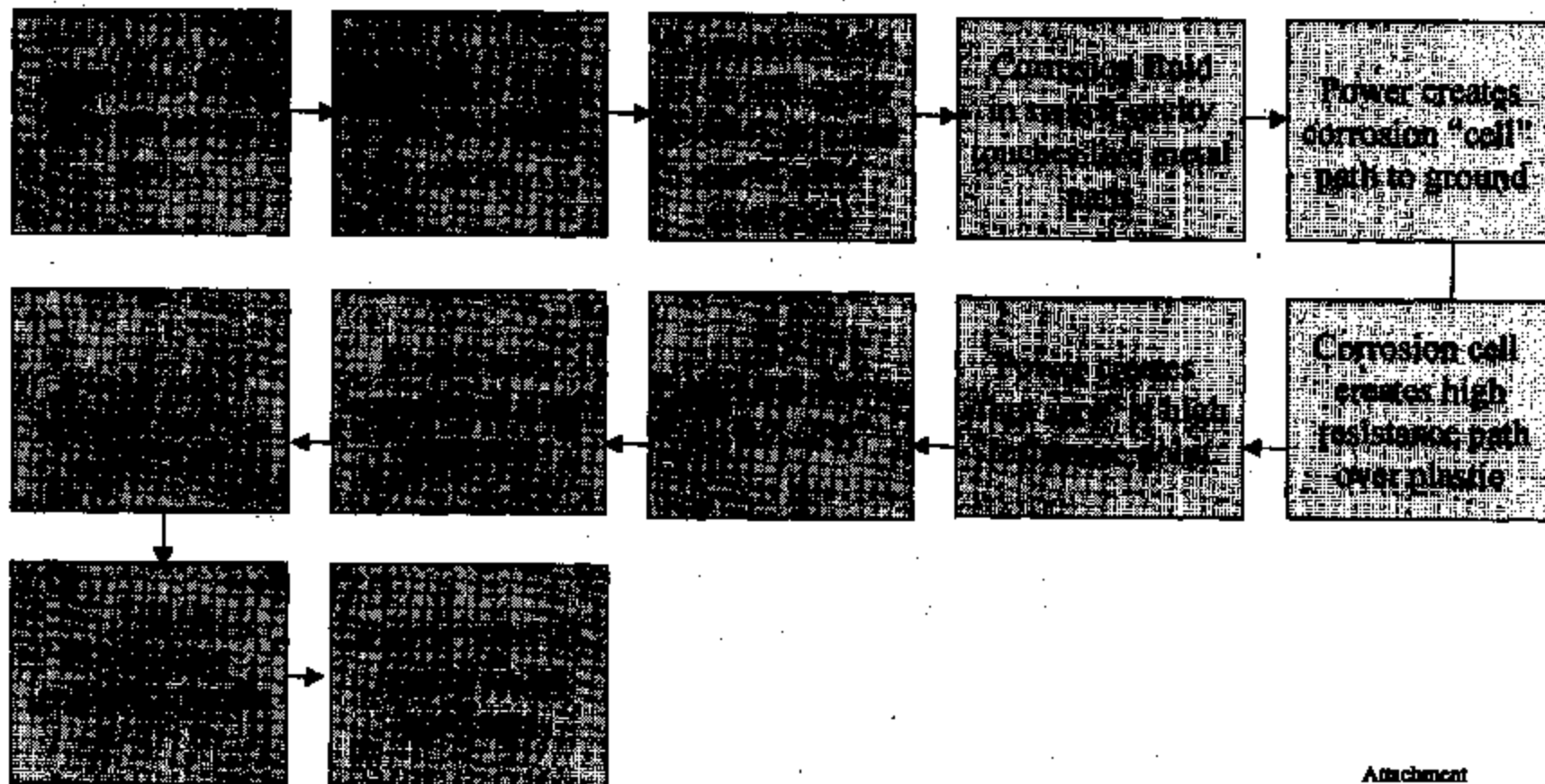
BOX 23 OF 28



- "Town Car" switch meets accelerated/simulated life cycle specification shown by "success" and "end-of-life" testing



PROCESS FLOW DIAGRAM "CORROSION" POTENTIAL CAUSE FLOW ANALYSIS



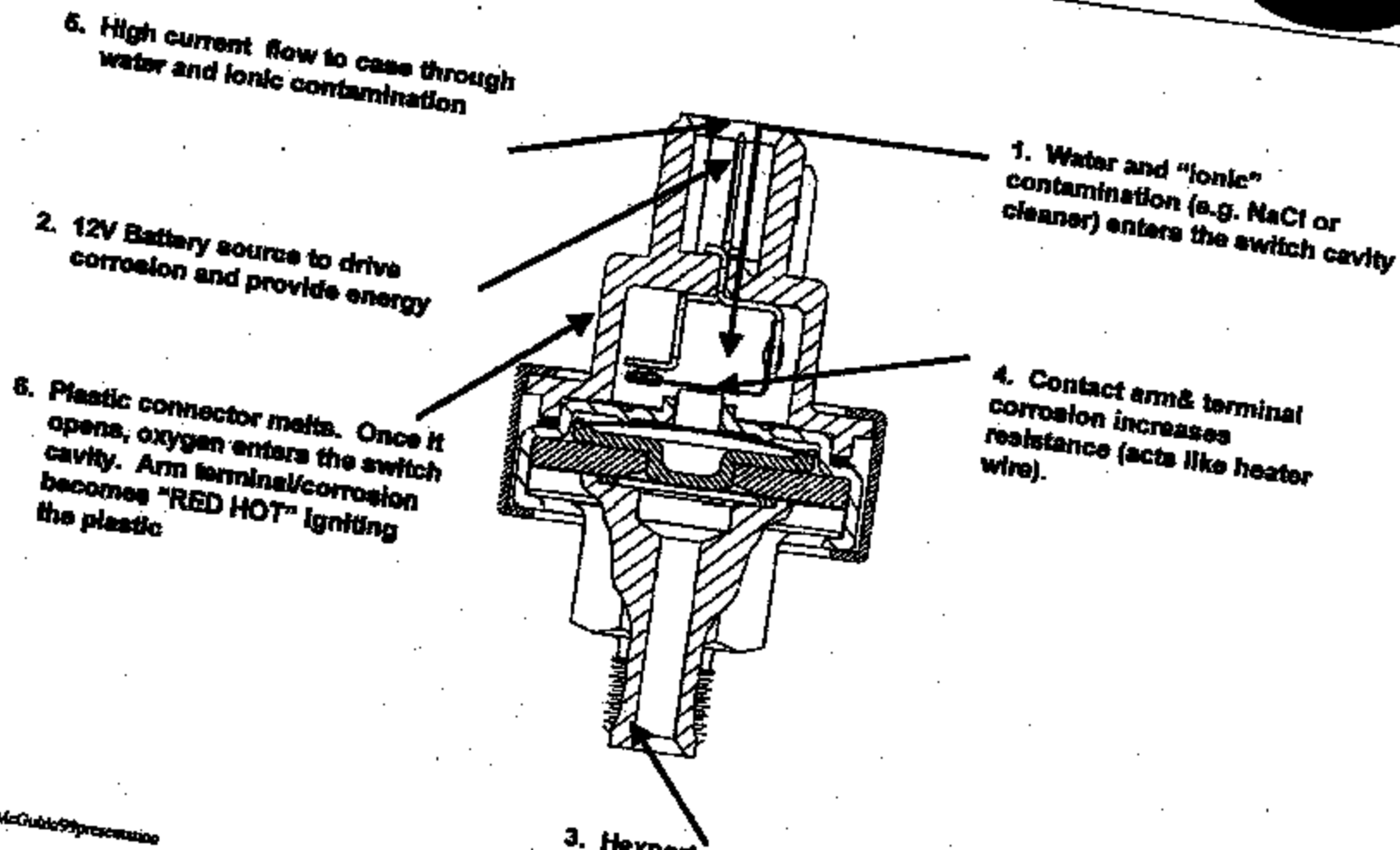
Attachment



TEXAS
INSTRUMENTS

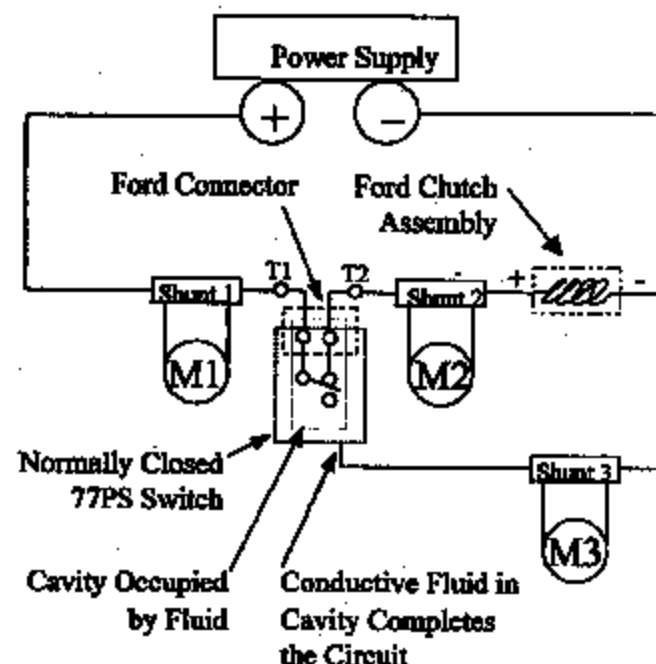
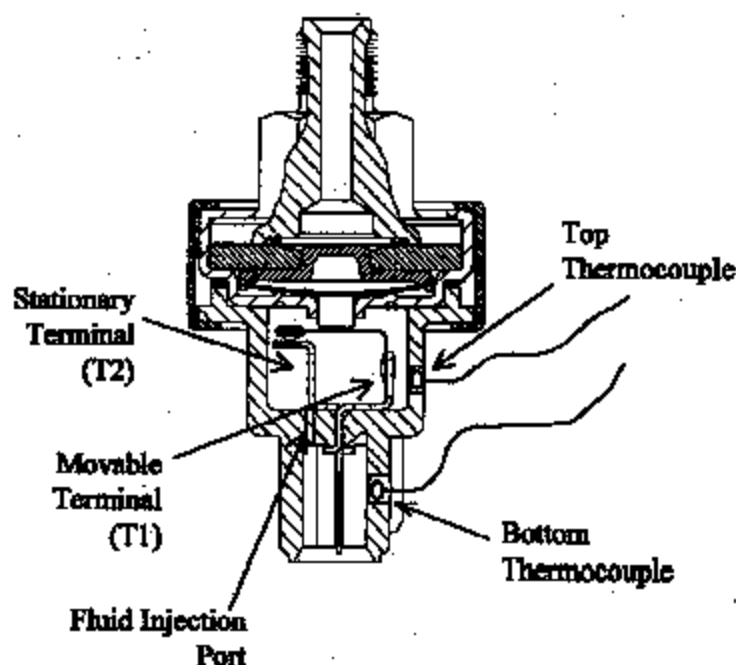
Brake Pressure Switch

Potential Thermal Event Theory Profile 4/21/99





5% Salt Water Ingress Experiment Test 1



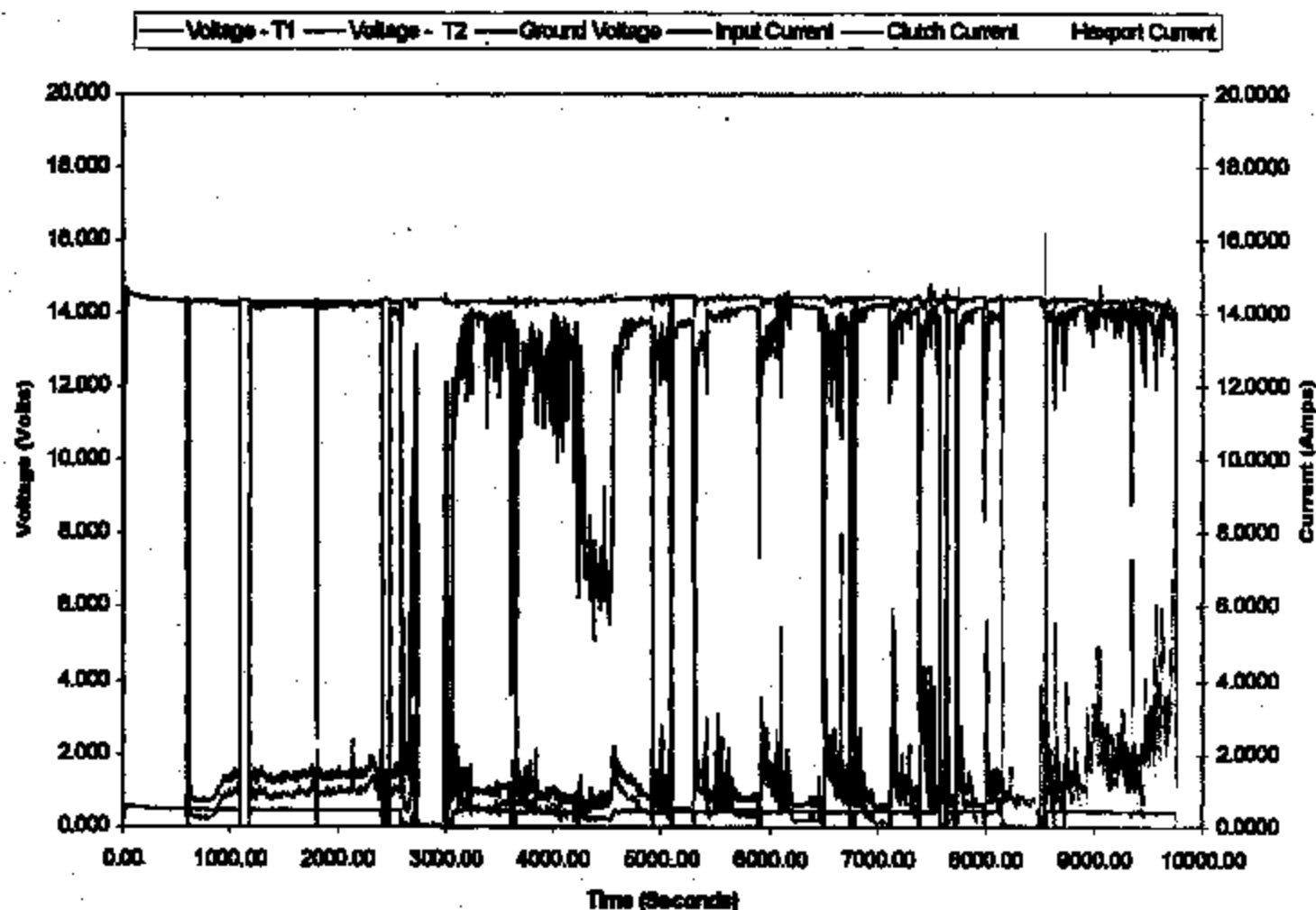
Test 1: Figure 1 and Figure 2.

TI Report PS/99/12
03/15/99

Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99



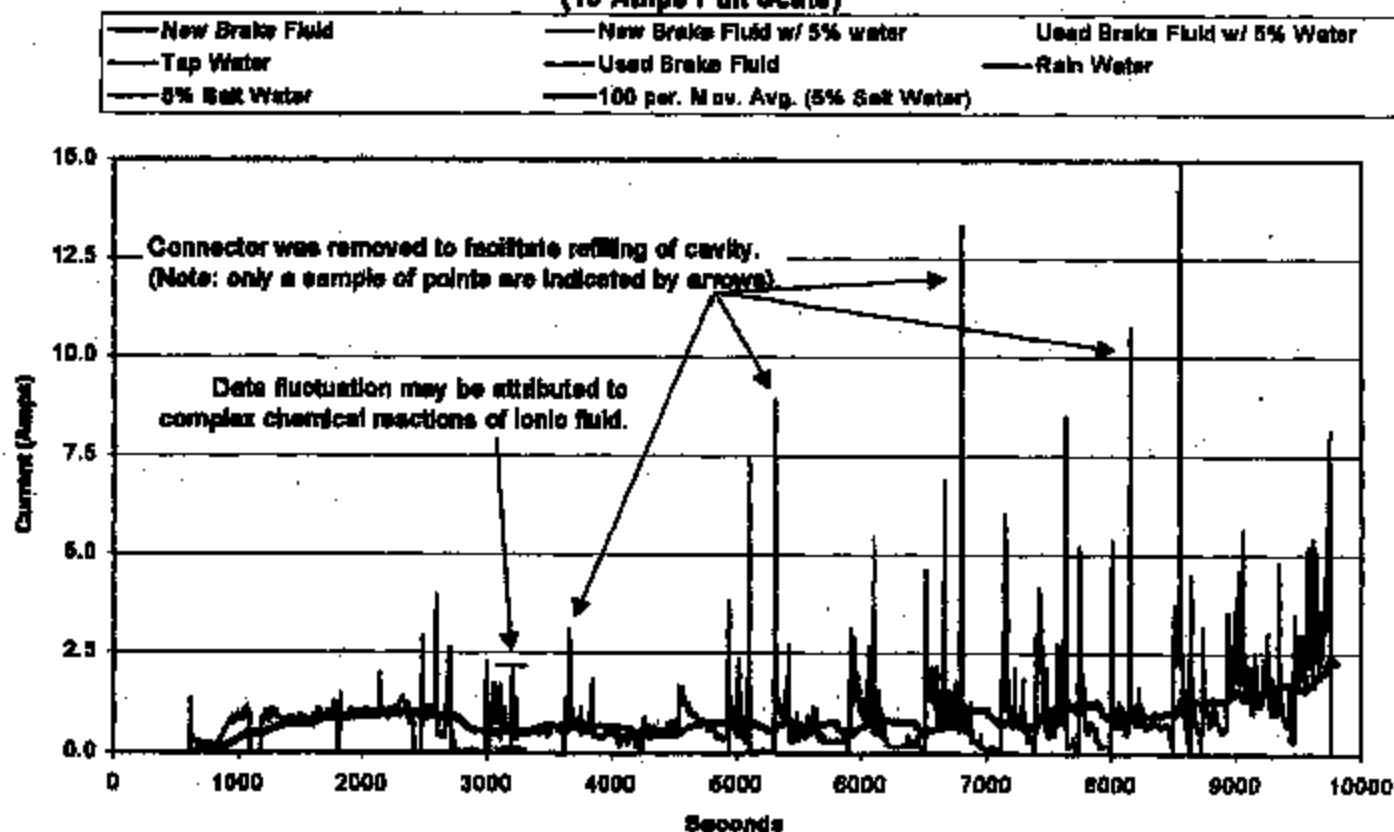
5% Salt Water Ingress Experiment



Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99



Hexport Current vs. Time
(3) Hour Fluid Ingress Experiment
(15 Amps Full Scale)



'Intentional ignition created thru TI fluid ingress lab test PS/99/13'



**77PS
45° Orientation in 15 Amp Circuit
5% Salt Water Ingress**

Cellanex 4300 Base



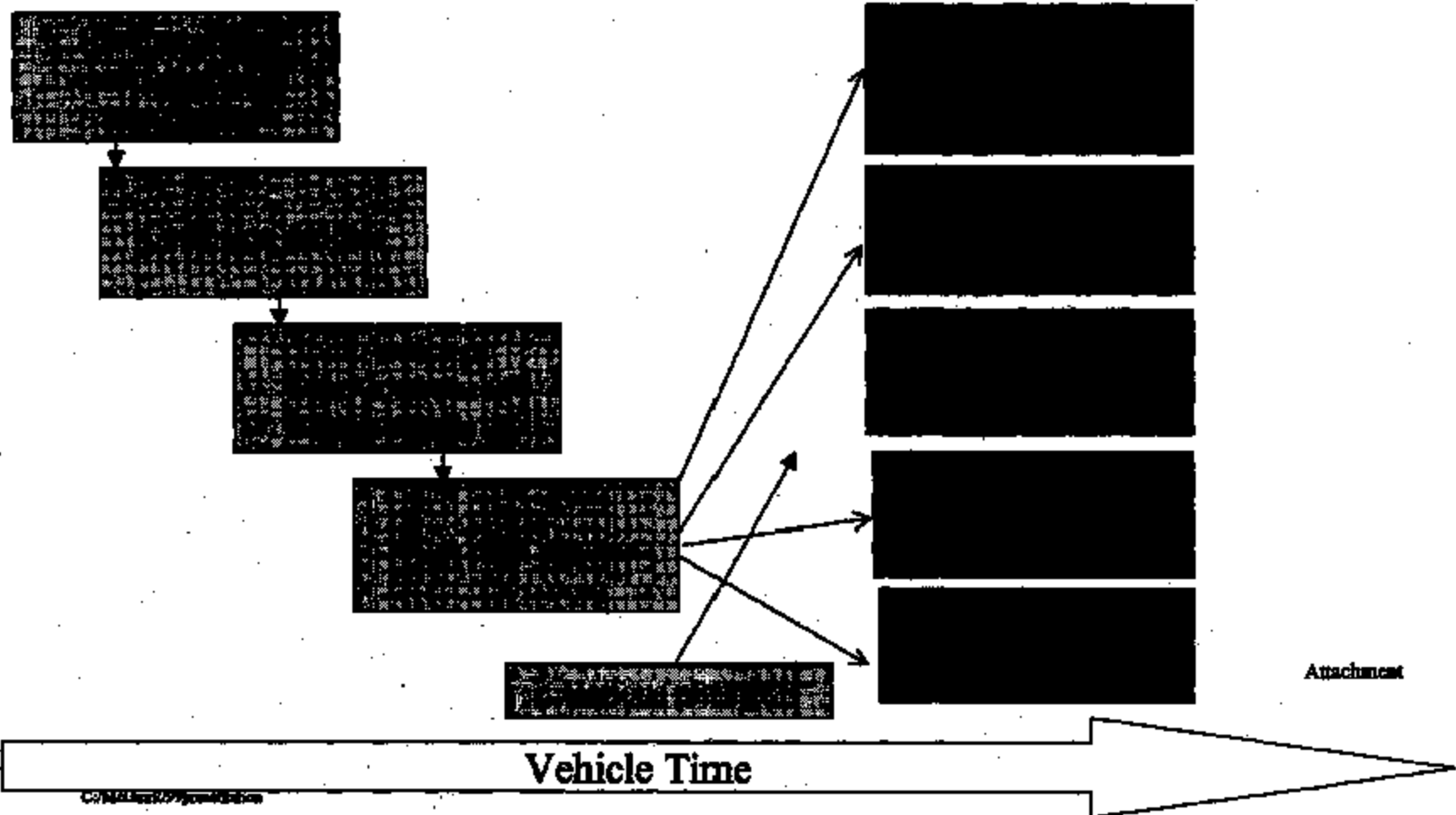
Cellanex 3316 Base



'Intentional ignition created thru TI fluid ingress lab test PS/99/13'



"Corrosion" potential cause time line
Theory Time Line





77PS

**45° Orientation in 15 Amp Circuit
5% Salt Water Ingress**

Cellanex 4300 Base



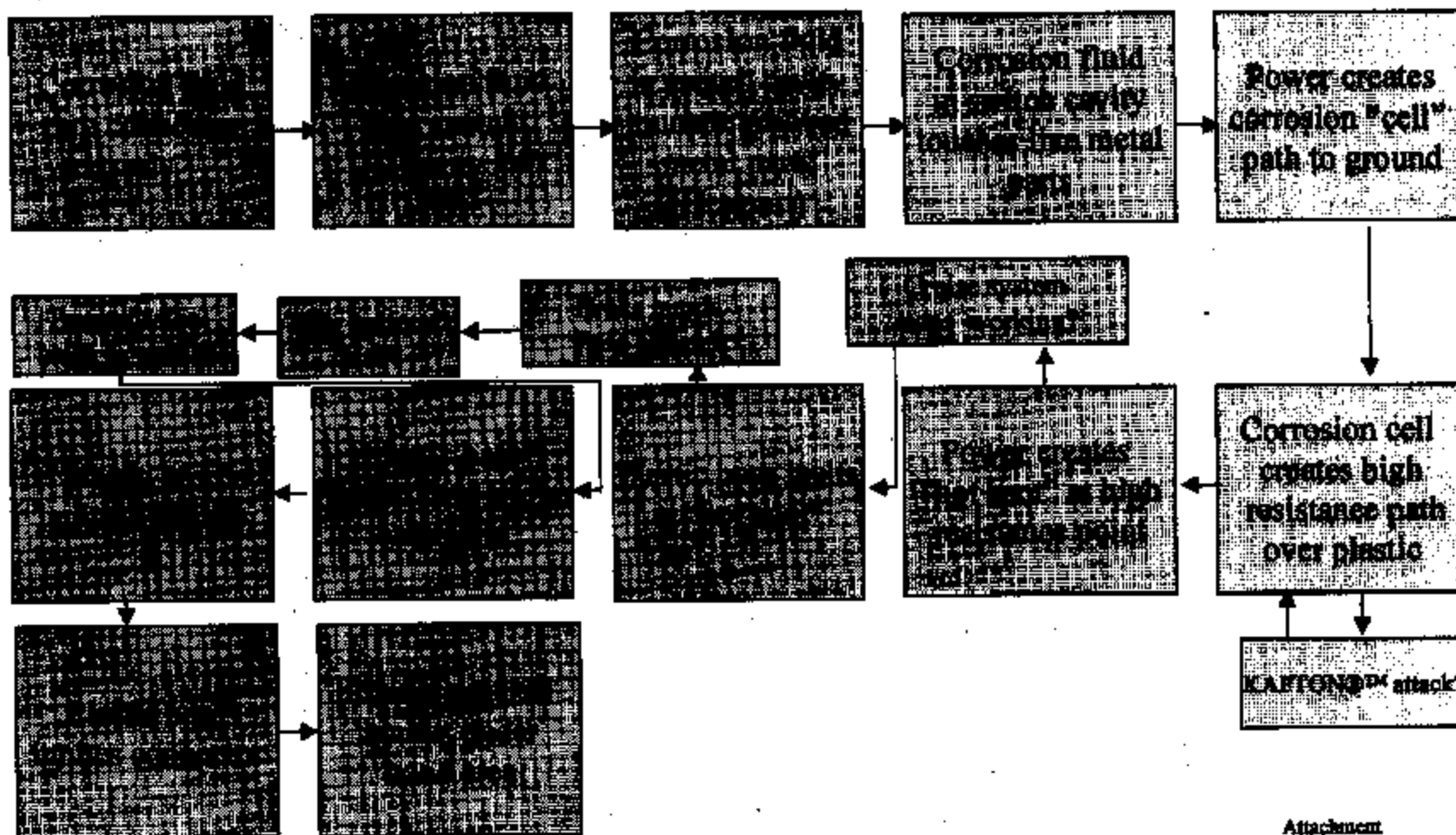
Cellanex 3316 Base



3713 8491



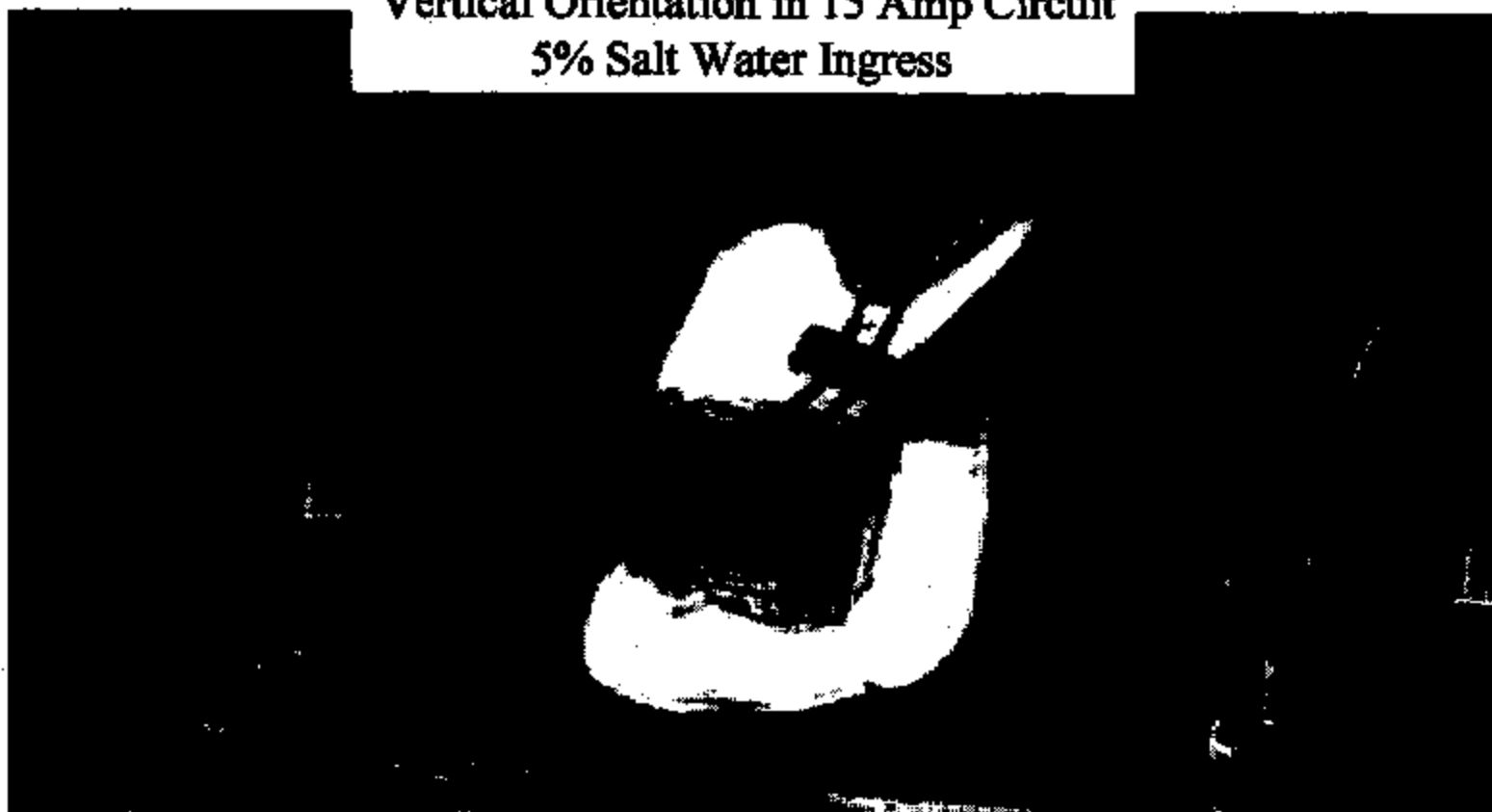
**PROCESS FLOW DIAGRAM
"CORROSION" POTENTIAL CAUSE FLOW ANALYSIS**



Attachment



**77PS Cellanex 4300 Base
Vertical Orientation in 15 Amp Circuit
5% Salt Water Ingress**



Not Enough Printer Memory -- See User's Guide

3713 8488



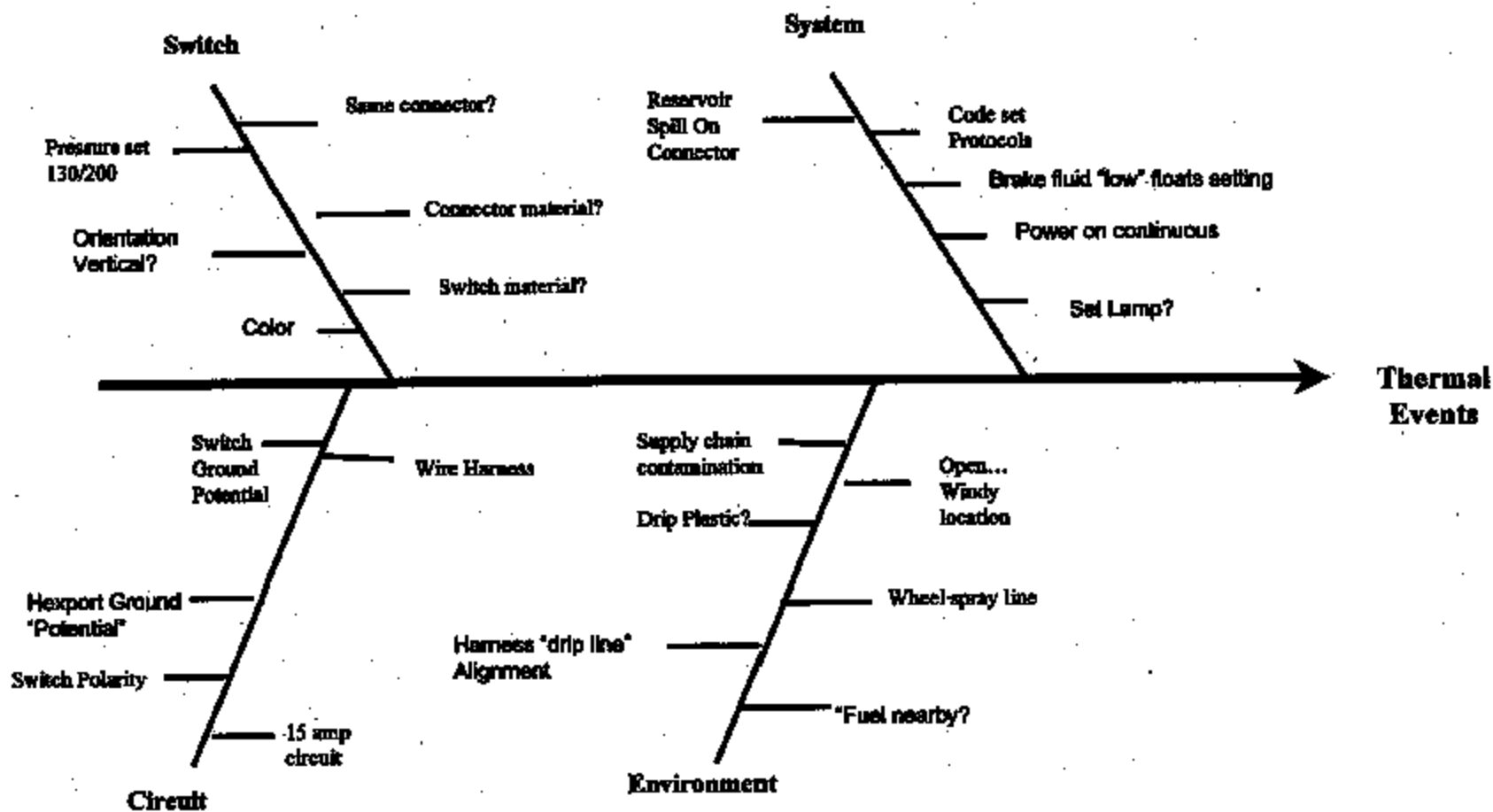
5% Salt Water - 15 Amp Circuit - Vertical - Zytel



3713 6494



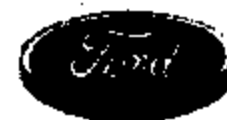
ECONOLINE VS. TOWN CAR P/S



3718 8485



Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99



5% Salt Water - 15 Amp Circuit - Vertical - Zytel

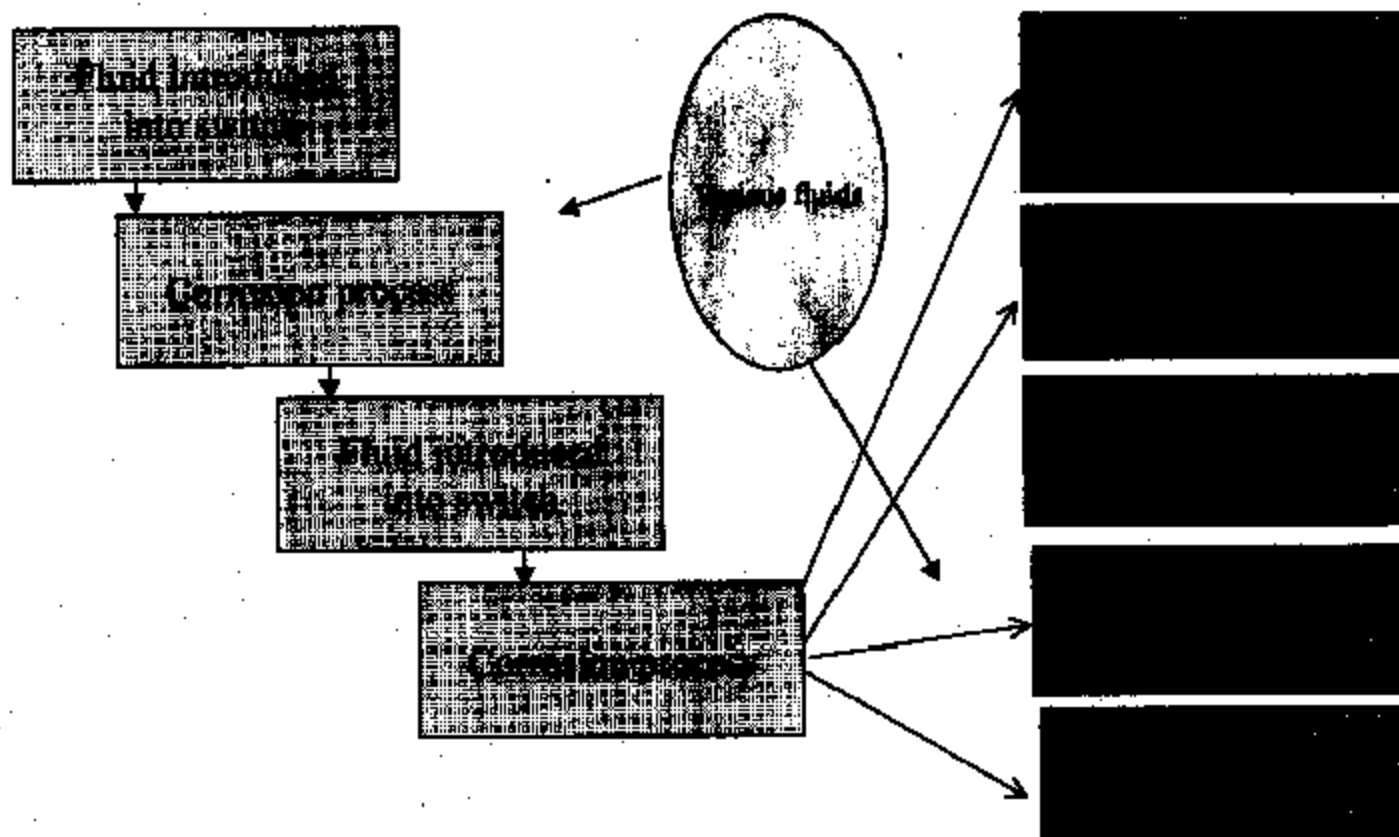


Not Enough Printer Memory -- See User's Guide

3713 8496



“Corrosion” potential cause time line Theory Time Line

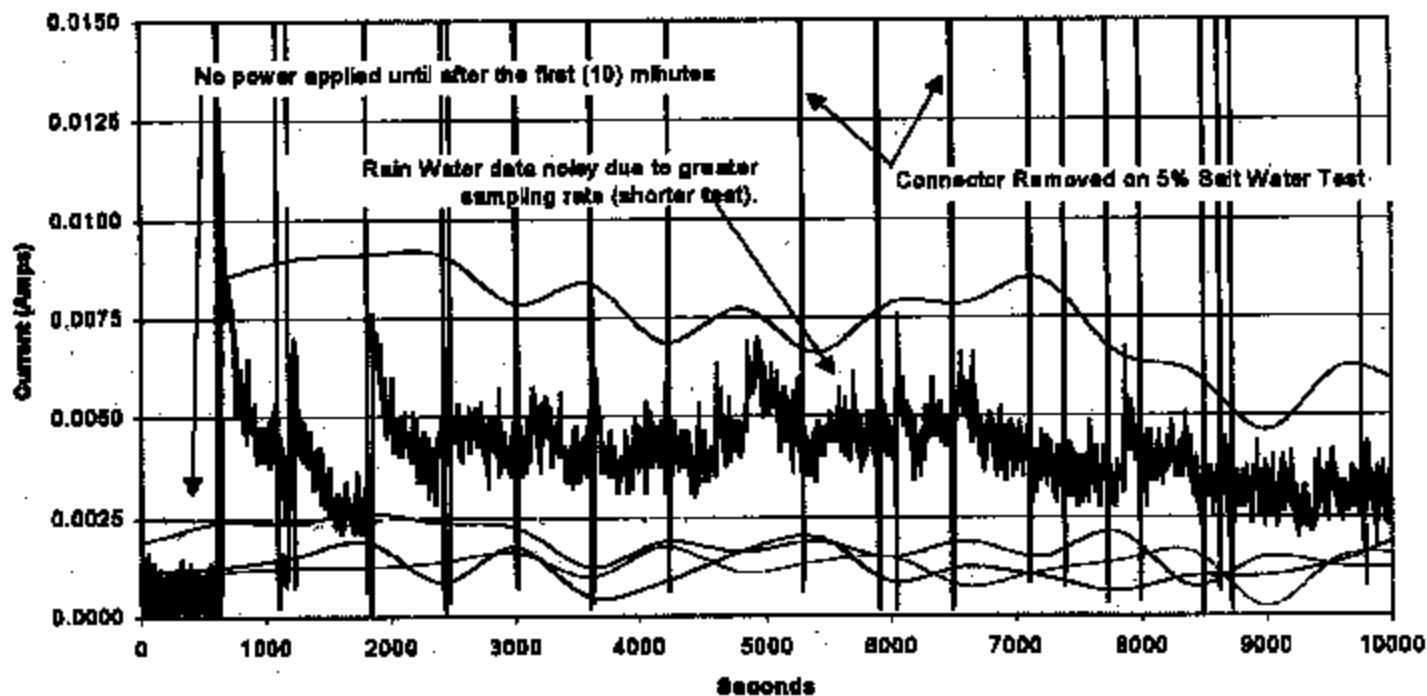
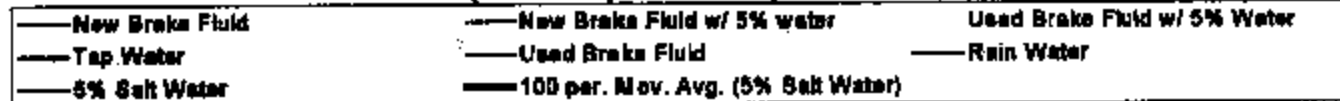


Attachment





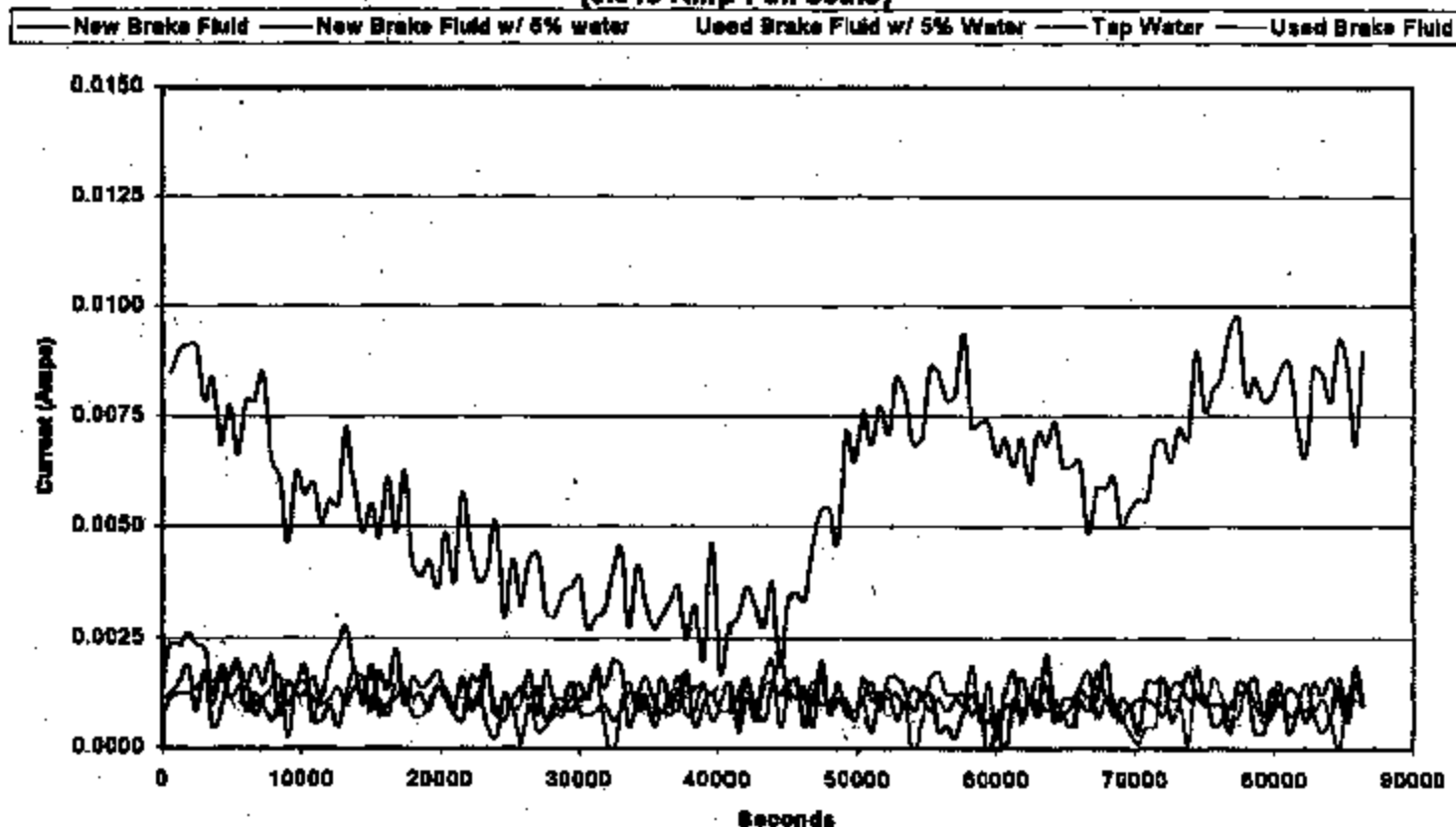
Hexport Current vs. Time (3) Hour Fluid Ingress Experiment (8.015 Amp Full Scale)



'Intentional ignition created thru TI fluid ingress lab test PS/99/13'



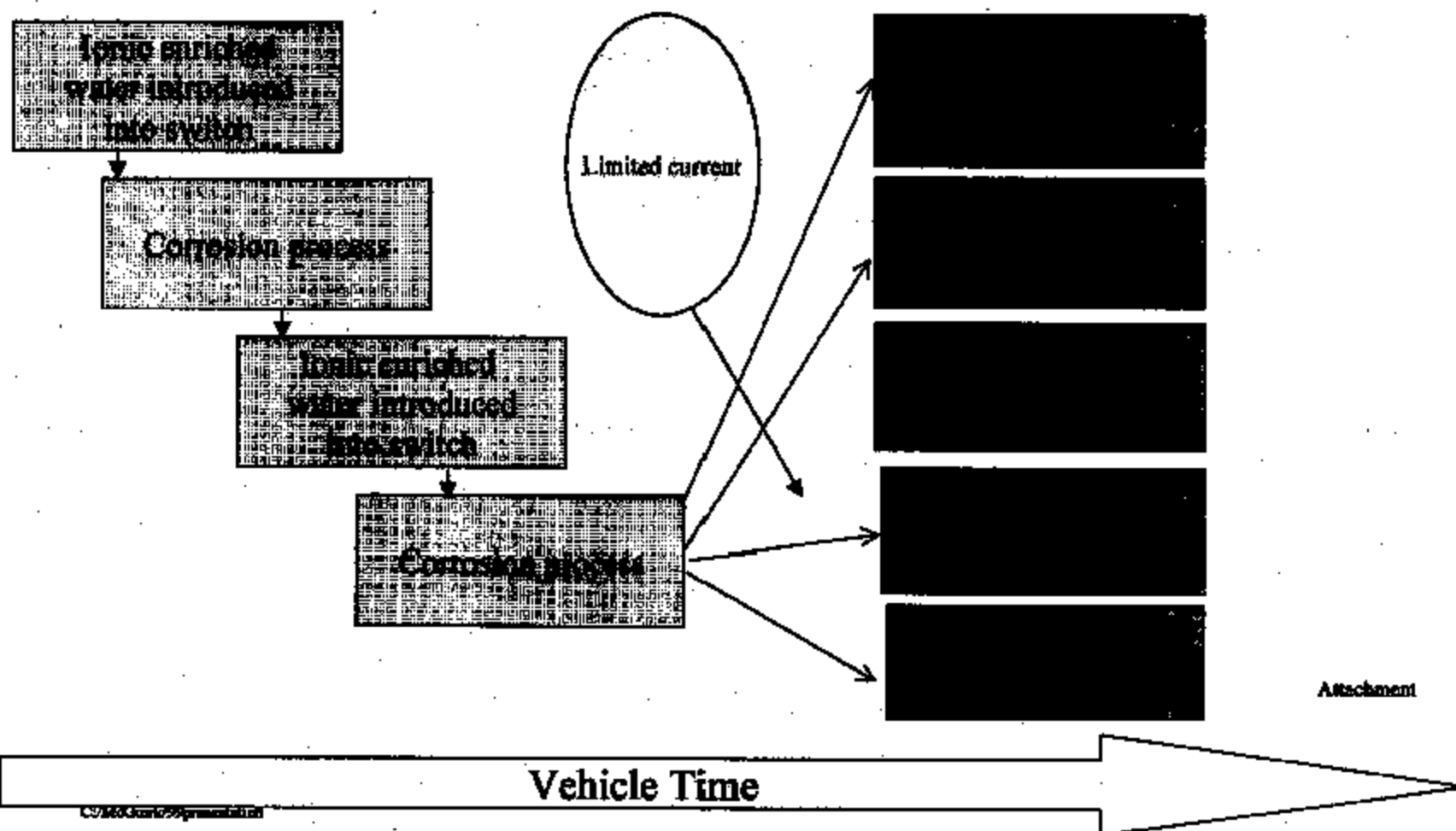
Hexport Current vs. Time
(24) Hour Fluid Ingress Experiment
(0.015 Amp Full Scale)



5713 8499

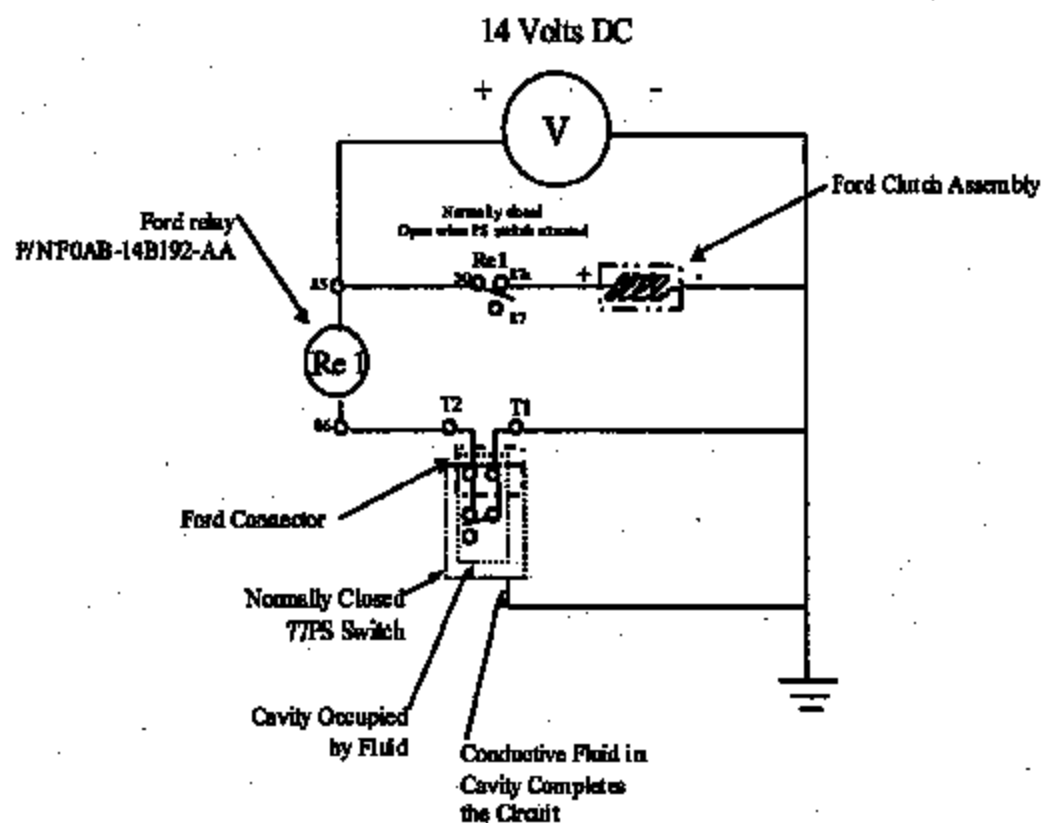


“Corrosion” potential cause time line Theory Time Line





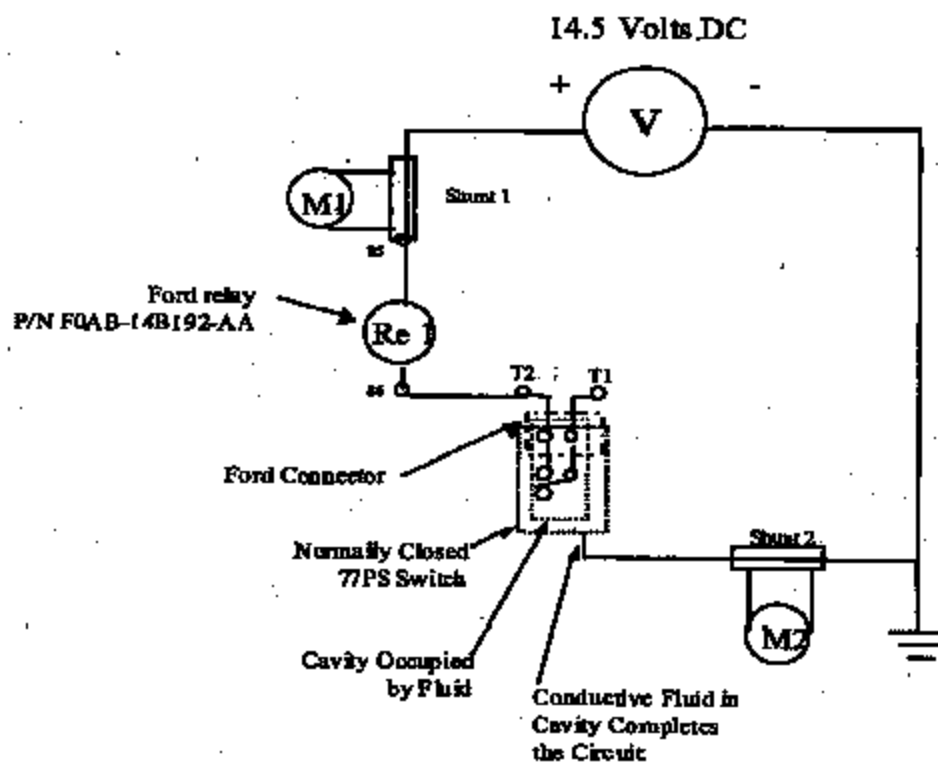
77PS Proposed Wiring Schematic



3713 6501



200 mAmp Current Limit Circuit Test Setup





See low current stuff from sean



TEXAS
INSTRUMENTS

Brake Pressure Switch

Potential Thermal Event Theory Profile 4/21/99



Today's Date: UPDATED 04/21/99

Scope or Effect Description

1. Operational Definition (Problem Statement): TOWN CAR UNDERHOOD FIRES			
2. Description	IS	IS NOT	Get Information
WREATH Town Car MAY '92, '93, '94	- Electrical pressure switches - Connector - Servo system - Electrical Distribution	Crown Victoria? Grand Marquis? TB Super Coupe? MAY '91, '93, '95? '92, '93, '94?	COMPARE PLATFORMS
	PRESS... Electrical pressure switches Connector Servo system Electrical Distribution	Not only pressure switches	COLLECT/TEST OTHER SYSTEM COMPONENTS FOR "SYNERGY" COMPARE VEHICLE OPTIONS FOR SYNERGY
	SYSTEM ISSUES... - Cables long enough - Locked in park - Short temperature - Brake lights temperature - Discharged battery - Door locked? - Hazard lamp?	Other circuits	COMPARE WARRANTY
WREATH	Driver side hood Medium vehicle is engine compartment	Passenger side hood Dash - poor compartment Not likely to engine compartment Not low in engine compartment	EVALUATE HEAT SOURCES
WREATH	1-24 hours after parking ignition off After 4-5 years After 100K miles After AAA switch cycles	Not while driving Not while ignition on Not before 3 years? Not before 100K miles Not before 1000 cycles	EVALUATE POWER AND HEAT AND WIND SOURCES REVIEW NOTES
HOW BIG	140 cars / 223K units "variable size" flame	Not all cars? Not "variable"	COMPARE PLATFORMS READ FIRE RPTS
	Several pressure switches Not all pressure switches	Not all underhood fires Not all pressure switches	PARITY UNDERHOOD



**TEXAS
INSTRUMENTS**

Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99

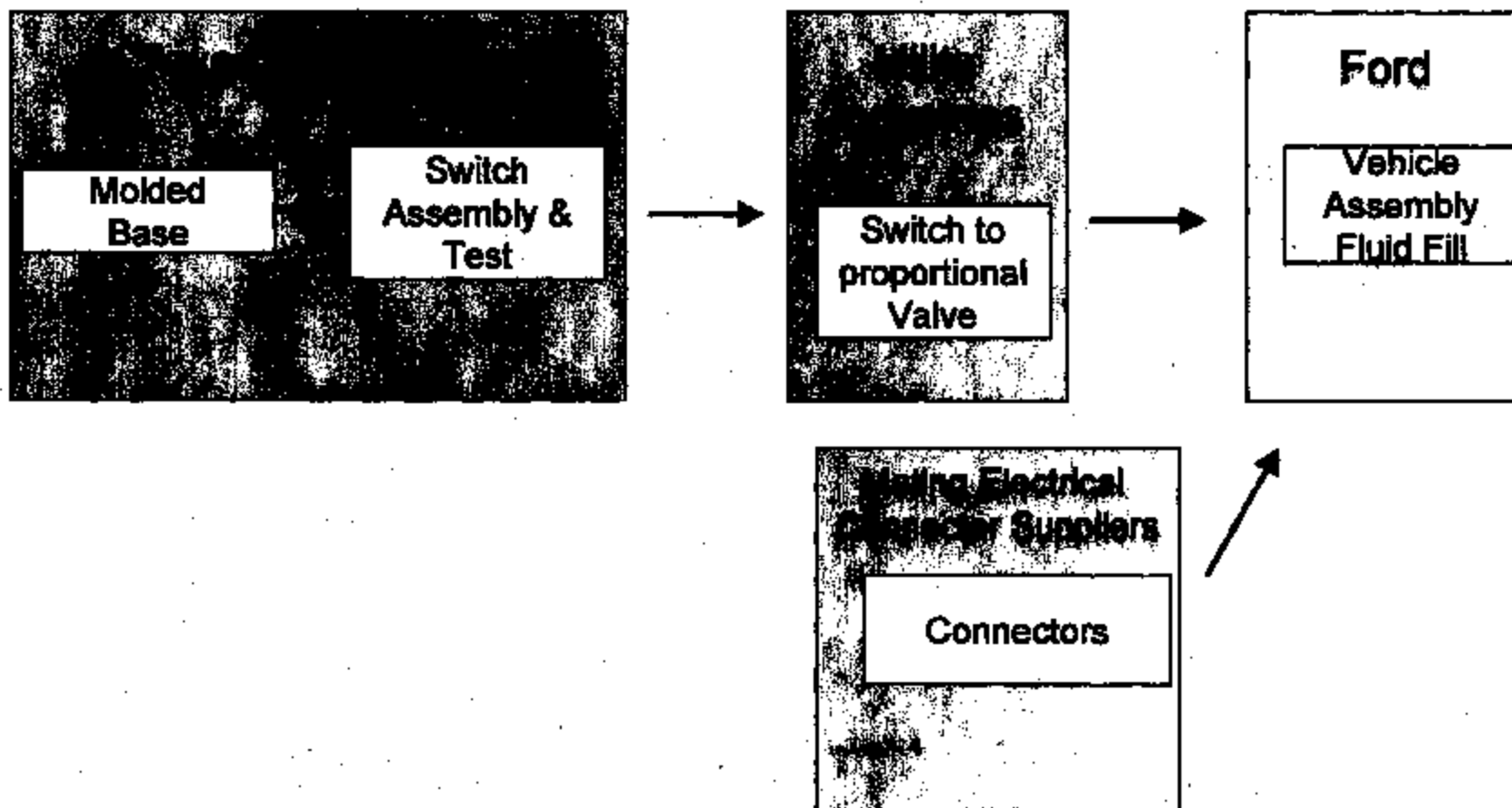


Texas Instruments
Automotive Services & Controls
ED Report

Customer Title	77 PG Thermal Events	Open Date	1/99
TLCAR Report Number	CAR 88-28	Updated	01/99
Vehicle	Vehicle	Part Name	Electric Speed Control Description/Version
Model	Trim Cx	Part No.	77PG D-1
Part	Vehicle		
1. Name: S. Deshpande B. Duggan A. McQuirk C. Duggan D. Miller T. Duggan	2. Problem Description Under hood active	% Effectiveness Dedicated	Implementation Dedicated
Under hood, controlling fueling speed control system			
4. Root Cause: See subelement 1, B - IS NOT TRUE (Theories of 5/15/99)		% Effectiveness Unknown	
- Water enters pressure switch then connector - Continuous power (when connector) - Connector creates high resistance - Resistance creates local heating - Several exposures over time (1) - Local heating creates pressure switch and connector plastic - Connector produced no indication			
5. Cause: Permanent Connector Action See subelement 2, 3, 4	Verification TBD by lab experiments	% Effectiveness Unknown	
Under Hood: - Entry harness - Connector - Quick ground shield protector - Improper connector seal - Electrical connector power - Charge life extension - Variable power flow/potential reduction - Locally plastic penetrates - Operates properly - Merit to ground potential			
6. Implemented Permanent Corrective Action:		Implementation	
7. Action(s) to Prevent Recurrence		Implementation	
Eliminate contact points, reduce power to function and, set code after "Input" electrical function			
8. Configuration Item	Class Desc:	Report By:	A. McQuirk
		Dept Name:	QA Manager
		Telephone No.:	(909) 235-3000



PRESSURE SWITCH "FLOW DIAGRAM" ('92, '93, TOWN CAR)



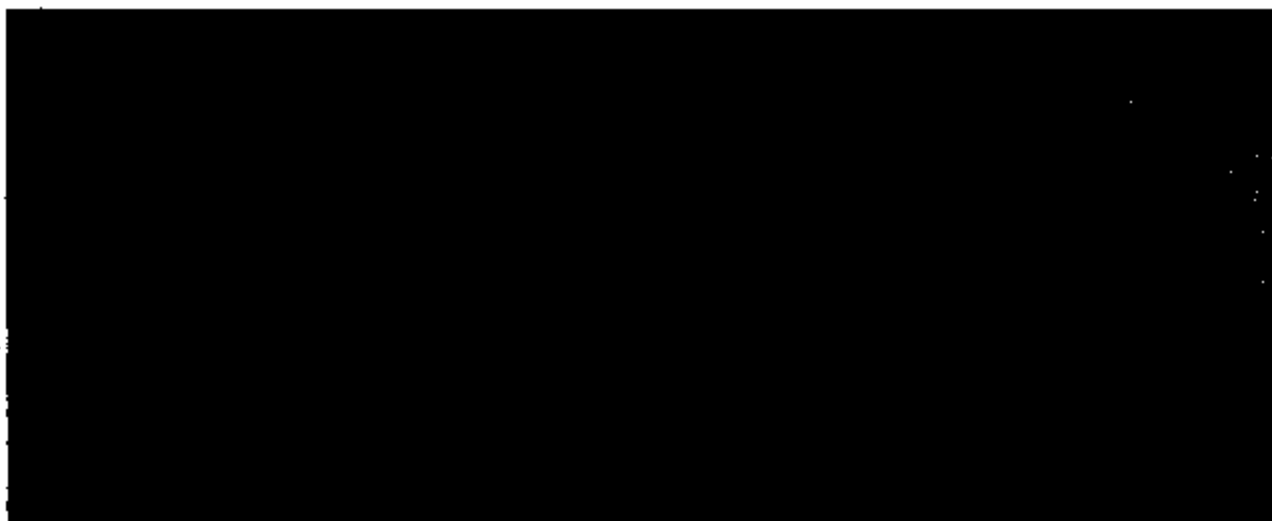


Brake Pressure Switch

Potential Thermal Event Theory Profile 4/21/99



SUMMARY OF 4/21/99



- TI to complete corrosion analysis of parts after testing
- 1/2 - Ford 1/2 - TI
- show deposits, no deposits before Andy
- old brake fluids

C:\McGill\99presentation

- send preferred polarity

Andy

Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99



77psl2-1		GROSS QTY		COMPLETE	COMPLETE	BEGIN	IMPACT	COMMENTS/CONCERNS
COMPONENT	DESCRIPTION	REQUIRED	SUPPLIER	1KK	2KK	PARTIAL	TO TI	
27405-1	CONVERTER	2,040,000	KF BASSLER	10 WKS	18 WKS	2 WKS	NONE	ADD OVERTIME/MATERIAL AVAILABILITY
27639-1	WASHER / A	2,040,000	DIEMASTER	10 WKS	18 WKS	2 WKS	NONE	MATERIAL AVAILABILITY
27713-1	CUP 77PS	2,040,000	VALENTINE	8 WKS	10 WKS	1 WK	NONE	RAW MATERIAL AVAILABILITY
36658-27	57PS	2,040,000	DISC DEPT	12+ WKS	24 WKS	3 WKS	TOOL \$?	POSSIBLE CAPACITY ISSUE
36800-1	HEXPORT 77	2,040,000	ELCO	10 WKS	25 WKS	3 WKS	NONE	RAW MATERIAL AVAILABILITY
74224-1	KAPTON	204	EI DUPONT	2 WKS	2 WKS	2 WKS	NONE	
27225-1	KAPTON ST	1,102	EI DUPONT	3 WKS	3 WKS	2 WKS	NONE	
74353-1	GASKET	2,040,000	JBL PARKER	8 WKS	18 WKS	3 WKS	NONE	ELIMINATE CORES WILL INCREASE DEL BY 10%
36888-1	STATIONARY	2,040,000	KF BASSLER	10 WKS	18 WKS	2 WKS	NONE	ADD OVERTIME/MATERIAL AVAILABILITY/REELS
28744-1	CONTACT-S	2,040,000	DERRINGER	4 WKS	8 WKS	1 WK	NONE	MATERIAL AVAILABILITY
36887-1	MOVABLE TI	2,040,000	KF BASSLER	10 WKS	18 WKS	2 WKS	NONE	ADD OVERTIME/MATERIAL AVAILABILITY/REELS
27716-1	BE/CU ISSUE	449	BRUSHWELL	1 WK	2 WKS	1 WK	NONE	NONE
74916-1	RIVET	2,040,000	JOHN HASS	8 WKS	11 WKS	4 WKS	NONE	RAW MATERIAL AVAILABILITY
46515-2	PRESSURE	2,040,000	INT/MOLDING	16 WKS	32 WKS	4 WKS	NONE	RAW MATERIAL CHANGEOVER/PRESS CAPACITY
74078-143	CERAMIC PI	2,040,000	PARATECH	7 WKS	15 WKS	2 WKS	NONE	
74247-4	BLUE O-RING	2,040,000	JBL PARKER	8 WKS	10 WKS	2 WKS	NONE	ELIMINATE CORES WILL INCREASE DEL BY 10%
74797-1	CRIMP RING	2,040,000	VALENTINE	8 WKS	10 WKS	1 WK	NONE	RAW MATERIAL AVAILABILITY
74888-1	RED THREAD	2,040,000	MARK IV CAL	3 WKS	6 WKS	1 WK	NONE	

77PS

SWITCH

TI

7/15,8/1,8/15 250K/MONTH

7 day weeks, thru summer vacations, 'std' plastic mold

3713 8508

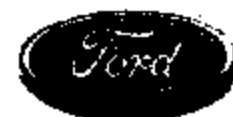


AGENDA

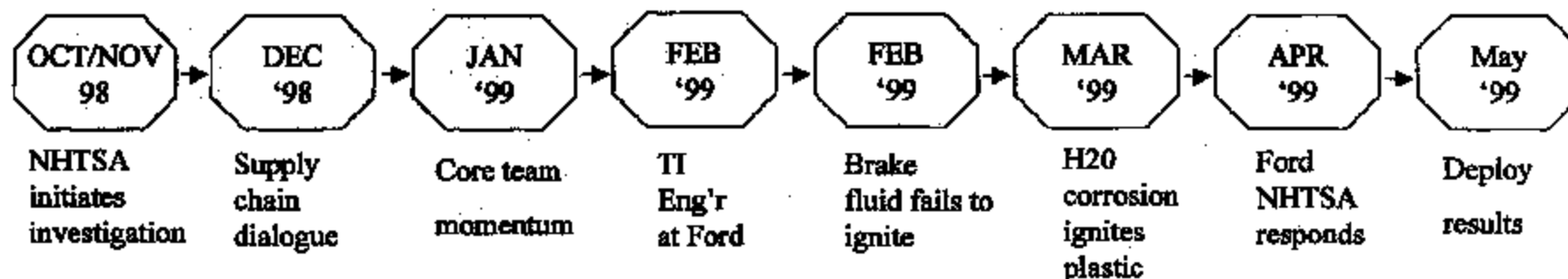
- **CONTRIBUTING FACTORS AND ROBUST DESIGN DIALOGUE**
- **OVERVIEW TIME LINE**
- **SYSTEM OVERVIEW**
 - **SWITCH AND CONNECTOR**
- **IS / IS NOT TABLE**
- **CAUSE AND EFFECT DIAGRAMS**
- **THEORIES**
 - **BRAKE FLUID IGNITION**
 - **PLASTIC IGNITION**
- **TEST RESULTS**
- **CONTRIBUTING FACTORS AND ROBUST DESIGN DIALOGUE**
- **ROBUST DESIGN ALTERNATIVES**



1. Connector Seal to P/S
2. Power continuously available
 - A. Operator notifications
3. Switch orientation/location
4. Current limit / fuse
5. Hexport isolation
6. Plastic ignition robustness
 - A. Nearby fuels
7. Kapton seal of P/S
8. Environmental seal of P/S



OVERVIEW OF
CONCERN TIME LINE

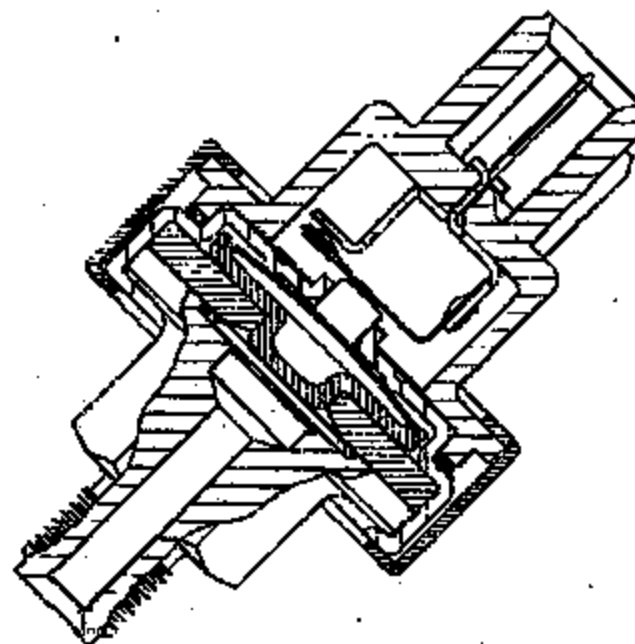
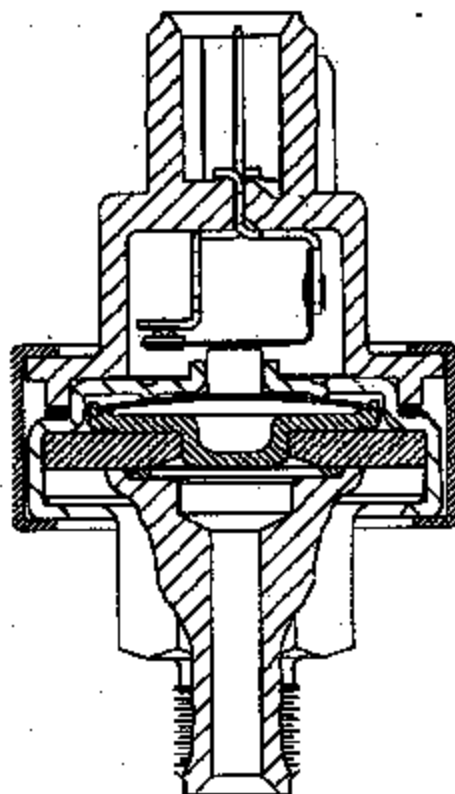


Attachment



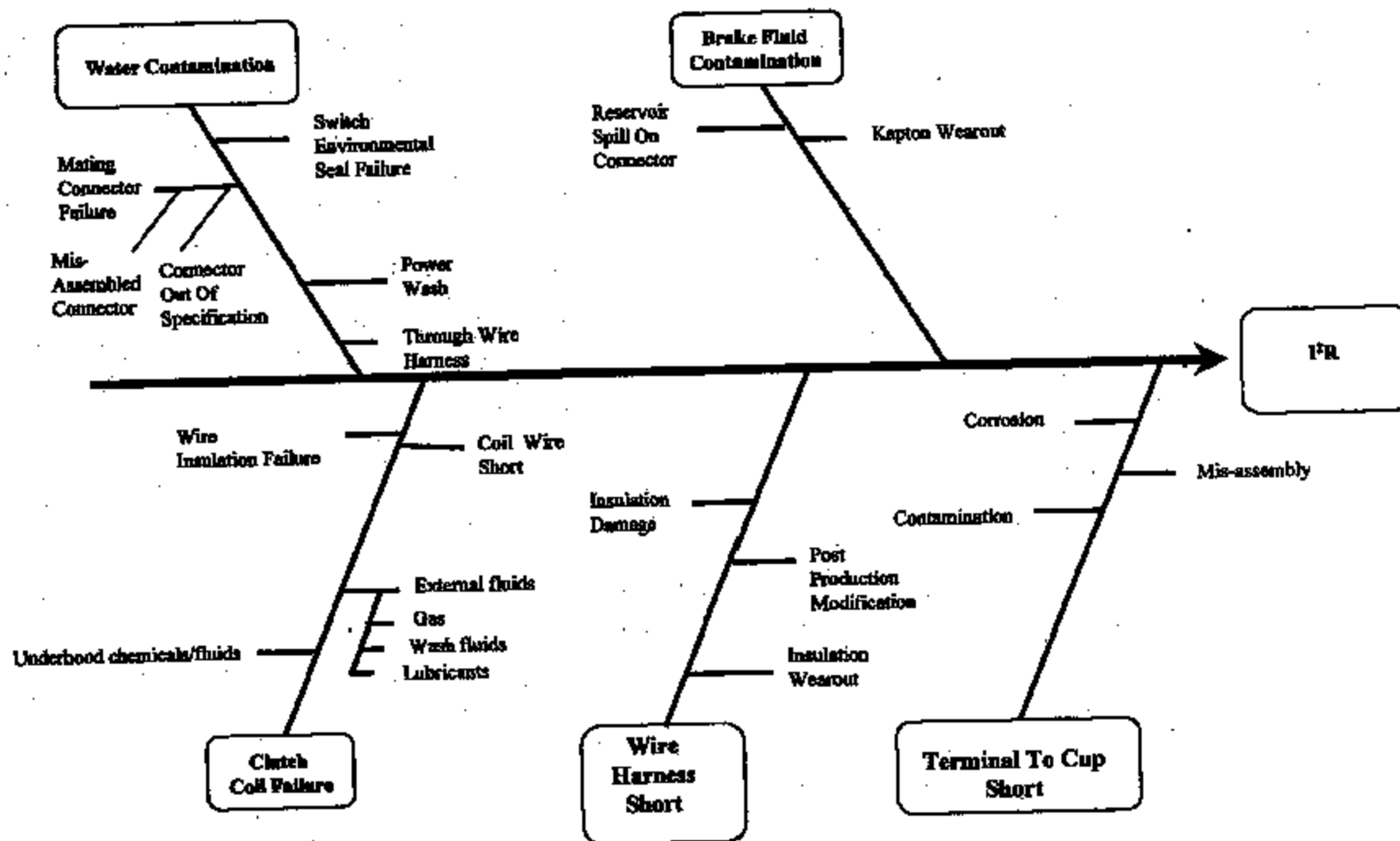
Brake Switch Overview

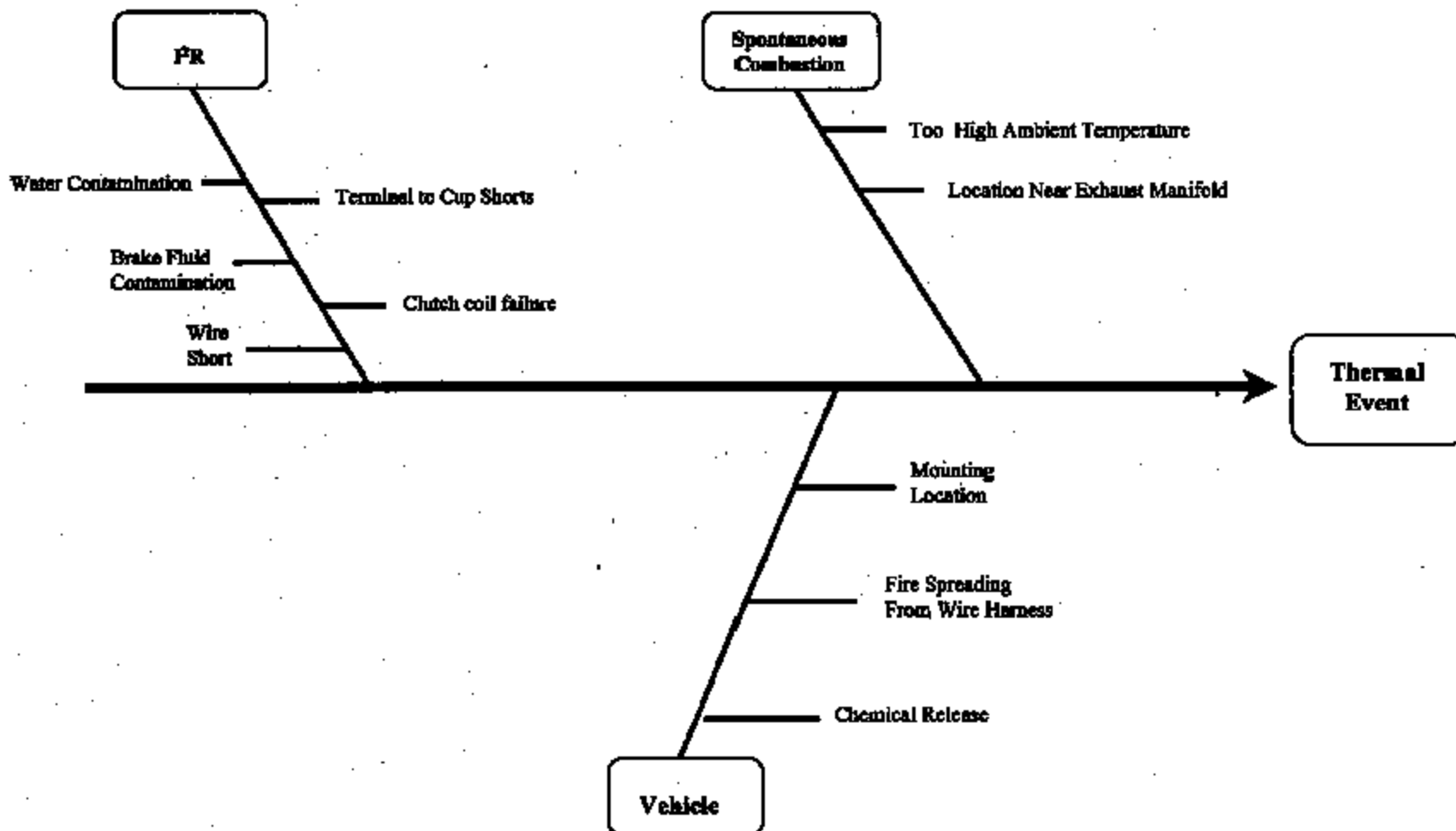
- Mounted under hood...14 inches under master cylinder
- Mounted on proportional valve at frame of vehicle
- Switch oriented approximately 25 degrees off vertical (connector up)
- Switch controls speed control...normally closed, opens at 130 psi
- Continuously powered by battery 15 amp connection



3713 0513

Brake Pressure Switch Potential Thermal Event Theory Profile 4/14/99







Brake Pressure Switch
Potential Thermal Event Theory Profile 4/14/99



SEE EXCEL SPREADSHEET

3713 8516



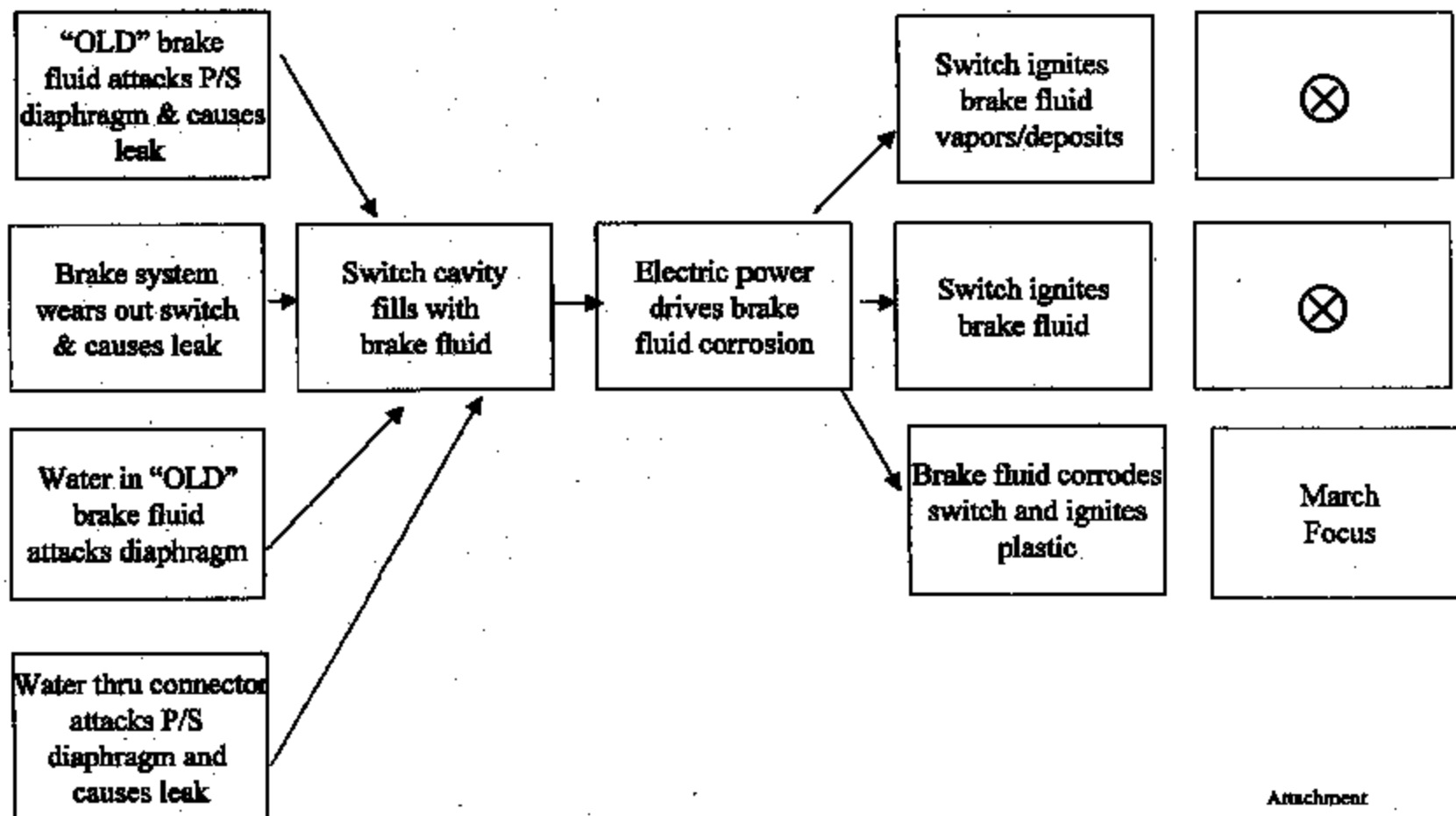
TEXAS
INSTRUMENTS

Brake Pressure Switch

Potential Thermal Event Theory Profile 4/14/99



REFINED BRAKE FLUID IGNITION THEORY POSSIBLE CAUSE THEORIES "FEB '99 FOCUS"



3713 8517

C:\McQuirk\99presentation

Attachment



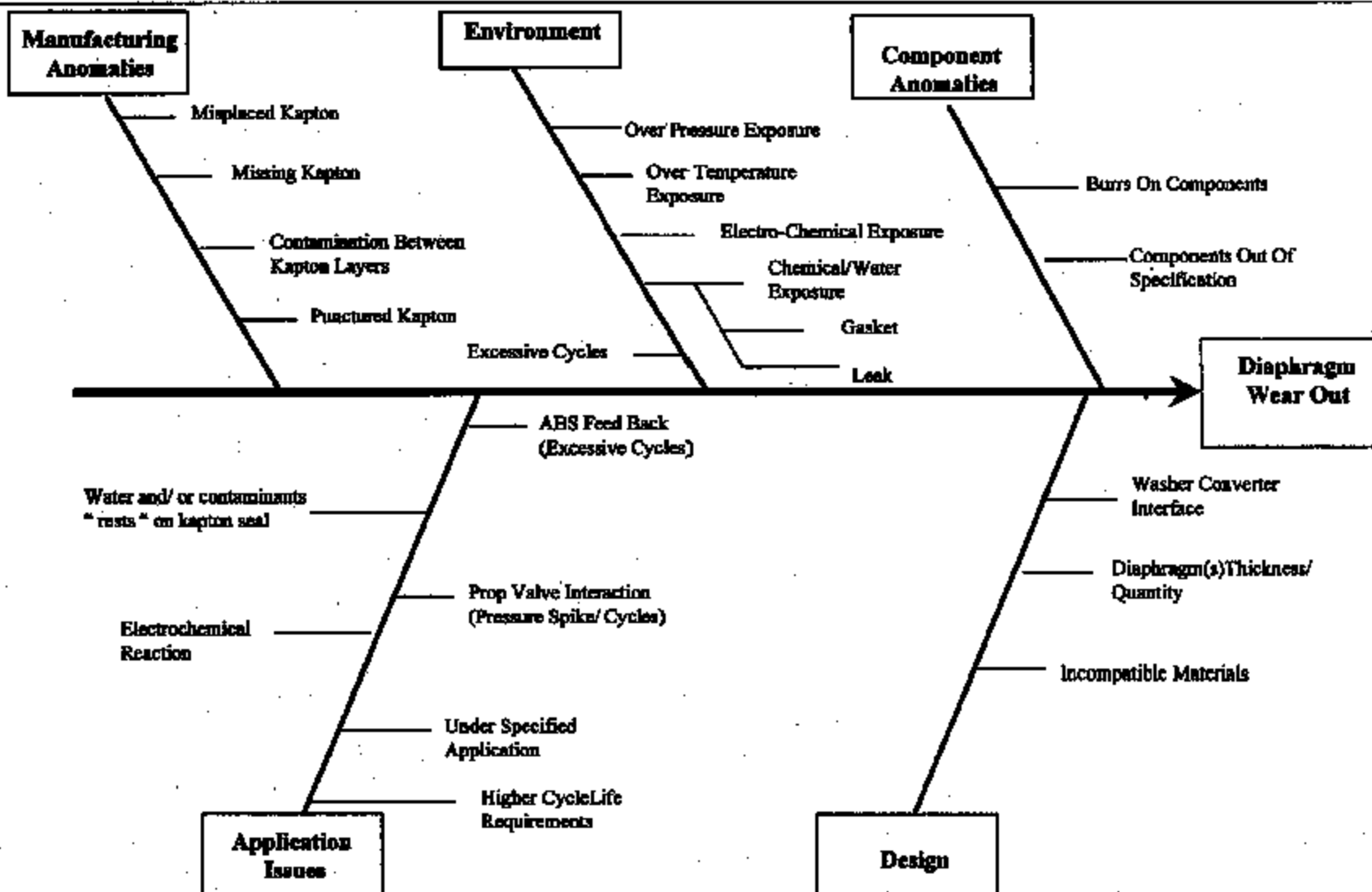
- TI and Ford not successful in creating ignition with "new" brake fluids



TEXAS
INSTRUMENTS

Brake Pressure Switch

Potential Thermal Event Theory Profile 4/14/99

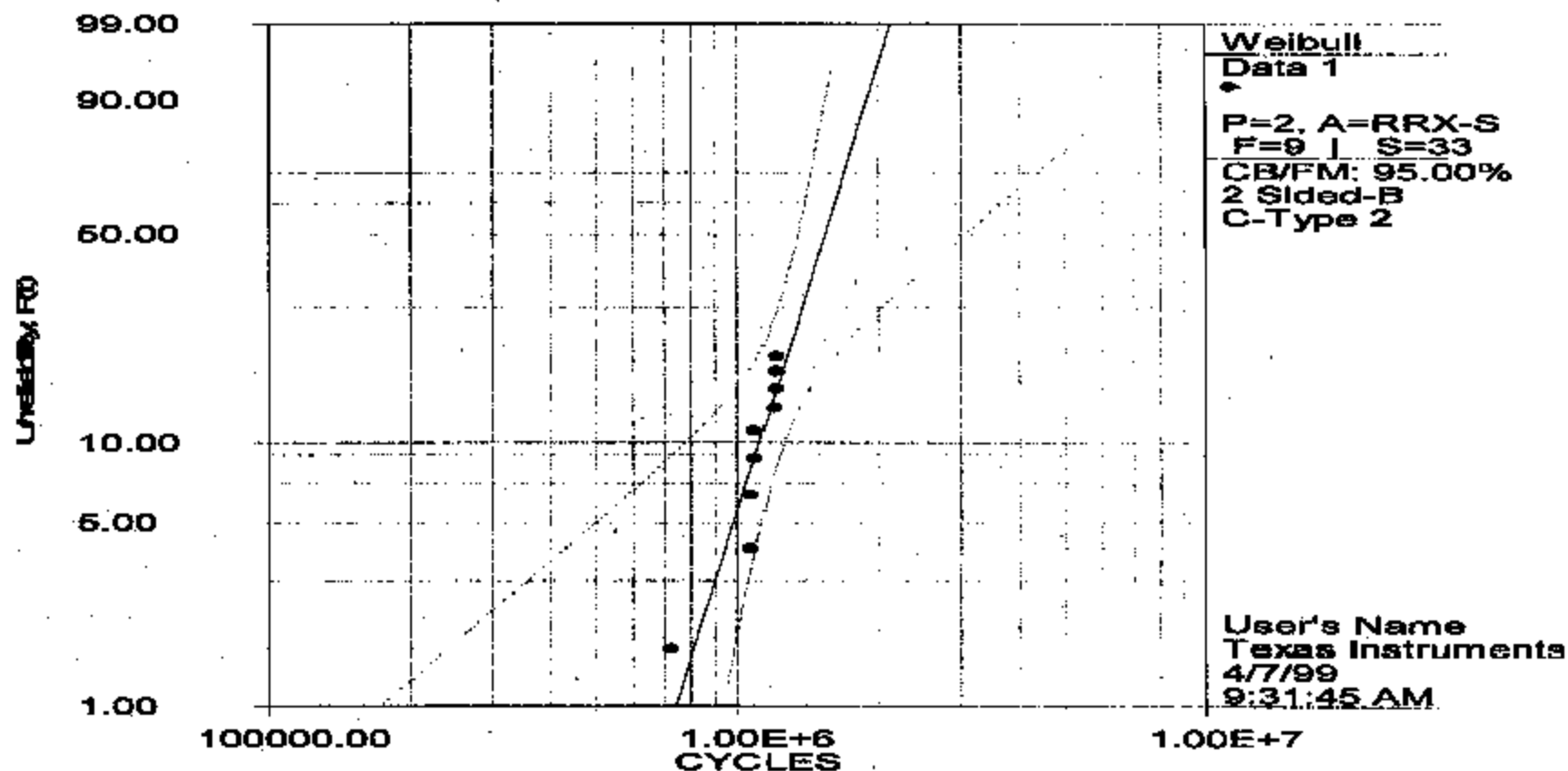


3713 8619



Generated by: ReliaSoft's Weibull++ 5.0 - www.Weibull.com - 888-886-0410

77PSL2-1 COMBINED DATA



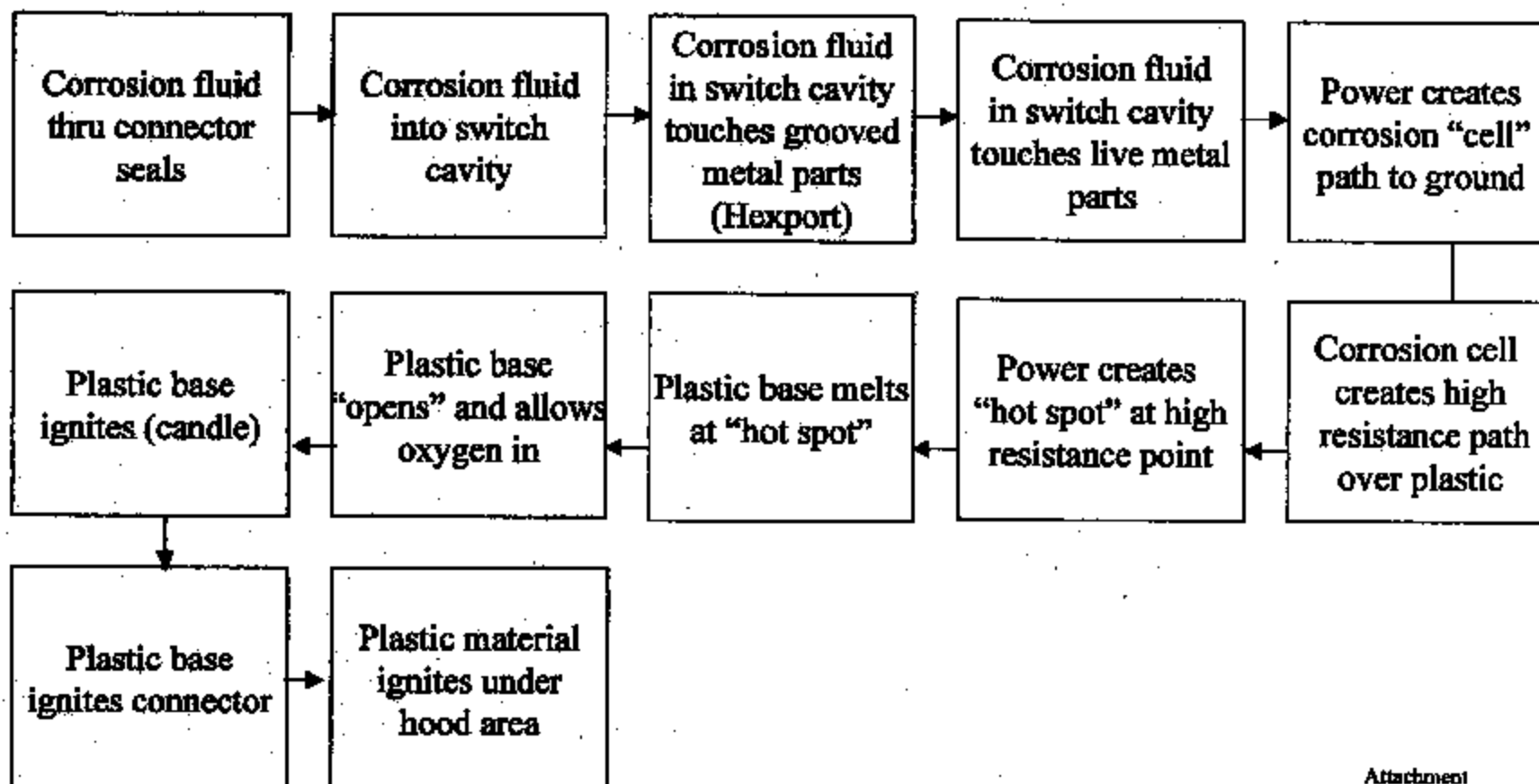
$\beta=5.83, \eta=1.64E+6, \rho=0.91$



- "Town Car" switch meets accelerated/simulated life cycle specification shown by "success" and "end-of-life" testing



PROCESS FLOW DIAGRAM
"CORROSION" POTENTIAL CAUSE FLOW ANALYSIS



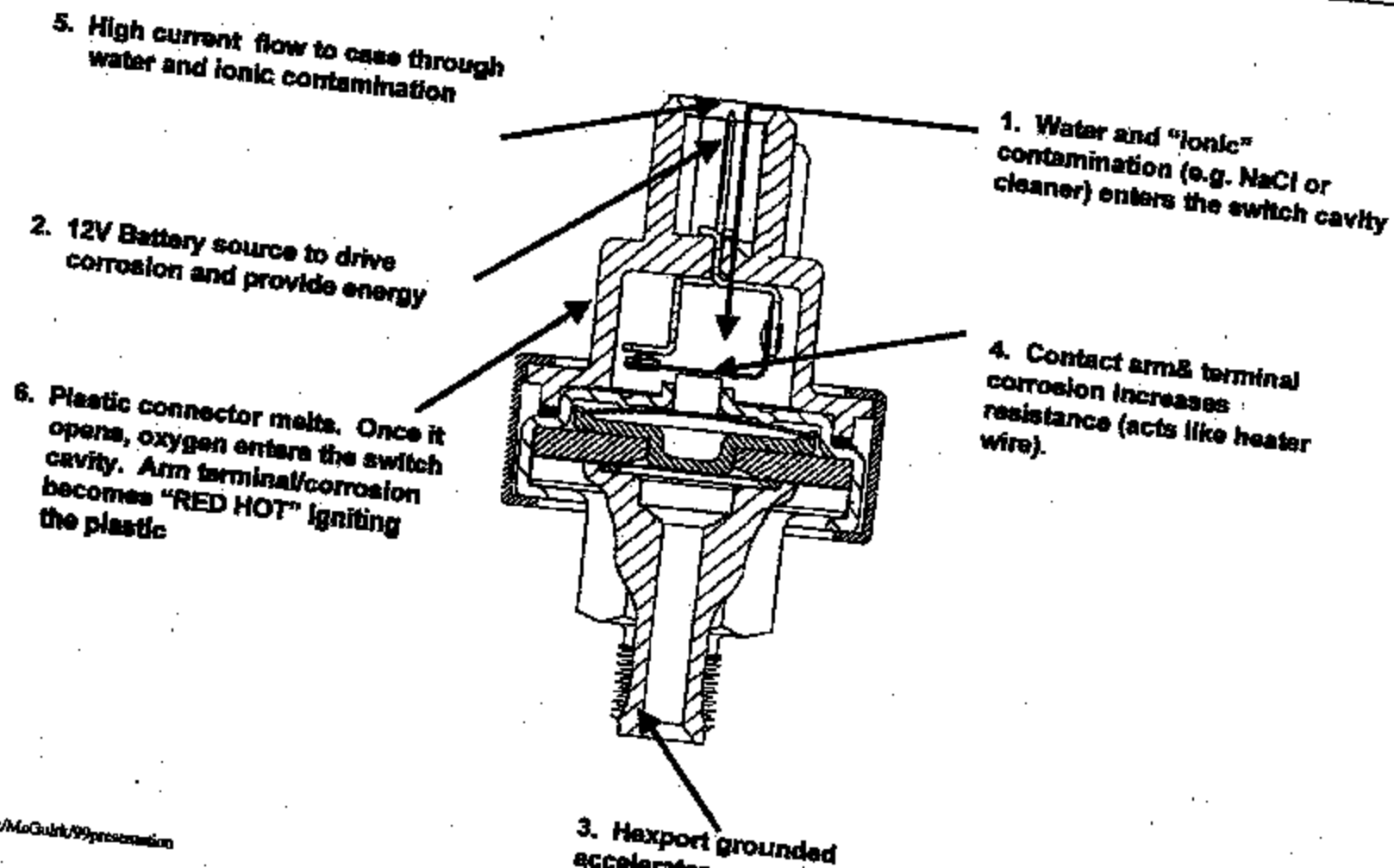
3713 8522



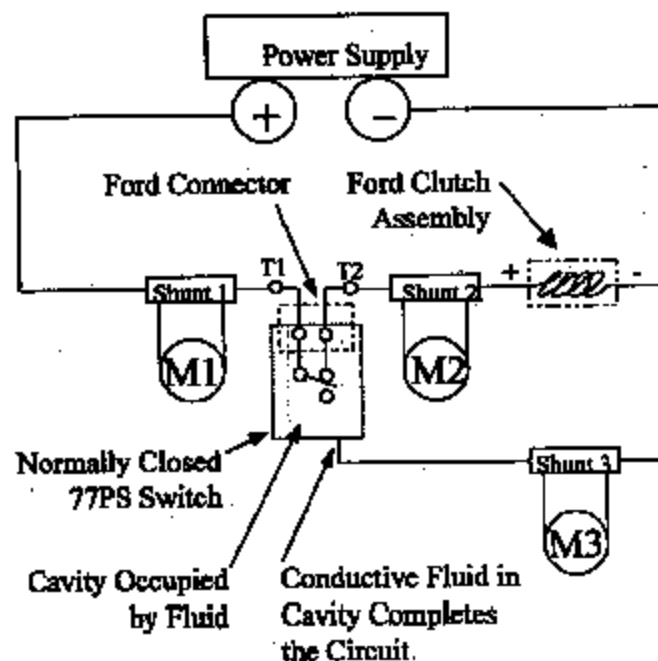
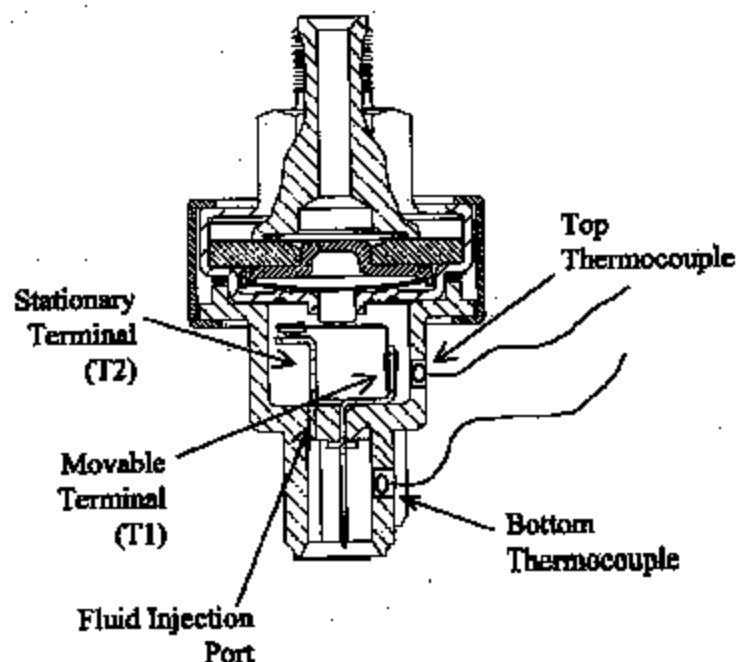
TEXAS
INSTRUMENTS

Brake Pressure Switch

Potential Thermal Event Theory Profile 4/14/99



5% Salt Water Ingress Experiment Test 1

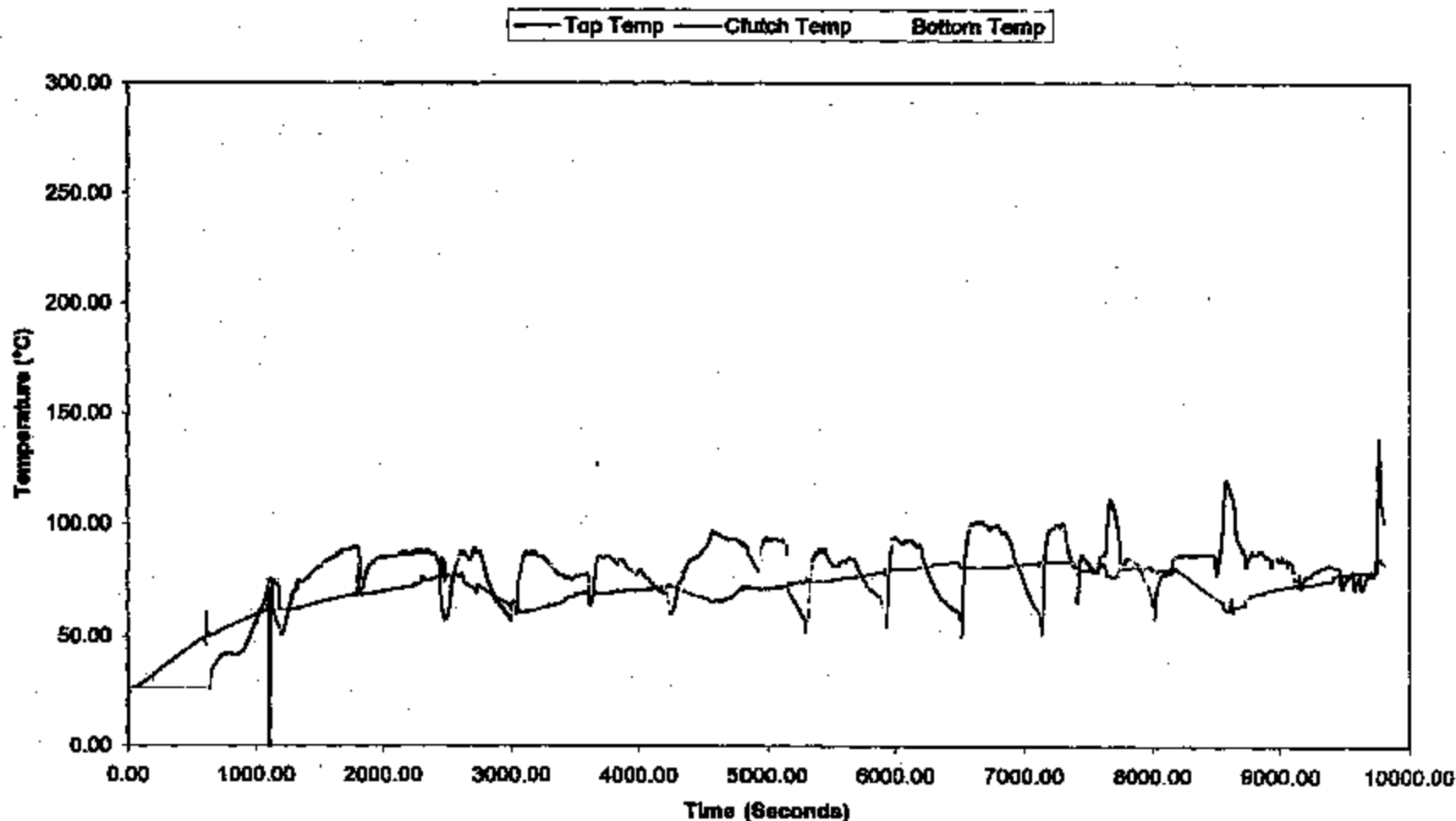


Test 1: Figure 1 and Figure 2.

TI Report PS/99/12
03/15/99

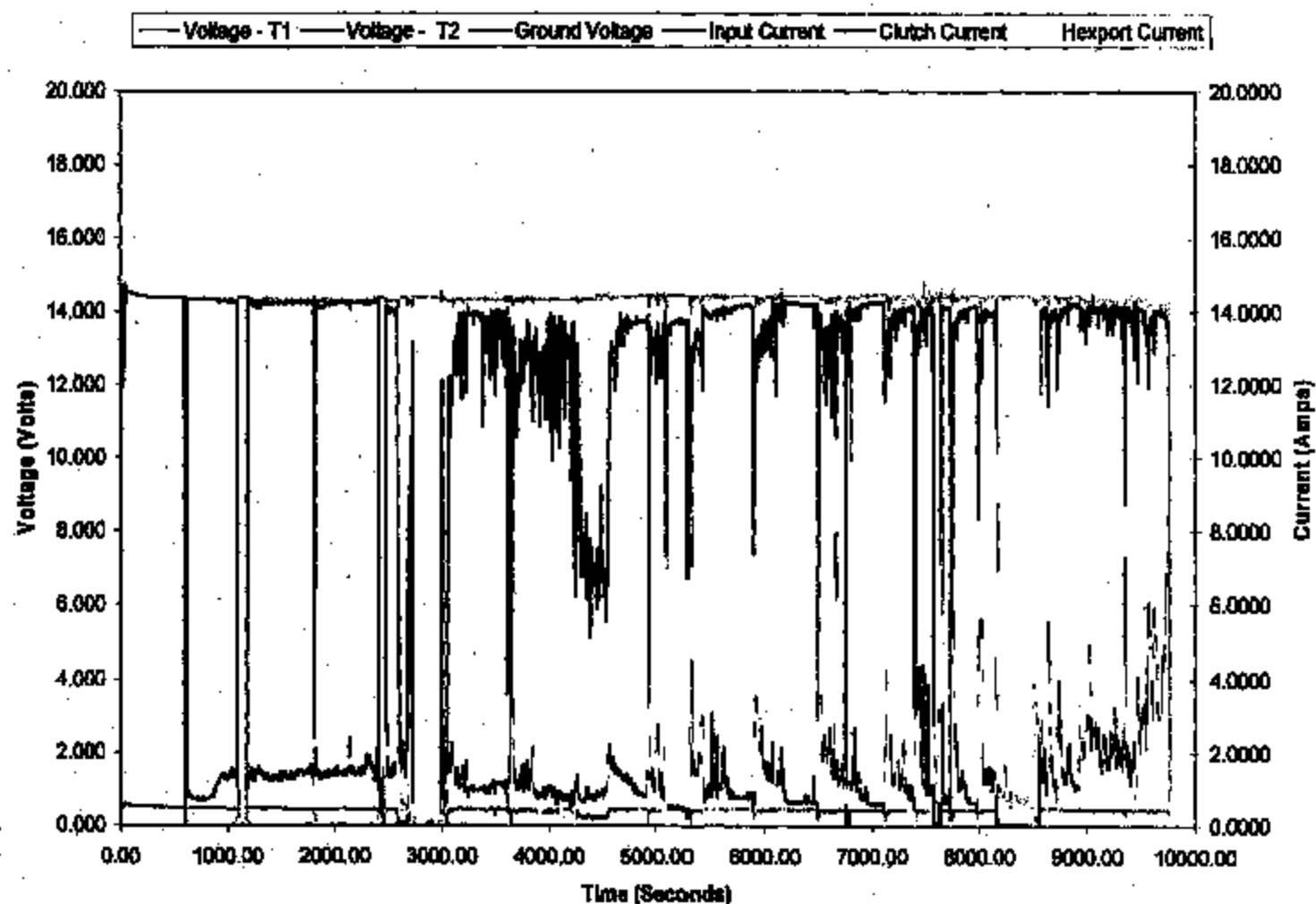


5% Salt Water Ingress Experiment
Temperature vs. Time





5% Salt Water Ingress Experiment





77PS

45° Orientation in 15 Amp Circuit

5% Salt Water Ingress

Cellanex 4300 Base

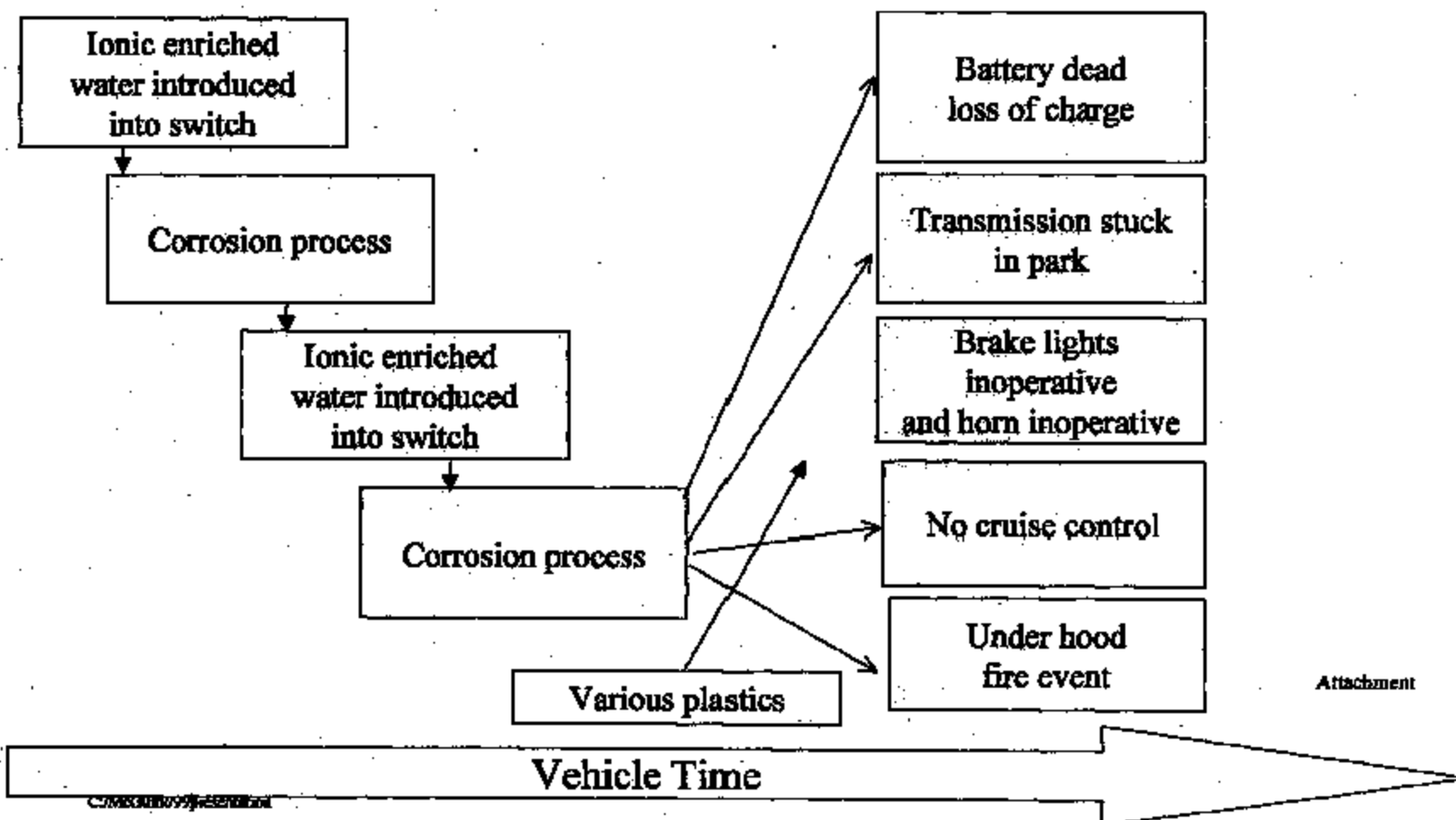


Cellanex 3316 Base



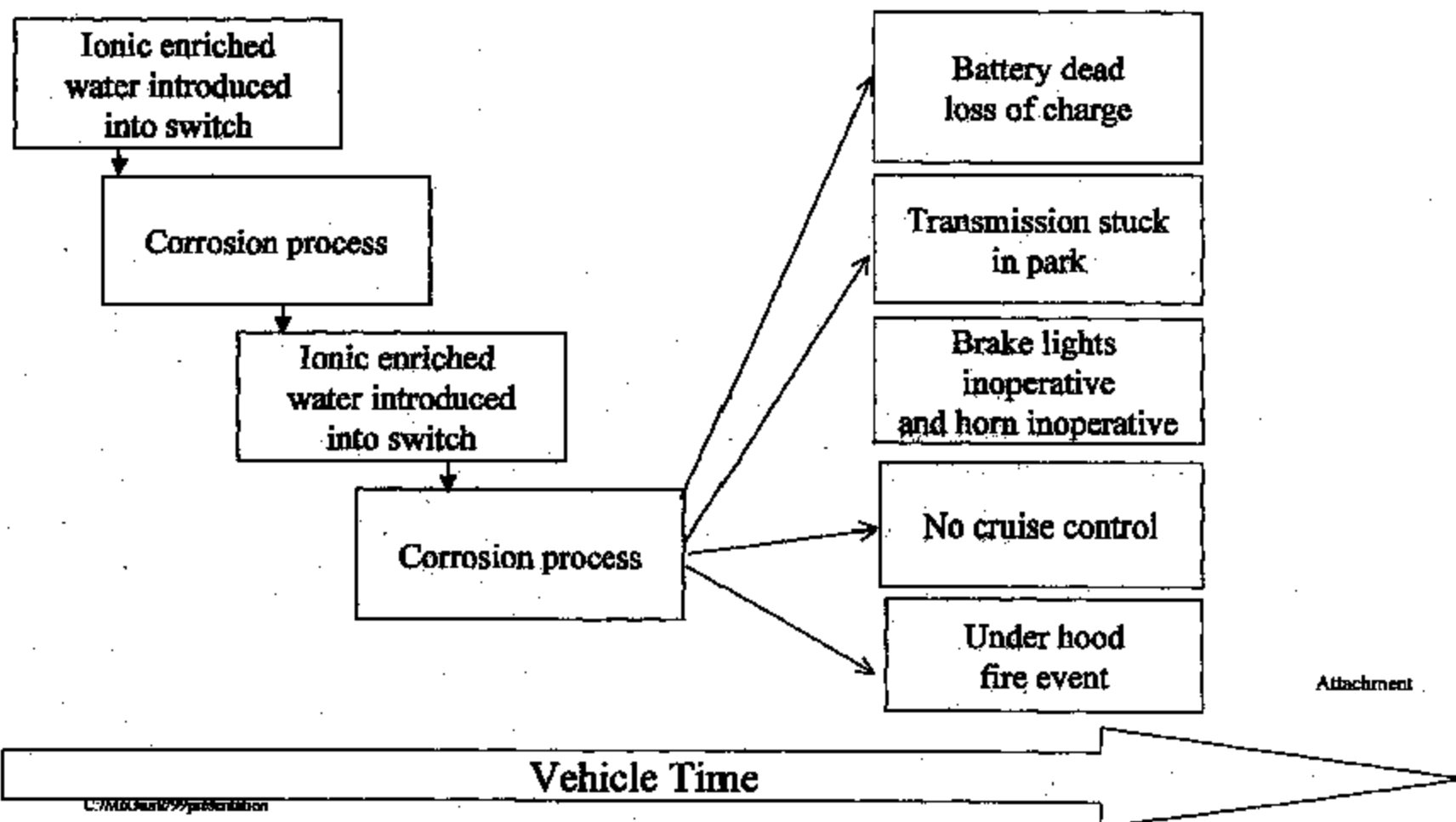


"Corrosion" potential cause time line Theory Time Line



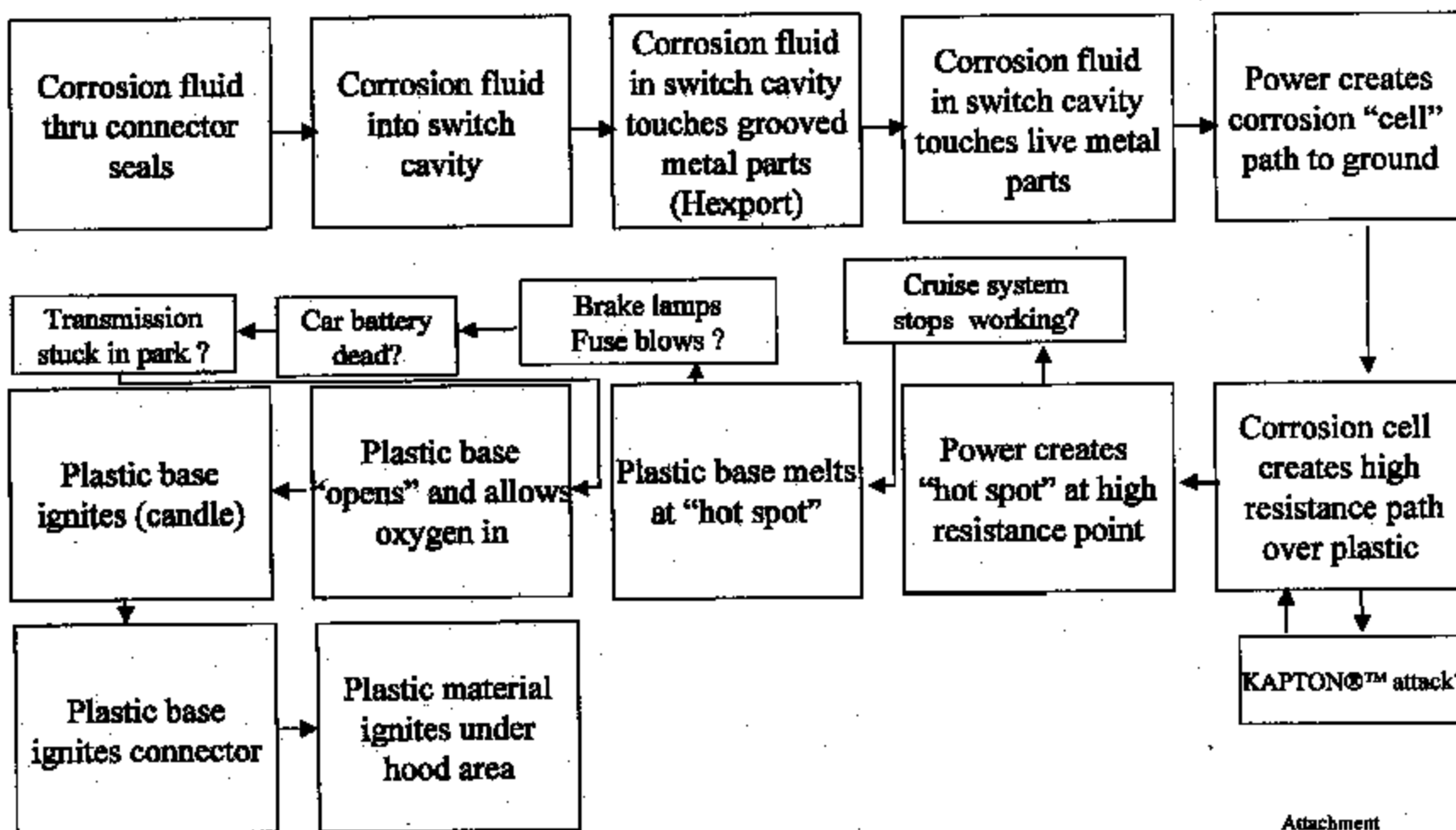


"Corrosion" potential cause time line
Theory Time Line





PROCESS FLOW DIAGRAM
"CORROSION" POTENTIAL CAUSE FLOW ANALYSIS



3713 8630



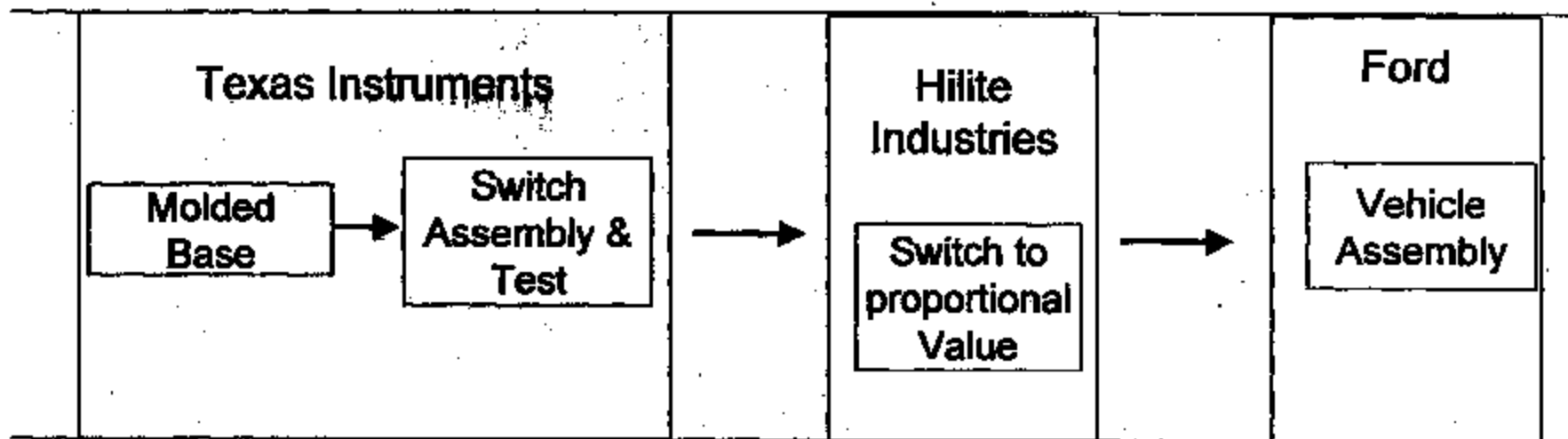
TEXAS
INSTRUMENTS

Brake Pressure Switch

Potential Thermal Event Theory Profile 4/14/99



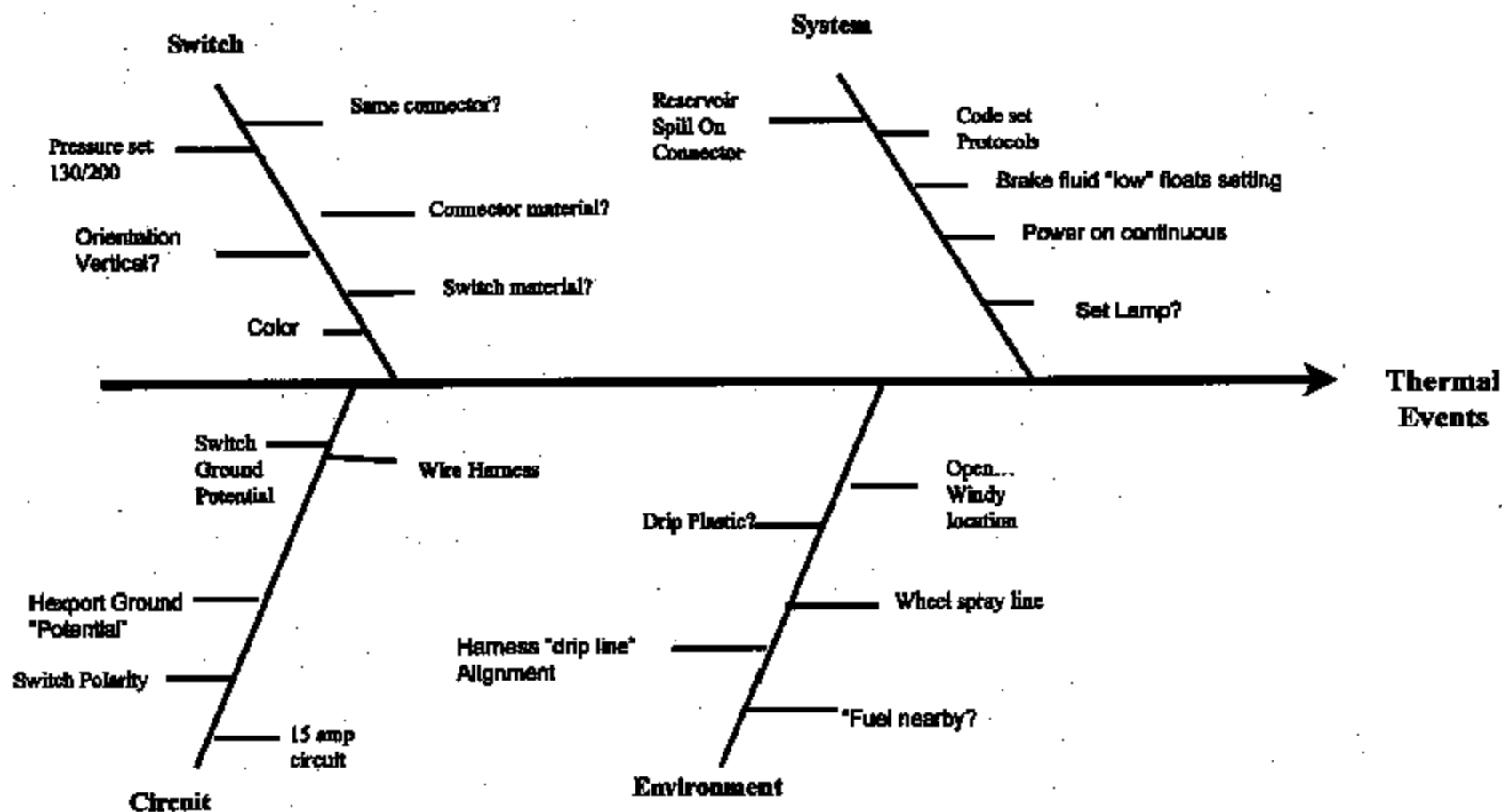
PRESSURE SWITCH "FLOW DIAGRAM" ('92, '93, '94 TOWN CAR)



3713 8531



ECONOLINE VS. TOWN CAR P/S



cc: San Min JTP&J-3 could not show all shipping locations. — ask them for facilities to know on the ship

COUNTRY	SHE TO LOC.	Cell Number	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	POLYMER-1	Material
CAMP CAMP 1983		77PBL-1 / F2VC WFEH AB	31.69	57.11	83.30	8	0	0	0	0	0	0	0	0	2 (brown, #2)	Coltan 4300
		77PBL-3 / F2AC WFEH AA	0	0	0	0	22.84	0	74.7	20.85	0	0	0	0	3 (natural #2)	GE Nory GTX 830
		77PBL-3-2 / FBA WFEH AA	0	0	0	8	0	0	0	0	0	0	0	0	10 (dk grey #1)	GE Nory GTX 830
ITT CAMP 1983		77PBL-2-1 / F2VC WFEH AB	0.85	0	0	0	8	0	0	0	0	0	0	0	2 (brown, #2)	Coltan 4300
		77PBL-2-2 / F3DZ WFEH AA	0	0	0	8	8	0	0	0	0	4.28	8.58	1.84	3 (natural #2)	GE Nory GTX 830
	1983	77PBL-2-2 / F3DZ WFEH AA	1.42	3.00	3.35	1.88	2.38	0.71	0	0	0.47	0.714	8	8.82	3 (natural #2)	GE Nory GTX 830
	1984	77PBL-2-2 / F3DZ WFEH AA	1.42	3.714	1.9	1.42	1.42	0	0.71	0.71	0.714	0.478	0.478	1.18	3 (natural #2)	GE Nory GTX 830
	1986	77PBL-2-2 / F3DZ WFEH AA	0.230	0.952	0.882	1.19	0	0	0	0	0	0	8	0	3 (natural #2)	GE Nory GTX 830
FITE INDUSTRIAL 1982		77PBL-1 / F2VC WFEH AB	40.93	43.21	6.47	21.40	22.36	3.38	35.2	65.78	21.42	43.78	44.74	18.38	2 (brown, #2)	Coltan 4300
		77PBL-2-2 / F3DZ WFEH AA	0	0	0	0	0	0	0	2.78	0	0	0	0	3 (natural #2)	GE Nory GTX 830
	1983	77PBL-1 / F2VC WFEH AB	16.47	16.24	23.58	22.84	14.51	22.81	20.7	28.85	23.58	16.80	24.78	20.7	2 (brown, #2)	Coltan 4300
		77PBL-3 / F2AC WFEH AA	0	0	0	8	0	0	0	0	0.05	0	0	3.35	3 (natural #2)	GE Nory GTX 830
	1984	77PBL-4 / F2AC WFEH AB	23.08	12.83	18.78	25.7	23.85	9.28	6.88	3.9	1.18	8.00	8	0	2 (brown, #2)	Coltan 4300
		77PBL-3-W F2AC WFEH AA	8	0	0	0	5.71	18.12	83.3	27.5	33.78	34.03	18.8	19.31	3 (natural #2)	GE Nory GTX 830
		77PBL-3-1 / F3TA WFEH CA	0	0	0	8	0	0	0	0	0	0	0	0.5	1 (black, #1)	Coltan 4300
	1986	77PBL-3 / F2AC WFEH AA	27.84	30.68	28.32	25.84	16.7	11.18	18.3	7.14	14.04	9.84	2.85	5.85	3 (natural #2)	GE Nory GTX 830
		77PBL-3 / F3TA WFEH CA	5.478	0	0	0	0	2.14	2.85	0.714	0.714	1.78	8.714	4.04	1 (black, #1)	Coltan 4300
		77PBL-2-1 / F2VC WFEH AB	8	0	0.238	0.714	0.478	0	0	0	0	0	0	0	2 (brown, #2)	Coltan 4300
	1988	77PBL-4 / F2AC WFEH AA	11.88	4.76	8.0	0.8	4	8	0	0	0	0	0	0	3 (natural #2)	GE Nory GTX 830
		77PBL-3 / F3TA WFEH CA	0	0	0	1.42	1	8	0	0	0	0	0	0	1 (black, #1)	Coltan 4300
		77PBL-2-1 / F2VC WFEH AB													2 (brown, #2)	Coltan 4300
FORD MOTOR 1982	Service (Brownstownship)	77PBL-2-1 / F2VC WFEH AB	0	0	8	0	0	0	8	0	0.47	4	8	0	2 (brown, #2)	Coltan 4300
	Lands, Tenn	77PBL-3 / F3TA WFEH CA	18.41	19.7	31.41	18.8	23.85	18.7	73.8	18.88	83.18	8.82	17.78	15.33	1 (black, #1)	Coltan 4300
	Brownstownship Lands Condo(Chilite) Kama City Any/Louisville Wagon/Lash Alaska Brownstownship	77PBL-3 / F3TA WFEH CA	0	0	0	8	8	2.44	3.35	83.3	87.11	71.47	88.82	44.26	7 (nat, #1)	GE Nory GTX 830
		77PBL-2-1 / F3DZ WFEH AA	0	0	0	8	8	0	0	0	0	0	0.47	0	3 (natural #2)	GE Nory GTX 830
	1983	Service (Brownstownship)	77PBL-1 / F2VC WFEH AB	0	0	0	0	0	0	0	0	0	0.238	0	0	2 (brown, #2)
	Lands, Tenn Chilite/Brownstownship	77PBL-3 / F3TA WFEH CA	1.87	0	0	0	0	8	0	0	0	0	0	0	1 (black, #1)	Coltan 4300
		77PBL-3-2 / FBA WFEH AA	0	0	0	0	0	0	0	0	0.71	0.887	0.478	0.714	10 (dk grey #1)	GE Nory GTX 830

3713 8633



INSTRUMENTS

Brake Pressure Switch

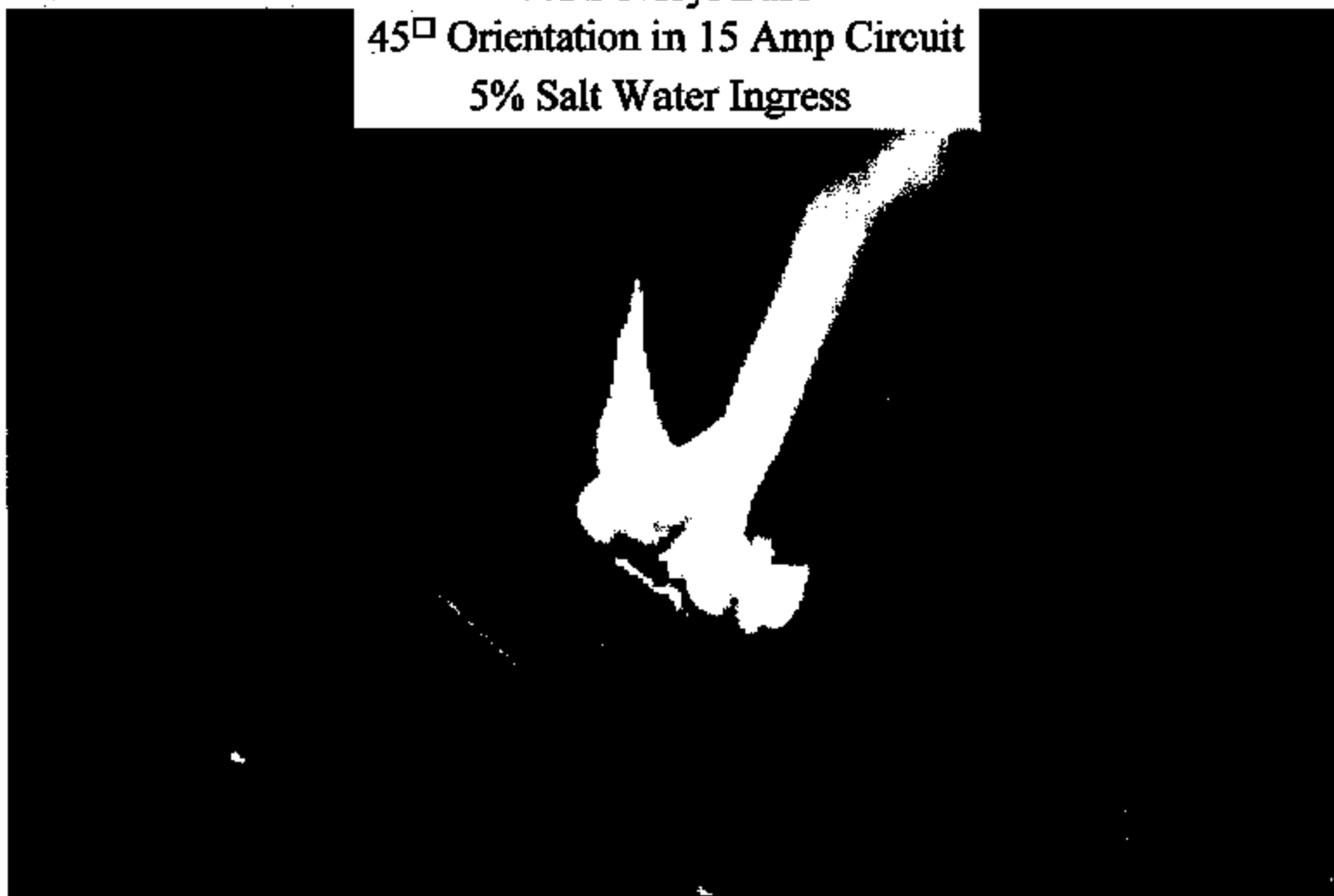
Potential Thermal Event Theory Profile 4/14/99



77PS Noryl Base

45° Orientation in 15 Amp Circuit

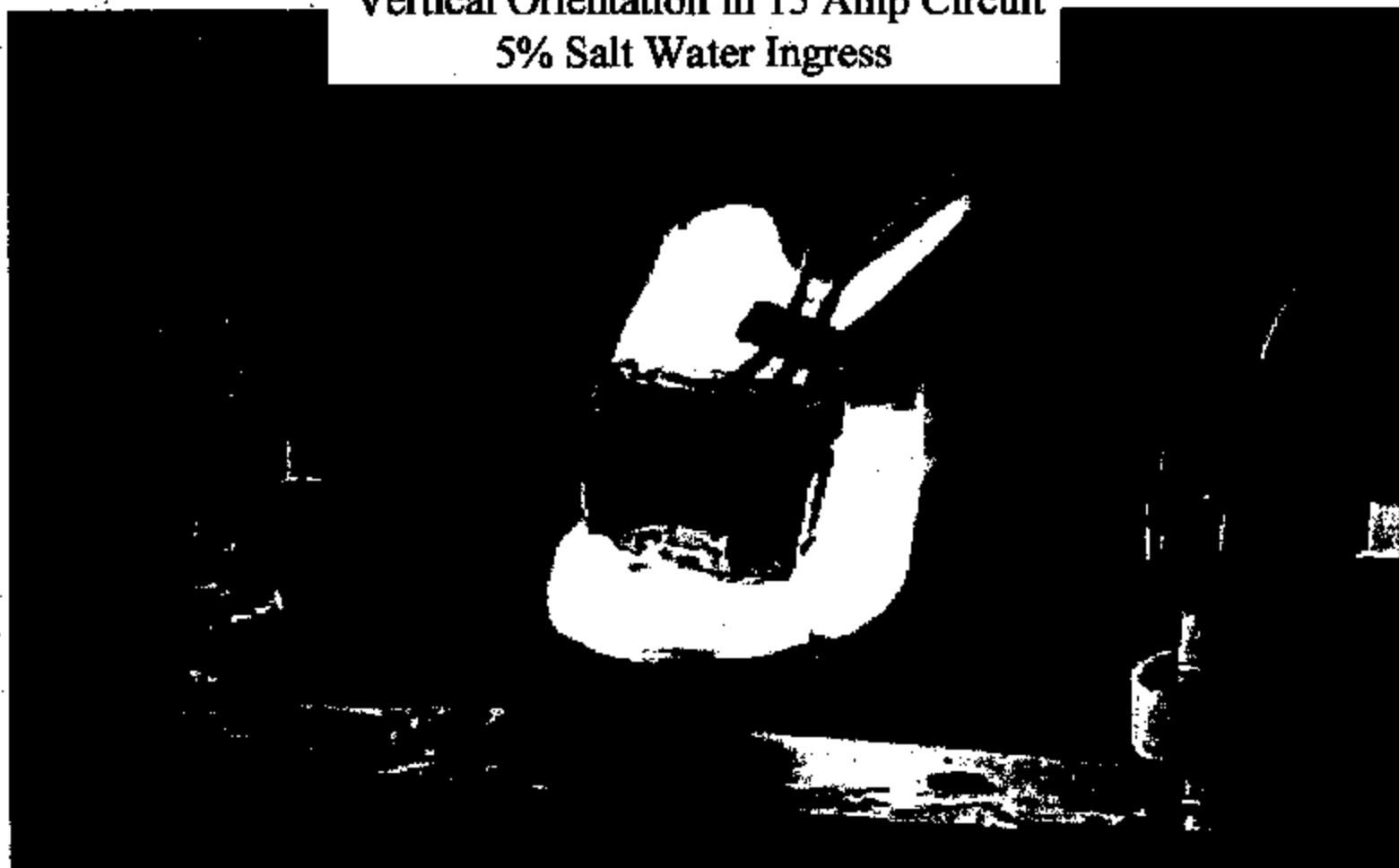
5% Salt Water Ingress



3713 8534

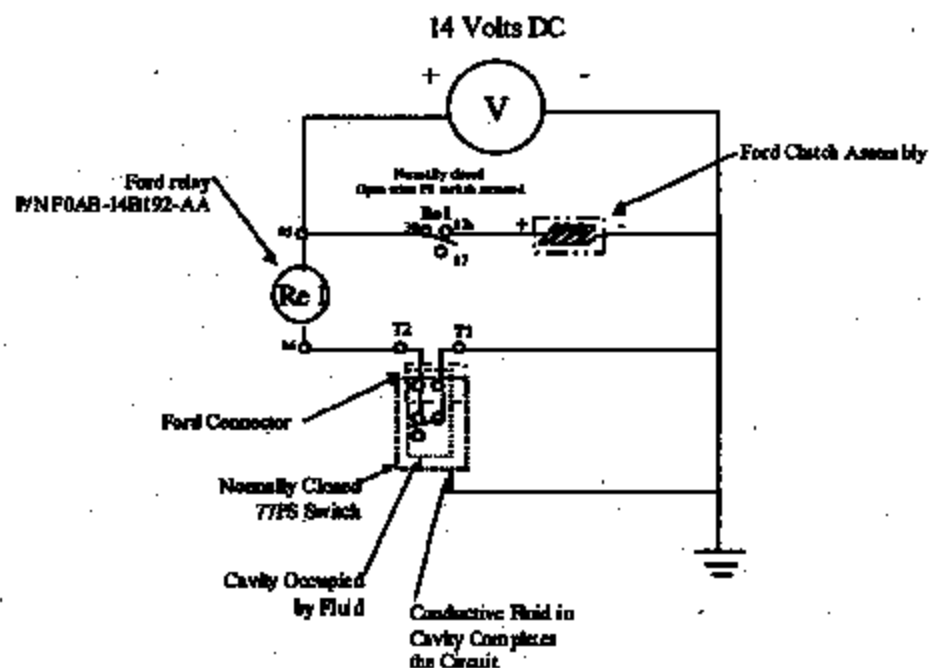


77PS Cellanex 4300 Base
Vertical Orientation in 15 Amp Circuit
5% Salt Water Ingress





77PS Proposed Wiring Schematic



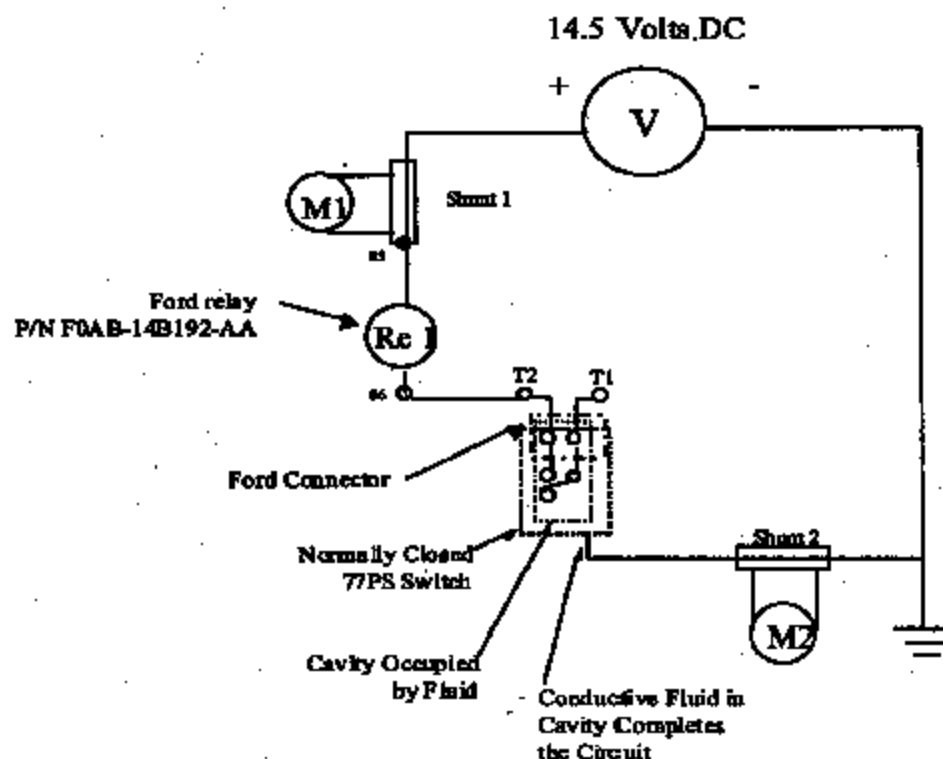
3713 8596



1. Connector Seal to P/S
2. Power continuously available
 - A. Operator notifications
3. Switch orientation/location
4. Current limit / fuse
5. Hexport isolation
6. Plastic ignition robustness
 - A. Nearby fuels
7. Kapton seal of P/S
8. Environmental seal of P/S



200 mAmp Current Limit Circuit Test Setup



Worst case scenario is when the switch is actuated, which puts T2 at full voltage. To facilitate testing, T1 is floating which keeps T1 and T2 at full voltage but limits current draw to .2 Amps (This test is harsher than worst case scenario).

77ps12-1		GROSS QTY		COMPLETE	COMPLETE	BEGIN	IMPACT	COMMENTS/CONCERNS
COMPONENT	DESCRIPTION	REQUIRED	SUPPLIER	1KK	2KK	PARTIAL	TO TI	
27406-1	CONVERTER	2,040,000	KF BASSLER	10 WKS	18 WKS	2 WKS	NONE	ADD OVERTIME/MATERIAL AVAILABILITY
27639-1	WASHER / ARA	2,040,000	DIEMASTER	10 WKS	18 WKS	2 WKS	NONE	MATERIAL AVAILABILITY
27713-1	CUP 77PS	2,040,000	VALENTINE	6 WKS	10 WKS	1 WK	NONE	RAW MATERIAL AVAILABILITY
36656-27	57PS	2,040,000	DISC DEPT	12+ WKS	24 WKS	3 WKS	TOOL \$?	POSSIBLE CAPACITY ISSUE
36900-1	HEXPORT 77PS	2,040,000	ELCO	10 WKS	25 WKS	3 WKS	NONE	RAW MATERIAL AVAILABILITY
74224-1	KAPTON	204	EI DUPONT	2 WKS	2 WKS	2 WKS	NONE	
27225-1	KAPTON STRIP	1,102	EI DUPONT	3 WKS	3 WKS	2 WKS	NONE	
74353-1	GASKET	2,040,000	JBL PARKER	8 WKS	18 WKS	3 WKS	NONE	ELIMINATE CORES WILL INCREASE DEL. BY 10%
36888-1	STATIONARY T	2,040,000	KF BASSLER	10 WKS	18 WKS	2 WKS	NONE	ADD OVERTIME/MATERIAL AVAILABILITY/ REELS
28744-1	CONTACT-SILV	2,040,000	DERRINGER	4 WKS	8 WKS	1 WK	NONE	MATERIAL AVAILABILITY
36887-1	MOVABLE TERM	2,040,000	KF BASSLER	10 WKS	18 WKS	2 WKS	NONE	ADD OVERTIME/MATERIAL AVAILABILITY/REELS
27716-1	BE/CJ ISSUE	449	BRUSHWELLMAN	1 WK	2 WKS	1 WK	NONE	NONE
74916-1	RIVET	2,040,000	JOHN HASSAL	8 WKS	11 WKS	4 WKS	NONE	RAW MATERIAL AVAILABILITY
46515-2	PRESSURE SWI	2,040,000	IMT/MOLDING	16 WKS	32 WKS	4 WKS	NONE	RAW MATERIAL CHANGEOVER/PRESS CAPACITY
7407B-143	CERAMIN PINS	2,040,000	PARATECH	7 WKS	15 WKS	2 WKS	NONE	
74247-4	BLUE O'RINGS	2,040,000	JBL PARKER	6 WKS	10 WKS	2 WKS	NONE	ELIMINATE CORES WILL INCREASE DEL. BY 10%
74797-1	CRIMP RING	2,040,000	VALENTINE	6 WKS	10 WKS	1 WK	NONE	RAW MATERIAL AVAILABILITY
74888-1	RED THREAD C	2,040,000	MARK IV CAPLUG	3 WKS	6 WKS	1 WK	NONE	

77PS

SWITCH

TI

7/15,8/1,8/1 250K/MONTH

7 day weeks, thru summer vacations, 'std' plastic mold

COMMUNICATIONS

Name / Project

Amy Cheff

Company / Department

FCSD

Address

Phones

DATE TIME	SEQ.	MY PLAN / I SAID NEEDS EXPRESSED / FEEDBACK SOUGHT	THEY SAID / FOLLOW-UP NEEDS EXPRESSED / FEEDBACK GIVEN	WHEN DATE
--------------	------	---	---	--------------

6/11/99

12:30P

what are the
quantities sold
for Service Parts

F2VY-9F924-B

Yr 92 20 Qty

93 140

94 363

95 408

96 666

97 1156

98 2511

99 1055

proj 99 total 3352

F2AZ-2B091-B

92 1

93 248

94 256

95 367

96 473

97 936

98 528

proj 99 total

RECALL 99515 KITS

TODATE 50,000

Where do they go?

Sold from Prod
Redistribution center
to Regional PDC.

PITTS

SURFACES.

MAPCO

Divisions

of

**FAX LEAD SHEET**

TO: FORD FROM: RON REINKE
FAX #: 313-390-4145 FAX #: (972) 242-3432
ATTN: STEVE REIMERS DATE: _____
TOTAL PAGES: Lead Sheet #: 1 SUBJECT: _____

MESSAGE/INSTRUCTIONS:

*Dear Steve,**SHIPMENTS PER ATTACHED SHEET*

P.O. Box 814849 Dallas, TX 75381-4849 • 1671 S. Broadway, Carrollton, TX 75006

Phone: (972) 242-2116 • Fax: (972) 242-2902

3713 8541

PITTS • MAPCO • SURFACES

JUN 03 '99 11:23

HILITE SHIPMENTS

DATE	SHIP TO	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PMF2AC-2B091-BA	Dearborn		14	10	3,140	5,390	8,924	5,842	1,656					24,976
PMF2AC-2B091-BA	Livonia						2	2						4
F2AC-2B091-BA	Dearborn								14,352	19,596	12,558	13,294	13,938	73,738
F2AC-2B091-BA	Dearborn											5		5
F2AC-2B091-BA	Livonia											200		200
F2AZ-2B091-B	Livonia									60				60
F2AZ-2B091-B	Livonia									3				3

1991 1992

DATE	SHIP TO	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
F2AC-2B091-BA	Dearborn	12,880	19,182	8,280	6,900	7,130	3,450	4,370	5,750	8,740	9,292	9,200	9,062	104,236
F2AC-2B091-BA	Livonia									39				39
F2AC-2B091-BA	Allied Signal Livonia				941		1,288	92				736		3,057
F2AZ-2B091-B	Dearborn								414					414

✓
BIG
CHANGE
IN VOLUME

1992

PAGE 02

3718 8642

JUN 03 '99 09:14PM HILITE INDUSTRIES

P.2/2



FACSIMILE LEAD SHEET

TO: Ford Motor Co. FROM: Ron Reinke
FAX#: 1-313-390-4145 FAX#: (972) 242-3432
ATTN: Mr. Joe Evans DATE: April 21, 1999
TOTAL PAGES: Lead + 1 REFERENCE #: '92 Town Car

MESSAGE/INSTRUCTIONS:

Dear Mr. Evans:

Our sales records show the following:

Part number F2VC-2B091-AA (Hilite # 5893): No sales during the three year time frame of 7-1-90 to 6-30-93.

Part number F2VC-2B091-BA (Hilite # 5945): Sales of only 87 pieces during the year 7-1-90 to 6-30-91. No sales during the following two years.

Part number PM-F2AC-2B091-BA (Hilite # 6072): No sales during 7-1-90 to 6-30-91. Sales during 7-1-91 to 6-30-92 were: Aug - 14, Sep - 10, Oct - 3140, Nov - 5390, Dec - 8924, Jan - 5842, and Feb - 1656 for a total of 24,976. No sales following Feb '92 are recorded thru 6-30-93.

Part number F2AC-2B091-BA (Hilite # 6076): No sales during 7-1-90 to 6-30-91. Sales during 7-1-91 to 6-30-92 were: Feb - 14352, Mar - 19596, Apr - 12558, May - 13294, Jun - 13938 for a total of

File: RR111901.FAX

(see next page)

USES F2VC-2B091-AA

73,738. Sales during 7-1-92 to 6-30-93 were: Jan - 19182, Sep - 8280, Oct - 7841, Nov - 7130, Dec - 4462, Feb - 5750, Mar - 8779, Apr - 9292, May - 9936 for a total of 107,332. There were also some small quantities shipped under the service number F2AC-2B091-B.

As you can see from the above info, the PM-F2AC-2B091-BA was for a few months until the F2AC-2B091-BA became available for shipment in February 1992.

I hope this is the information you were interested in. If I can be of further assistance please advise.

Sincerely,

Ronald E. Reinke

Ronald E. Reinke
VP Engineering

cc: Mike Thomas

F170: RR112901.FAM

5/27/99 Ron is going to get dates & quantities & shipped-to-loc for these service parts by 3/4/99.

Steve

F2AC-2 ^{B091} -BA	280	LIVONIA	5/92
	svc 60	"	3/92
	svc 3	"	3/92
	5	Dbn	5/92

Post-Net Fax Note	7871	Date	4/15/99	Page	8
To	Joe Evans	From	M. Thomas		
Cd/Dpt.	FAD	On	HILITE		
Phone #		Phone #	248 543 6520		
Fax #	313 390 4145	Fax #	248 543 0743		

Divisions

313
390
4145



FAX LEAD SHEET

TO: MIKE THOMAS FROM: RON REINKE
 FAX #: 1-248-543-0743 FAX #: (972) 242-3432
 ATTN: _____ DATE: 4-15-99
 TOTAL PAGES: Lead Sheet #: 7 SUBJECT: 92 Towncar mem

MESSAGE/INSTRUCTIONS:

YOUR 4-13-99 Memo

Dear Mike, or have used
 The only fluid we use on
 remote valves is Ucon. Ucon
 is a standard assembly fluid
 for brake valves. Attached
 is the MSDS info on Ucon.
 I'll also send this by mail so
 you can read it better. If
 you need anything else let me
 know.
 Ron

P.O. Box 814648 Dallas, TX 75381-4848 • 1871 S. Broadway, Carrollton, TX 75006

Phone: (972) 242-2116 • Fax: (972) 242-2902

3713 8545

FITTS • MAPCO • SURFACES

VAPOR DENSITY (AIR = 1): >1

EVAPORATION RATE (Butyl Acetate = 1): NI

SOLUBILITY IN WATER by wt: <0.1%

APPEARANCE: Transparent colorless to straw-colored

ODOR: Sweet pleasant

PHYSICAL STATE: Liquid

III. INGREDIENTS

%	MATERIAL	CAS#	EXPOSURE LIMIT
>95	Polypropylene Glycol Monobutyl Ether	9008-15-0	None established
< 5	Trade Secret Additives	None	None established

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(test method(s)) 316 F (158 C)
Pensky-Martens Closed Cup ASTM D 93
488 F (257 C)
Cleveland Open Cup ASTM D 92

FLAMMABLE LIMITS IN AIR LOWER: Not Determined
% by volume: UPPER: Not Determined

SPECIAL FIRE FIGHTING PROCEDURES: Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Use self-contained breathing apparatus and protective clothing.

EXTINGUISHING MEDIA: Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This material may produce a floating fire hazard in extreme fire conditions. See "Other Precautions" in Section IX.

3713 8546

V. HEALTH HAZARD DATA

EXPOSURE LIMIT(S): None established by OSHA or ACGIH.

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: No evidence of harmful effects from available information.

SKIN ABSORPTION: No evidence of harmful effects from available information.

INHALATION: Short-term harmful health effects are not expected from vapor generated at ambient temperature.

SKIN CONTACT: Brief contact is not irritating.
Prolonged contact may cause reddening, itchiness, a burning sensation, and possible drying and flaking of the skin.

EYE CONTACT: May cause irritation, experienced as stinging with excess blinking and tear production.
Excess redness of the conjunctiva may occur.

EFFECTS OF REPEATED OVEREXPOSURE:

No adverse effects anticipated from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Skin contact may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

Overexposure to vapor, aerosol or mist generated at high temperature may result in eye and respiratory tract irritation, dizziness, nausea and the inhalation of harmful amounts of material.
Skin contact may cause sensitization and an allergic skin reaction in a small proportion of individuals.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: No emergency care anticipated.

SKIN: Wash skin with soap and water.

INHALATION: Remove to fresh air.

3713 8547

EYES: Immediately flush eyes with water and continue washing for several minutes. Remove contact lenses, if worn. Obtain medical attention.

NOTES TO PHYSICIAN: There is no specific antidote. Treatment of overexposure should be directed at the removal of symptoms and the clinical condition of the patient.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: None known.

INCOMPATIBILITY (materials to avoid):

Normally unreactive; however, avoid strong bases at high temperatures, strong acids, strong oxidizing agents and materials reactive with hydrazyl compounds.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Combustion may produce the following products:
Carbon monoxide and/or carbon dioxide.
See Section V, "Other Effects of Overexposure."
Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Wear suitable protective equipment, especially eye protection.
See Section VII.
Small spills can be flushed with large amounts of water; larger spills should be collected for disposal.
See Section IX, Other Precautions.

WASTE DISPOSAL METHOD:

Incinerate in a furnace or otherwise dispose of in accordance with applicable Federal, State and local requirements.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required for use at low temperatures.

VENTILATION:

General (mechanical) room ventilation is satisfactory for use at low temperatures. If used at high temperatures, special local ventilation is recommended at points where vapors can be expected to escape to the workplace air.

3713 8548

PROTECTIVE GLOVES: Polyvinyl chloride coated

EYE PROTECTION: Menogoggles

OTHER PROTECTIVE EQUIPMENT:
Eye Bath, Safety Shower

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

WARNING!

CAUSES EYE AND SKIN IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
VAPOR, AEROSOL OR MIST OF THE PRODUCT AND THERMAL DEGRADATION
PRODUCTS GENERATED AT HIGH TEMPERATURE CAN BE IRRITATING
AND HARMFUL IF INHALED.

Avoid contact with eyes, skin and clothing.
Avoid breathing vapor, aerosol and mist.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

SPILLS: This product has very low solubility in water and will float on the surface. Avoid drainage of large spills to sewers or to natural waters.
ADDITIONAL INFORMATION: Additional product safety information on this product may be obtained by calling your Union Carbide Corporation Sales or Customer Service contact.

Ask for the brochure:

UCON Fluids and Lubricants (Family Brochure).

Ask about the availability of specific product and end-use bulletins.

PROCESS HAZARD: Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into hot equipment under a vacuum, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapors."

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum allowable levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

3713 8549

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

*** NONE ***

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

*** NONE ***

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of releases of toxic chemicals that appear in 40 CFR 372 (for SARA 312). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

UPPER BOUND

CHEMICAL

CAS NUMBER CONCENTRATION %

This product does not contain toxic chemicals at levels which require reporting under the statute.

Toxic Substances Control Act (TSCA) STATUS:

All components of this product are on the TSCA Inventory or are exempt from TSCA inventory requirements.

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

*** NONE ***

PENNSYLVANIA Right-to-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

*** NONE ***

3713 8550

CALIFORNIA SUMMERS RULE 443.1 VOC'S:

****NOT DETERMINED****

OTHER REGULATORY INFORMATION:

EPA Hazard Categories: Immediate Health, Delayed Health

NOTE —

The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of Union Carbide, it is the user's obligation to determine conditions of safe use of the product.

REVISED SECTIONS:

Section IX - Special Precautions

PRODUCT: 84405

F NUMBER: 800782

3713 8551

Speed Control Installation Rates

3713 8552

1987	MC PPV (000)	CAR PPV (000)	INSTALL RATE	CAR LINE RATE	1988	MC PPV (000)	CAR PPV (000)	INSTALL RATE	CAR LINE RATE	1989	MC PPV (000)	CAR PPV (000)	INSTALL RATE	CAR LINE RATE	1990	MC PPV (000)	CAR PPV (000)	INSTALL RATE	CAR LINE RATE	1991	MC PPV (000)	CAR PPV (000)	INSTALL RATE	CAR LINE RATE
CAR					CAR					CAR					CAR						CAR			
MUSTANG	88738	01164	88.8%		MUSTANG	70702	7188	88.7%		MUSTANG	8889	8244	88.7%		MUSTANG	10004	6818	88.7%			MUSTANG	10004	18887	88.8%
TEMPO	15289	58888	78.8%		TEMPO	18888	18888	88.8%		TEMPO	10888	28818	88.8%		TEMPO	8889	18888	88.8%			CONTOUR	8888	7888	88.8%
TOPAZ	48878	58887	88.8%	78.8%	TOPAZ	8888	7288	74.8%	88.8%	TOPAZ	8888	7488	77.8%	88.8%	TOPAZ	8889	8888	77.8%	88.8%		SYNTHESIS	8888	8888	88.8%
T-BIRD	77201	77884	88.8%		T-BIRD	7888	7888	88.8%		T-BIRD	11782	11782	88.8%		T-BIRD	18882	18882	88.8%			T-BIRD	11888	11888	88.8%
COURAGE	88881	88881	88.8%	88.8%	COURAGE	8888	8888	88.8%	88.8%	COURAGE	8888	8888	88.8%	88.8%	COURAGE	7888	7888	88.8%	88.8%		COURAGE	8888	8888	88.8%
TAURUS	88882	88882	88.8%		TAURUS	8888	8888	88.8%		TAURUS	8888	8888	88.8%		TAURUS	8888	8888	88.8%			TAURUS	8888	8888	88.8%
SALE	8888	8888	88.8%	88.8%	SALE	18882	18882	88.8%	88.8%	SALE	18882	18882	88.8%	88.8%	SALE	8888	8888	88.8%	88.8%		SALE	18882	18882	88.8%
FORD	18888	18888	88.8%		FORD	18888	18888	88.8%		FORD	8888	8888	88.8%		FORD	8888	8888	88.8%			FORD	8888	8888	88.8%
MERCURY	18888	18888	88.8%	88.8%	MERCURY	18888	18888	88.8%	88.8%	MERCURY	18888	18888	88.8%	88.8%	MERCURY	18888	18888	88.8%	88.8%		MERCURY	18888	18888	88.8%
TOWN CAR	18888	18888	88.8%		TOWN CAR	18888	18888	88.8%		TOWN CAR	18888	18888	88.8%		TOWN CAR	18888	18888	88.8%			TOWN CAR	18888	18888	88.8%
CONTINER	8888	8888	88.8%		CONTINER	8888	8888	88.8%		CONTINER	8888	8888	88.8%		CONTINER	8888	8888	88.8%			CONTINER	8888	8888	88.8%
MARK VI	8888	8888	88.8%		MARK VI	8888	8888	88.8%		MARK VI	8888	8888	88.8%		MARK VI	8888	8888	88.8%			MARK VI	8888	8888	88.8%
ESCORT	18888	88882	88.8%		ESCORT	8888	8888	88.8%		ESCORT	8888	8888	88.8%		ESCORT	8888	8888	88.8%			ESCORT	8888	8888	88.8%
TRUCK	2888	7888	88.8%	88.8%	TRUCK	1888	2888	88.8%	88.8%	TRUCK	1888	2888	88.8%	88.8%	TRUCK	1888	2888	88.8%	88.8%		TRUCK	1888	2888	88.8%
PROBE	8888	7888	78.8%		PROBE	8888	8888	88.8%		PROBE	8888	8888	88.8%		PROBE	8888	8888	88.8%			PROBE	8888	8888	88.8%
TTL CAR	14888	18888	77.8%		TTL CAR	8888	18888	77.8%		TTL CAR	14888	18888	78.8%		TTL CAR	18888	18888	77.8%			TTL CAR	18888	18888	77.8%
LE BT	18888	18888	88.8%		LE BT	18888	18888	88.8%		LE BT	18888	18888	88.8%		LE BT	18888	18888	88.8%			LE BT	18888	18888	88.8%
TRUCK					TRUCK					TRUCK					TRUCK						TRUCK			
ECORLINE	8888	18888	88.8%		ECORLINE	8888	18888	88.8%		ECORLINE	8888	18888	88.8%		ECORLINE	8888	18888	88.8%			ECORLINE	8888	18888	88.8%
F-BEARS	8888	18888	88.8%		F-BEARS	8888	18888	88.8%		F-BEARS	8888	18888	88.8%		F-BEARS	8888	18888	88.8%			F-BEARS	8888	18888	88.8%
BRONCO	8888	18888	88.8%		BRONCO	8888	18888	88.8%		BRONCO	8888	18888	88.8%		BRONCO	8888	18888	88.8%			BRONCO	8888	18888	88.8%
RANGER	8888	18888	88.8%		RANGER	8888	18888	88.8%		RANGER	8888	18888	88.8%		RANGER	8888	18888	88.8%			RANGER	8888	18888	88.8%
EXPLORER	8888	18888	88.8%		EXPLORER	8888	18888	88.8%		EXPLORER	8888	18888	88.8%		EXPLORER	8888	18888	88.8%			EXPLORER	8888	18888	88.8%
AEROSTAR	8888	18888	88.8%		AEROSTAR	8888	18888	88.8%		AEROSTAR	8888	18888	88.8%		AEROSTAR	8888	18888	88.8%			AEROSTAR	8888	18888	88.8%
TTL TRUCK	8888	18888	88.8%		TTL TRUCK	8888	18888	88.8%		TTL TRUCK	8888	18888	88.8%		TTL TRUCK	8888	18888	88.8%			TTL TRUCK	8888	18888	88.8%
LE RANGER	8888	18888	88.8%		LE RANGER	8888	18888	88.8%		LE RANGER	8888	18888	88.8%		LE RANGER	8888	18888	88.8%			LE RANGER	8888	18888	88.8%
GRD TOTAL	8888	18888	88.8%		GRD TOTAL	8888	18888	88.8%		GRD TOTAL	8888	18888	88.8%		GRD TOTAL	8888	18888	88.8%			GRD TOTAL	8888	18888	88.8%

Speed Control Deactivation Switch Rationale

1) WCR - Automatic Vehicle Speed Control 10.03-D01-1

4.1 DEACTIVATION REDUNDANCY:

Backup system for deactivation shall be provided.

1) SDS Requirement SC-0005 REDUNDANT BRAKE DEACTIVATION REQUIRED

A redundant method for sensing brake application independent of the primary system deactivation mode must be provided to the speed control system.

One Interpretation of this requirement: Brake Pedal cancellation of speed control operation shall be done using dual brake detection systems; speed control operation shall be canceled if a malfunction occurs at the microcomputer or at the brake switch.

2) Primary Redundant Safety Feature

(Most important the Deactivation Switch is INDEPENDENT of Servo electronics)

3) All major speed control system has a similar switch

4) Used to avoid liability

5) Introduction with the vacuum system; estimate 1979

Being INDEPENDENT of Servo electronics, Deactivation Switch provides system cancellation for:

- Stuck motor phase after engagement
- Shorted motor phase after engagement
- Normal brake (stop Lamp) malfunction
- Seized motor
- Software malfunction

3713 8653



Central Laboratory
15000 Century Drive
Dearborn, MI 48120-1287
FAX (313) 322-1814

RECORD COPY
SCHEDULE NO. 7-4-2
DATE, UNIT: 2003

Report 8901010

March 31, 1999

To: Greg Stevens K35555 X36685 FAX
From: B. Slavin (313) 84-54890
Subject: Brake Pressure Switch Components Testing
Part Number: F2V4-9F924-A
Specification: Not provided
Supplier: Not provided
Received: Four samples were received on March 26, 1999:
1. Celenex 3316 Gray Tensile Bar 2. Celenex 4300 Black Tensile Bar
3. Connector 4. Switch

Object: Soak the four components in used brake fluid (from three 1998 Taurus's) per SAE J1703 Paragraph 5.12.4 for 70 hr at 120°C. Run PDSC on as received samples and on soaked samples.

Data and Analysis:

Discussion: The samples were visually examined after testing. Some particles were seen in the used brake fluid, but no discoloration or degradation of the four components was observed. No autoignition was observed by PDSC (at 800 psi oxygen from room temperature to 450°C) with either the black or gray plastic bars before or after soaking in the brake fluid.

Concur:

A. Terjmanian
A. Terjmanian, Supervisor
Polymers Section

By:

Brent Slavin
Brent Slavin (bslavin)
Laboratory Specialist

Request for Central Laboratory Service

15000 Century Dr., Dearborn MI 48120-1267 Phone (313) 32-2167 FAX (313) 32-21614

All shaded areas must be filled in to process your request

Your Name (Send report to) BREG STEVENS		Telephone 36686	PROPS ID GSTEVEN1	FAX 36686
Secondary Contact		Telephone	PROPS ID	FAX

Send Report To		Bill To		
Room No./Mail Drop/PO Box 26065/8006	Department/Activity RVT MAT. L	Building ME5	Location Code 500	Dept. # 7113
		Work Task # (For 5100 Loc. Only) XQ604		

Total # of Samples 4	Sample Handling ☒ Return after test ☐ Dispose after test ☐ Dispose after 30 days	TOX/CAS#	Source	Supplier Code
Part/Material Name	Sample Identification (Continue below if needed)	Part Number (If any)	Material Specification (If any)	CPSC Code
BRAKE PRESSURE	N/A	F2V4-9F921-A	N/A	06 06 05
SWITCH COMPONENTS	Below			

Nature of Investigation/Specific Tests Required (Check all that apply)		Requester Info. Box (For requester use)
☐ Production/Plant problem ☐ Failure Analysis ☒ Legal ☐ Specification Compliance	☐ Perform Tests as in Lab No. _____ ☐ Photograph (Describe below) _____ ☐ Use Specifications _____ as a guide ☐ Other (Describe below) _____	
Stop testing upon failure? ☒ No ☐ Yes	Does this support CAE testing? (If "Yes", what is the expected outcome?) ☒ No ☐ Yes	Do you need to know your CL contact and timing? ☐ Yes

Additional Sample Information/Testing Requirements

**SOAK 4 COMPONENTS IN USED BRAKE FLUID (from 3 1988 Taurus)
PER SAE J1703 PAR 5.12.4 AS FOLLOWS:**

~~XXXXXXXXXXXX~~

<u>Tensile Bars</u>	<u>AS-RECEIVED</u>	<u>AFTER 70Hr @ 120°C</u>
#1 Celconex 3316 (Gray Color)	P.D.S.C	P.D.S.C
#2 4300 (Black)	P.D.S.C	P.D.S.C
CONNECTOR	—	VISUAL EXAM
SWITCH	—	VISUAL EXAM

Date you would like report 3/31/97 AM	Format (Check all that apply)	☒ Mail typed report ☐ FAX preliminary results ☐ FAX hand written ☐ FAX typed report ☐ Mail hand written ☒ Electronically transfer report ☒ Phone preliminary results
---	-------------------------------	--

Information about services or assistance in completing this form please refer to the Central Laboratory Web page. (www.gm.ford.com/central/home.htm)
Laboratory number and date cannot be assigned without receipt of samples.
Samples will be disposed of after 30 days unless otherwise indicated above.

COMMUNICATIONS

Name / Project

Bill BABLE

Company / Department

Heat Thermal Management

Address

EVB

Phones

47426

DATE
TIME

SEQ.

MY PLAN / I SAID

NEEDS EXPRESSED / FEEDBACK SOUGHT

THEY SAID / FOLLOW-UP

NEEDS EXPRESSED / FEEDBACK GIVEN

WHEN

DATE

4/26/99

WHAT ARE TEMP PEAK

10:30A

FOR FOLLOWING

LOCATION S. ON

92 & 93 TOWN CAR

& CV/GM.

That locations
was not monitored
during the R405
tests.

Brake Pressure Switch

ON Prop. Valve

Closest monitored
locations are
Master Cylinder, Brake
Vacuum Booster, Shift
Cable @ Exhaust manifold.

Will copy the test data
for CV 92 & Town Car 92
and deliver to me.

What does data show
for high Temp

Master Cyl

CROWN VIC.,
CLASS III Trailer Tow

215°F

BOOSTER

236°F

Shift Cable

330°F

Speed Control

208°F

End

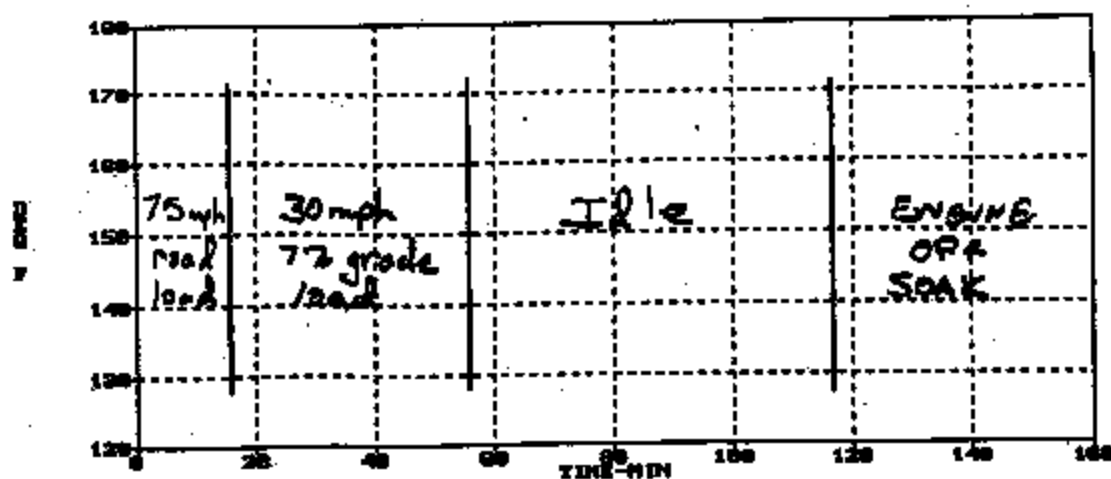
PLOT REPORT

3713 8557

PLOT SETTINGS: X-AXIS: MANUAL SCALE Y-AXIS: MANUAL SCALE

Y-AXIS: 1200
X-AXIS: 1600

TEST ID: 2181412 VERSION: 1 FILENAME: 0413183
TEST DATE: 21 SEP 93
TEST DESCRIPTION: ENGINE



0-16 min = 75 mph road load for 20 miles
16-56 min = 30 mph 7% grade for 20 miles
56-66 min = Idle in drive
66-116 min = Idle in neutral
116-146 min = ENGINE OFF SOAK

- This is the R405 test cycle.
- If test is a trailer tow, the 30mph portion changes to include trailer load & done at 5.5% grade instead of 7%.
- If test is a "engine malfunction" a shorted spark plug is installed into 1 cylinder

CAR HEAT PROTECTION SIGNOFF DATA SUMMARY

TEST VEHICLE DESCRIPTION

CARLINE: 1992 1/2 EN53

MODEL: 4 - Door Sedan

VEHICLE NUMBER: A2-213 (311W455)

POWERTRAIN: 4.6L, AODE, 2.73:1

ENGINE NO.: X2AE-4.6MC-B-25720

ENGINE EEC STRATEGY: CABA0-04

CATALYST NO.: F1VC-5E212-GA (RH)
F1VC-5E214-GA (LH)

SHIELDS: LOC'S (RH & LH), UBC'S (RH & LH), EXH. PIPE IN KICKUP,
AIR SUSPENSION SOLENOID

GROUND COVER PROTECTION: UBC'S (LH & RH)

RADIATOR: F1VH-AE BASE
F2AH-AA CLASS III TRAILER TOW

W.C. Bable
ISSUED BY: W. C. BABLE

V.L. Polkus
CONCURRED BY: V. L. POLKUS

J.V. Kranig
APPROVED BY: J. V. KRANIG

CAR HEAT PROTECTION SIGNOFF DATA SUMMARY

TEST INDEX

1. TEST CONDITIONS: W455W3

a) PROCEDURE:

- 75MPH ROAD LOAD (20 MILES)
- 30MPH 7% GRADE LOAD (20 MILES)
- IDLE IN DRIVE (10 MIN.)
- IDLE IN NEUTRAL (50 MIN.)
- ENGINE OFF SOAK (30 MIN.)

b) DATE

- 05-05-91

c) SITE

- WINDTUNNEL #3

d) AMBIENT TEMPERATURE

- 100 DEG F

e) DRAWBAR LOAD:

- 75MPH 150LBS
- 30MPH 360LBS

f) AVG. MANIFOLD VACUUM / TRANSMISSION GEAR:

- 75RL: 7.0 IN. HG. / OVERDRIVE
- 30GL: 1.5 IN. HG. / 3RD GEAR
- IDLE: 15.4 IN. HG. / DRIVE
- IDLE: 18.0 IN. HG. / NEUTRAL

g) COMMENTS: SINGLE EXHAUST

CAR HEAT PROTECTION SIGNOFF DATA SUMMARY

TEST INDEX

2. TEST CONDITIONS: W455W3ML

a) PROCEDURE:

- 75MPH ROAD LOAD (20 MILES)
- 30MPH 7% GRADE LOAD (20 MILES)
- IDLE IN DRIVE (10 MIN.)
- IDLE IN NEUTRAL (50 MIN.)
- ENGINE OFF SOAK (30 MIN.)

b) DATE

- 05-05-91

c) SITE

- WINDTUNNEL #3

d) AMBIENT TEMPERATURE

- 100 DEG F

e) DRAWBAR LOAD:

- 75MPH 150LBS
- 30MPH 360LBS

f) AVG. MANIFOLD VACUUM / TRANSMISSION GEAR:

- 75RL: 4.7 IN. HG. / OVERDRIVE
- 30GL: 5.2 IN. HG. / 2ND GEAR
- IDLE: 15.4 IN. HG. / DRIVE
- IDLE: 17.5 IN. HG. / NEUTRAL

g) COMMENTS: ENGINE MALFUNCTION #6 SPARK PLUG SHORTED
SINGLE EXHAUST

CAR HEAT PROTECTION SIGNOFF DATA SUMMARY

TEST INDEX

3. TEST CONDITIONS: W455WST

a) PROCEDURE:

- 75MPH ROAD LOAD (20 MILES)
- 30MPH 5.5% GRADE LOAD (20 MILES)
- IDLE IN DRIVE (10 MIN.)
- IDLE IN NEUTRAL (50 MIN.)
- ENGINE OFF SOAK (30 MIN.)

b) DATE

- 05-05-91

c) SITE

- WINDTUNNEL #3

d) AMBIENT TEMPERATURE

- 100 DEG F

e) DRAWBAR LOAD:

- 75MPH 150LBS
- 30MPH 525LBS

f) AVG. MANIFOLD VACUUM / TRANSMISSION GEAR:

- 75RL: 6.8 IN. HG. / OVERDRIVE
- 30GL: 2.8 IN. HG. / 2RD GEAR
- IDLE: 15.8 IN. HG. / DRIVE
- IDLE: 20.0 IN. HG. (A/C OFF) / NEUTRAL

g) COMMENTS: CLASS I TRAILER TOW (2500 LBS)
SINGLE EXHAUST

4. TEST CONDITIONS: TEST#1

a) PROCEDURE:

- 75MPH ROAD LOAD (20 MILES)
- 30MPH 5.5% GRADE LOAD (20 MILES)
- IDLE IN DRIVE (10 MIN.)
- IDLE IN NEUTRAL (50 MIN.)
- ENGINE OFF SOAK (30 MIN.)

b) DATE

- 06-13-91

c) SITE

- WINDTUNNEL #3

d) AMBIENT TEMPERATURE

- 100 DEG F

e) DRAWBAR LOAD:

- 75MPH 150LBS
- 30MPH 690LBS

f) AVG. MANIFOLD VACUUM / TRANSMISSION GEAR:

- 75HL: 7.9 IN. HG. / OVERDRIVE
- 30GL: W.O.T. / 2ND GEAR
- IDLE: 15.4 IN. HG. / DRIVE
- IDLE: 20.0 IN. HG. (A/C OFF) / NEUTRAL

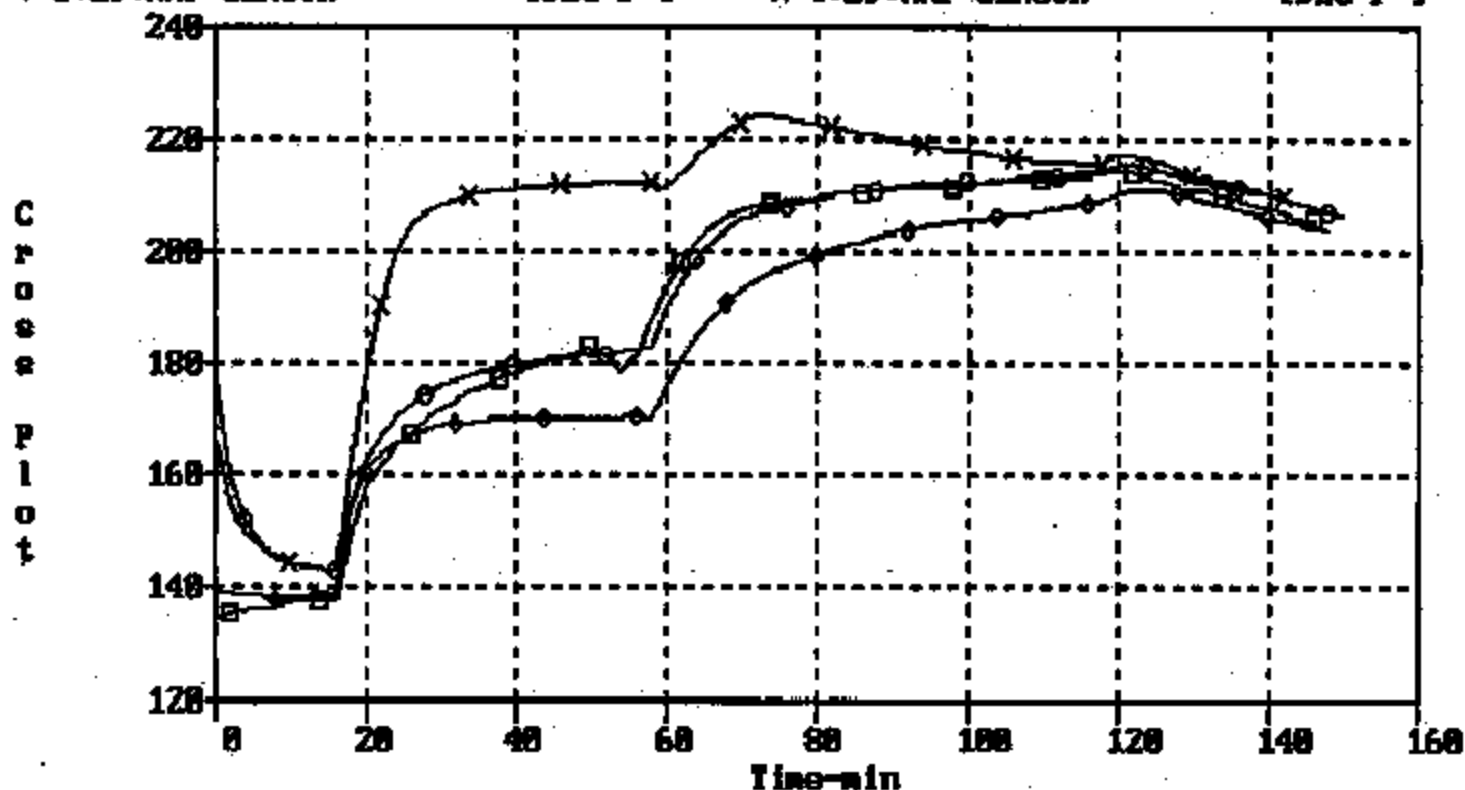
g) COMMENTS: GLASS III TRAILER TOW (5000LBS)

DUAL EXHAUST
SIMULATED 3.55:1 AXLE

CAR HEAT PROTECTION SIGNOFF DATA SUMMARY
COMPONENT OVERTEMPERATURE SUMMARY - A2-213

<u>ITEM</u>	<u>RECOMMENDED TEMP LIMIT</u>	<u>TEMP</u>	<u>MODE</u>	<u>COMMENTS</u>
MASS AIRFLOW SENSOR	212° F.	224° F.	IDLE	CR C10092318 -CLOSED ELD NO ISSUE
EDIS MODULE	212 F.	218 F.	IDLE	CR C10075405 -CLOSED ELD NO ISSUE
FLOORFAN OVER MUFFLER	350 F.	375 F.	IDLE	CR C10075415 -CLOSED FIBERGLASS PAD RELEASED

1-311W455W:W455W3 2-311W455W:W455WST 3-311W455W:W455W3HL 4-311W455:TEST2
 □=1:29:MAF SENSOR [DEG F] ○=2:29:MAF SENSOR [DEG F]
 ◇=3:29:MAF SENSOR [DEG F] ×=4:29:MAF SENSOR [DEG F]



75 MPH
ROAD
LOAD

20 MI

30 MPH
7% GRADE LOAD

20 MILES

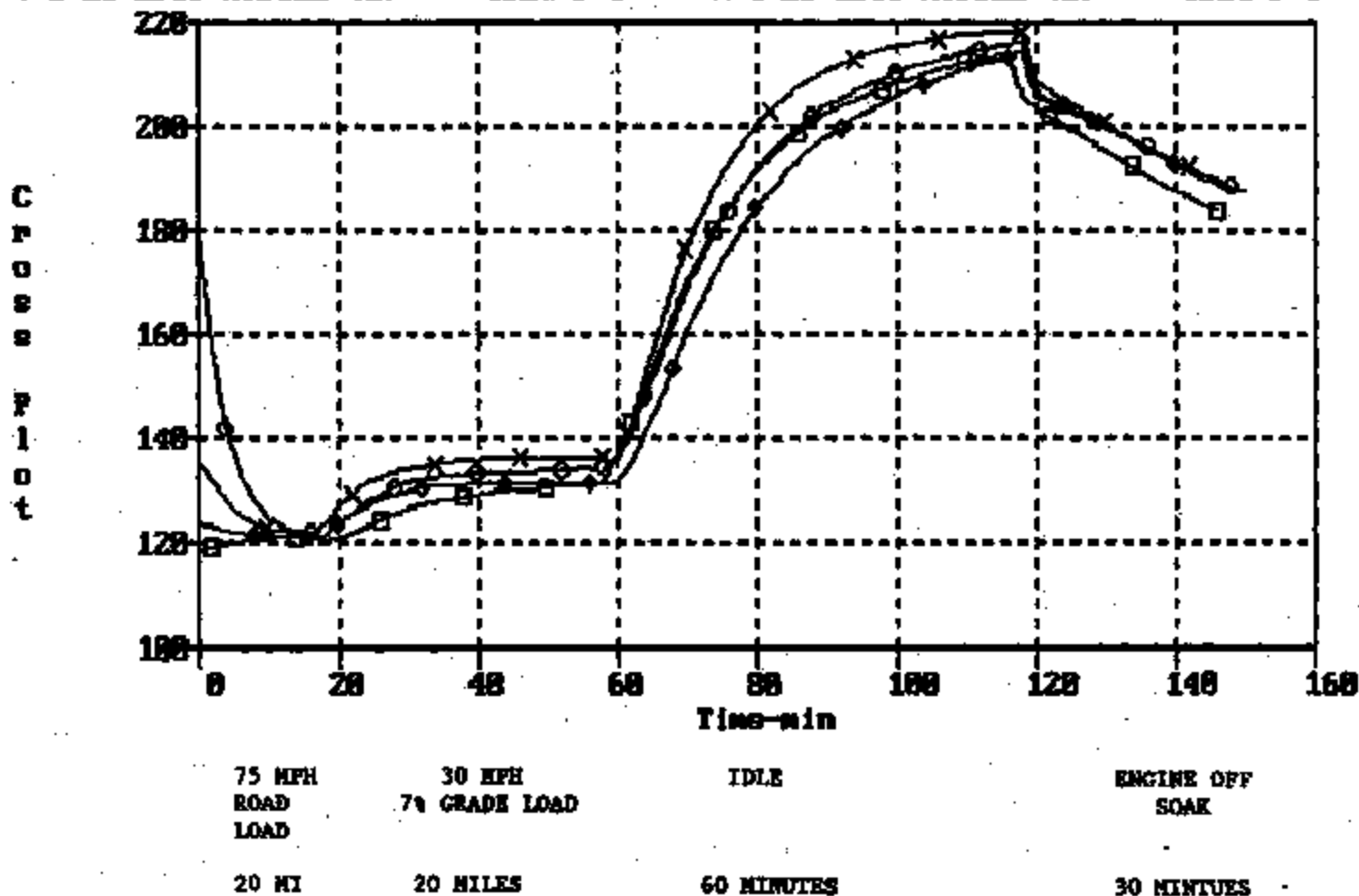
IDLE

60 MINUTES

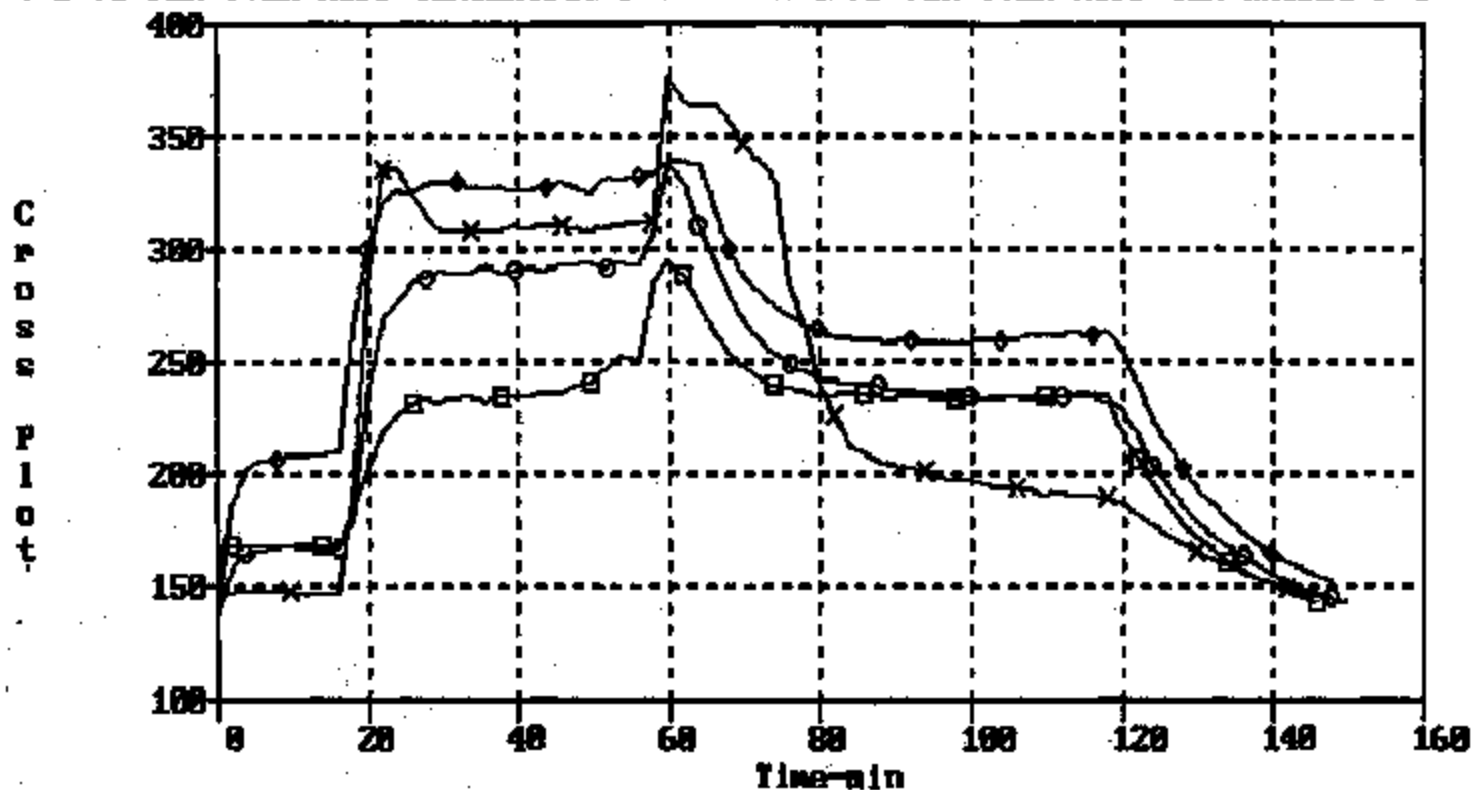
ENGINE OFF
SOAK

30 MINUTES

1=311W455W:W455W3 2=311W455W:W455WST 3=311W455W:W455W3ML 4=311W455:TEST2
 □=1:23:EDIS MODULE (1) [DEG F] ○=2:23:EDIS MODULE (1) [DEG F]
 △=3:23:EDIS MODULE (1) [DEG F] ×=4:23:EDIS MODULE (1) [DEG F]



1=311W455W:W455W3 2=311W455W:W455W3T 3=311W455W:W455W3ML 4=311W455:TEST2
 □=1:76:FLR OVER MUFF CENTER(DEC F) ○=2:76:FLR OVER MUFF CENTER(DEC F)
 △=3:76:FLR OVER MUFF CENTER(DEC F) ×=4:76:FLR OVER MUFF CEN RH(DEC F)



75 MPH
ROAD
LOAD

20 MI

30 MPH
7% GRADE LOAD

20 MILES

IDLE

60 MINUTES

ENGINE OFF
SOAK

30 MINUTES

EXHAUST SKIN TEMP VS GROUND COVER REQUIREMENT

1=GFC:GFC

2=311W455W:W455W3

0=1:11:G.F.C.

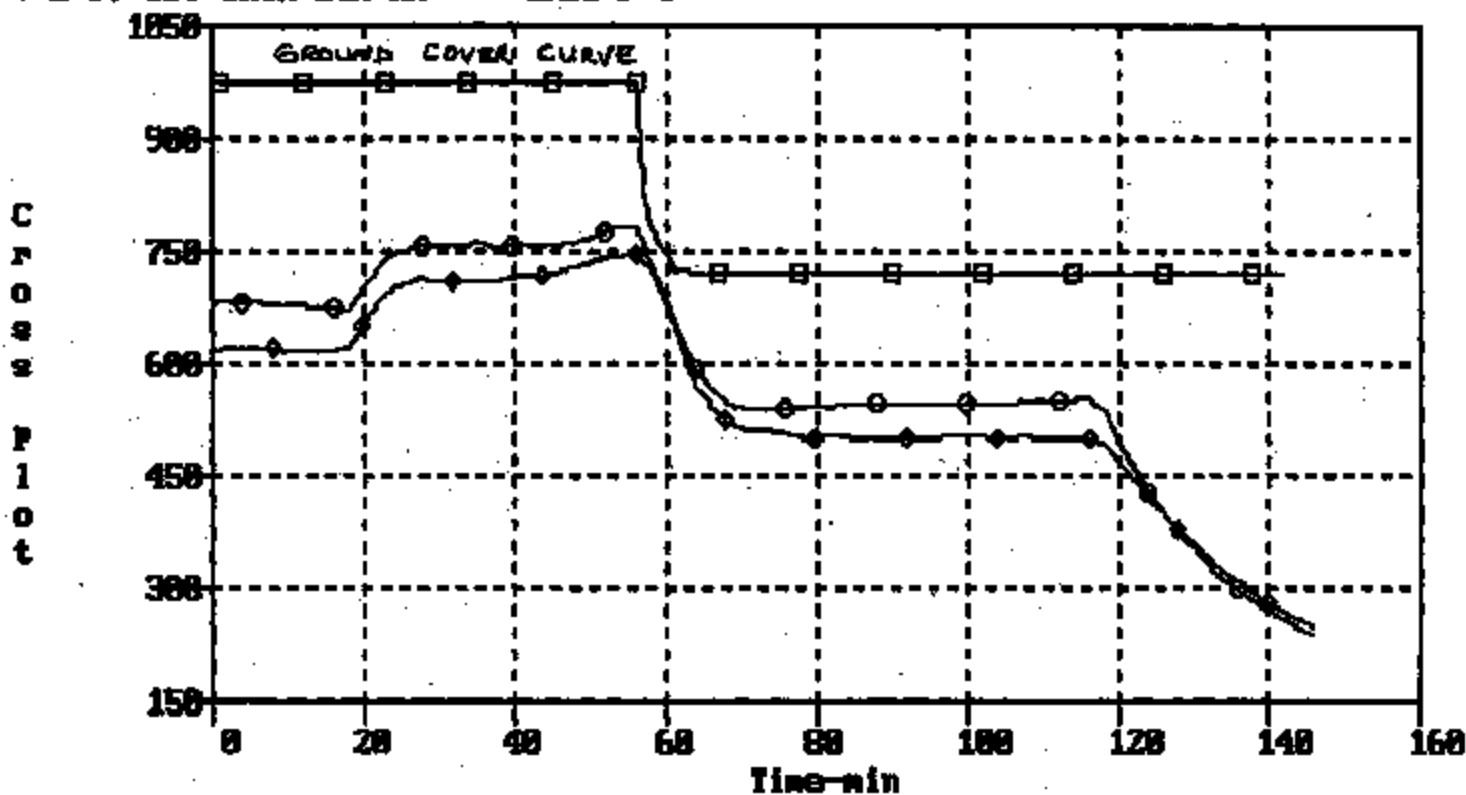
[DEG F]

0=2:96:UBC SKIN BTM LH

[DEG F]

0=2:97:UBC SKIN BTM RH

[DEG F]



75 MPH
ROAD
LOAD

20 MI

30 MPH
7% GRADE LOAD

20 MILES

IDLE

60 MINUTES

ENGINE OFF
SOAK

30 MINUTES

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
2	MANIFOLD VACUUM	8.2	-0.1 @05:42:36 @ 122.0 m	18.0 @04:54:36 @ 74.0 m	7.9	IN HG
5	ENGINE SPEED	846.9	-9.0 @05:40:36 @ 120.0 m	1774.0 @03:40:36 @ 0.0 m	535.8	RPM
6	VEHICLE SPEED	17.2	0.0 @04:38:36 @ 58.0 m	75.0 @03:40:36 @ 0.0 m	25.3	MPH
11	AMBIENT	118.7	100.0 @03:40:36 @ 0.0 m	147.0 @05:58:36 @ 138.0 m	15.6	DEG F
12	TOP WATER	236.8	210.1 @03:40:36 @ 0.0 m	250.4 @04:30:36 @ 50.0 m	10.6	DEG F
13	ENGINE OIL	241.9	199.8 @06:06:36 @ 146.0 m	271.1 @04:32:36 @ 52.0 m	17.0	DEG F
14	TRANSMISSION FLUID	231.4	171.5 @03:40:36 @ 0.0 m	263.0 @04:40:36 @ 60.0 m	23.7	DEG F
15	POWER STEERING FLUID	219.2	175.4 @03:40:36 @ 0.0 m	241.6 @05:36:36 @ 116.0 m	20.2	DEG F
16	HOOD AMB X LF/RR	193.1	143.0 @03:40:36 @ 0.0 m	218.7 @05:42:36 @ 122.0 m	24.9	DEG F
17	HOOD AMB X RF/LR	184.0	137.6 @03:40:36 @ 0.0 m	211.9 @05:40:36 @ 120.0 m	27.0	DEG F
18	ACT CONNECTOR	182.4	112.2 @03:40:36 @ 0.0 m	214.4 @05:42:36 @ 122.0 m	34.2	DEG F
19	ECT CONNECTOR	202.6	150.8 @03:40:36 @ 0.0 m	231.7 @05:52:36 @ 132.0 m	21.3	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
20	TP SENSOR	189.5	148.5 @03:40:36 @ 0.0 m	211.4 @05:36:36 @ 116.0 m	20.5	DEG F
21	CRANK POSITION SEN.	194.2	157.9 @03:40:36 @ 0.0 m	213.3 @05:36:36 @ 116.0 m	17.7	DEG F
22	CAM POSITION SEN.	210.4	172.0 @03:40:36 @ 0.0 m	231.5 @05:46:36 @ 126.0 m	16.6	DEG F
23	EDIS MODULE (1)	165.4	118.4 @03:40:36 @ 0.0 m	214.1 @05:36:36 @ 116.0 m	36.4	DEG F
24	EDIS MODULE (2)	165.0	119.3 @03:58:36 @ 18.0 m	212.7 @05:36:36 @ 116.0 m	35.8	DEG F
25	LH IGNITION COIL AMB	194.5	141.2 @03:40:36 @ 0.0 m	217.8 @05:40:36 @ 120.0 m	23.3	DEG F
26	RH IGNITION COIL AMB	191.5	146.1 @03:40:36 @ 0.0 m	213.3 @05:44:36 @ 124.0 m	22.9	DEG F
27	OIL PRESSURE SENDER	215.2	177.3 @03:40:36 @ 0.0 m	237.2 @04:40:36 @ 60.0 m	17.4	DEG F
28	H2O TEMP SENDER	228.6	201.0 @03:40:36 @ 0.0 m	240.2 @05:46:36 @ 126.0 m	11.2	DEG F
29	MAF SENSOR	190.9	134.1 @03:40:36 @ 0.0 m	214.6 @05:40:36 @ 120.0 m	26.4	DEG F
30	EEC POWER RELAY	175.8	112.1 @03:40:36 @ 0.0 m	216.6 @05:38:36 @ 118.0 m	38.5	DEG F
31	FUEL PUMP RELAY	180.2	115.8 @03:40:36 @ 0.0 m	233.8 @05:36:36 @ 116.0 m	44.2	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
32	ISC MOTOR	186.1	130.0 #03:40:36 @ 0.0 m	218.0 #05:42:36 @ 122.0 m	29.6	DEG F
33	EVR SOLENOID	188.9	150.3 #03:40:36 @ 0.0 m	207.6 #05:36:36 @ 116.0 m	16.4	DEG F
34	EVR REGULATOR	184.0	141.4 #03:40:36 @ 0.0 m	207.9 #05:36:36 @ 116.0 m	21.3	DEG F
35	THROTTLE BODY @TPS	182.7	127.8 #03:40:36 @ 0.0 m	211.4 #05:46:36 @ 126.0 m	30.4	DEG F
36	PURGE CONTROL SOLE.	179.8	127.0 #03:40:36 @ 0.0 m	202.6 #05:36:36 @ 116.0 m	21.7	DEG F
37	ALTERNATOR INLET AIR	209.0	171.3 #03:48:36 @ 8.0 m	236.2 #05:44:36 @ 124.0 m	19.6	DEG F
38	A/C EVAP CASE BTM	154.3	131.7 #03:50:36 @ 10.0 m	189.9 #04:36:36 @ 56.0 m	18.4	DEG F
39	FUEL PRESSURE REG	155.3	122.5 #03:40:36 @ 0.0 m	199.5 #06:02:36 @ 142.0 m	20.3	DEG F
40	FUEL RAIL SUPPLY	150.3	117.2 #03:40:36 @ 0.0 m	196.5 #06:02:36 @ 142.0 m	22.3	DEG F
41	FUEL RAIL RETURN	146.8	110.0 #03:40:36 @ 0.0 m	198.8 #06:04:36 @ 144.0 m	24.1	DEG F
42	STARTER CABLE @MAN	275.7	185.1 #06:06:36 @ 146.0 m	346.2 #04:38:36 @ 58.0 m	36.9	DEG F
43	STARTER MAGNET	227.5	155.1 #03:40:36 @ 0.0 m	272.9 #04:56:36 @ 76.0 m	37.4	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
44	STARTER COIL	208.9	149.9 @03:40:36 @ 0.0 m	237.9 @05:14:36 @ 94.0 m	27.5	DEG F
45	BRK MASTER CYL	174.6	119.0 @03:40:36 @ 0.0 m	210.5 @05:40:36 @ 120.0 m	29.6	DEG F
46	BRK VAC BOOSTER	195.7	140.4 @03:40:36 @ 0.0 m	232.8 @05:36:36 @ 116.0 m	29.0	DEG F
47	POWER DIST BOX AMB I	185.6	120.8 @03:40:36 @ 0.0 m	209.9 @05:38:36 @ 118.0 m	28.2	DEG F
48	AIR CLEANER CASE	179.8	115.7 @03:40:36 @ 0.0 m	209.3 @05:36:36 @ 116.0 m	31.9	DEG F
49	AIR CLEANER INLET	164.2	100.5 @03:40:36 @ 0.0 m	208.0 @05:36:36 @ 116.0 m	44.3	DEG F
50	A/C-RESONATOR HOSE	197.7	156.6 @03:40:36 @ 0.0 m	225.1 @05:58:36 @ 138.0 m	21.2	DEG F
51	CARBON CANNISTER	131.4	97.9 @03:40:36 @ 0.0 m	152.8 @05:28:36 @ 108.0 m	19.6	DEG F
52	STEERING FLEX COUPL.	198.1	147.7 @03:40:36 @ 0.0 m	226.5 @05:36:36 @ 116.0 m	25.1	DEG F
53	POWER STEERING PUMP	207.6	168.2 @03:40:36 @ 0.0 m	231.3 @05:36:36 @ 116.0 m	18.6	DEG F
54	POWER STEERING HOSE	206.4	168.8 @03:40:36 @ 0.0 m	232.7 @05:36:36 @ 116.0 m	20.1	DEG F
57	EDIS MODULE EXT SKIN	159.8	105.0 @03:40:36 @ 0.0 m	210.0 @05:38:36 @ 118.0 m	42.9	DEG F

10007174

1

BULLETIN-SIT-BULLETIN-1419825: PI01605

Allison LCT1000 Intermittent No Reverse Cold Only

When servicing the vehicle with the VIN you entered, the following diagnosis might be helpful if the vehicle exhibits the described symptoms.

Condition/Concern:

The Allison LCT1000 Automatic Transmission may exhibit a condition of intermittent no reverse when the transmission oil temperature is approximately 32 degrees F (0 degrees C) or colder. Reverse operation will begin functioning again once the transmission has operated approximately 3 - 5 minutes. Electrically unplugging the transmission will not change the operation of reverse. All the forward gears perform properly when reverse is inoperative.

Recommendation/Instructions:

The TCC "F" solenoid should be replaced. The TCC "F" solenoid may leak in cold conditions. TCC operation is not effected as the transmission fluid temperature and solenoid will have warmed up before TCC is requested.

Please follow this diagnosis process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed. If these steps do not resolve the condition, please contact GM TAC for further diagnostic assistance. This diagnostic approach was developed for the vehicle with the VIN you entered and should not be automatically be used for other vehicles with similar symptoms.

Models:

(04 Chevrolet Silverado)

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
73	FLR OVER MUFF INLET	149.7	122.8 @06:06:36 @ 146.0 m	172.5 @04:38:36 @ 58.0 m	13.1	DEG F
74	FLR VERT FWD OF MUFF	172.1	132.0 @06:06:36 @ 146.0 m	209.5 @04:42:36 @ 62.0 m	20.9	DEG F
75	FLR OVER MUFF PRT	179.2	138.5 @03:40:36 @ 0.0 m	217.1 @04:42:36 @ 62.0 m	22.0	DEG F
76	FLR OVER MUFF CENTER	216.6	142.4 @06:06:36 @ 146.0 m	294.7 @04:40:36 @ 60.0 m	37.1	DEG F
77	FLR OVER MUFF RR	176.6	133.2 @03:40:36 @ 0.0 m	214.5 @04:42:36 @ 62.0 m	22.0	DEG F
78	FLR IN KICKUP	150.5	119.8 @03:40:36 @ 0.0 m	166.4 @04:44:36 @ 64.0 m	13.6	DEG F
79	FLR IN TRUNK	142.8	117.9 @03:40:36 @ 0.0 m	163.5 @04:42:36 @ 62.0 m	11.6	DEG F
80	HEGO TIP LH	1036.1	244.6 @06:06:36 @ 146.0 m	1347.4 @03:56:36 @ 16.0 m	355.2	DEG F
81	HEGO TIP RH	979.5	220.6 @06:06:36 @ 146.0 m	1317.3 @03:56:36 @ 16.0 m	359.2	DEG F
82	HEGO GROMMET LH	274.1	180.3 @03:40:36 @ 0.0 m	349.2 @05:36:36 @ 116.0 m	61.5	DEG F
83	HEGO GROMMET RH	246.9	179.4 @03:40:36 @ 0.0 m	301.5 @04:40:36 @ 60.0 m	32.6	DEG F
84	HEGO HEX LH	555.4	237.9 @06:06:36 @ 146.0 m	689.8 @04:32:36 @ 52.0 m	123.9	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
85	HEGO HEX RH	529.2	218.2 @06:06:36 @ 146.0 m	721.7 @04:32:36 @ 52.0 m	148.8	DEG F
86	HEGO CONNECTOR LH	205.0	150.2 @03:40:36 @ 0.0 m	244.1 @05:34:36 @ 114.0 m	32.8	DEG F
87	HEGO CONNECTOR RH	193.3	146.4 @03:40:36 @ 0.0 m	213.2 @05:42:36 @ 122.0 m	20.4	DEG F
88	EXHAUST MANIFOLD LH	589.0	222.6 @06:06:36 @ 146.0 m	847.9 @04:36:36 @ 56.0 m	207.0	DEG F
89	EXHAUST MANIFOLD RH	554.1	214.6 @06:06:36 @ 146.0 m	776.4 @04:36:36 @ 56.0 m	174.1	DEG F
90	LOC GAS LH	986.3	380.5 @06:06:36 @ 146.0 m	1322.3 @03:40:36 @ 0.0 m	263.7	DEG F
91	LOC GAS RH	962.1	301.6 @06:06:36 @ 146.0 m	1287.2 @03:40:36 @ 0.0 m	274.6	DEG F
92	LOC SKIN OUTBD LH	465.7	250.5 @06:06:36 @ 146.0 m	587.3 @04:40:36 @ 60.0 m	103.9	DEG F
93	LOC SKIN OUTBD RH	428.9	236.8 @06:06:36 @ 146.0 m	567.3 @04:40:36 @ 60.0 m	109.2	DEG F
94	UBC GAS LH	889.7	393.2 @06:06:36 @ 146.0 m	1190.0 @03:40:36 @ 0.0 m	236.6	DEG F
95	UBC GAS RH	879.3	359.9 @06:06:36 @ 146.0 m	1184.4 @04:36:36 @ 56.0 m	244.9	DEG F
96	UBC SKIN BTM LH	590.9	245.4 @06:06:36 @ 146.0 m	789.0 @04:34:36 @ 54.0 m	150.1	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
97	UBC SKIN BTM RH	556.9	254.4 @06:06:36 @ 146.0 m	751.0 @04:36:36 @ 56.0 m	135.5	DEG F
98	EXH PIPE 1ST BEND LH	469.7	165.2 @06:06:36 @ 146.0 m	663.4 @04:36:36 @ 56.0 m	138.8	DEG F
99	EXH PIPE 1ST BEND RH	488.7	198.9 @06:06:36 @ 146.0 m	690.6 @04:36:36 @ 56.0 m	141.0	DEG F
100	EXH PIPE 6"RR UBC LH	465.0	158.3 @06:06:36 @ 146.0 m	665.4 @04:36:36 @ 56.0 m	143.2	DEG F
101	EXH PIPE 6"RR UBC RH	466.5	179.6 @06:06:36 @ 146.0 m	676.7 @04:32:36 @ 52.0 m	143.6	DEG F
102	EXH PIPE AT Y-JT	473.9	148.2 @06:06:36 @ 146.0 m	679.3 @04:36:36 @ 56.0 m	151.9	DEG F
103	EXH PIPE 6"FWD MUFF	411.9	137.0 @06:06:36 @ 146.0 m	613.8 @04:36:36 @ 56.0 m	140.0	DEG F
104	MUFFLER BTM CENTER	370.6	137.5 @06:06:36 @ 146.0 m	544.2 @04:36:36 @ 56.0 m	115.5	DEG F
105	EXH TOP OF KICKUP	380.8	145.1 @06:06:36 @ 146.0 m	576.6 @04:32:36 @ 52.0 m	130.6	DEG F
106	EXH 12" FWD OUTLET	284.8	122.1 @06:06:36 @ 146.0 m	441.7 @04:32:36 @ 52.0 m	94.5	DEG F
107	INTERMED EXH HGR IN	212.6	136.3 @06:06:36 @ 146.0 m	281.0 @04:40:36 @ 60.0 m	35.4	DEG F
108	INTERMED EXH HGR OUT	213.2	139.0 @06:06:36 @ 146.0 m	277.6 @04:40:36 @ 60.0 m	33.5	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W435W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
109	RR EXH. HANGER	188.1	123.7 006:06:36 0 146.0 m	248.3 004:38:36 0 58.0 m	32.6	DEG F
110	FRT U-JT AMB	186.9	146.9 006:02:36 0 142.0 m	227.0 004:42:36 0 62.0 m	27.2	DEG F
111	ENG MNT LH	211.2	157.4 003:40:36 0 0.0 m	248.4 005:26:36 0 106.0 m	28.0	DEG F
112	ENG MNT RH	195.3	132.2 003:40:36 0 0.0 m	229.2 005:36:36 0 116.0 m	29.3	DEG F
113	ENG MNT RR	190.8	130.5 003:40:36 0 0.0 m	224.0 004:56:36 0 76.0 m	28.9	DEG F
114	TRANS PAN GASKET LH	227.4	155.1 003:40:36 0 0.0 m	269.4 004:46:36 0 66.0 m	30.3	DEG F
116	SPEED SENSOR	204.3	242.2 003:40:36 0 0.0 m	239.2 004:50:36 0 70.0 m	26.0	DEG F
118	TRAN ELEC CONN LH/RR	199.2	153.9 003:40:36 0 0.0 m	228.7 004:54:36 0 74.0 m	24.4	DEG F
119	TRANS BELT HSG LH	222.6	152.1 003:40:36 0 0.0 m	260.4 004:50:36 0 70.0 m	31.2	DEG F
120	TRANS BELT HSG RH	226.1	161.3 003:40:36 0 0.0 m	258.6 004:46:36 0 66.0 m	27.4	DEG F
121	TRAN EXT HSG GASKET	225.0	160.4 003:40:36 0 0.0 m	262.0 004:48:36 0 68.0 m	26.6	DEG F
122	TRAN EXT HSG BUSHING	216.5	262.5 003:40:36 0 0.0 m	251.1 004:46:36 0 66.0 m	22.7	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
123	TRAN FILL TUBE SKIN	226.2	150.7 #03:40:36 # 0.0 m	276.0 #04:42:36 # 62.0 m	32.5	DEG F
124	TRAN FILL TUBE SEAL	216.9	136.5 #03:40:36 # 0.0 m	268.7 #04:42:36 # 62.0 m	37.0	DEG F
125	TRAN CASE OMAN LEV	225.1	157.0 #03:40:36 # 0.0 m	266.6 #04:46:36 # 66.0 m	28.8	DEG F
126	TRAN MLP8	209.3	159.9 #03:40:36 # 0.0 m	243.1 #05:36:36 # 116.0 m	26.0	DEG F
127	TRAN BULKHEAD COHN	207.7	159.0 #03:40:36 # 0.0 m	240.2 #04:44:36 # 64.0 m	25.7	DEG F
128	SHIFT CABLE OXEN MAN	243.3	154.2 #06:06:36 # 146.0 m	308.7 #05:36:36 # 116.0 m	50.8	DEG F
129	SHIFT CABLE O LOC	181.9	126.9 #03:40:36 # 0.0 m	228.8 #05:36:36 # 116.0 m	35.9	DEG F
130	SHIFT CABLE OMAN LEV	198.8	131.2 #03:40:36 # 0.0 m	237.2 #05:26:36 # 106.0 m	36.9	DEG F
131	SHIFT CABLE OXEN MAN	205.5	138.5 #06:06:36 # 146.0 m	247.7 #04:42:36 # 62.0 m	33.5	DEG F
132	SHIFT CABLE OXEN MAN	196.1	141.7 #06:06:36 # 146.0 m	229.5 #05:28:36 # 108.0 m	28.9	DEG F
133	SHIFT CABLE O ENDOFIT	194.3	142.8 #03:40:36 # 0.0 m	229.2 #05:20:36 # 100.0 m	30.7	DEG F
135	FUEL FILTER	126.5	99.6 #03:40:36 # 0.0 m	139.0 #05:34:36 # 114.0 m	11.4	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
136	FUEL LINE AT FILTER	123.1	104.6 @03:40:36 @ 0.0 m	132.1 @05:22:36 @ 102.0 m	7.9	DEG F
137	FUEL RET LINE @ TANK	133.4	101.7 @03:40:36 @ 0.0 m	147.6 @05:44:36 @ 124.0 m	12.3	DEG F
138	FUEL SUP LINE @ TANK	137.5	114.2 @03:40:36 @ 0.0 m	148.3 @05:36:36 @ 116.0 m	9.6	DEG F
139	FUEL TANK SKIN FRT	131.7	108.4 @03:40:36 @ 0.0 m	141.3 @04:36:36 @ 56.0 m	8.6	DEG F
140	FUEL PUMP FLANGE	128.0	96.4 @03:40:36 @ 0.0 m	139.3 @05:38:36 @ 118.0 m	12.1	DEG F
141	FUEL LINE AT SENDER	134.2	106.8 @03:40:36 @ 0.0 m	146.8 @05:34:36 @ 114.0 m	10.1	DEG F
142	FUEL LINE PLAS. CONV	144.3	118.6 @03:40:36 @ 0.0 m	157.8 @04:38:36 @ 56.0 m	10.5	DEG F
143	FUEL IN TANK	122.5	85.0 @03:40:36 @ 0.0 m	138.1 @05:36:36 @ 116.0 m	14.4	DEG F
144	PARK BRK CABLE S/XLE	150.5	124.6 @06:06:36 @ 146.0 m	181.6 @04:38:36 @ 58.0 m	15.8	DEG F
145	AIR SPRING UP CAP RH	151.3	112.4 @03:40:36 @ 0.0 m	166.7 @05:34:36 @ 114.0 m	16.0	DEG F
146	AIR SPRING SLV RH RR	154.9	123.8 @03:40:36 @ 0.0 m	171.9 @04:42:36 @ 62.0 m	13.1	DEG F
147	AIR SPRING SOLE. RH	155.1	115.0 @03:40:36 @ 0.0 m	174.5 @04:42:36 @ 62.0 m	18.2	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3
 TEST DESC: SIGNOFF
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
148	ABS SENS WIRE RH RR	149.8	121.8 006:06:36 0 146.0 m	179.6 004:36:36 0 56.0 m	16.3	DEG F
149	A/CLEAN ELEMENT SEAL	189.6	133.2 003:40:36 0 0.0 m	210.7 005:38:36 0 118.0 m	24.8	DEG F
150	A/C CYCLING SWITCH	187.1	152.3 003:40:36 0 0.0 m	205.3 005:36:36 0 116.0 m	16.7	DEG F
151	SHIFT CABLE BRACKET	202.1	148.5 003:40:36 0 0.0 m	239.6 004:46:36 0 55.0 m	30.8	DEG F
152	SHIFT CABLE @ UBC	205.0	154.7 006:06:36 0 146.0 m	243.6 004:44:36 0 64.0 m	32.2	DEG F
153	SFT CABLE 10*RR BRKT	48.0	-7.1 004:40:36 0 60.0 m	147.1 006:06:36 0 146.0 m	40.9	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3NL
 TEST DEFC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3NL

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
2	MANIFOLD VACUUM	8.7	-0.1 @ 11:12:28 @ 122.0 m	17.5 @ 10:20:28 @ 70.0 m	7.0	IN HG
5	ENGINE SPEED	941.2	-9.0 @ 11:12:28 @ 122.0 m	1774.0 @ 09:10:28 @ 0.0 m	632.2	RPM
6	VEHICLE SPEED	17.4	0.0 @ 10:10:28 @ 60.0 m	75.0 @ 09:10:28 @ 0.0 m	25.2	MPH
11	AMBIENT	122.7	100.1 @ 09:22:28 @ 12.0 m	153.7 @ 11:38:28 @ 148.0 m	19.2	DEG F
12	TOP WATER	226.4	206.5 @ 09:10:28 @ 0.0 m	238.1 @ 11:18:28 @ 128.0 m	7.5	DEG F
13	ENGINE OIL	231.7	196.7 @ 11:38:28 @ 148.0 m	245.8 @ 10:04:28 @ 54.0 m	12.5	DEG F
14	TRANSMISSION FLUID	221.1	203.7 @ 09:10:28 @ 0.0 m	230.4 @ 10:22:28 @ 72.0 m	8.3	DEG F
15	POWER STEERING FLUID	215.7	173.0 @ 09:10:28 @ 0.0 m	236.5 @ 11:08:28 @ 118.0 m	15.1	DEG F
16	UNHOOD AND X 12/88	187.2	140.4 @ 09:10:28 @ 0.0 m	215.4 @ 11:14:28 @ 124.0 m	23.4	DEG F
17	UNHOOD	181.2	136.9 @ 09:10:28 @ 0.0 m	211.3 @ 11:14:28 @ 124.0 m	25.7	DEG F
18	ACT CONNECTOR	178.0	114.9 @ 09:24:28 @ 14.0 m	210.9 @ 11:16:28 @ 126.0 m	30.7	DEG F
19	ECT CONNECTOR	196.1	156.6 @ 09:10:28 @ 0.0 m	227.1 @ 11:26:28 @ 136.0 m	20.6	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
20	TP SENSOR	185.0	144.2 009:10:28 0 0.0 m	207.4 011:08:28 0 118.0 m	19.3	DEG F
21	CRANK POSITION SEN.	189.4	153.3 009:10:28 0 0.0 m	209.5 011:08:28 0 118.0 m	16.0	DEG F
22	CAM POSITION SEN.	202.9	167.1 009:10:28 0 0.0 m	226.3 011:18:28 0 128.0 m	15.8	DEG F
23	EDIS MODULE (1)	165.5	121.1 009:26:28 0 16.0 m	214.5 011:08:28 0 118.0 m	35.4	DEG F
24	EDIS MODULE (2)	165.0	121.7 009:28:28 0 18.0 m	212.9 011:08:28 0 118.0 m	34.7	DEG F
25	LH IGNITION COIL AMB	188.6	143.7 009:10:28 0 0.0 m	214.5 011:14:28 0 124.0 m	21.3	DEG F
26	RE IGNITION COIL AMB	187.1	144.2 009:10:28 0 0.0 m	210.2 011:18:28 0 128.0 m	20.7	DEG F
27	OIL PRESSURE SENDER	208.4	168.7 009:10:28 0 0.0 m	226.3 011:08:28 0 118.0 m	14.2	DEG F
28	H2O TEMP SENDER	220.0	197.4 009:10:28 0 0.0 m	234.3 011:18:28 0 128.0 m	9.4	DEG F
29	MAP SENSOR	125.4	138.8 009:18:28 0 8.0 m	211.3 011:14:28 0 124.0 m	24.1	DEG F
30	REC POWER RELAY	173.1	113.9 009:26:28 0 16.0 m	216.6 011:10:28 0 120.0 m	35.6	DEG F
31	FUEL PUMP RELAY	178.6	122.2 009:26:28 0 16.0 m	229.9 011:08:28 0 118.0 m	40.4	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
32	ISC MOTOR	183.0	133.2 @09:12:28 @ 2.0 m	214.9 @11:14:28 @ 124.0 m	26.7	DEG F
33	EVR SOLENOID	187.2	143.9 @09:10:28 @ 0.0 m	206.0 @11:10:28 @ 120.0 m	14.8	DEG F
34	EVR REGULATOR	182.4	139.4 @09:10:28 @ 0.0 m	206.4 @11:12:28 @ 122.0 m	19.6	DEG F
35	THROTTLE BODY @TPS	178.9	131.1 @09:26:28 @ 16.0 m	208.8 @11:20:28 @ 130.0 m	28.1	DEG F
36	PURGE CONTROL SOLE.	179.4	128.7 @09:10:28 @ 0.0 m	199.2 @11:08:28 @ 118.0 m	18.6	DEG F
37	ALTERNATOR INLET AIR	201.1	163.9 @09:10:28 @ 0.0 m	231.2 @11:16:28 @ 126.0 m	19.6	DEG F
38	A/C EVAP CASE BTM	149.4	125.9 @10:26:28 @ 76.0 m	181.3 @09:40:28 @ 30.0 m	19.0	DEG F
39	FUEL PRESSURE REG	158.5	132.9 @09:10:28 @ 0.0 m	199.7 @11:38:28 @ 148.0 m	17.3	DEG F
40	FUEL RAIL SUPPLY	155.3	127.5 @09:10:28 @ 0.0 m	195.5 @11:34:28 @ 144.0 m	18.8	DEG F
41	FUEL RAIL RETURN	152.8	123.4 @09:10:28 @ 0.0 m	198.6 @11:38:28 @ 148.0 m	20.7	DEG F
42	STARTER CABLE @MAN	275.2	184.5 @11:38:28 @ 148.0 m	354.6 @10:10:28 @ 60.0 m	39.8	DEG F
43	STARTER MAGNET	241.4	162.3 @09:10:28 @ 0.0 m	268.5 @10:14:28 @ 64.0 m	26.0	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
44	STARTER COIL	202.7	149.9 009:10:28 0 0.0 m	229.1 011:08:28 0 118.0 m	21.7	DEG F
45	BRK MASTER CYL	182.7	156.5 009:26:28 0 16.0 m	210.9 011:14:28 0 124.0 m	20.4	DEG F
46	BRK VAC BOOSTER	194.1	147.0 009:10:28 0 0.0 m	235.2 011:08:28 0 118.0 m	29.1	DEG F
47	POWER DIST BOX AMB I	181.5	125.9 009:26:28 0 16.0 m	206.4 011:10:28 0 120.0 m	25.0	DEG F
48	AIR CLEANER CASE	175.8	122.2 009:14:28 0 4.0 m	205.3 011:10:28 0 120.0 m	28.4	DEG F
49	AIR CLEANER INLET	161.5	100.6 009:16:28 0 6.0 m	204.7 011:08:28 0 118.0 m	41.5	DEG F
50	A/C-RESONATOR HOSE	192.6	150.3 009:10:28 0 0.0 m	201.0 011:30:28 0 140.0 m	20.5	DEG F
51	CARBON CANNISTER	120.2	96.8 009:16:28 0 6.0 m	152.7 011:30:28 0 140.0 m	15.9	DEG F
52	STEERING PUMP	192.7	146.4 009:10:28 0 0.0 m	221.3 011:08:28 0 118.0 m	21.7	DEG F
53	POWER STEERING HOSE	204.1	163.9 009:10:28 0 0.0 m	226.8 011:08:28 0 118.0 m	15.0	DEG F
54	POWER STEERING NOSE	209.7	164.3 009:10:28 0 0.0 m	228.2 011:08:28 0 118.0 m	16.5	DEG F
57	EDIS MODULE EXT SKIN	158.7	106.6 009:22:28 0 12.0 m	209.5 011:12:28 0 122.0 m	42.1	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
61	A/C DISCHARGE AIR	61.3	37.4 009:58:28 0 48.0 m	126.8 011:38:28 0 148.0 m	27.0	DEG F
62	TOEBOARD TOP LH	249.7	152.3 009:10:28 0 0.0 m	329.3 011:08:28 0 118.0 m	59.2	DEG F
63	TOEBOARD TOP RH	200.8	159.0 009:10:28 0 0.0 m	229.5 009:50:28 0 40.0 m	19.5	DEG F
64	TOEBOARD BTM LH	279.8	156.8 009:10:28 0 0.0 m	341.0 011:08:28 0 118.0 m	51.2	DEG F
65	TOEBOARD BTM RH	206.3	150.2 009:10:28 0 0.0 m	239.3 010:12:28 0 62.0 m	20.7	DEG F
66	FIR OVER CAT LH	278.5	145.7 009:10:28 0 0.0 m	338.7 011:08:28 0 118.0 m	55.0	DEG F
67	FIR OVER CAT RH	194.0	144.7 009:10:28 0 0.0 m	232.1 010:12:28 0 62.0 m	17.9	DEG F
68	FIR OVER CAT OUT LH	293.6	157.0 009:10:28 0 0.0 m	349.2 010:18:28 0 68.0 m	60.3	DEG F
69	FIR OVER CAT OUT RH	201.9	154.9 009:10:28 0 0.0 m	246.5 010:10:28 0 60.0 m	20.2	DEG F
70	FIR 4" RR UBC LH	249.9	145.8 009:10:28 0 0.0 m	311.9 010:14:28 0 64.0 m	51.1	DEG F
71	FIR 4" RR UBC RH	199.4	152.5 009:10:28 0 0.0 m	228.3 010:10:28 0 60.0 m	17.3	DEG F
72	FIR OVER Y JT	206.2	138.2 009:10:28 0 0.0 m	278.8 010:12:28 0 62.0 m	34.6	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
73	FLR OVER MUFF INLET	165.2	127.7 #09:10:28 0 0.0 m	198.3 #10:10:28 0 60.0 m	19.6	DEG F
74	FLR VERT FWD OF MUFF	196.2	125.5 #09:10:28 0 0.0 m	249.5 #10:12:28 0 62.0 m	29.4	DEG F
75	FLR OVER MUFF FRT	207.4	128.3 #09:10:28 0 0.0 m	263.0 #10:12:28 0 62.0 m	30.0	DEG F
76	FLR OVER MUFF CENTER	261.0	142.3 #09:10:28 0 0.0 m	338.8 #10:12:28 0 62.0 m	57.5	DEG F
77	FLR OVER MUFF RR	208.4	122.2 #09:10:28 0 0.0 m	260.5 #10:14:28 0 64.0 m	32.5	DEG F
78	FLR IN KICKUP	165.1	123.1 #09:10:28 0 0.0 m	186.3 #10:16:28 0 66.0 m	16.6	DEG F
79	FLR IN TRUNK	159.2	116.1 #09:10:28 0 0.0 m	181.2 #10:12:28 0 62.0 m	14.6	DEG F
80	HEGO TIP LH	927.8 #11:38:28 0 148.0 m	248.7 #11:38:28 0 148.0 m	1275.2 #09:18:28 0 8.0 m	304.7	DEG F
81	HEGO TIP RH	1001.4 #11:38:28 0 148.0 m	326.6 #11:38:28 0 148.0 m	1353.7 #09:22:28 0 12.0 m	374.2	DEG F
82	HEGO GROMMET LH	260.2	153.6 #09:10:28 0 0.0 m	337.0 #11:08:28 0 118.0 m	62.1	DEG F
83	HEGO GROMMET RH	243.7	153.6 #09:10:28 0 0.0 m	296.0 #10:12:28 0 62.0 m	30.5	DEG F
84	HEGO HEX LH	452.2 #11:38:28 0 148.0 m	239.3 #11:38:28 0 148.0 m	545.8 #10:08:28 0 58.0 m	85.1	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
85	HEGO HEX RH	538.2	222.3 @11:38:28 @ 148.0 m	743.6 @09:34:28 @ 24.0 m	165.8	DEG F
86	HEGO CONNECTOR LH	199.4	151.7 @09:10:28 @ 0.0 m	242.3 @11:08:28 @ 118.0 m	31.9	DEG F
87	HEGO CONNECTOR RH	188.4	145.9 @09:10:28 @ 0.0 m	209.8 @11:16:28 @ 126.0 m	18.0	DEG F
88	EXHAUST MANIFOLD LH	540.5	219.0 @11:38:28 @ 148.0 m	781.7 @09:30:28 @ 20.0 m	197.9	DEG F
89	EXHAUST MANIFOLD RH	567.3	217.6 @11:38:28 @ 148.0 m	810.8 @09:30:28 @ 20.0 m	196.3	DEG F
90	LOC GAS LH	1462.7	472.2 @11:38:28 @ 148.0 m	1836.3 @09:18:28 @ 8.0 m	383.3	DEG F
91	LOC GAS RH	977.4	414.4 @11:38:28 @ 148.0 m	1318.8 @09:16:28 @ 6.0 m	287.6	DEG F
92	LOC SKIN OUTED LH	640.1	275.1 @09:10:28 @ 0.0 m	800.9 @10:14:28 @ 64.0 m	166.8	DEG F
93	LOC SKIN OUTED RH	425.3	193.6 @09:10:28 @ 0.0 m	584.0 @10:12:28 @ 62.0 m	102.1	DEG F
94	UBC GAS LH	1260.9	505.6 @11:38:28 @ 148.0 m	1619.5 @10:08:28 @ 58.0 m	331.0	DEG F
95	UBC GAS RH	887.1	381.8 @11:38:28 @ 148.0 m	1215.4 @09:30:28 @ 20.0 m	280.7	DEG F
96	UBC SKIN BTM LH	822.7	295.0 @11:38:28 @ 148.0 m	1094.2 @09:38:28 @ 28.0 m	233.6	DEG F

TABULAR DATA SUMMARY REPORT

VEH. ID : 311W455W
 TEST ID : W455W3ML
 TEST DESC: MALFUNCTION
 TEST DATE: 05 MAY 91
 DATAFILE : W455W3ML

Ch #	Label	Average	Minimum	Maximum	Std.Dev.	Units
97	UBC SKIN BTM RH	550.1	237.9 011:38:28 0 148.0 m	765.1 009:36:28 0 26.0 m	166.8	DEG F
98	EXH PIPE 1ST BEND LH	613.9	184.1 011:38:28 0 148.0 m	855.5 009:34:28 0 24.0 m	203.2	DEG F
99	EXH PIPE 1ST BEND RH	487.9	172.9 011:38:28 0 148.0 m	694.3 009:38:28 0 28.0 m	164.4	DEG F
100	EXH PIPE 6"RR UBC LH	606.3	174.3 011:38:28 0 148.0 m	851.8 009:38:28 0 28.0 m	205.6	DEG F
101	EXH PIPE 6"RR UBC RH	467.5	158.7 011:38:28 0 148.0 m	676.2 009:36:28 0 26.0 m	164.4	DEG F
102	EXH PIPE AT Y-JT	553.4	141.7 011:38:28 0 148.0 m	794.9 009:32:28 0 22.0 m	201.4	DEG F
103	EXH PIPE 6"FWB MWF	493.5	139.7 011:38:28 0 148.0 m	747.0 009:32:28 0 22.0 m	198.3	DEG F
104	MUFFLER BTM CENTER	440.7	145.9 011:38:28 0 148.0 m	544.6 009:36:28 0 26.0 m	165.7	DEG F
105	EXH TOP OF MUFFLER	455.0	152.3 011:38:28 0 148.0 m	700.2 009:36:28 0 26.0 m	187.9	DEG F
106	EXH 12" FWB	336.6	127.0 011:38:28 0 148.0 m	530.2 009:42:28 0 32.0 m	137.6	DEG F
107	INTERMED EXH HGR IN	239.1	130.0 009:10:28 0 0.0 m	323.9 010:10:28 0 60.0 m	51.1	DEG F
108	INTERMED EXH HGR OUT	243.6	126.3 009:10:28 0 0.0 m	326.3 010:12:28 0 62.0 m	49.8	DEG F