

**EA02-025**

**TEXAS INSTRUMENTS, INC.'S**

**9/10/03**

**REQUEST NO. 7**

**BOX 9**

**PART A - R**

**PART B**

1999 5 4 11:24:49 AM MVC-PD91

**Digital Mavica images**

7 mavica images

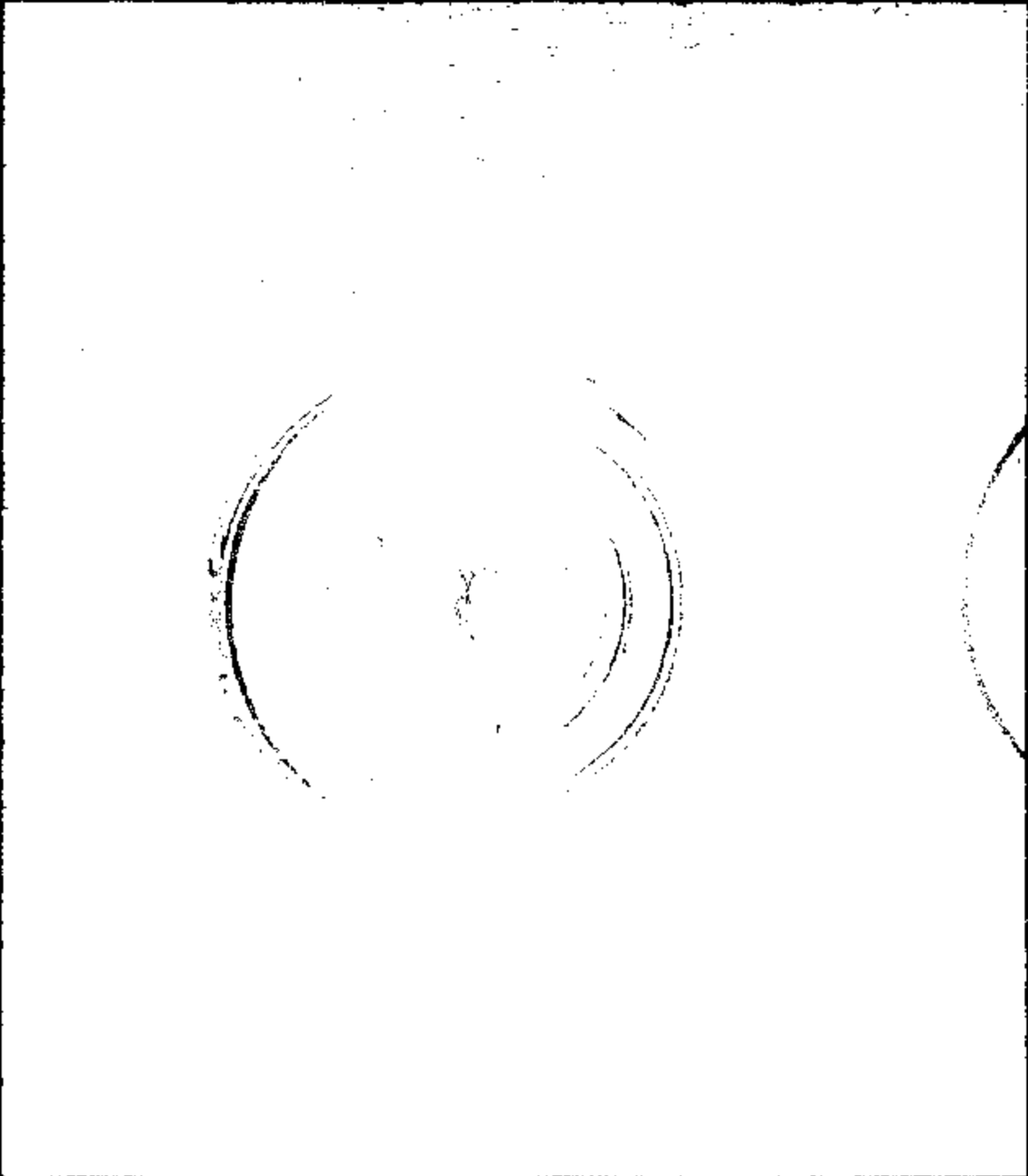
296 Kbytes free

<u>MVC-182X.JPG</u>	1999	5	4	11:22:10 AM
<u>MVC-183X.JPG</u>	1999	5	4	11:22:32 AM
<u>MVC-184X.JPG</u>	1999	5	4	11:22:48 AM
<u>MVC-185X.JPG</u>	1999	5	4	11:23:10 AM
<u>MVC-186X.JPG</u>	1999	5	4	11:24:08 AM
<u>MVC-187X.JPG</u>	1999	5	4	11:24:24 AM
<u>MVC-188X.JPG</u>	1999	5	4	11:24:48 AM

This document contains the following shortcuts:

Shortcut Text	Internet Address
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MVC-183X.JPG	file:///F:/Disc%2035/MVC-183X.JPG
MVC-184X.JPG	file:///F:/Disc%2035/MVC-184X.JPG
MVC-185X.JPG	file:///F:/Disc%2035/MVC-185X.JPG
MVC-186X.JPG	file:///F:/Disc%2035/MVC-186X.JPG
MVC-187X.JPG	file:///F:/Disc%2035/MVC-187X.JPG
MVC-188X.JPG	file:///F:/Disc%2035/MVC-188X.JPG

TI-NHTSA 013622



TI-NHTSA 013823



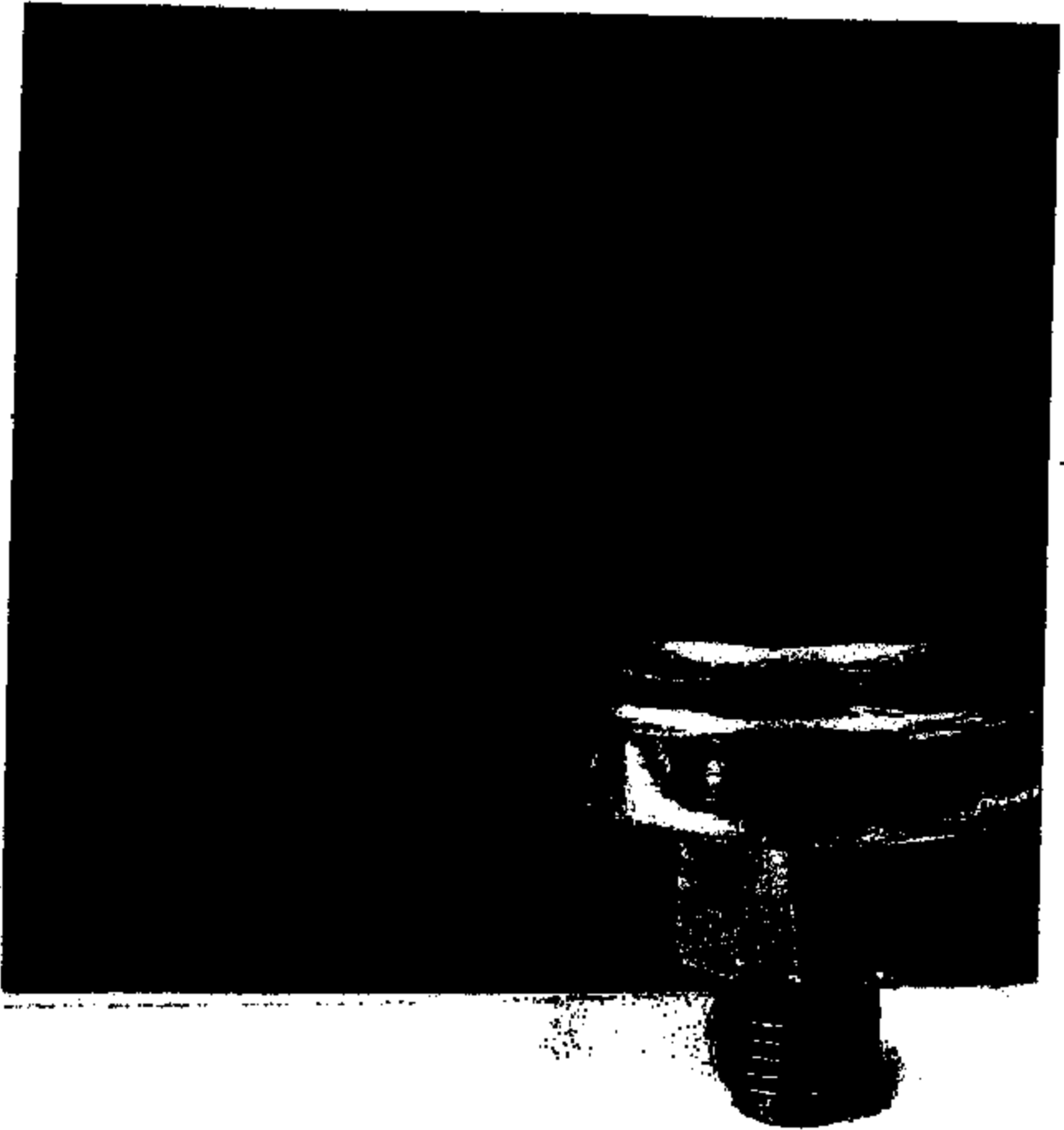
TI-NHTSA 013524



TI-NHTSA 013626



TI-NHTSA 013526



TI-NHT8A 013527



TI-NHTSA 013528





10/1

TI-NHT8A 013628

2/3/00

PRESSURE SWITCH DATA

FORM 21605

TEST NO. 577-15-50

DEVICE 77PS	DATE REQUESTED 5-5-99	REQUESTED BY Brian Deane / Sean Mulligan	REQUESTED COMPL. DATE
PERFORMED BY David Dube	DATE STARTED 5-5-99	DATE COMPLETED 5-19-99	APPROVED BY

PROJECT TITLE:

CUSTOMER: Ford

PURPOSE OF TEST: To test electro-chemical effect. To measure current leakage over time with heat/vibration cycling daily.

PROCEDURE: See Attached document

Note C: 100°C heat applied from 5-11-99, 100°C heat applied daily for 1 hour beginning 5-11-99.

Note D: 1 hour vibration applied daily beginning 5-12-99.

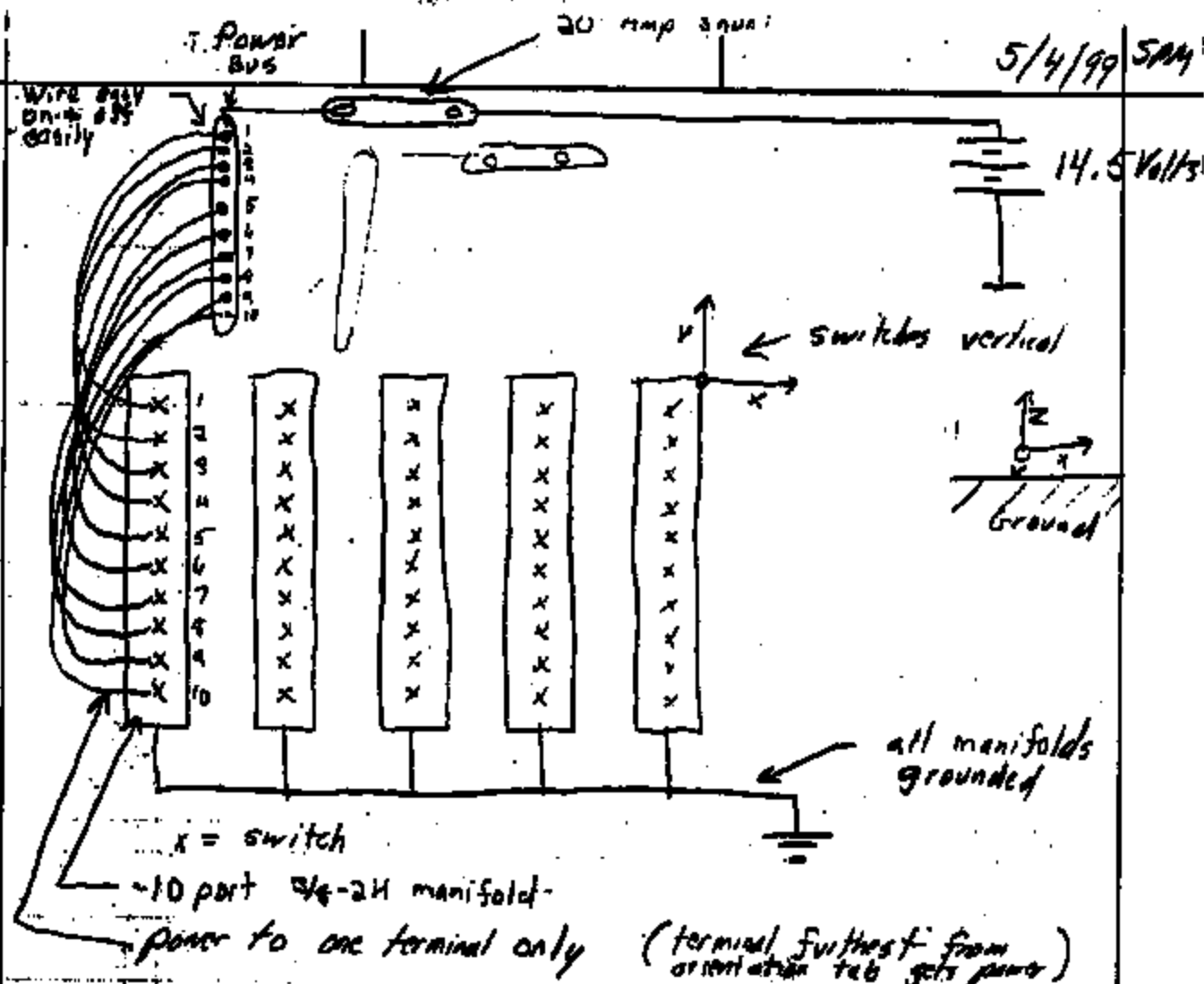
Note E: End test 5-19-99 at 9pm. Power turned off

Note A: 3 switches checked using 10W-30 motor oil. Zero current was measured.

Note B: Switches under test 6:30 pm, 5-6-99.

Sw. #	(mA) Current Flow 5-7-99	(mA) Current 5-10-99	(mA) Current 5-11-99	(mA) Current 5-12-99	(mA) Current 5-13-99	(mA) Current 5-14-99	(mA) Current 5-17-99	(mA) Current 5-18-99	(mA) Current 5-19-99
1	.575 mA	1.73 mA	2.99 mA	1.911 mA	.445 mA	1.07 mA	6.62 mA	12.48 mA	2.74 mA
2	.242	.281	1.48	1.65	.561	.229	1.72	6.91	2.04
3	.192	3.79	4.46	2.15	.194	1.87	2.22	2.12	3.26
4	.260	.983	1.51	1.90	2.27	2.83	4.19	2.79	6.18
5	.229	1.21	2.13	1.62	.649	2.36	7.95	4.12	7.04
6	.216	.077	.251	.117	-.037	.413	1.54	1.698	1.80
7	.220	.826	.799	.849	-.026	.683	2.09	1.03	2.71
8	.183	.279	1.85	.925	.126	1.624	2.51	.568	.932
9	.163	1.018	1.79	.074	.013	.413	2.79	.796	.297
10	.218	.089	.245	.042	.018	.165	.282	.024	.020
11	.240	.074	.040	.033	.029	.277	2.10	.081	.075
12	.225	.268	.335	.045	.026	.283	1.91	.824	.805
13	.220	4.25	7.74	1.24	.149	.819	2.60	2.36	3.15
14	.190	3.99	7.57	.043	.014	.186	.612	.569	1.37
15	.160	.178	.316	.536	.020	1.19	2.96	2.72	4.52
16	.285	1.268	3.15	1.80	.026	.070	.251	6.07	.075
17	.210	2.39	4.42	.879	1.124	3.04	7.20	6.80	1.94
18	.270	.267	.620	1.13	.153	1.89	3.91	4.76	2.24
19	.213	.138	.302	2.33	.273	.919	2.43	.208	.82
20	.232	2.06	1.64	.216	.017	.050	.166	.061	1.14
21	.241	3.39	1.37	.099	1.09	3.11	.277	.125	.301
22	.253	1.83	2.99	4.07	.031	.051	.377	.112	.062
23	.245	.255	.442	.690	.111	.120	1.15	.456	.802
24	.166	.220	.198	.226	.119	.112	2.162	2.124	2.09
25	.199	.136	.197	1.37	.562	.613	2.05	.101	.196
26	.173	.289	.512	.193	.159	.400	.451	.195	.767
27	.204	.148	.065	.064	.026	.139	2.58	3.27	3.25

5/4/99 SAM



Needed

- (50) 77 PS switches
- (5) Power Buses
- (5) 10 port 1/4-24 Manifolds
- (5) 20-25 Amp Shunts (or whatever is available)
- (5) wire & connectors

To do

- 1 - Get nec. supplies
- 2 - Drill ~1/2 hole into connector base on all switches
- 3 - Solder switches L01 - 50. (L01, L02 ... L050)
- 4 - Mount switches (in order) in manifold.  
(O-ring optional, switches not pressurized but need good electrical ground)
- 5 - Wire switches to bus (in order) & label either bus terminal or wire
- 6 - Fill bases with brake fluid. Monitor current flow periodically.

**Pechonis, John**

---

**From:** Gildea, Robert  
**Sent:** Thursday, May 06, 1999 4:49 PM  
**To:** Proia, Stephen; Milroy, Mary-Jean; Martin, Scott; Mulligan, Sean; Weil, Jim; Dague, Bryan  
**Cc:** Pechonis, John; McGuirk, Andy; Beringhouse, Steven  
**Subject:** 77PGL2-1

The attached file is what I plan on using for pre-launch control plan for the building of the replacement 77PGL2-1's. We have already started to build some devices so if anyone has any comments or suggestions please let me know ASAP.



77PGL2-1.doc

*Regards,*

*Bob Gildea*  
**Phone:** (508) 236-2023  
**Fax:** (508) 236-2586  
**email:** rgildea@it.com

28-Feb-92	4,000	10	9	-
6-Mar-92	4,000	10	10	-
10-Mar-92	4,000	10	10	-
11-Mar-92	4,000	10	10	-
12-Mar-92	4,000	10	10	-
18-Mar-92	4,000	10	10	-
23-Apr-92	2,000	5	5	-
2-May-92	2,000	5	5	-
5-May-92	2,000	5	5	-
6-May-92	2,000	5	5	-
14-Sep-92	2,000	5	5	-
22-Sep-92	4,000	10	10	-
30-Sep-92	4,000	10	10	-
7-Oct-92	4,000	10	10	-
7-Oct-92	4,000	10	10	-
16-Oct-92	4,000	10	10	-
21-Oct-92	2,000	5	5	-
20-Oct-92	4,000	10	10	-
29-Oct-92	4,000	10	10	-
29-Oct-92	4,000	10	10	-
30-Oct-92	4,000	10	10	-
4-Nov-92	4,000	10	10	-
10-Nov-92	4,000	10	10	-
10-Nov-92	4,000	10	10	-
11-Nov-92	4,000	10	10	-
17-Nov-92	2,000	5	5	-
20-Nov-92	4,000	10	10	-
4-Dec-92	2,000	5	5	-
9-Dec-92	2,000	5	5	-
14-Dec-92	2,000	5	5	-
16-Dec-92	4,000	10	10	-
16-Dec-92	4,000	10	10	-
16-Dec-92	4,000	10	10	-
21-Dec-92	2,000	5	5	-
21-Dec-92	4,000	10	10	-
<b>Total</b>	<b>265,650</b>	<b>668</b>	<b>663</b>	<b>-</b>

Continuity failure, terminal inside of  
base is not seated, Data code 2057.  
Sorted lot 100%.

## 77PSL2-1 Pre-Launch Control Plan

- **Pilot 24 pieces**
  - Normal piloting procedures
  - Impulse (5) devices
  - Function Test (4) devices
- **Build Sensors**
  - Increase SPC on the Kapton stations from once every 4 hours to once every hour
- **Build Final Devices**
- **100% Function Test**
  - Actuation
  - Release
  - Creep
  - Millivolt Drop
- **Leak test full devices**
  - First lot 100% - 2000 pcs
  - 10 pieces from each subsequent tote of 200 pcs - 100 pcs / lot
  - Total tested for first 50,000 pcs = 4,400 pcs
- **200% visual inspection for correct base and hexport**
  - Done at Pressure Test and Packing
- **Inspect 10 pcs from each box at packing with mating connector**
- **Inspect 10 pcs. from each box at packing with 3/8" -24 go/no-go ring gauge and torque wrench set at 4.5 in-lbs.**

77PS PRESSURE TESTER LOT REPORT

RATING: 77PSL2-1

LOT ID: 27

LOT STARTED: 6-MAY-1999 14:59:31.08

LOT FINISHED: 6-MAY-1999 15:08:04.72

SETUP DATA:

DISC LOT ID: 27.00  
 DISC MEAN ACT: 23.9 MEAN REL: 13.1  
 LIMIT (NC)  
 ACTUATION: 90.0 TO 160.0 PSI  
 RELEASE: 20.0 TO 120.0 PSI  
 DIFFERENTIAL: 0.0 TO 140.0 PSI  
 MAX MILLIVOLT: 200.0 mV  
 ACT CREEP TIME: 25.0 PSI  
 REL CREEP TIME: 150.0 PSI  
 MAX CREEP TEST  
 PRECYCLE PRESS: 800.0 PSI  
 PRECYCLE COUNT: 2

NUMBER OF PIECES TESTED: 100  
 NUMBER OF PIECES GOOD: 100  
 YIELD: 100.00 %

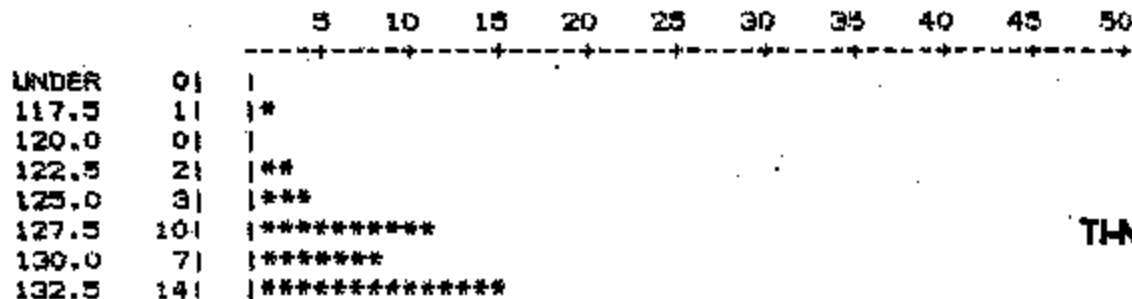
REJECT COUNTS

B*	COUNT	% OF REJECTS
EA..	0	0.00 %
CONT	0	0.00 %
ACCR	0	0.00 %
XCLO	0	0.00 %
XCHI	0	0.00 %
RLHI	0	0.00 %
RLLO	0	0.00 %
RFLO	0	0.00 %
RLCR	0	0.00 %
RFHI	0	0.00 %

STATISTICS

	MEAN	SIGMA	CPK
ACTUATION:	136.4	6.93	1.14
RELEASE:	72.0	5.74	2.78
MILLIVOLT:	0.0	0.00	0.00
DIFFERENTIAL:	64.3	4.40	4.87

HISTOGRAM OF ACTUATION PRESSURE



135.0	9	*****
137.5	18	*****
140.0	13	*****
142.5	5	*****
145.0	10	*****
147.5	5	*****
150.0	3	***
OVER	0	

HISTOGRAM OF RELEASE PRESSURE

			5	10	15	20	25	30	35	40	45	50
			+	+	+	+	+	+	+	+	+	+
UNDER	0											
60.0	8	*****										
65.0	17	*****										
70.0	25	*****										
75.0	35	*****										
80.0	13	*****										
85.0	2	**										
OVER	0											

HISTOGRAM OF DIFFERENTIAL PRESSURE

			5	10	15	20	25	30	35	40	45	50
			+	+	+	+	+	+	+	+	+	+
UNDER	0											
50.0	2	**										
55.0	9	*****										
60.0	16	*****										
65.0	49	*****										
70.0	24	*****										
OVER	0											

HISTOGRAM OF ACTUATION CREEP

			15	30	45	60	75	90	105	120	135	150
			+	+	+	+	+	+	+	+	+	+
UNDER	0											
1.0	100	*****										
OVER	0											

HISTOGRAM OF RELEASE CREEP

			15	30	45	60	75	90	105	120	135	150
			+	+	+	+	+	+	+	+	+	+

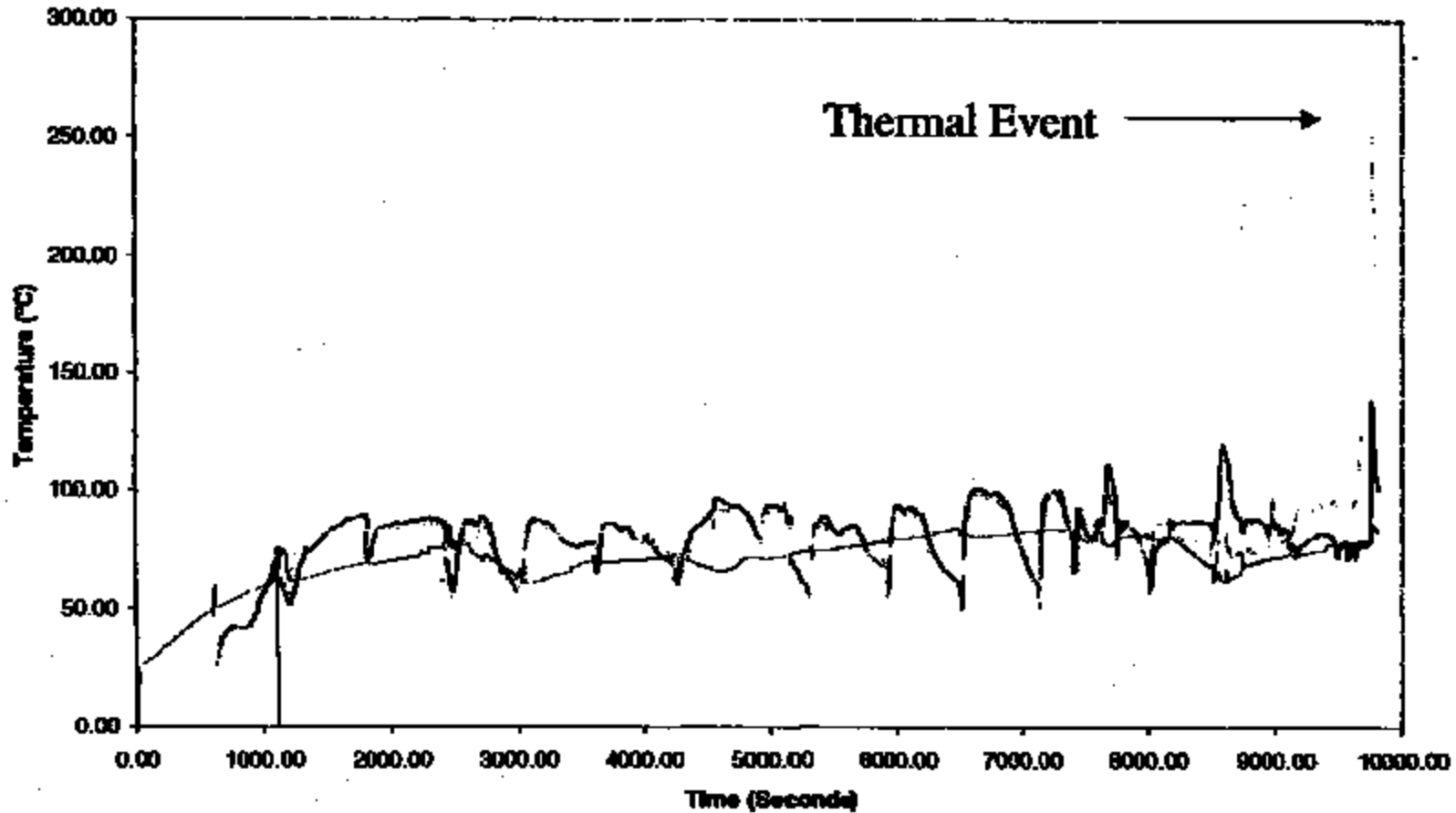


UNDER 01 |  
O.O 100| |\*\*\*\*\*  
OVER 01 |



## 5% Salt Water Ingress Experiment Temperature vs. Time

— Top Temp — Clutch Temp — Bottom Temp



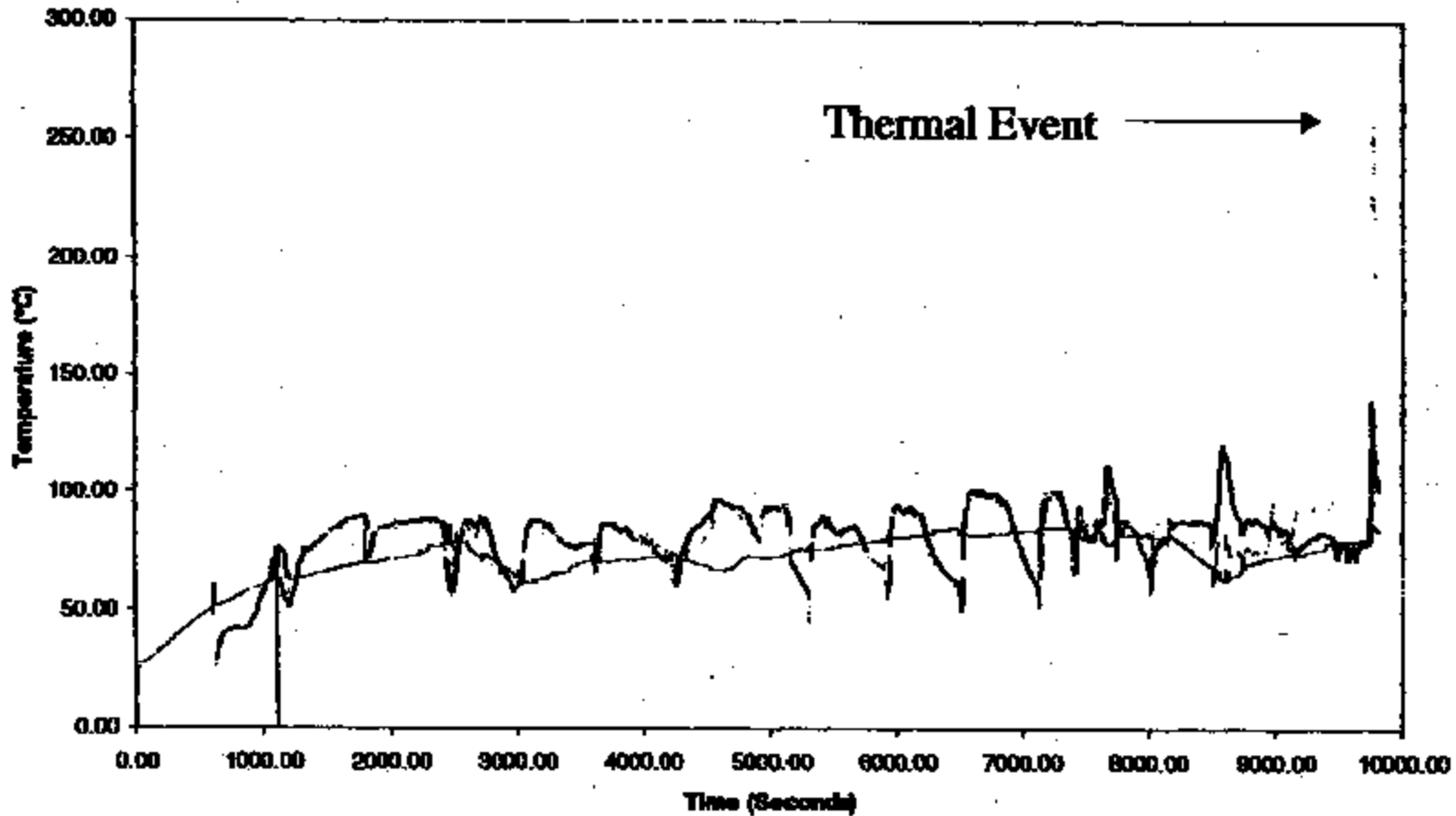
CircleGraphics.com

INTENTIONAL IGNITION CREATED THRU TI FLUID INGRESS LAB TEST



### 5% Salt Water Ingress Experiment Temperature vs. Time

Top Temp    Clutch Temp    Bottom Temp



C:\McGraw\99\present\m

INTENTIONAL IGNITION CREATED THRU TI FLUID INGRESS LAB TEST



22-161 30 SHEETS  
 22-162 300 SHEETS  
 22-166 300 SHEETS

Objective	Data Results	Conclusions
<p>#1 Enough Energy          See a FIRE?          (with Heater          No Hold line?)</p>	<p>See Report</p>	<p>Base will          ignite <del>with</del>          (see Report)</p>
<p>#2 <sup>create</sup> with stock          switch components?</p>	<p>Reaction subjective</p>	<p>current data &lt; (?)          → YES, with          high JL perms.          → Method to create          FIRE.</p>
<p>#3 Quasi-steady Method          +          Understand path          via <del>function</del> data          sig.</p>	<p>→ Data sig. plots          → Report in progress</p>	<p>→ Repeatable test          → Current path          ID.</p>
<p>#4 Compare + contrast          - Fluids          - % H<sub>2</sub>O          - NaCl          - Plastic Mat'ls</p>	<p>→ See Data sig. plots          → Summary of          current data</p>	<p>→ No FIREs seen          Low current means          → Will Low current          produce FIRE and          long time?</p>

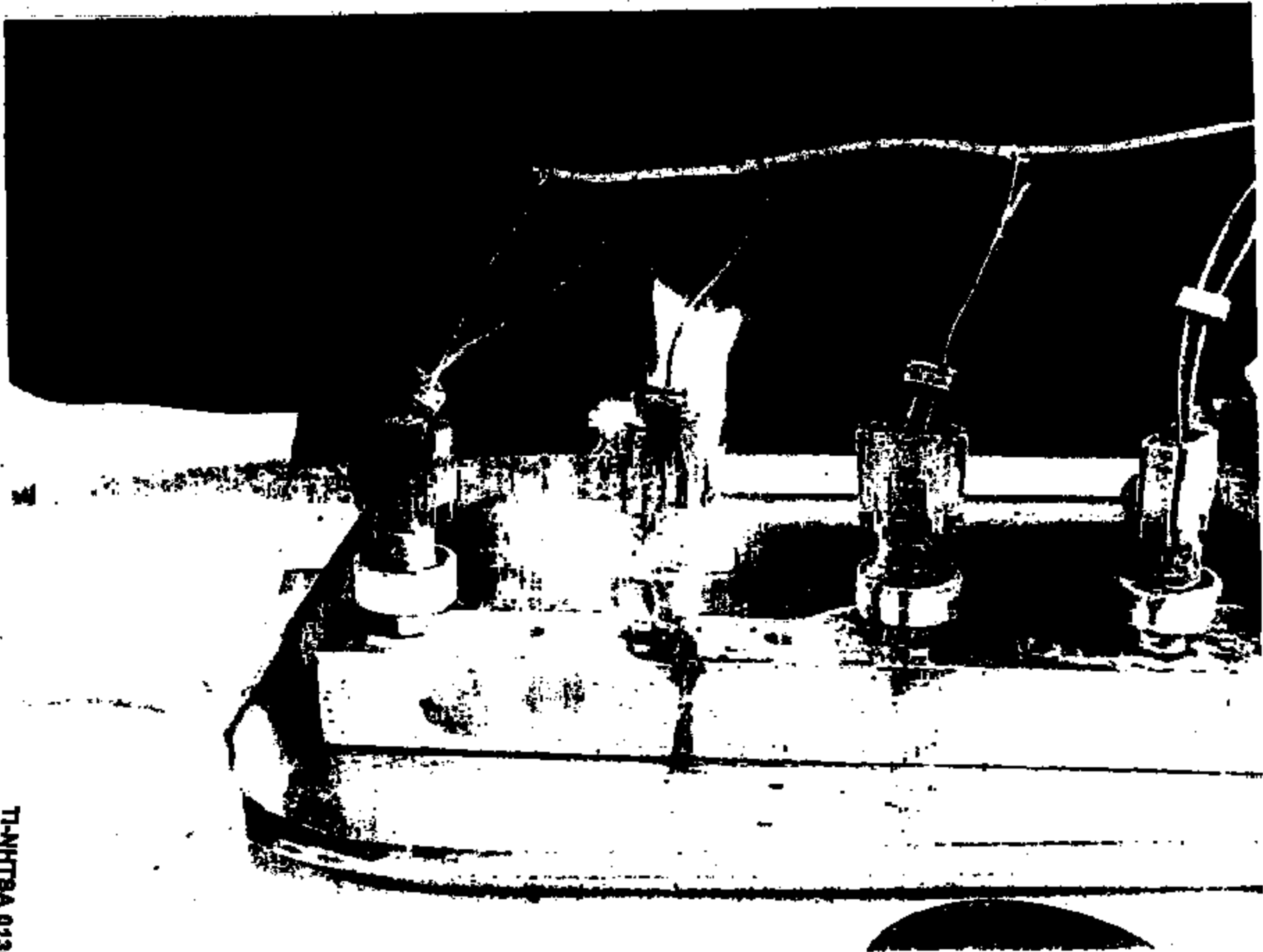
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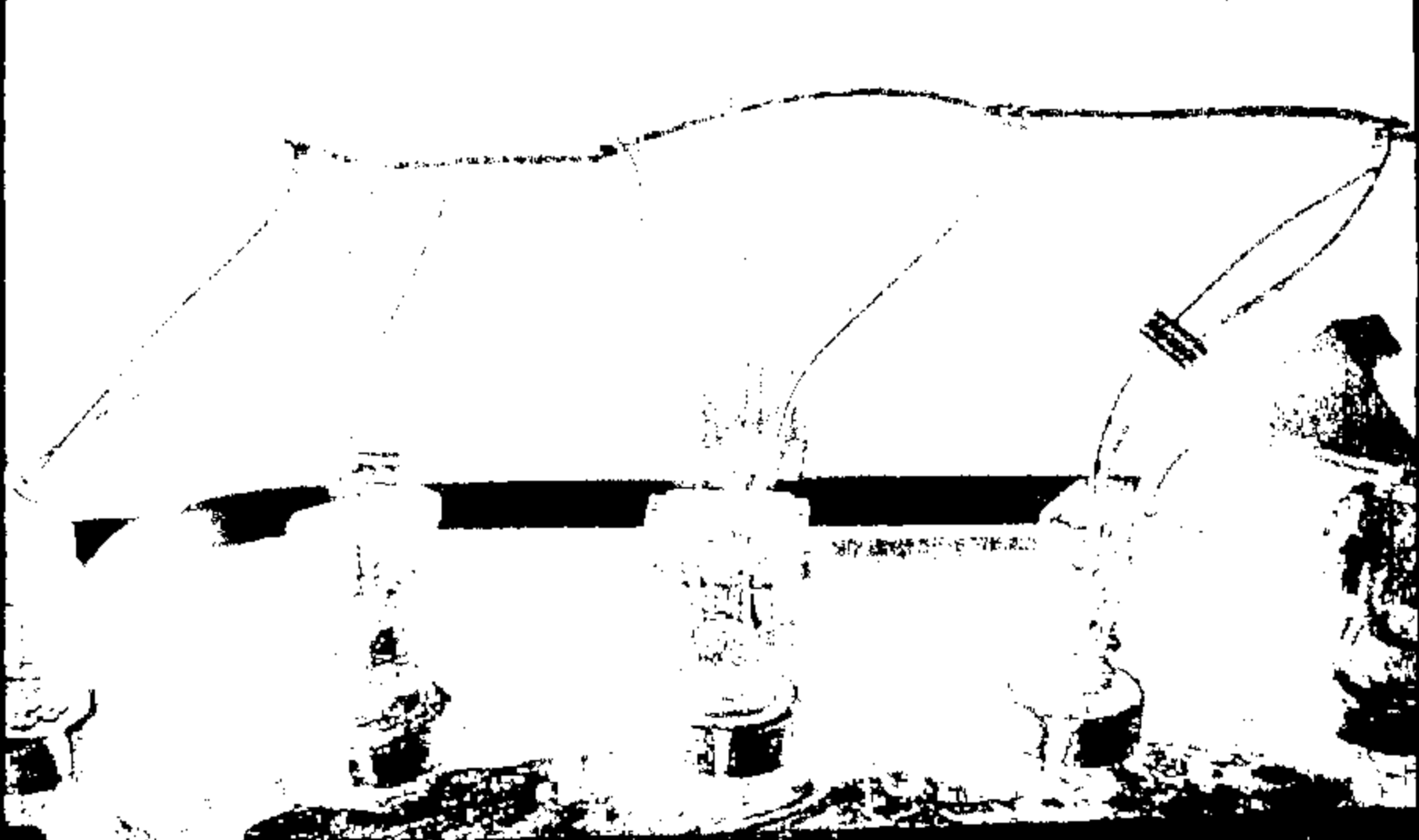
TRANSA



TI-NHTSA 013643



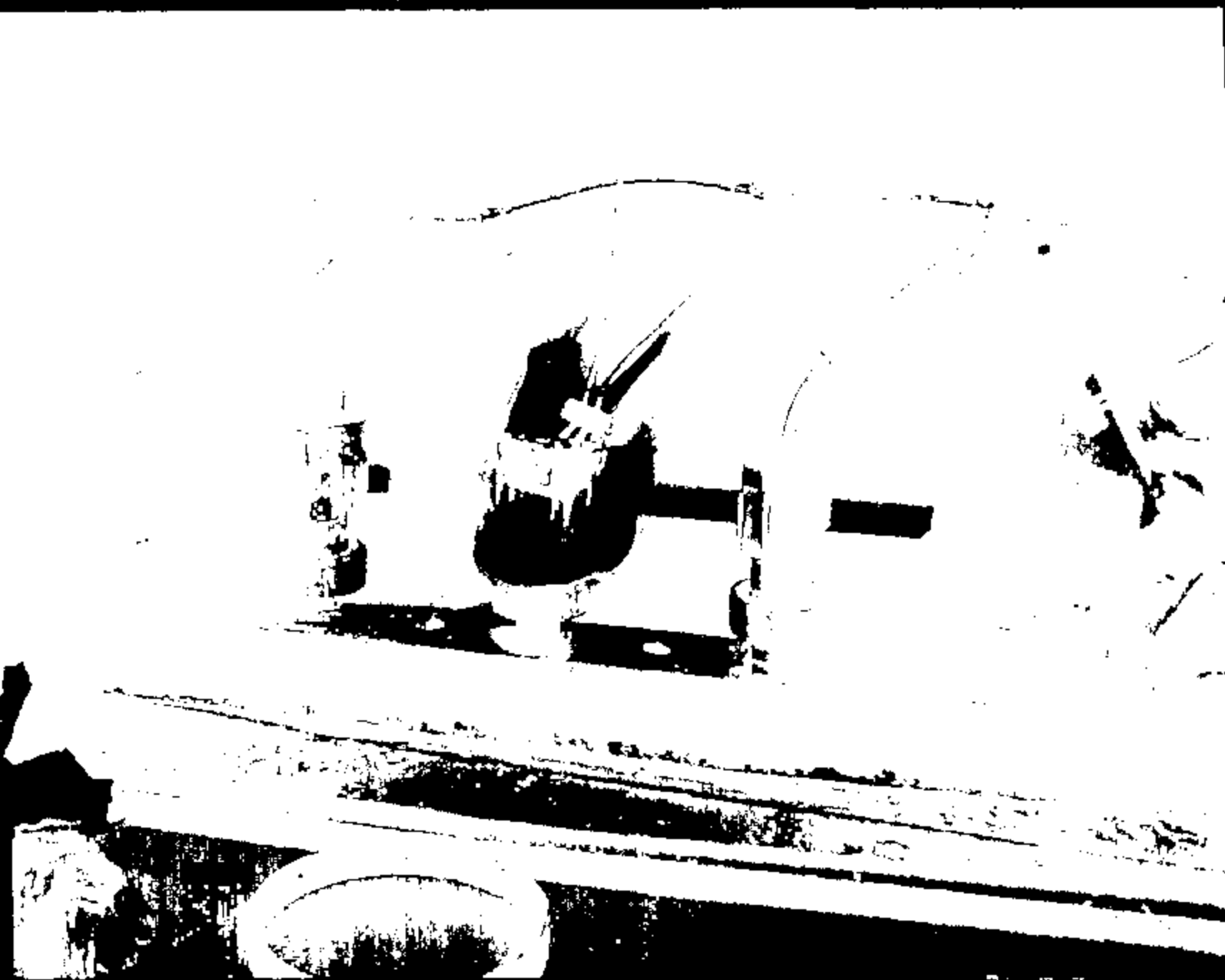
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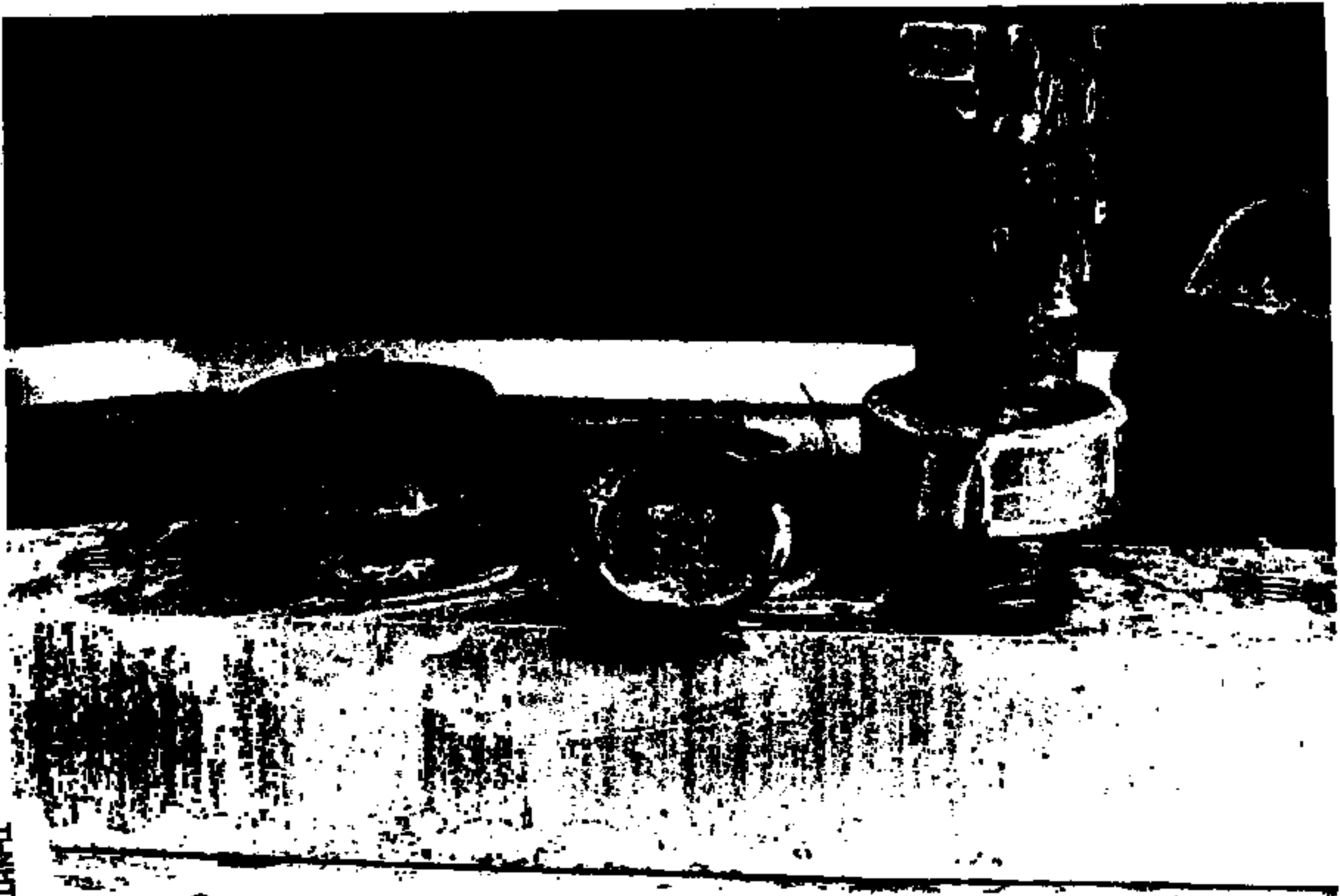


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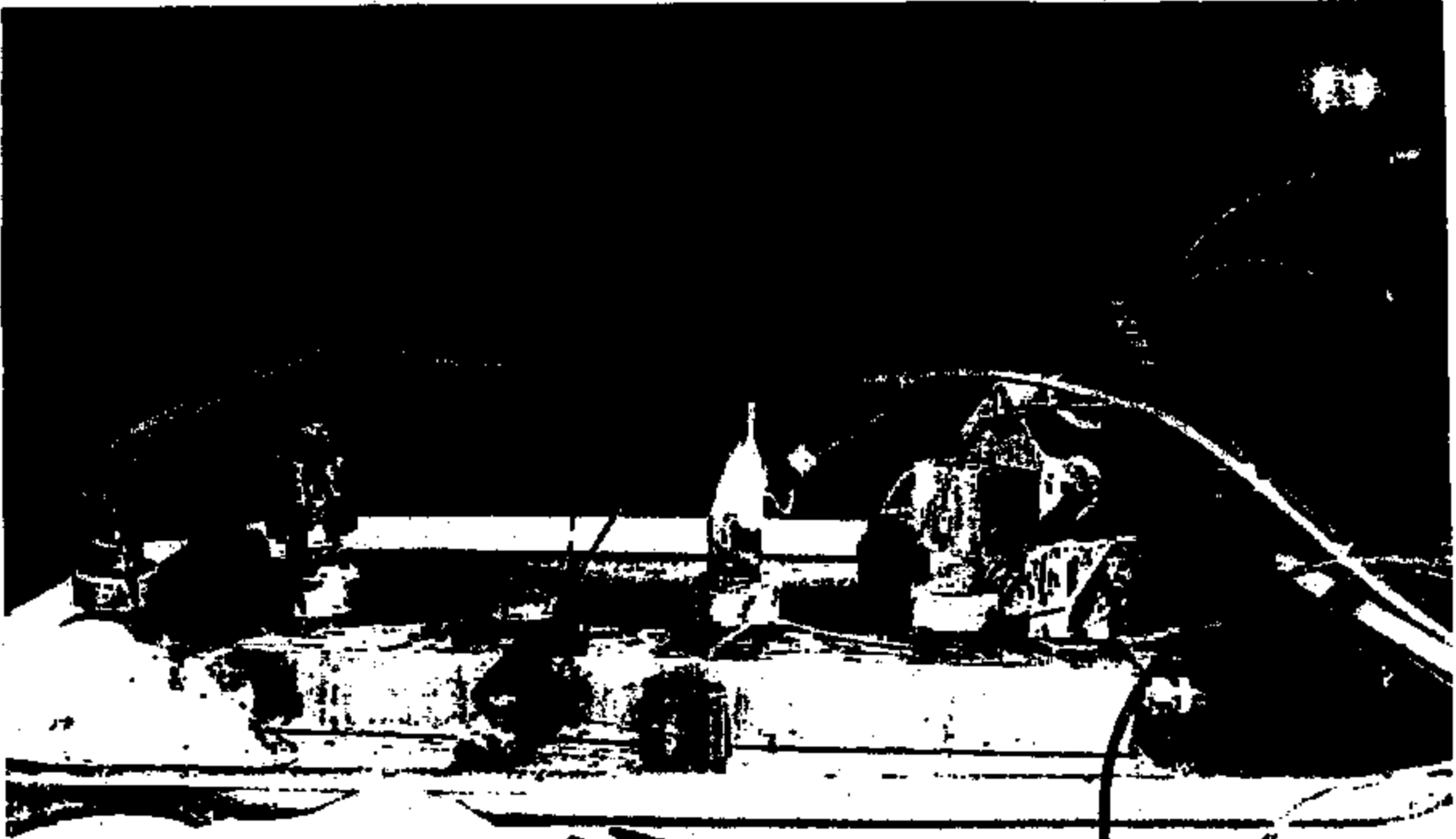


97910 013648

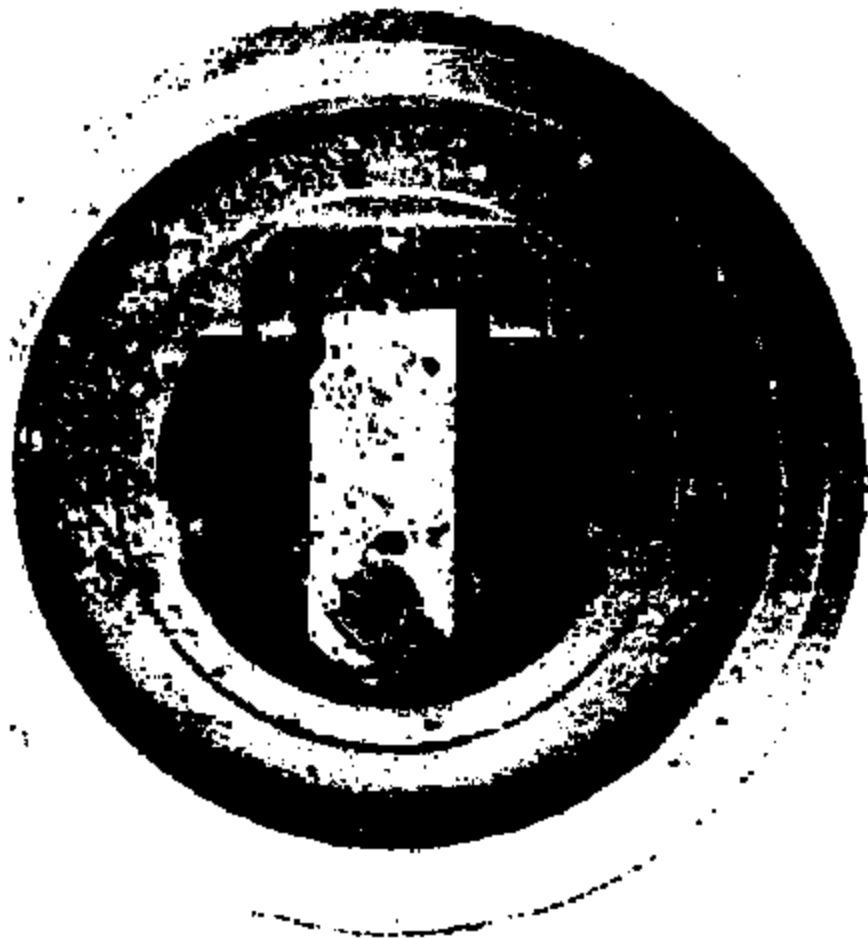




TI-NHTSA 013847



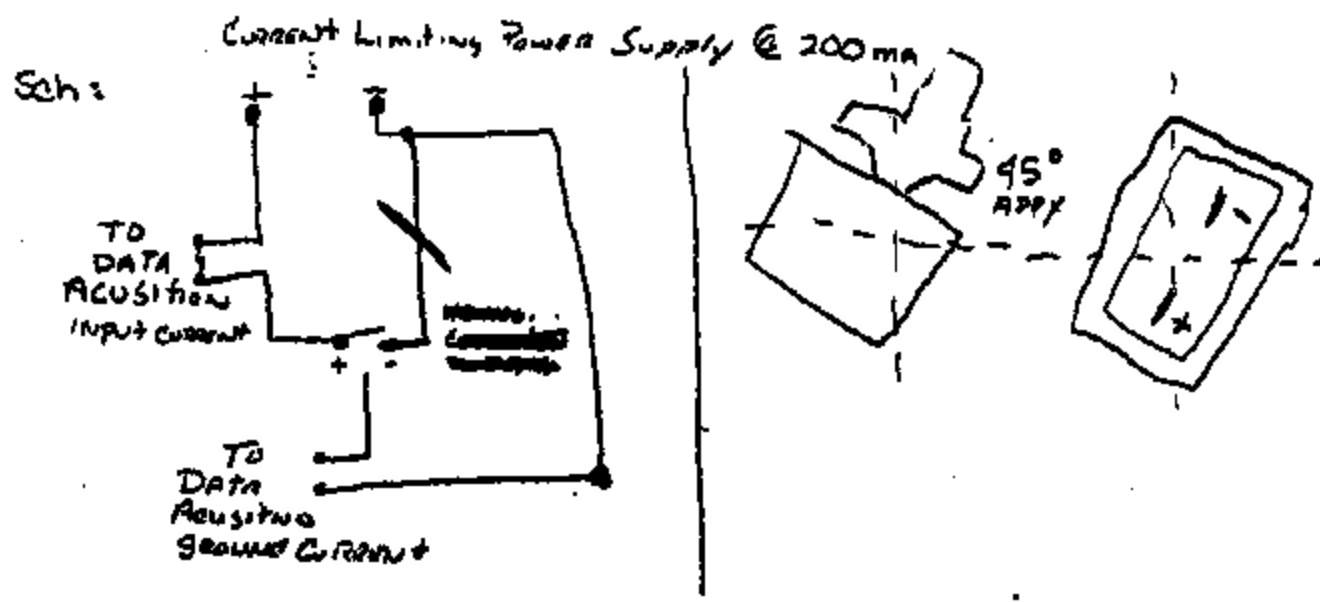
TI-NHTSA 013848



TI-NHTSA 013549

5-7-59

# Current Limited Burn testing



DEVICE will be connected to positive Terminal only with current in and current ground DATA logged. A solution of 5% salt will be injected into Device At 10 min intervals or as needed

**Epstein, Sally**

---

**From:** McGuirk, Andy [a-mcguirk@email.mot.com]  
**Sent:** Sunday, May 09, 1999 5:09 PM  
**To:** Demers, Richard  
**Cc:** Gildea, Robert; Watt, Jim; Sundaram, Sunder  
**Subject:** FW: 77PSL2-1



77PSL2-1

be sure we do impulse testing too as a sample

■

---

**From:** Gildea, Robert  
**Sent:** Thursday, May 06, 1999 4:49 PM  
**To:** Frois, Stephen; Milkay, Mary-Jean; Martin, Scott; Mulligan, Sean;  
Watt, Jim; Dague, Bryan  
**Cc:** Pechonis, John; McGuirk, Andy; Beringhaus, Steven  
**Subject:** 77PSL2-1

The attached file is what I plan on using for pre-launch control plan for the building of the replacement 77PSL2-1's. We have already started to build some devices so if anyone has any comments or suggestions please let me know ASAP.

<<77PSL2-1>>

Regards,

Bob Gildea  
Phone: (508) 236-2023  
Fax: (508) 236-3586  
email: rgildea@ti.com

## 77PSL2-1 Pre-Launch Control Plan

- Pilot 24 pieces
  - Normal piloting procedures
  - Impulse (5) devices
  - Function Test (4) devices
- Build Sensors
  - Increase SPC on the Kapton stations from once every 4 hours to once every hour
- Build Final Devices
- 100% Function Test
  - Actuation
  - Release
  - Creep
  - Millivolt Drop
- Leak test full devices
  - First lot 100% - 2000 pcs
  - 10 pieces from each subsequent tote of 200 pcs - 100 pcs / lot
  - Total tested for first 50,000 pcs = 4,400 pcs
- 200% visual inspection for correct base and hexport
  - Done at Pressure Test and Packing
- Inspect 10 pcs from each box at packing with mating connector
- Inspect 10 pcs. from each box at packing with 3/8"-24 go/no-go ring gauge and torque wrench set at 4.5 in-lbs.

**Kill, Beth**

---

**From:** Kill, Beth  
**Sent:** Monday, May 10, 1999 3:00 PM  
**To:** Dagua, Bryan; Mulligan, Sean  
**Cc:** Hopkins, Al  
**Subject:** T&L # 153465, Identify sludge composition in two pressure switches cycled with brake fluid

**Objective:**

Identify the composition of the black sludge forming around the contact arm in two pressure switches cycled with brake fluid.

**Results:**

I examined a sample of the sludge taken from the contact arm of each device. Each sample was similar in appearance, consisting of a clear liquid phase containing solid particles ranging from amber to black.

I isolated areas of the liquid phase of both samples, without particles, and scanned them using FT-IR spectroscopy. Both samples matched with a sample of automotive brake fluid in my FT-IR spectral library.

I rinsed each portion of sludge with two aliquots of solvent to remove the liquid phase. The remaining solids were green and black in color. FT-IR spectroscopy did not produce any meaningful identification for these solids.

I pulled examples of several forms of oxalates from my FT-IR spectral library for comparison. Neither the solid phase nor the liquid phase of the sludge appears to contain any oxalates.

I sampled portions of the core plastic from the connector of each device. I did this by slicing away the surface of the plastic base not exposed to the brake fluid, and sampling from the newly exposed surface for my analysis. Both core samples produced matches with polyester, specifically "polybutylene terephthalate" (PBT), with match factors over 90%. Next, I sampled the surface plastic where the contact arm is close to the plastic. I rinsed these samples with acetone to remove the brake fluid prior to testing. For both devices, FT-IR spectroscopy shows the molecular structure of the plastic in the region is the same as the core sample. It shows no signs of degradation.

I forwarded the samples to the surface analysis lab for further evaluation. I will forward the FT-IR spectral data by internal mail. Please call if you have any questions.

Regards,

*Beth*

Texas Instruments, Inc.  
Technical Service Labs  
MS 10-16  
34 Forest Street  
Andover, MA 02703  
Tel: 603-236-3069  
Fax: 603-236-1870  
eth@ti.com



# HIGHLIGHTS

## Downey, Mike

---

**From:** Downey, Mike  
**Sent:** Thursday, May 13, 1999 1:49 PM  
**To:** Rowland, Thomas  
**Cc:** Baker, Gary; Charbonneau, Tom; Pechonis, John; Tourangeau, Ray; Springhouse, Steven; Strott, Doug; McGuirk, Andy; O'Neill, Ed; Ibraakma, Geert; Tamaka, Takeshi; Craighton, Chris  
**Subject:** Marketing Highlights for Period Ending 14May99

### Air Conditioning Segment

**Hutchinson / Parker** - The APT team is in TMX this week with Hutchinson for a 2nd PSO audit following the March trip. The assessment so far is "fair" but improved from the March visit. Chrysler will be going down w/o B/T for the final audit, and from this meeting are looking forward to receiving MY00 approval for TMX CBE's.

**Visteon** - We understand we have received engineering endorsement as the CCS supplier of the future. As a result we expect in the near term to meet with SBU Manager Chris Filipowicz to discuss pricing, funding and other program related issues. We expect Ms. Filipowicz has assumed the role as the final decision maker, making the meeting with her critical to the sourcing outcome. TSY = \$8 M.

**DaimlerChrysler** - we continue to see incremental moves towards VOV acceptance at DC. Chrysler's Test Lab group visited TI last Friday to review our equipment to become grounded in what is required to test VOV's that are assembled in liquid lines. Also, WJGCC, which is satisfied with VOV performance and plans to launch with it later this month, has called an internal meeting (with other DC platforms) for June 2 to show their results of VOV development. The meeting is extremely important as it tends to put in doubt WJ's claims about the VOV performance.

### Powertrain Market Segment

**IMS** - From Bill Iran's and Roger Combe's IMS visit last week we learned that the IMS will be farmed out across all the 4T66E transmissions by MY02 with ramp up volume to start with MY00; long term, this represents about \$00 ku and \$2.8 M upside relative to LRP. In order to meet these volumes some modifications and additions will have to be made to the assembly line. GMPT indicated that these modifications should be in place by the summer of '00. We have begun the process of preparing cost estimates for the modifications in addition to ensuring the supply chain will be in ready to support these additional volumes.

We also learned from Bill that the IMS line is definitely in the top third of his product responsibility for customer satisfaction while the PSM line is in the bottom third. Roger Combe added that he wished all lines had as few issues as the IMS line.

**PSM** - Received a GM RFQ for increasing capacity of 65PS line from current contractual obligation of 10ku / day to 11ku and 12ku / day due to continued and anticipated strength in truck sales. Volume ramp is expected to be somewhat linear during MY00 - MY01 timeframe and will include capacity addition from GM Ramos plant as well as planned capacity expansions at both Romulus and Toledo plants. While no piece price action will result from expansion, we will ask GM to share in the funding required expansion on the order of \$175K to expand line capacity to 12ku / day. The extra 2k per day equates to approximately \$3 M per year not currently captured by the LRP.

**MPB** - Aziz and Mike visited with key European players in this market and continue to receive pull from the marketplace that inductive technology could be the best long term solution for inside the transmission position sensing. Tier 1 suppliers, notably Siemens and Bosch, will be our important customers. Siemens indicated it will revise its module design and potentially its supply chain to support anticipated volume demand linked to the Ford-ZF joint venture, with a potential source decision for these opportunities to be made in Jan 00.

### HVOR

SIEMENS V119 - This program continues to pose potentially significant challenges and risks for us. After our meeting with Siemens two weeks ago we provided at its request a written response on T&C's based on inputs from our legal group, TIH, and Michael Hammerl (TI SC Global Mgr for Siemens account). Our response was met with strong disappointment and Siemens has indicated there will be NO negotiation on T&C's, adding that our exceptions could jeopardize a favorable sourcing decision. They have also inserted additional demands for commercial concessions and even noted our "acceptance" of other criteria that we clearly stated during our meeting and in follow-on correspondence we could not accept. We have contacted the Siemens US program mgr to help sort this out and will likely need a mgt level discussion at Siemens in the very near future.

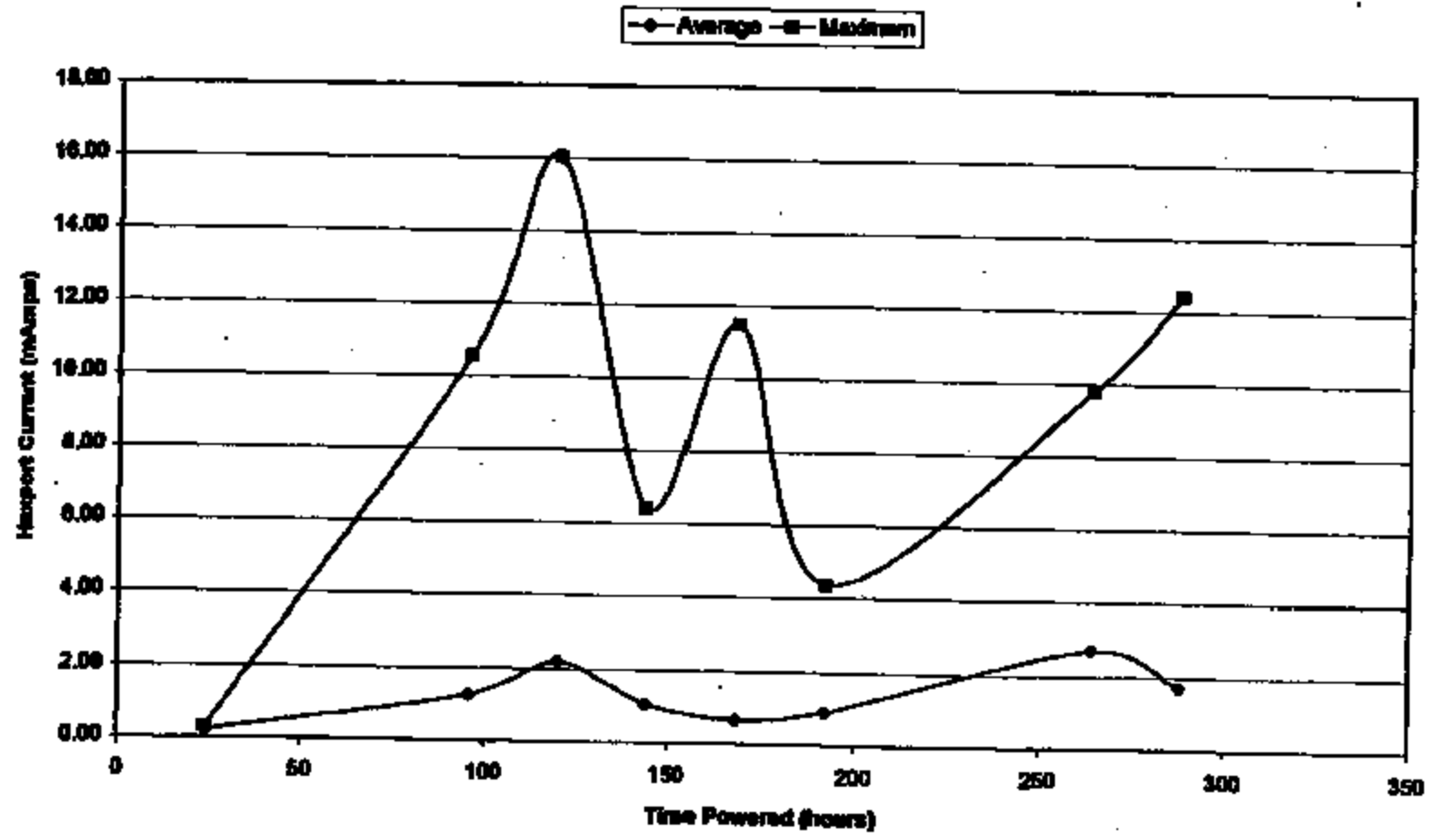
Power Steering Segment

~~200ku~~ 200ku Power Steering - We are being asked to provide 200ku 77PBL2-1's by mid June to support a recall campaign to be announced by Ford. This proposed solution of replacing only the switch is really not a solution to any problem and, even though we have a purchase order to cover this volume, there would appear to be some nominal level of risk that Ford could change direction after we have completed build. Since this part number is no longer a production device neither TI nor Ford would have an outlet for the 200ku devices if the direction is changed and the order is cancelled.

Regards,

Mike Downey for Gary Baker

**Average and Maximum Hexport Current  
(50) TTPS Switches with Contact Cavities Filled with Brake Fluid  
Powered at 14.5 Volts**



TI-NHTSA 013668

5/18/99

HOURS:	24	66	120	144	168	192	264
DATE:	5/7/99	5/10/99	5/11/99	5/13/99	5/13/99	5/14/99	5/17/99
Device #	Leakage Current (mA)	Leakage Current (mA)	Leakage Current (mA)	Leakage Current (mA)	Leakage Current (mA)	Leakage Current (mA)	Leakage Current (mA)
1	0.273	1.73	2.85	1.91	0.428	1.07	5.82
2	0.302	0.28	1.48	1.88	0.801	0.228	1.28
3	0.182	3.78	4.48	2.18	0.484	1.37	3.28
4	0.28	0.883	1.31	1.3	2.27	2.15	0.18
5	0.188	1.31	3.18	1.28	0.288	4.38	7.38
6	0.218	0.077	0.281	0.117	0.087	0.288	1.38
7	0.28	0.288	0.788	0.288	0.288	0.288	2.08
8	0.188	0.277	1.38	0.288	0.118	0.288	3.18
9	0.188	1.088	1.38	0.288	0.018	0.288	2.08
10	0.188	0.088	0.288	0.288	0.018	0.288	0.288
11	0.28	0.072	0.28	0.288	0.288	0.277	0.28
12	0.288	0.288	0.288	0.288	0.288	0.288	1.31
13	0.28	4.38	7.28	1.38	0.128	0.118	3.8
14	0.188	3.38	7.28	0.288	0.074	0.188	0.812
15	0.188	0.128	0.288	0.288	0.02	1.18	2.88
16	0.288	1.288	3.18	1.28	0.288	0.07	0.281
17	0.28	2.28	4.28	0.288	1.124	3.04	7.28
18	0.28	0.287	0.288	1.18	0.188	1.28	3.01
19	0.188	0.188	0.288	2.28	0.278	0.717	2.78
20	0.288	2.28	1.28	0.28	0.017	0.08	0.188
21	0.288	1.28	1.28	0.287	1.28	2.17	0.277
22	0.288	1.28	2.28	2.07	0.287	0.081	0.277
23	0.288	0.288	0.288	0.28	0.17	0.12	1.18
24	0.188	0.288	0.188	0.288	0.188	0.112	2.8
25	0.188	0.188	0.188	1.28	0.288	0.278	2.08
26	0.178	0.288	0.288	0.188	0.188	0.28	0.281
27	0.288	0.188	0.288	0.288	0.288	0.288	2.88
28	0.288	0.287	0.281	0.288	0.288	1.28	6.78
29	0.188	1.28	0.28	0.28	0.281	0.287	1.1
30	0.288	0.288	0.281	0.288	0.28	0.288	1.08
31	0.288	0.288	0.281	0.288	1.288	1.788	2.02
32	0.288	0.288	0.281	0.281	0.288	0.287	0.188
33	0.288	0.17	0.28	2.7	1.788	1.28	2.8
34	0.288	0.28	1.12	0.288	0.278	1.28	1
35	0.288	0.288	0.28	0.118	0.288	0.287	4.38
36	0.28	1.28	3.28	0.28	1.18	2.4	0.72
37	0.28	0.288	0.288	0.288	0.288	0.181	0.288
38	0.281	0.288	0.188	0.288	0.288	0.081	1.28
39	0.281	0.288	0.281	0.288	0.288	0.047	0.278
40	0.28	1.28	4.28	0.28	0.281	2.24	3.28
41	0.288	0.28	0.277	0.178	0.281	0.288	0.18
42	0.287	0.288	1.71	1.71	0.278	0.278	4.08
43	0.28	0.281	18.18	2.28	1.188	1.28	2.88
44	0.28	0.281	0.177	0.288	0.288	0.288	1.28
45	0.188	0.281	18.28	0.288	0.288	2.7	4.22
46	0.288	0.287	0.28	0.288	0.288	0.288	3.28
47	0.288	0.287	0.288	0.28	0.288	0.288	0.128
48	0.188	0.12	1.28	0.288	1.124	2.22	0.11
49	0.178	0.188	1.28	0.28	0.278	0.288	0.287
50	0.288	2.28	2.28	3.1	0.288	0.288	2.4
<b>AVE</b>	<b>0.22</b>	<b>1.27</b>	<b>2.28</b>	<b>1.08</b>	<b>0.58</b>	<b>0.93</b>	<b>2.72</b>
<b>Max</b>	<b>0.31</b>	<b>10.85</b>	<b>16.02</b>	<b>5.42</b>	<b>11.80</b>	<b>4.36</b>	<b>9.80</b>
<b>stdv.</b>	<b>0.03</b>	<b>2.10</b>	<b>3.18</b>	<b>1.31</b>	<b>1.57</b>	<b>1.00</b>	<b>2.82</b>

TI-NHTSA 013657

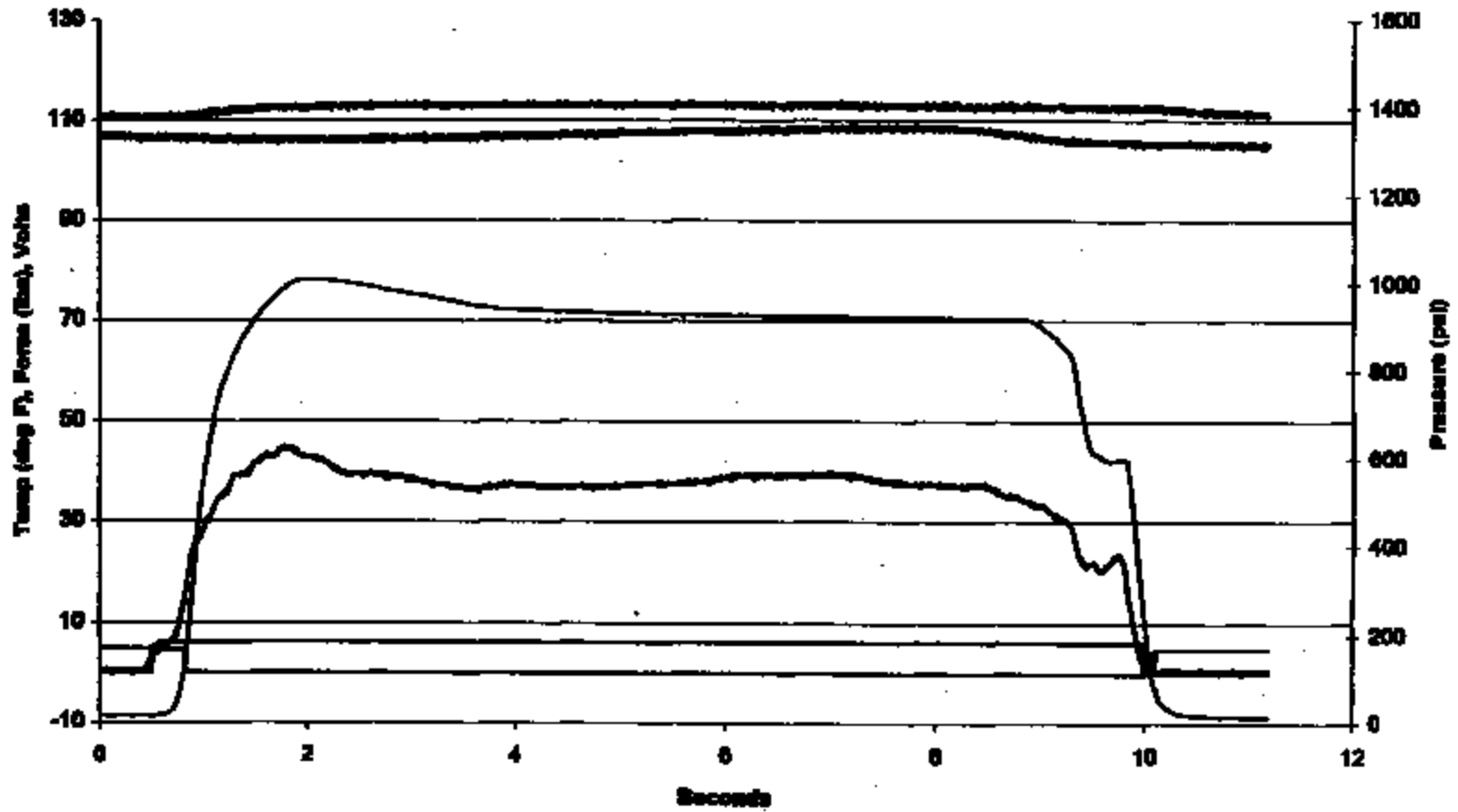
5/18/99

268		
5/18/99	5/18/99	5/20/99
Leakage	Leakage	Leakage
Current	Current	Current
(mA)	(mA)	(mA)
1.25		
1.31		
1.19		
2.78		
4.12		
0.988		
1.09		
0.9		
1.282		
1.261		
1.244		
2.38		
0.988		
2.72		
0.07		
0.8		
4.78		
0.905		
0.991		
0.785		
0.112		
0.48		
2.824		
0.707		
0.788		
3.37		
1.74		
2.40		
0.891		
1.34		
0.097		
3.07		
0.808		
0.218		
0.282		
0.118		
0.284		
0.284		
1.37		
0.082		
2.1		
2.89		
1.8		
4.85		
0.867		
0.742		
4.17		
0.278		
4.08		
1.74	0DIV01	0DIV01
12.43	0.50	0.50
2.32		

TI-NHT8A 013558

0 MPH

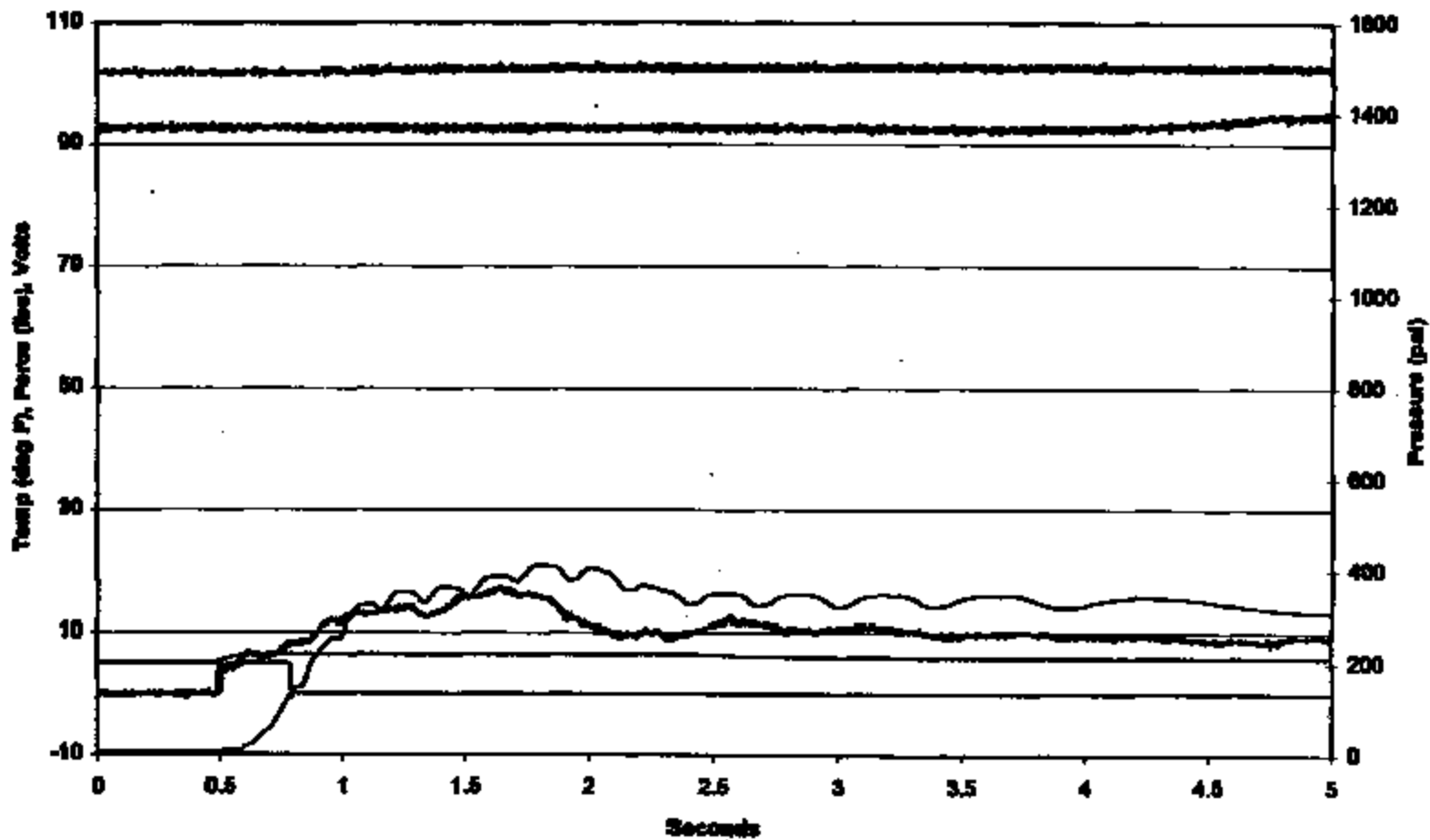
— Air F — DOT3 F — BCU sw — Pedal lb — BP Sw V — BP psi — HCU psi



TI-NHTSA 013889

38 MPH 0.3 g

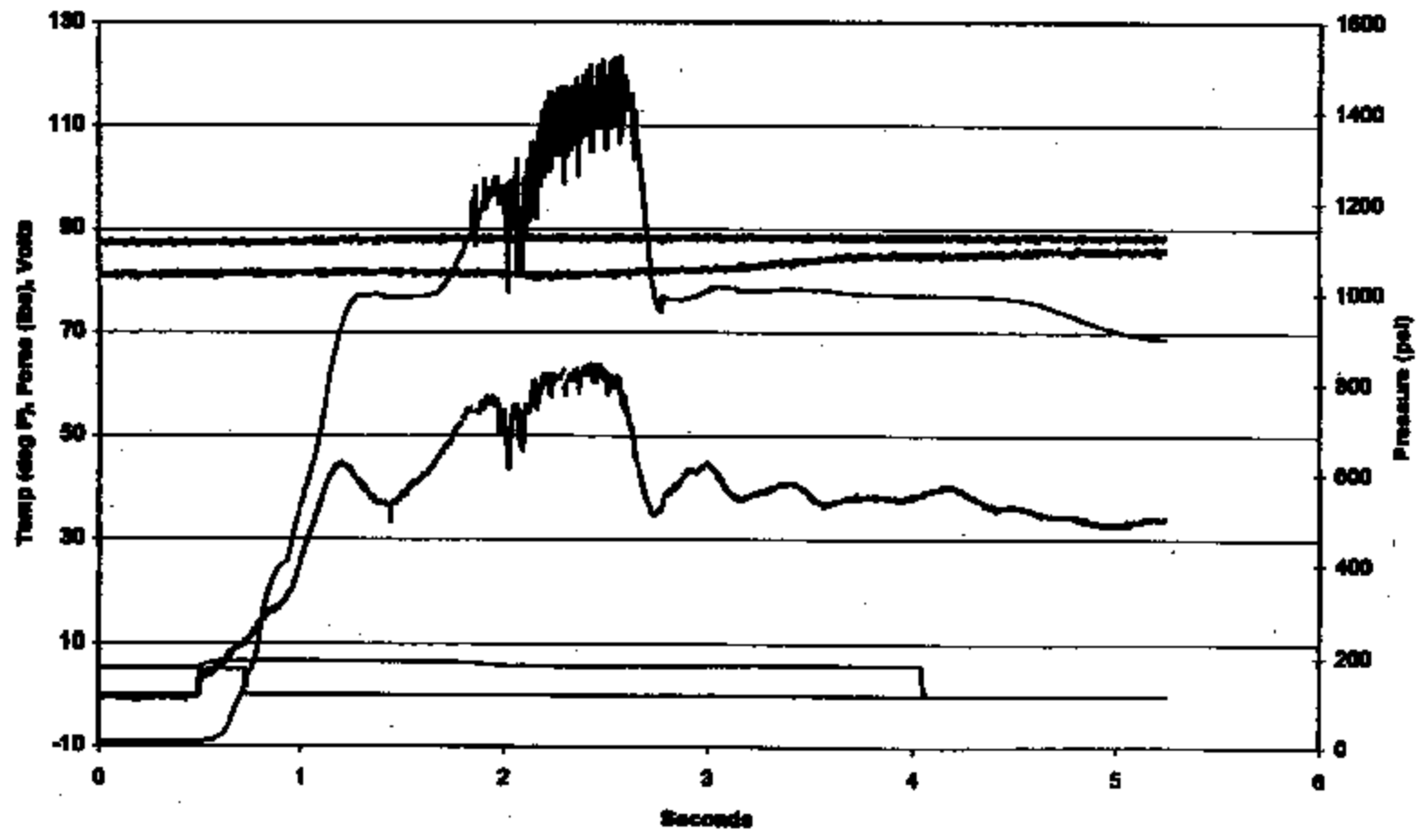
— Air F — DOT3 F — BOO su — Padel lb — BP Sw V — BP psi — HCU psi



TI-NHTSA 013860

30 MPH 6.7 g

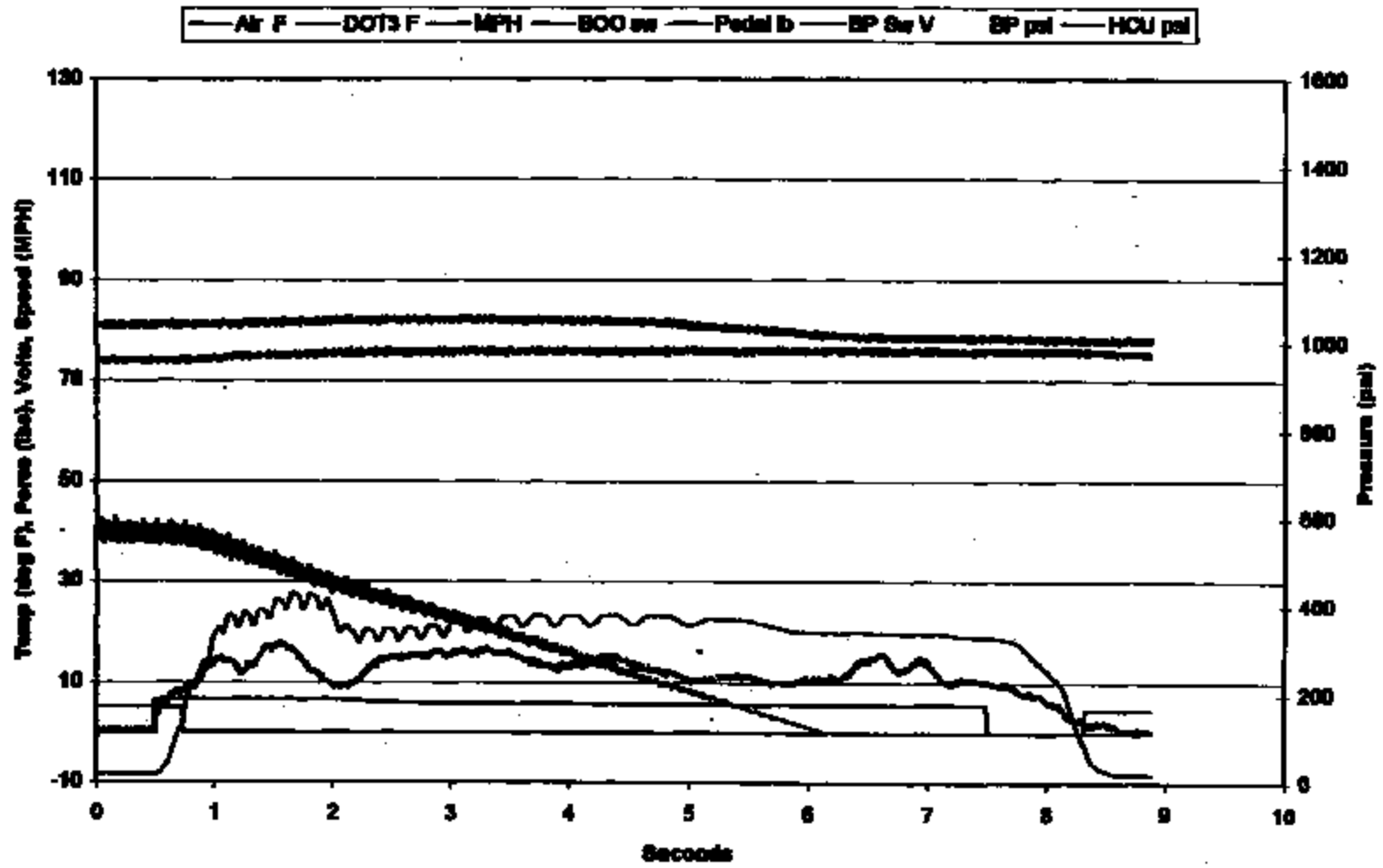
— Air F — DOT3 F — BCO sw — Pedal lb — BP Sw V — BP psi — HCU psi



TI-NHTSA 013861



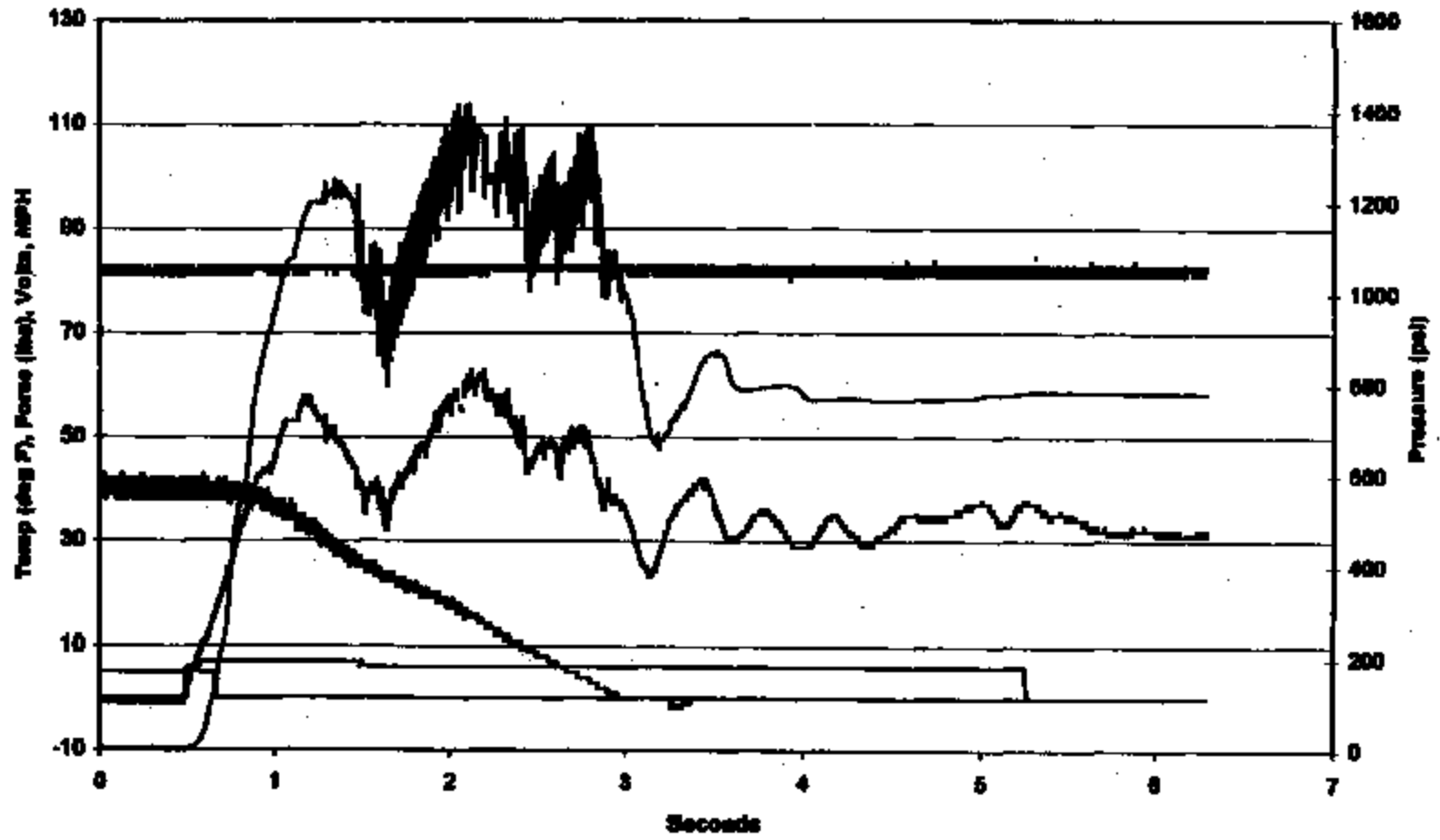
40 MPH 0.3 g



TL-NHTSA 013862

48 MPH 0.7 g

— Air F — DOT3 F — MPH — BOO sw — Pedal lb — BP Sw V — BP pal — HCU pal



TR-NHTSA 013663

**Dague, Bryan**

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**From:** Proka, Stephen  
**Sent:** Tuesday, May 18, 1999 3:21 PM  
**To:** Beringhouse, Steven  
**Cc:** McGuirk, Andy; Pechonis, John; Dague, Bryan  
**Subject:** 77PSL2\_1.xls



77PSL2\_1.xls

Steve,

I've summarized the data per our discussion. I have also reviewed the files in marketing without success. Please let me know if you need anything else.

Regards,

Steve

**Dague, Bryan**

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**From:** Proka, Stephen  
**Sent:** Monday, May 17, 1999 5:50 PM  
**To:** McGuirk, Andy; Beringhouse, Steven  
**Cc:** Pechonis, John; Dague, Bryan; Botthazar, Claire; Rose, Elaine  
**Subject:** RE: 77PS - '92 impulse data

I have (16) boxes coming tomorrow in or around the 91/92/93 timeframe. Nothing specific for impulse testing but some with the 77PS description. Wish me luck.

Claire/Elaine,

I'll need your assistance tomorrow morning to sort through this stuff. Thanks.

Regards,

Steve

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**From:** McGuirk, Andy  
**Sent:** Saturday, May 16, 1999 6:58 PM  
**To:** Proka, Stephen  
**Subject:** RE: 77PS - '92 impulse data  
**Importance:** High

oh, yea.....

cc 148 was inspection.

try there

8  
AUTOMOTIVE SENSORS AND CONTROLS QA MANAGER  
34 FOREST ST N/S 23-05  
ATTLEBORO, MA 02703  
TEL : (508) 234-3080  
FAX : (508) 234-3748  
MOBILE: (508) 208-6119  
PAGE: (800) 467-3700 FXN 604-2044

From: Prala, Stephen  
Sent: Saturday, May 16, 1999 7:19 AM  
To: Beringhouse, Steven; Prala, Stephen; Bathazar, Claire; Harrop, Lou; Rose, Elaine  
Cc: Pechonik, John; Dague, Bryan; McGuirk, Andy  
Subject: RE: 77PS - '92 Impulse data  
Importance: High

Update:

I just went through the first (4) boxes received from the warehouse. There was nothing close to the '92 timeframe.

<u>Box #</u>	<u>Description in Box</u>
1282C	4/94-8/94: 77PS Pilot Info
1282J	11/93-12/95: 89PS PM Sheets/Route Sheets
1282J	10/93-12/94: 89PS Lot reports
1288C	1/94-7/94: 52PS Route Slips

When selecting these boxes the only description that was accurate with respect to actual device family was the first box. The other box descriptions were more general (ie: 1282J - PM Sheets vs. 89PS PM Sheets). Of the (6) page inventory summary report from DSC (for CC149 only), these were the oldest dates with relation to the products of interest. Any other suggestions.

Louise/Elaine,

Was CC149 the only cost center that we would have stored EPS material under? Should we try other numbers (ie: 148, 291, etc, etc.). Please let me know.

Claire,

You mentioned yesterday that we typically combined our pilot route sheets with the impulse data. Is this correct? If so could you take a look in box 1282C (at your desk) and see if this is still a valid assumption. In looking through the data, all I found was disc data, production data results. Thanks.

Regards,

Steve

From: Prala, Stephen  
Sent: Friday, May 14, 1999 6:58 AM  
To: Beringhouse, Steven  
Cc: Pechonik, John; Dague, Bryan  
Subject: 77PS - '92 impulse data

Steve.

I put a request in last night with DSC (Milton Whee) for 3-4 boxes of data falling around the '82 timeframe. I would expect to have these boxes in the AM timeframe. Based on the Inventory list provided for CC149 there were no specific dates for '82 nor were there any boxes in the this timeframe with the discription "77PS". I will contact Elaine again this morning to see if there was another cost center that 77PS would have fallen under. Gut feel is that CC149 is the only one.

I will be in around 8:00 AM this morning due to an appointment. If you need me please page #1376. I'll have a cell phone.

Regards,

Steve

### Dague, Bryan

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**From:** Proia, Stephen  
**Sent:** Monday, May 17, 1999 9:57 AM  
**To:** Mulligan, Sean; Homol, Stan; Dague, Bryan; Bosch, Kees; Boedeker, Steven  
**Subject:** FW: Bitron benchmark tests

Sean,

Your test plan looks good to me. With the limited devices we have on hand we need to pick those tests that will give us the most relevant information.

By the way, I've added a picture to your file.

Kees,

Is this switch intended to be pump mounted in the future or will it remain on the line. Your input will help us understand how to benchmark the the (2) devices received. For instance, if we compare it to our pump mount devices we would want to test the device for cavitation. Please let us know.

Also, can we get 1-2 dozen 151PS switches with lot data for each switch and (3) take aparts for the guys here in Attleboro. Thanks.

Regards,

Steve

**From:** Mulligan, Sean  
**Sent:** Friday, May 14, 1999 5:04 PM  
**To:** Dague, Bryan; Homol, Stan; Proia, Stephen  
**Subject:** Bitron benchmark tests

Looking for feedback: