MODEL-SHOP LOTS (EACH QTY 6) WASHERS

I. .006" REDUCED THK OVERALL
II. .003" STEP
III. .006" STEP

- UPON RECEIPT FROM M/S, PRE-CUT INTO 3 LOTS OF SENSORS USING PL CUPS, PL DISCS, STEAYED KAPTON, ETC.; INCL. A CONTROL LOT
- BUILD ONE ASM'L - HAND-LOAD ONTO RULES CAREFULLY (NO PRE-CRIMP)
- CHAR. EACH ONCE IN EACH LOT. THIS WILL SERVE THE FOLLOWING PURPOSES:
  1) HELP FIND OUT WHAT EFFECT A HIGH BUTTON HAT ON LAYUP (CONTAINING LOT I W/ SPACERS)
  2) FIND OUT IF ANY OF LOTS II OR III ARE PRE-SNAPPED.

NOTE: LOTS II & III ARE STEPPED, WHICH HAS THE EFFECT OF REDUCING THE AMOUNT OF SPACE BETWEEN BUMPS FOR THE DISC. IT IS POSSIBLE THAT THE SPACE WILL BE REDUCED SO MUCH THAT THE DISC WILL SNAP THRU DURING CLAMP (AND STAY THERE). OF COURSE LOT III (.006) IS MORE LIKELY TO DISPLAY THIS THAN LOT II (.003). EVEN IF SOME .006'S ARE PRESNAPPED, IF WE HAVE 6 GOOD ONES WE'LL USE THIS LOT; OTHERWISE WE'LL USE THE .003'S. IF WE DON'T HAVE SET 6 OF THESE, SEE M.B.

- AFTER CHAR, PUT 3 LOTS OF 6 INTO MANIFOLDS ASAP (CONTROL LOT; HIGH BUMP LOT; PRE SNPL. LOT)
- CAREFULLY STABILIZE & CHAR ONE OF THE LOWEST LOT I'S THEN HAVE PUTS 5. DO AN F/A
- DO A HATCHET CHECK ON ONE OF THE LOWEST LOT II/III (WHICHEVER LOT IS ACTUALLY USED)

-MSG M#= 115044 FR=CZRN TO=PCQA SENT=09/04/91 12:01 PM
R#=198 ST=C DIV=0059 CC=00101 BY=CZRN AT=09/04/91 12:01 PM

Claire

SEPTEMBER 4, 1991

TO:	RUSTY STRUBLE	RCS2	CC:	TOM CHARBONNEAU	TC
	MIKE DeMATTIA	PCQA		JOHN KOURTESIS	MDES
	CHARLIE DOUGLAS	CPPC		STEVE MAJOR	WHLS
	DICK GARIEPY	MFPC		ANDY McGUIRK	PCQA
	PAUL KOTCH	PRK1		ED O'NEILL	EJON
	JOE LAZARZ	JMLS		JOE SCHUCK	WHLS
	STEVE OFFILER	SSO1		GARY SNYDER	CPPC
	MATT SELLERS	PCMS		MARTHA SULLIVAN	CPPC
	BILL SWEET	PCME		RAY TOURANGEAU	PCME
	JIM WATT	PCQA		BILL CONGDON	MFPC
	TOM BURKE	MFPC		STEVE McCOOEY	MDES
	CLAIRE BALTHASAR	PSWT		DONNA MOYNIHAN	PCQA
	TERRY RODRIGUEZ	MFPC			

FR: DAVE CZARN ZARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING: 08/29/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 09/05 (THURSDAY)
TIME: 10:00 - 11:30 AM
PLACE: T.I.P. ROOM *** PLEASE NOTE CHANGE ***

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* = ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED SINCE PREVIOUS MEETING

57 L/T (15-2)	WHO	WHEN	
Report:			
. REPORT ON ELCO ISSUES FROM 7/22 VISIT - 10621 SENSL/.00015" [illegible] $/ [illegible]D CHECK, [illegible] CAP	KOTCH	ONGOING	
* [illegible] S/ [illegible] [illegible]	OFFILER	07/11	[illegible]
		09/05	[illegible]
* [illegible] 10621 [illegible]	CZARN	[illegible]/05	

57 P/C (15-3)

[illegible]			
* [illegible] P/C AND L/T [illegible]	SELLERS	[illegible]/29	[illegible]
		08/29	[illegible]
		08/29	[illegible]
* [illegible] P/C [illegible]	SELLERS	[illegible]	
. [illegible]	[illegible]	09/05	[illegible]

[illegible]

TI-NHTSA 002333

. PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHAZAR	ONGOING	
. UPDATE PRODUCTION PLANS FOR ALL SWITCHES	DOUGLAS	ONGOING	
. REPORT ON WEEKLY MFG. START-UP MTGS.	SELLERS	ONGOING	
* PRIORITIZE CLAIRE'S/TERRY'S TIME FOR MFG. START-UP ITEMS	GARTEPY	08/29 09/05	ORIG. REV.
. COMPLETE DESIGN FMEA	OFFILER	04/18 09/06	ORIG. REV.
. COMPLETE PROCESS FMEA	SELLERS	07/01 09/06	ORIG. REV.
. IS CALIBRATION ACCURACY ACCEPTABLE W.R.T. DEVICE PERFORM. AND MFG. YLDS ?	OFFILER/ SELLERS	08/08 09/12	ORIG. REV.
* COMPLETE B.A.M. STAKER ~~MODIFICATION~~	SELLERS/ MCCOOEY	07/31 09/05	ORIG. REV.
. GAGE R&R STUDIES (Need List)	WATT	07/15 09/03	ORIG. REV.

PV Testing/ISR:

. COMPLETE TESTING AND REPORT	OFFILER	05/16 09/20	ORIG. REV.
* RECOVERY PLAN FOR P/C	[illegible]	09/05	
* FAI ON 6 L/T AND 6 P/C SWITCHES	WATT	09/12	
* PROVIDE PROCESS INFO FOR FAI	SELLERS	09/12	
* COMPLETE ISR PACKAGE FOR 09/20 DELIVERY	WATT	09/19	

Manufacturing Equipment:

. B.A.M. DEBUG COMPLETION	SELLERS/ FOURTESIS	09/12	
* B.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/05	ORIG. REV.
* F.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/05	ORIG. REV.
* EQUIP. MOVE TO B12	SELLERS	09/12 09/19	ORIG. REV.
* SHIP SWITCHES TO K-H FOR 08/30 RECEIPT; BUILD WITH [illegible] LINE [illegible] [illegible]	SELLERS	08/29 08/29	ORIG. COMP.
* INSPECT [illegible] HARDNESS OF [illegible] SEALS FOR VOIDS BEFORE USING FOR 77PS BUILDS	[illegible]	08/30 08/29	ORIG. COMP.

Miscellaneous:

* [illegible]	[illegible]	10/1	
. 57 TO 77 CONVERSION; [illegible]	[illegible]	05/30 [illegible]	ORIG. REV.

[illegible]	[illegible]	[illegible]
57 L/T [illegible]	11/21/90	11/21/90
57 P/C [illegible]	[illegible]/03/91	
57 P/C [illegible]	07/15/91	07/15/91
57 P/C [illegible]	[illegible]	
77PS [illegible]	[illegible]/01/91 ORIG. [illegible]/20/91 REV.	
77PS [illegible]	[illegible]/91	

TI-NHTSA 002334

PRODUCTION PLAN BY MONTH (THOUSANDS)

	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (COMP.)	2	0	0
JUN	0	0	0	0
JUL	0	2.3	0	0
AUG	0	2.3	0	0
SEP	~~25~~	~~16.9~~ 10K	25	15
	equipment move to B12 starting 3rd week of September			
OCT	~~8~~ 20K	0	0	0
NOV	0	0	25	13
DEC	0	0	25	13

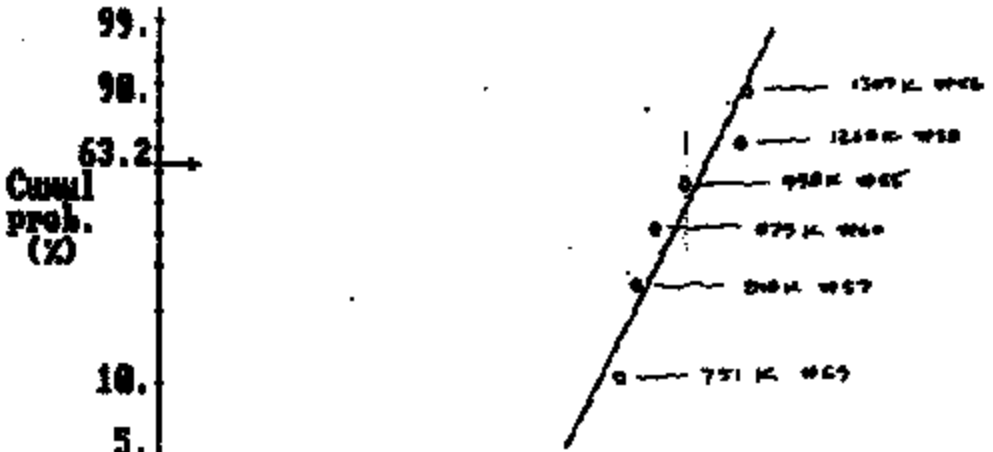
REGARDS,
DAVE CRAF [illegible]

.005 WASHER STEP, PRELOAD DISC, REDUCE CONV. TRAVEL

BUILD AT 918965 AMI, NO REE-CR

SUBSAR-ONLY

TEST 160



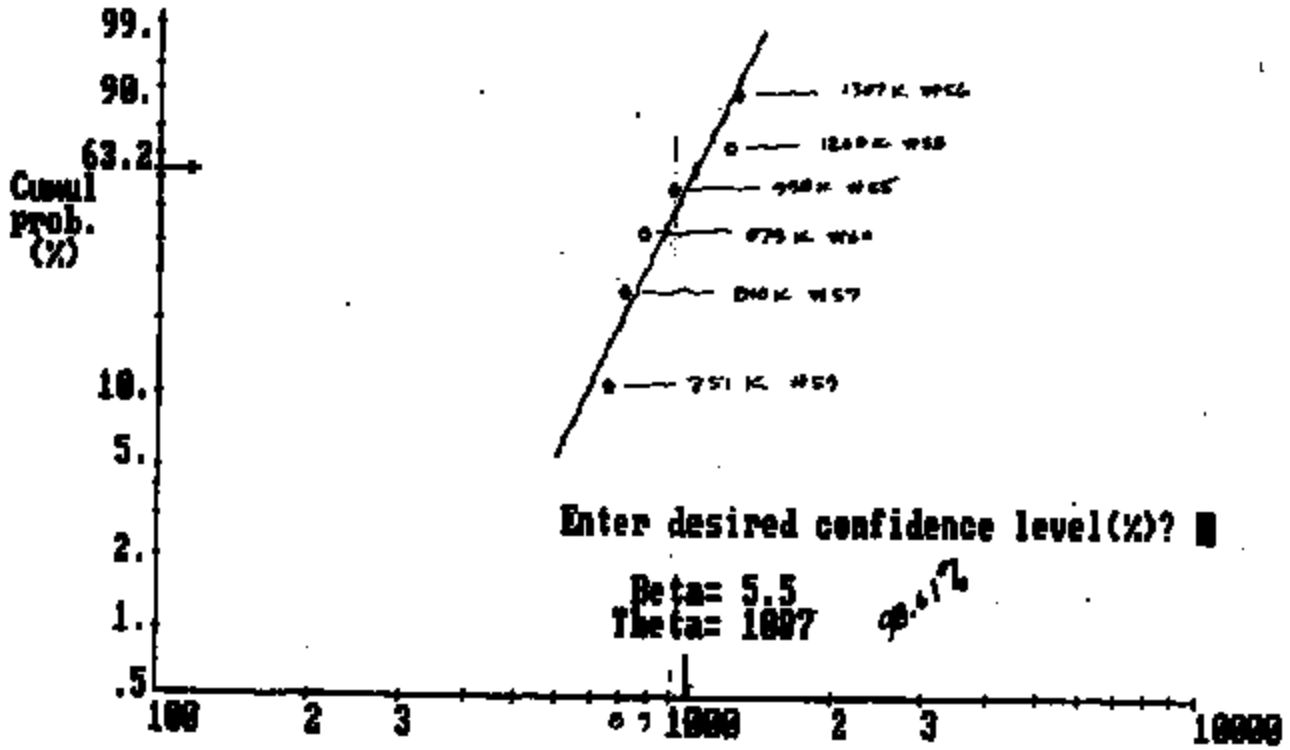
Enter desired confidence level(X)?

.005 WASHER STEP, PRELOAD DISC, REDUCE CONV. TRAVEL

BUILD AT 910905 AM1, NO ARS-CR

SENSOR-ONLY

TEST 160



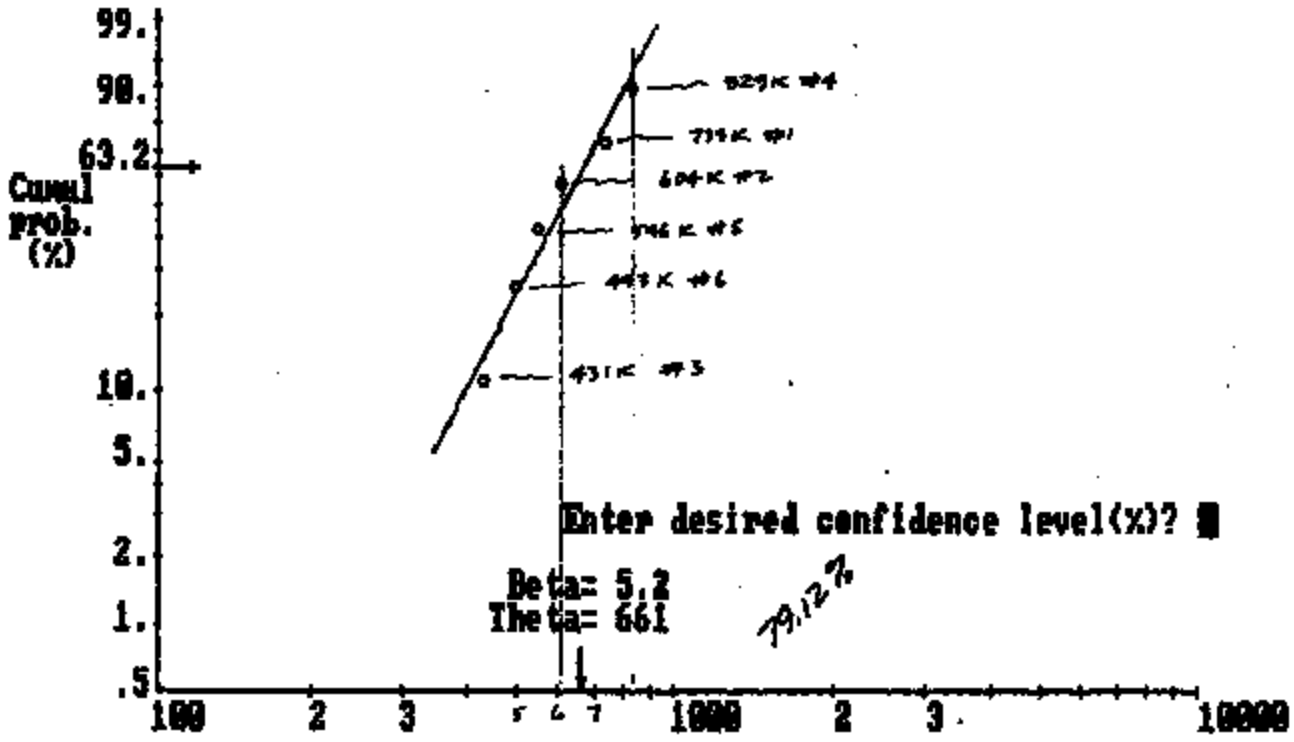
TI-NHTSA 002336

VALIDATION ATTEMPT BUILT ON AMI;
CYCLED ON RBD. + STAN'S

TEST 165

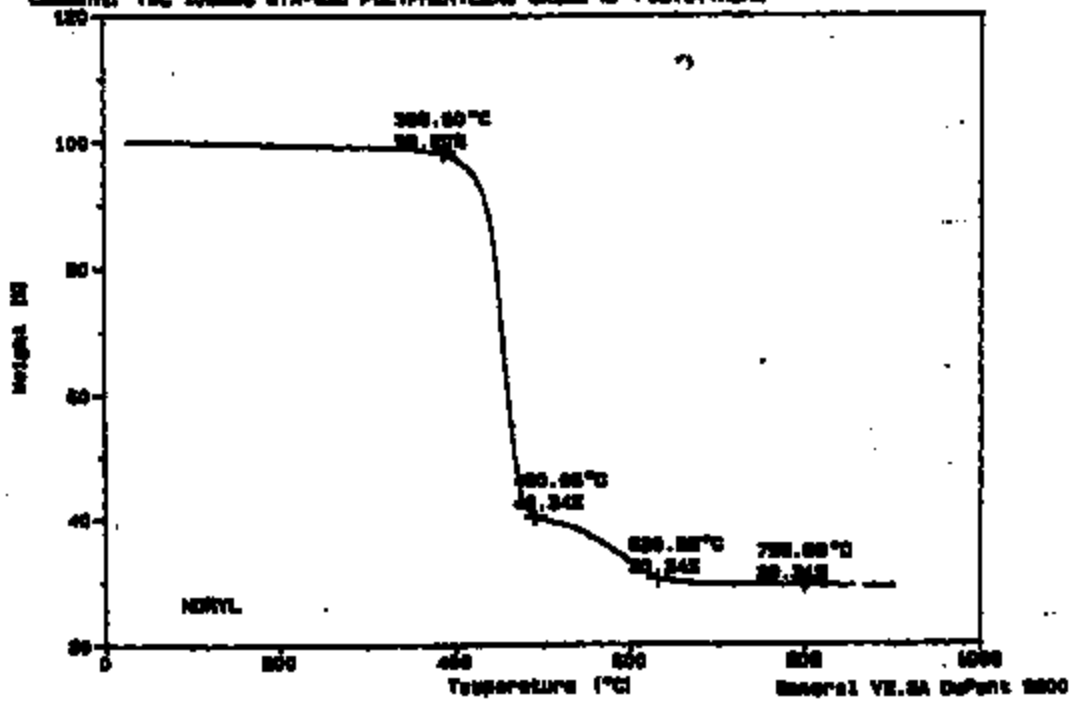
BLD OT 910913

So
911009

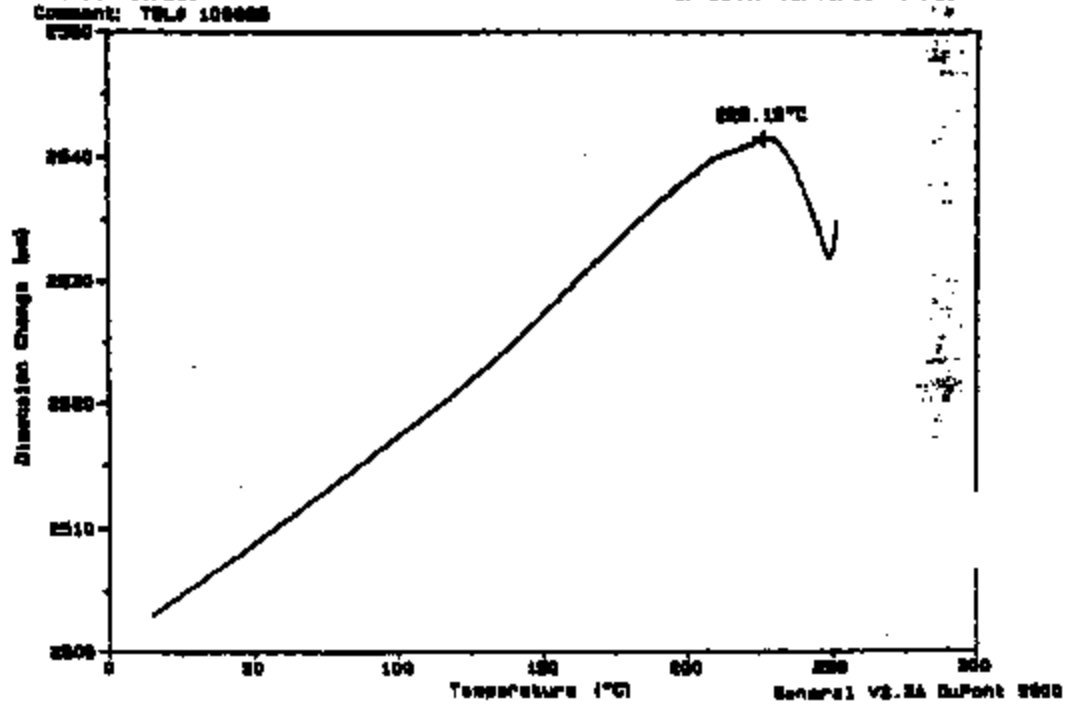


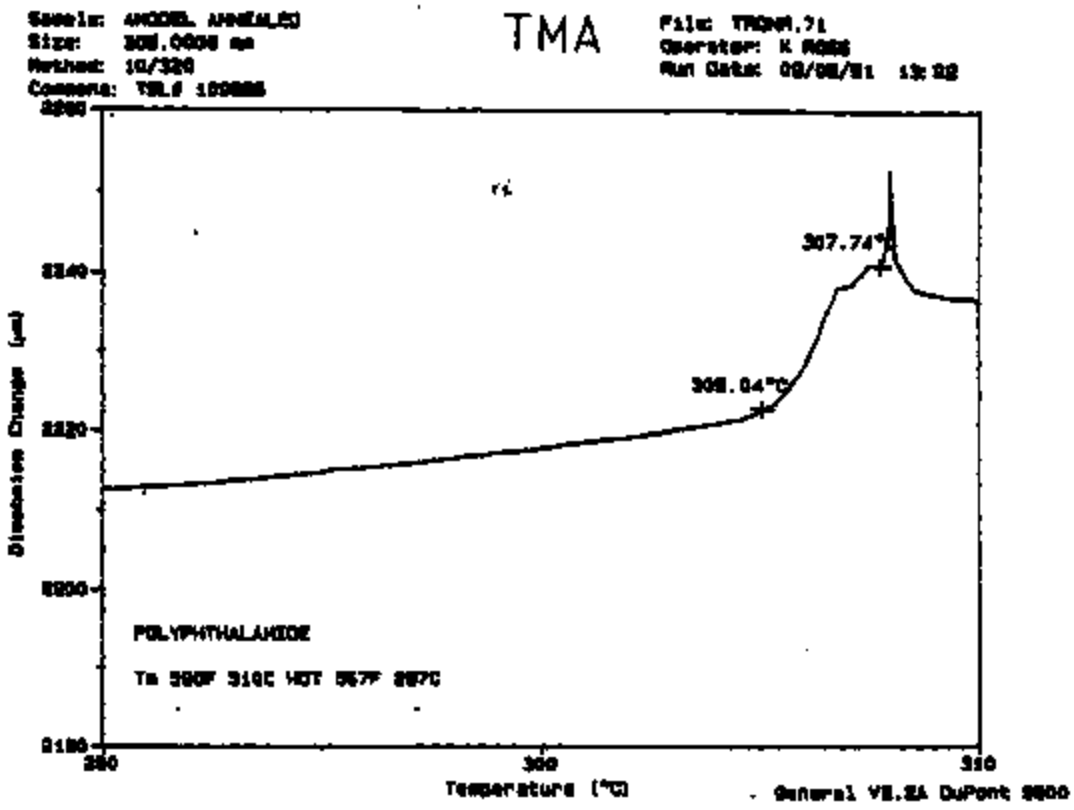
TI-NHTSA 002337

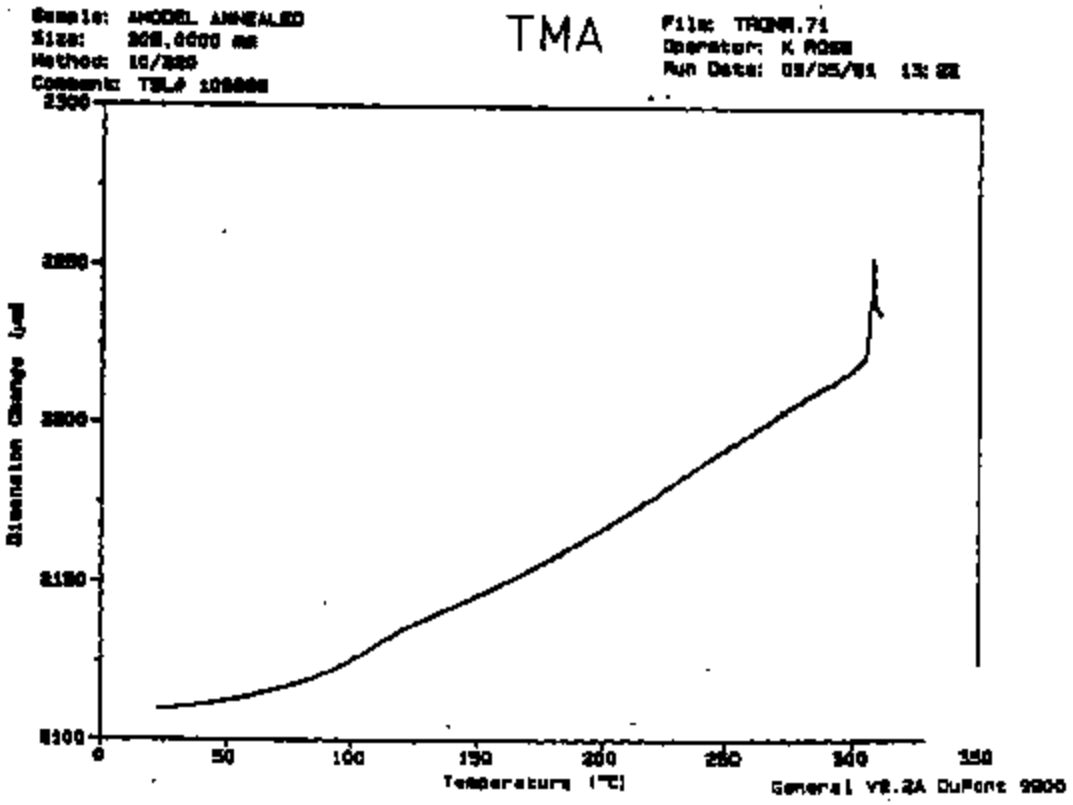
TGA



TMA




Sample: AMODEL ANNEALED
Size: 308.0000 mm
Method: 10/320
Comment: TSL# 100888
TMA
File: TRONR.71
Operator: K ROSS
Run Date: 08/08/91 13:32
307.74°C
308.04°C
POLYPHTHALAMIDE
Tm 590F 310C HDT 567F 297C
Dimension Change (µm)
Temperature (°C)
General V8.2A DuPont 9900


Sample: AMODEL ANNEALED
Size: 308.0000 mm
Method: 10/320
Comment: TSL# 100888
TMA
File: TRONR.71
Operator: K ROSS
Run Date: 08/08/91 13:32
Dimension Change (µm)
Temperature (°C)
General V8.2A DuPont 9900

"77 AS"

9-5-91

Elco to provide 20 vs 34 Data

Parts list spacers - 1/hole (pilot *)
needs - 2 wa hole
Change parts list!?

FAI sample
Black = LT - 15-2
Brown = PC - 15-3

* * ISIR for Brake - need test's run

5 TPS F3-3
= F3-5 need 6 pcs. - 1 ea. cavity + 2 mi
test results.

* Sensors need to be built on AMI

Request
300 PC
sample
on F3-3 AMI
F3-5 Hand Line
L2-2 (RH) AMI

HIGHLIGHTS

Stephen B. Offiler
Week Ending 91-09-06

FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

VALIDATION:
Results of Kapton lifetesting to date are as follows. Given the Weibull beta's and theta's for each test lot, reliabilities have been calculated for 500K cycles.

Rel @ 500K	Configuration
99.85%	Prod. cup, Hand line crimp, with AMI precrimp
99.77	Prod. cup, AMI crimp (built 910828)
99.26	Prod. cup, Hand line crimp
97.63	Model shop cup, Hand line crimp (9010xx validation)
96.75	Prod. cup, AMI crimp without precrimp (910828)
94.81	Model shop cup, AMI crimp
14.69	Prod. cup, AMI crimp (built 9107xx for PC Val.)

Notably, the lot of standard PC production parts recently built on AMI as a control lot (#2 above) turned out to be very significantly different than the failed validation parts. The hand line crimp displays some slight advantage over the AMI crimp, and the presence of pre-crimp also displays an advantage.

We plan to get Light Truck parts, built in July along with the failed PC parts above, on test ASAP. The reason for this is because these parts are now also suspected to have reduced life. One of the LT parts which recently passed Impulse testing was found to be wet inside; it was very close to failure which would have stalled current LT validation progress. Understanding the characteristic life of these LT parts built in this timeframe may shift the focus away from the increased PC converter travel, and towards either component parts or a production problem which has since been corrected.

We are also testing new lots of PC parts which are designed to modify converter travel. One lot actually decreases travel by preloading the disp, hence shortening its throw. The other lot raises the converter relative to the washer, such that the total travel is the same, but is shifted up so at maximum travel the flexure of the Kapton is similar to a LT part. Yet another control lot is included with these parts.

It has been decided to go ahead and rebuild PC validation parts now, even though the cause of the early failures has not been identified and corrected yet. PC control lots built recently are displaying very good life. We plan to get these parts onto the cycler by the end of the day today, which will allow them to reach 500K roughly mid-day Tuesday if all goes well. During build of these sensors on AMI, we also ran a couple of parts with pressure-sensitive film. The pressure traces on these looked essentially identical to the ones that were taken during the previous AMI build (the one that produced excellent life). We hope that a similar crimp pressure will mean a similar life expectancy.

Another significant tool for solution of this problem is the cross-sections of the original failed parts and controls. However, we have not received the parts from TSL yet, and Paul Sherman has not returned my calls.

MECHANIZATION:
We have proposed that the control software on the switch AMI be changed such that the check station is the final arbitrator of a "good" part. This is because we have demonstrated excellent correlation between the check station and the real world. Presently, a part bad on either cal or check will be called bad, decreasing yields if cal is bad but check is good. Before Mech. will make this fundamental software change, they'd like to see effort placed on understanding the differences between the calibrator and the check station.

We have begun to experiment with the system of weights on the calibrator in order to try to close the gap in correlation between it and the check station. A quick-and-dirty experiment was conducted, using a limited selection of poorly-fitting weights. We did discover that additional weight over the transfer-pin area seems to close the correlation gap slightly. We also noted that the check station itself is running commendably well, with sigma's on repeated measurements of the same part running in the range of 0.06 - 0.14 mils. See MSG #182281 for a complete discussion.

ACME MILFORD
857 BRIDGEPORT AVE.
MILFORD, CONNECTICUT 06460

TEL.\ 203-878-4631 * FAX 203-878-5071

TO: TEXAS INSTRUMENTS

CERTIFICATE OF COMPLIANCE

ACME MILFORD CERTIFIES THAT;

P.O. NUMBER: 500011076
ACME/MILFORD CONTROL NUMBER: 17642
ACME/MILFORD P/N: 6254-A
QUANTITY: 915425

WAS PROCESSED TO CONFORM TO THE FOLLOWING

PART NUMBER: 74408-1
PART REVISION: D
MATERIAL: COPPER CDA 162
HEAT NUMBER:
TENSILE AFTER LIGHT DRAW:
FINISH: .0011-.0024 SILVER PLATE
: (.0007 MIN OVER NICK)

SIGNED: DATE: 09-06-91

JOHN MICHAUD
TITLE\ QUALITY CONTROL MANAGER

SWORN TO AND SUBSCRIBED BEFORE ME THIS/_____DAY_____MONTH_____YEAR

NOTARY PUBLIC_____

-MSG MÎ= 196209 FR=CZRN TO=PCQA SENT=09/06/91 02:09 PM
RÎ=079 ST=C DIV=0050 CC=00101 BY=CZRN AT=09/06/91 02:09 PM

SEPTEMBER 6, 1991

TO:	RUSTY STRUBLE	RCB2	CC:	TOM CHARBONEAU	TC
	MIKE DeNATTIA	PCQA		JOHN KOURTESIS	MDES
	CHARLIE DOUGLAS	CPPC		STEVE MAJOR	MELZ
	DICK GARIEPY	MFPC		ANDY McGUIRK	PCQA
	PAUL KOTCH	PRK1		ED O'NEILL	EJON
	JOE LAZARS	JNL8		JOE SCHUCK	MELZ
	STEVE OFFILER	SBO1		GARY SNYDER	CPPC
	MATT SELLERS	PCME		MARTHA SULLIVAN	CPPC
	BILL SWEET	PCME		RAY TOURANGEAU	PCME
	JIN WATT	PCQA		BILL CORGDON	MFPC
	TOM BURKE	MFPC		STEVE MCCOOEY	MDES
	CLAIRE BALTHAZAR	PSNT		ELAINE ROSE	PCQA
	TERRY RODRIGUEZ	MFPC			

FR: DAVE CZARN ZARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
09/05/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 09/12 (THURSDAY)
TIME: 10:00 - 11:30 AM
PLACE: MARKETING CONFERENCE ROOM

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* = ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED SINCE PREVIOUS MEETING

57 L/T (LS-2)	WHO	WHEN	
Hexport:			
. REPORT ON ELCO ISSUES FROM 7/22 VISIT - 10821 STEEL/.00015" MIN. PLATE/J512 S/ THREAD CHAMF. ANGLE/THREAD CAP	KOTCH	ONGOING	
* REVISED HEXPORT PRINT W/ RADIUS ON DOGPOINT DIAMETER	OFFILER	07/11 09/12	ORIG. REV.
* ORDER SK 10821 HEXPORTS	CZARN	09/05 09/05	ORIG. COMP.
57 P/C (LS-3)			
Environmental Seal:			
. RECEIVE BLUE P/C GASKETS	SELLERS	TBD	
* DEFINE GAGING TORQUE SPEC W/WEATHERHEAD & K-H	WATT	09/05 09/12	ORIG. REV.
77PS			
. PROD. LINE SET-UP (RTS CARDS, ETC)	BALTHAZAR	ONGOING	
. UPDATE PRODUCTION PLANS FOR ALL SWITCHES	DOUGLAS	ONGOING	
. REPORT ON WEEKLY MFG. START-UP MTGS.	SELLERS	ONGOING	

* PRIORITIZE CLAIRE'S/TERRY'S TIME FOR MFG. START-UP ITEMS	GARIEPY	08/29 09/05 09/05	ORIG. REV. COMP.
. COMPLETE DESIGN FMEA	OFFILER	04/18 09/06	ORIG. REV.
. COMPLETE PROCESS FMEA	SELLERS	07/01 09/06	ORIG. REV.
. IS CALIBRATION ACCURACY ACCEPTABLE W.R.T. DEVICE PERFORM. AND MFG. YLDS ?	OFFILER/ SELLERS	08/08 09/12	ORIG. REV.
* COMPLETE B.A.M. STAKER MODIFICATION	SELLERS/ MCCOOEY	07/31 09/12	ORIG. REV.
* GAGE R&R STUDIES	WATT	07/15 09/12	ORIG. REV.
* UPDATE PARTS LISTS TO ADD AMI-PRODUCED SPACER AS ALTERNATE	OFFILER	10/10	
PV Testing/ISR:			
. COMPLETE TESTING AND REPORT	OFFILER	09/16 09/20	ORIG. REV.
* RECOVERY PLAN FOR P/C	CZARN	09/05 09/05	ORIG. COMP.
. FAI ON 6 L/T AND 6 P/C SWITCHES	WATT	09/12	
. PROVIDE PROCESS INFO FOR FAI	SELLERS	09/12	
. COMPLETE ISR PACKAGE FOR 09/20 DELIVERY	WATT	09/19	
Manufacturing Equipment:			
. B.A.M. DEBUG COMPLETION	SELLERS/ KOURTESIS	09/12	
* B.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/09	ORIG. REV.
* F.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/09	ORIG. REV.
* EQUIP. MOVE TO B12	SELLERS	09/12 09/30	ORIG. REV.
Miscellaneous:			
* IDENTIFY SWITCH MOUNTING LOCATIONS & SIZE REQMTS FOR FUTURE PLATFORMS	SCHUCK	10/10	
. 57 TO 77 CONVERSION: PHASE 1 TESTING	HOHOL	05/30 09/--	ORIG. REV.

DISCUSSION

.

PRODUCTION PLAN HAS BEEN UPDATED; SEE BELOW.

.

THE HAND LINE WILL BE USED FOR BUILDING P/C SENSORS (57LS-3, 77L2-1) UNTIL A TBD TIME. SWITCHOVER TO AMI SENSORS WILL BE DETERMINED BY TEST RESULTS OVER THE NEXT COUPLE OF WEEKS.

.

A SECOND LOT OF STANDARD P/C 77'S YIELDED SIGNIFICANTLY IMPROVED DIAPHRAGM LIFE OVER THE ORIGINAL VALIDATION PARTS; 99.77% RELIABILITY @ RATED LIFE vs. 14.69% THEREFORE, 24 P/C SWITCHES - WITH AMI BUILD SENSORS - WILL BE IMPULSE TESTED AS A FOLLOW UP TO THE PV TEST FAILURES. IF SUCCESSFUL, WE WILL BE ABLE TO COMPLETE ISR SUBMITTAL ON BOTH L/T AND P/C SWITCHES ON 9/20. AS A TOP PRIORITY, WE WILL CONTINUE TESTING TO UNDERSTAND AND IMPROVE UPON THE FACTORS INFLUENCING DIAPHRAGM LIFE.

MILESTONES	PLANNED	ACTUAL
57 L/T ISIR	11/21/90	11/21/90
57 L/T JOB 1	09/03/91	
57 P/C ISIR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	
77PS ISIR	09/01/91 ORIG.	
	08/20/91 REV.	
77PS SOP (TI)est.	08/91	

PRODUCTION PLAN BY MONTH (THOUSANDS)

	P/C 57PSLS-3	L/T 57PSLS-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (COMP.)	2	0	0
JUN	0	0	0	0
JUL	0	2.3	0	0
AUG	0	2.3	0	0
SEP	25	9.3	15	12.4
equipment move to 812 starting last week of September				
OCT	0	7	0	0
NOV	0	0	25	13
DEC	0	0	25	13

REGARDS,
DAVE CHARN \37-FORD

cc: Bob Hall
Fyi/Rc

MG M#= 196209 FR=CZRN TO=PCQA SENT=09/06/91 02:09 PM
RI=078 ST=C DIV=0050 CC=00101 BY=CZRN AT=09/06/91 02:09 PM

SEPTEMBER 6, 1991

TO:	RUSTY STRUBLE	RCS2	CC:	TOM CHARBONEAU	TC
	MIKE DeMATTIA	PCQA		JOHN KOURTESIS	MDES
	CHARLIE DOUGLAS	CPPC		STEVE MAJOR	WHLS
	DICK GARIEPY	MFPC		ANDY McGUIRK	PCQA
	PAUL KOTCH	PRK1		ED O'NEILL	EJOH
	JOE LAZARE	JMLS		JOE SCHUCK	WHLS
	STEVE OFFILER	SBO1		GARY SNYDER	CPPC
	MATT SELLERS	PCNE		MARTHA SULLIVAN	CPPC
	BILL SWEET	PCNE		RAY TOURANGEAU	PCNE
	JIM WATT	PCQA		BILL CONGDON	MFPC
	TOM BURKE	MTPC		STEVE MCCOOEY	MDES
	CLAIRE BALTHAZAR	PSMT		ELAINE ROSE	PCQA
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FR: DAVE CZARN ZARN

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* DEFINE GAGING TORQUE SPEC W/WEATHERHEAD & K-N	WATT	09/05 09/12	ORIG. REV.
77PS			
. PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHAZAR	ONGOING	
. UPDATE PRODUCTION PLANS FOR ALL SWITCHES	DOUGLAS	ONGOING	
. REPORT ON WEEKLY MFG. START-UP MTGS.	SELLERS	ONGOING	

* PRIORITIZE CLAIRE'S/TERRY'S TIME FOR MFG. START-UP ITEMS	GARIEPY	08/29 09/05 09/05	ORIG. REV. COMP.
. COMPLETE DESIGN FMEA	OFFILER	04/18 09/06	ORIG. REV.
. COMPLETE PROCESS FMEA	SELLERS	07/01 09/06	ORIG. REV.
. IS CALIBRATION ACCURACY ACCEPTABLE W.R.T. DEVICE PERFORM. AND MFG. YLDS ?	OFFILER/ SELLERS	08/08 09/12	ORIG. REV.
* COMPLETE B.A.M. STAKER MODIFICATION	SELLERS/ MCCOOEY	07/31 09/12	ORIG. REV.
* GAGE R&R STUDIES	WATT	07/15 09/12	ORIG. REV.
* UPDATE PARTS LISTS TO ADD AMI-PRODUCED SPACER AS ALTERNATE	OFFILER	10/10	
PV Testing/ISR:			
. COMPLETE TESTING AND REPORT	OFFILER	09/16 09/20	ORIG. REV.
* RECOVERY PLAN FOR P/C	CEARN	09/05 09/05	ORIG. COMP.
. FAI ON 6 L/T AND 6 P/C SWITCHES	WATT	09/12	
. PROVIDE PROCESS INFO FOR FAI	SELLERS	09/12	
. COMPLETE ISR PACKAGE FOR 09/20 DELIVERY	WATT	09/19	
Manufacturing Equipment:			
. B.A.M. DEBUG COMPLETION	SELLERS/ KOURTESIS	09/12	
* B.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/09	ORIG. REV.
* F.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/09	ORIG. REV.
* EQUIP. MOVE TO B12	SELLERS	09/12 09/30	ORIG. REV.
Miscellaneous:			
* IDENTIFY SWITCH MOUNTING LOCATIONS & SIZE REQMTS FOR FUTURE PLATFORMS	SCHUCK	10/10	
. 57 TO 77 CONVERSION: PHASE 1 TESTING	HONOL	05/30 09/--	ORIG. REV.

DISCUSSION

PRODUCTION PLAN HAS BEEN UPDATED; SEE BELOW.

THE HAND LINE WILL BE USED FOR BUILDING P/C SENSORS (57L5-3, 77L2-1) UNTIL A TBD TIME. SWITCHOVER TO AMI SENSORS WILL BE DETERMINED BY TEST RESULTS OVER THE NEXT COUPLE OF WEEKS.

A SECOND LOT OF STANDARD P/C 77'S YIELDED SIGNIFICANTLY IMPROVED DIAPHRAGM LIFE OVER THE ORIGINAL VALIDATION PARTS; 99.77% RELIABILITY @ RATED LIFE vs. 14.69% THEREFORE, 24 P/C SWITCHES - WITH AMI BUILD SENSORS - WILL BE IMPULSE TESTED AS A FOLLOW UP TO THE PV TEST FAILURES. IF SUCCESSFUL, WE WILL BE ABLE TO COMPLETE ISR SUBMITTAL ON BOTH L/T AND P/C SWITCHES ON 9/20. AS A TOP PRIORITY, WE WILL CONTINUE TESTING TO UNDERSTAND AND IMPROVE UPON THE FACTORS INFLUENCING DIAPHRAGM LIFE.

MILESTONES	PLANNED	ACTUAL
57 L/T ISIR	11/21/90	11/21/90
57 L/T JOB 1	09/03/91	
57 P/C ISIR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	
77PS ISIR	09/01/91 ORIG.	
	09/20/91 REV.	
77PS SOP (TI)est.	08/91	

PRODUCTION PLAN BY MONTH (THOUSANDS)

	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (COMP.)	2	0	0
JUN	0	0	0	0
JUL	0	2.3	0	0
AUG	0	2.3	0	0
SEP	25	9.3	15	12.4
equipment move to 812 starting last week of September				
OCT	0	7	0	0
NOV	0	0	25	13
DEC	0	0	25	13

REGARDS,
DAVE CHARN \37-FORD

Form 6519

ENVIRONMENTAL TEST LAB REQUEST FORM
(ONE TEST PER REQUEST)

DATE 9/6/91

REQUESTED BY Jeffrey DiBenedico

REQUIRED COMPLETION DATE 9/11/91

EXTENSION 2148 - MS 4-27

DEVICE 77PSLB-1; 77PSLA-3

CHARGE DEPT. NO. 127 I.O. NO. 101060

REFERENCE SPEC. NO. ES-F2VC-9F924-AA

SOURCE OF TEST SAMPLES Design Lab

QUANTITY OF TEST SAMPLES 12

REPORT NO. 0933-091

TESTED BY LAB

COMPLETION DATE 9-20-91

TEST REQUIREMENTS: (TO BE FILLED IN BY REQUESTOR)

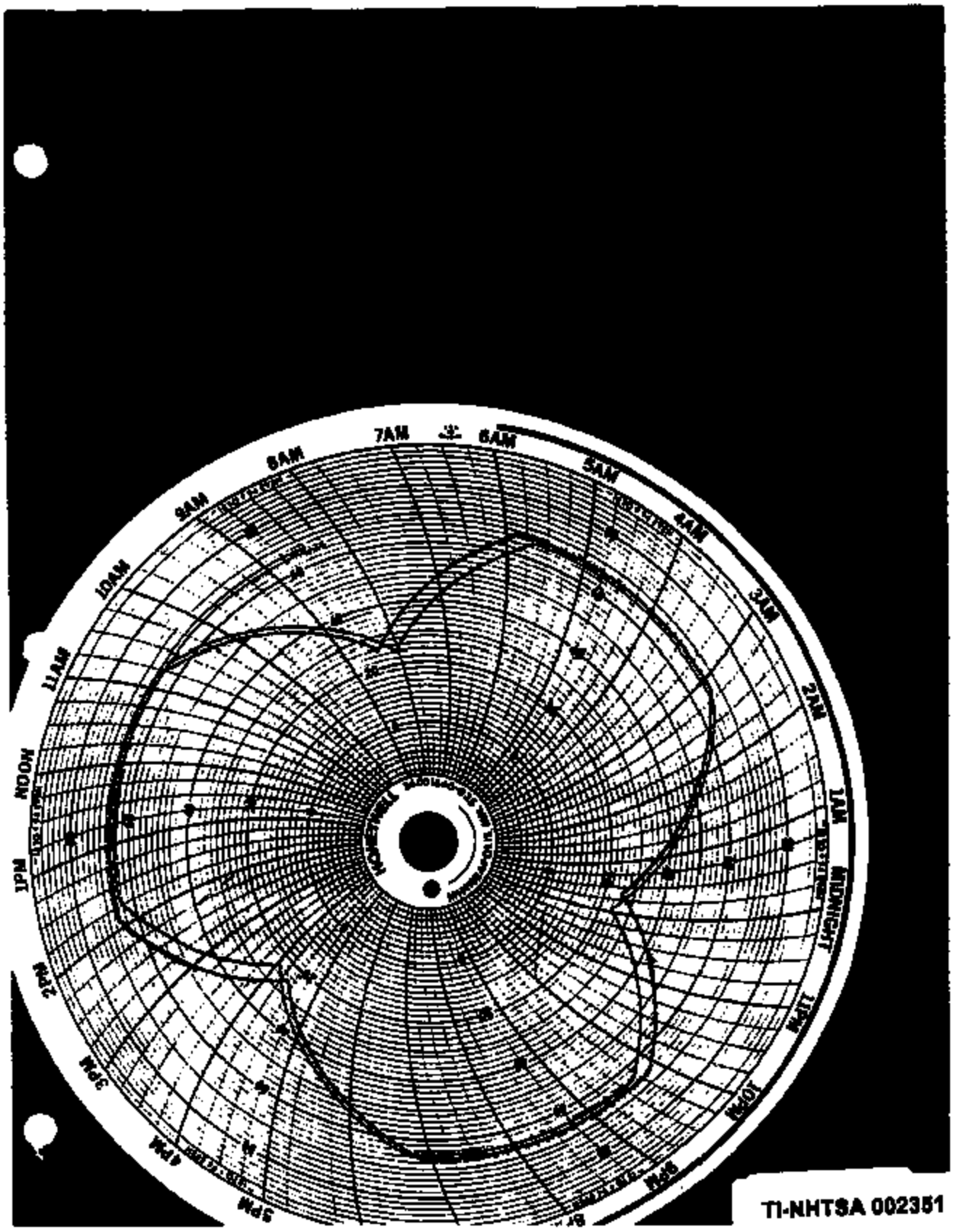
Please run humidity test per attached.

TEST PERFORMED:

START 9-16-91 16:00 CHAMBER MALFUNCTION (SHUT DOWN)
RESTART 9-18-91 0830 HOURS
STOP 9-20-91 1630 HOURS

TEST RESULTS:

EQUIPMENT USED: CALIBRATION DATE: NEXT DUE DATE:



Form 6916

ENVIRONMENTAL TEST LAB REQUEST FORM
(ONE TEST PER REQUEST)

DATE 9/6/91

REQUESTED BY Jeffrey D. Pomraico

REQUIRED COMPLETION DATE 9/11/91

EXTENSION 3144 MS H-09

DEVICE 77PSLJ-1 ; 77PSLJ-3

CHARGE DEPT. NO. 126 I.O. NO. 101060

REFERENCE SPEC. NO. ES-FJ4C-9F124-AA

SOURCE OF TEST SAMPLES Desks Lab

QUANTITY OF TEST SAMPLES 12

REPORT NO. 0934-091

TESTED BY Lab

COMPLETION DATE 9-9-91

TEST REQUIREMENTS: (TO BE FILLED IN BY REQUESTOR)

Please run salt spray Test per attached.

TEST PERFORMED:

IN: 1430 9-6-91

Out: 1430 9-9-91

TEST RESULTS:

to be determined by requestor.

EQUIPMENT USED: CALIBRATION DATE: NEXT DUE DATE:

III. Test Procedures and Requirements (cont'd)

G. Humidity

1. Test Requirements

a. Mount the switch in the test port in a humidity chamber. Currently released mating electrical connector must be installed before start of test.

b. Subject the switch to ten (10) continuous humidity cycles as follows:

(1) Raise temperature to 65 +10/-2 °C over 2.5 hours; at 90-98% relative humidity.

(2) Hold 3 hours at 65 +10/-2 °C at 90-98% relative humidity.

(3) Lower temperature to 25 +10/-2 °C over 2.5 hours at 80-98% relative humidity.

2. Acceptance Requirements

a. Within 15 minutes after completion of the tenth humidity cycle check the switch to sections A, B, C, D, using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D.

H. Salt Spray

1. Test Requirements

a. Mount the switch in the test port in a salt spray chamber. The currently released mating electrical connector and wiring must be installed prior to start of test.

b. Expose the switch assembly to 72 hours of salt spray per ASTM B-117.

2. Acceptance Requirements

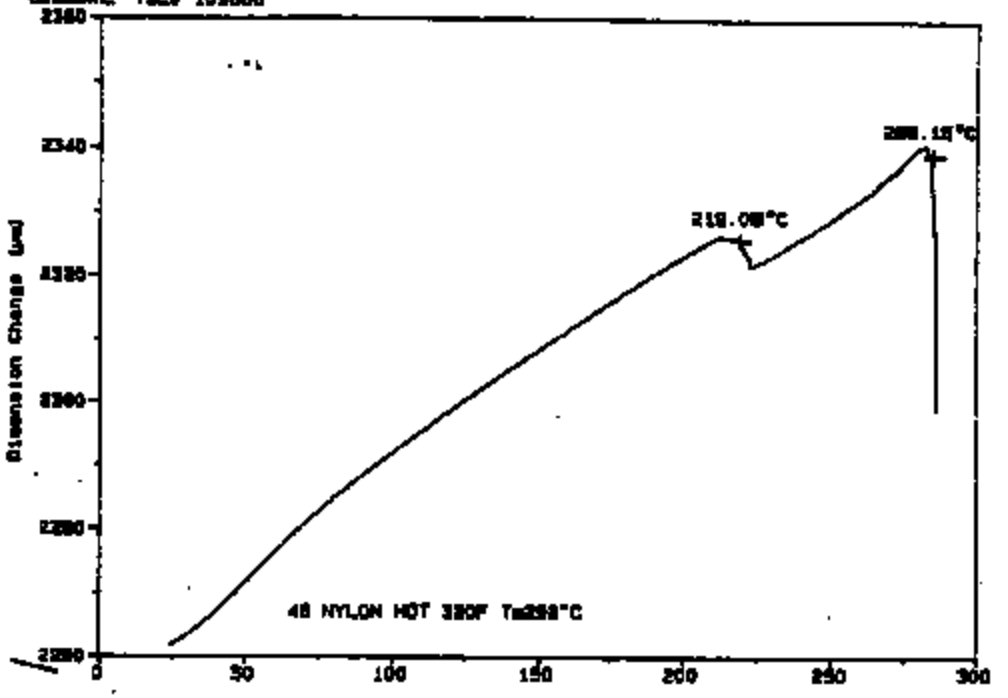
a. After exposure, check the switch to sections A, B, C, D, using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test must be destroyed after all testing is completed.

Sample: STANYL, STX 630
Size: 302.0000 mm
Method: 10/320
Comment: TEL# 109000

TMA

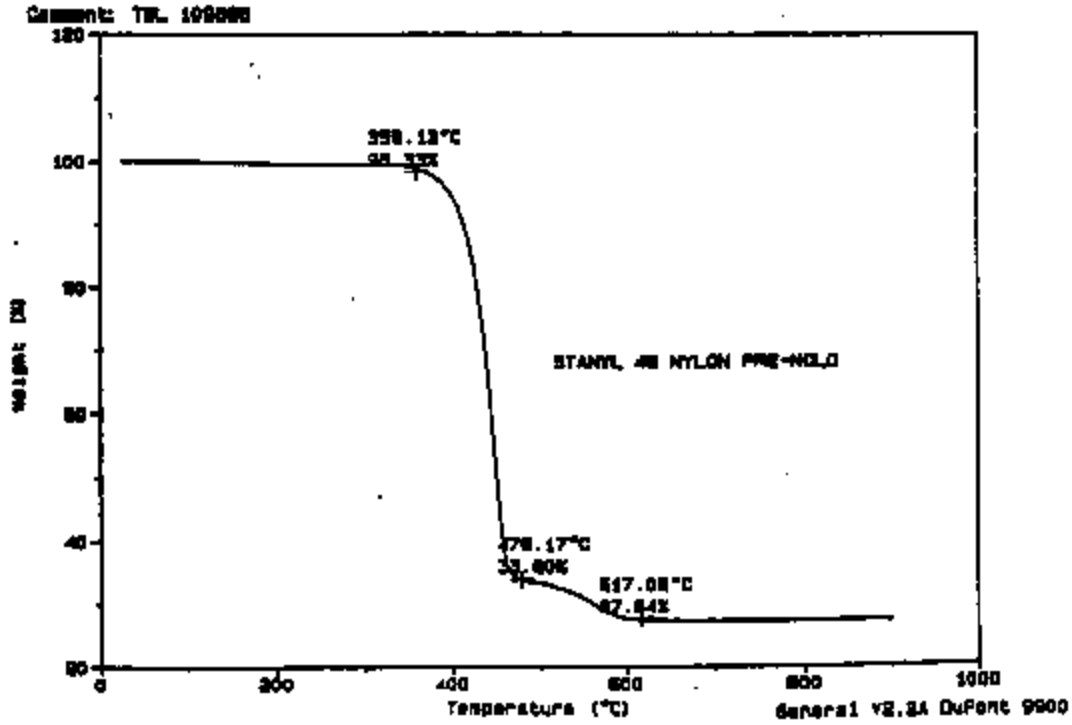
File: TRONR.7d
Operator: K ROSS
Run Date: 09/06/91 08:55



Sample: STANYL 46 PRE-HOLD MATERIAL
Size: 45.0780 mg
Method: 10/800/IBO
Comment: TEL 109000

TGA

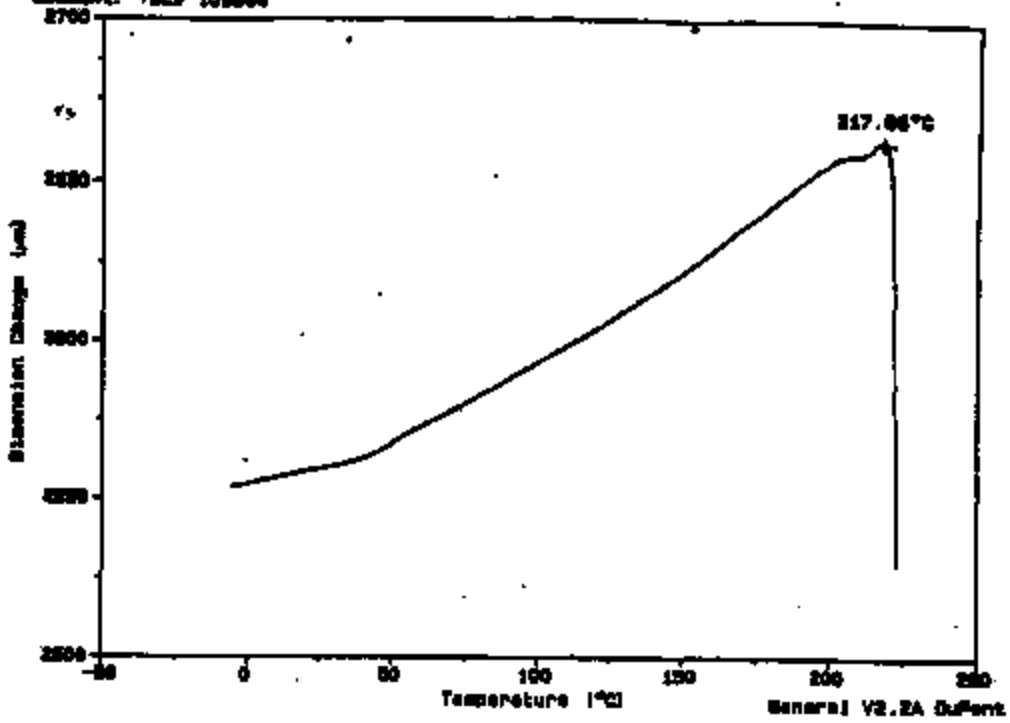
File: TRONR.08
Operator: KROSS
Run Date: 07/11/91 08:07



TMA

Size: 387.0000 mm
Method: 10/320
Comment: TBL# 109888

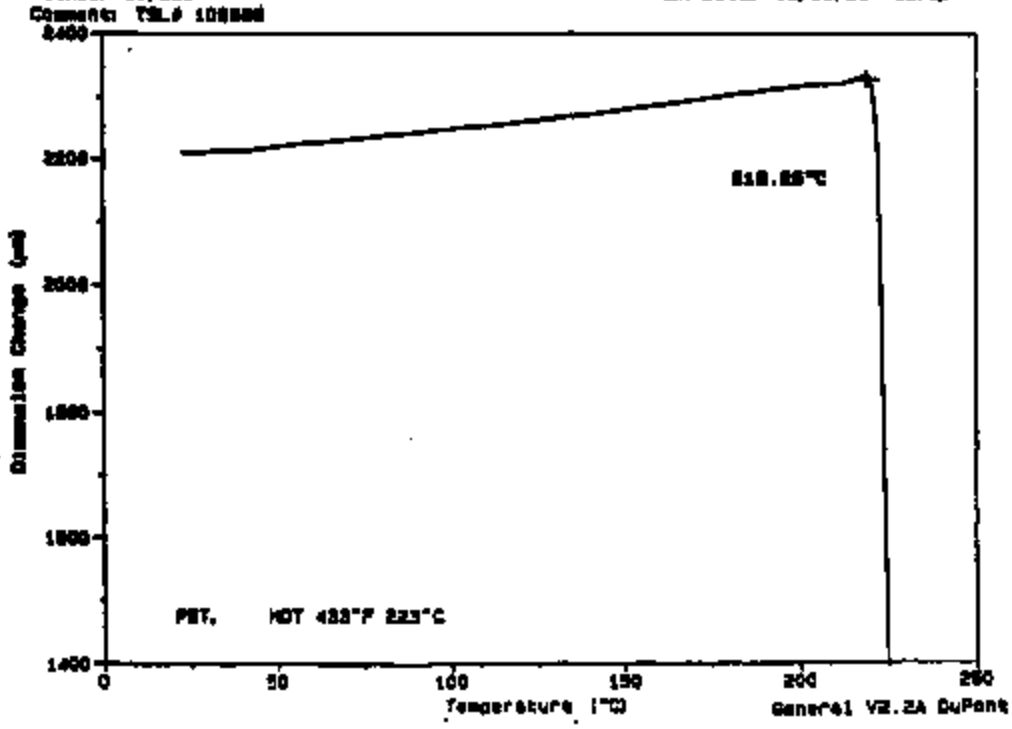
Operator: K ROSS
Run Date: 08/06/91 10:30



Sample: CELANEX 4300
Size: 298.0000 mm
Method: 10/320
Comment: TBL# 109888

TMA

File: TMCNM.72
Operator: K ROSS
Run Date: 08/06/91 15:27



KELSEY-HAYES™ GROUP

MN12 Program INITIAL SAMPLE READINESS CHECKLIST Duncan

Supplier Texac Inst. Supplier Contact ~~Yoga Chandra~~ Charlie Douglas

Supplier Address 34 Forest St.

City, State, Zip Attleboro, MA Phone (508) 699-3012 Fax (508) 699-1598

Part or Product pressure switch Date 9-9-91

Kelsey-Hayes Group _____ Kelsey-Hayes Contact _____

P/N 12604301 Released version S/P dated 4-9-91

The following items have been prepared and/or approved. Items marked with an asterisk (*) are to be completed prior to ISIR date.

K-H Required	Item	Available by Supplier (Note: initial and date each item)	K-H Disposition
____	*Manufacturing feasibility signoff	_____	_____
____	*Design FMEA	_____	_____
X	*Process flow diagram	_____	_____
X	*Process FMEA	_____	_____
X	*Designated characteristics list	_____	_____
____	*Pre-launch control plan	_____	_____
X	Gage R&R studies	_____	_____
X	Short term process capability studies	_____	_____
X	*Process control plan	_____	_____
____	Inspection instructions	_____	_____
____	Set-up instructions	_____	_____
____	Operations instructions	_____	_____
X	ES testing requirements	_____	_____
____	Packaging and identification approval	_____	_____
X	Functional testing	_____	_____

9/10/91

-MSG MS= 277944 FR=SBO1 TO=ZARN SENT=09/10/91 01:27 PM
RS=002 ST=C DIV=0050 CC=00101 BY=SBO1 AT=09/10/91 01:27 PM

	Dave Czarn	ZARN	CC:	Tom Burke	MFPC
	Jeff DiDomenico	ELB		Tom Charboneau	TC
	Charlie Douglas	CPPC		Mike DeMattia	PCQA
	Stan Homol	SH2		Dick Gariepy	MFPC
	Bob Robichaud	RHRO		John Kourtsais	MDEB
	Matt Sellers	PCME		Bill Sweet	PCME
				Jim Watt	PCQA

FR: Steve Offiler SBO1

SJ: Early Kapton Failures on AMI#2 Sensors

As most of you are aware, Production Validation of the 77P8L2-1 has been significantly impacted by failure during the Impulse test. This test runs 500K pressure cycles from 0 to 1450 psi at 2 Hz, in 121 deg. C ambient. The failure mode was leakage, caused by ruptured Kapton, beginning at roughly 270K cycles. Sensors for this test were built on AMI#2 on 91-07-19.

We have placed the highest priority on solving this problem. Several test lots have been created to test a number of possible causes. These test lots, typically 6 devices per lot, have been cycled to failure and Weibull techniques employed. Results are presented as follows:

Sorted by: Theta

	Build dt	Beta	Theta	Rel@500K	Cup	Crimp	PreCr	OP psi
	910828	3.5	1449	97.73	27713	AMI	no	1300
	901019	3.7	1371	97.63	MB	HL	no	3000
	910828	6.9	1208	99.77	27713	AMI	yes	1300
	910822	6.0	1133	99.26	27713	HL	no	800
	910828	9.3	1005	99.85	27713	HL	yes	0
	910822	7.0	760	94.81	MB	AMI	yes	1300
✓	910719	12.8	722	99.10	27288	AMI	yes	4000
✓	910719	5.7	446	14.69	27713	AMI	yes	3000

Sorted by: Beta

	Build dt	Beta	Theta	Rel@500K	Cup	Crimp	PreCr	OP psi
	910719	12.8	722	99.10	27288	AMI	yes	4000
	910828	9.3	1005	99.85	27713	HL	yes	0
	910822	7.0	760	94.81	MB	AMI	yes	1300
	910828	6.9	1208	99.77	27713	AMI	yes	1300
	910822	6.0	1133	99.26	27713	HL	no	800
	910719	5.7	446	14.69	27713	AMI	yes	3000
	901019	3.7	1371	97.63	MB	HL	no	3000
	910828	3.5	1449	97.73	27713	AMI	no	1300

In Weibull terminology, Beta is the slope of the curve plotting cumulative percentage of failures versus # cycles, and Theta is the characteristic life, the number of cycles at which 63.2% of the devices have failed. A large Beta number means all failures occur in a relatively short timespan, which is good because relatively accurate life predictions

the percentage of failures at any given number of cycles is possible.

Scrutinizing the data above, sorted by Theta, shows devices built for Validation (both 77PSL2-1 and 77PSL2-3) on 91-07-19 are at the very bottom of the list. However, the attempt to reproduce the very worst lot on 91-08-28 produced drastically different results (third best). It has come to our attention that certain upgrades to AMI#2 to increase speed were underway in the July timeframe. While more details are needed, it is possible that something related to these modifications may be the root cause of the observed failures from 91-07-19.

Results sorted by Beta are also presented above. The only interesting point to be made here is that the larger Beta's seem to correlate rather well with the presence of AMI pre-crimp.

Other tools and techniques are also being employed to help solve this problem, including: cross-sectioning of devices to expose any issues related to internal geometries; pressure-sensitive film which helps show location of peak forces applied during crimp, etc. Please contact me for more details.

Regards,
Steve O.

MSG M#= 00277944 FR=SBO1 TO=SBO1 SENT=09/10/91 01:27 PM
S#=107 ST=C DIV=0050 CC=00101 BY=SBO1 AT=09/10/91 01:27 PM

):	Dave Czarn	ZARN	CC:	Tom Burke	MFPC
	Jeff DiDomenico	ELB		Tom Charboneau	TC
	Charlie Douglas	CPPC		Mike DeMattia	PCQA
	Stan Homol	SH2		Dick Gariepy	MFPC
	Bob Robichaud	RHRO		John Kourtesis	MDES
	Matt Sellers	PCME		Bill Sweet	PCME
				Jim Watt	PCQA

R: Steve Offiler SBO1

SJ: Early Kapton Failures on AMI#2 Sensors

s most of you are aware, Production Validation of the 77PSL2-1 has een significantly impacted by failure during the Impulse test. his test runs 500K pressure cycles from 0 to 1450 psi at 2 Hz, in 21 deg. C ambient. The failure mode was leakage, caused by uptured Kapton, beginning at roughly 270K cycles. Sensors for his test were built on AMI#2 on 91-07-19.

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910822	6.0	1133	99.26	27713	HL	no	800
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910719	12.8	722	99.10	27288	AMI	yes	4000
910719	5.7	446	14.69	27713	AMI	yes	3000

w/ sw.
is switch off ??
Need NB.

Sorted by: Beta

Build dt	Beta	Theta	Rel@500K	Cup	Crimp	PreCr	OP psi
910719	12.8	722	99.10	27288	AMI	yes	4000
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✓

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TI-NHTSA 002360

[illegible] the range the [illegible] given data and [illegible], calculation of
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lease contact me for more details.

egards,
teve O.

EFF: 174-01-10

PLEASE NOTE CHANGES

SAMPLE ORDER

ORDER NO: CD91-44

REQUEST DATE: 09/11/91

CREDIT ACCOUNT: 5902

COST CENTER: 101

PRODUCT CODE: 060

CUSTOMER: FORD OF AUSTRALIA

CUSTOMER P.O. NO: 543850

TI PART NO: 77PSL2-1

CUSTOMER PART NO: F2VC-9F924-BA

QUANTITY: ~~[illegible]~~

PRICE: $22 EACH F.O.B AUSTRALIA (I.E. WE PAY FREIGHT)

DELIVERY PLEASE: NO LATER THAN 9/1/1991 ~~SHIP DATE~~ TBD

SPECIAL INSTRUCTIONS: ~~PARTS TO HAVE M10 X 1.25 THREAD~~ TBD
INCLUDE MATING CONNECTORS

BILL TO:
FORD MOTOR COMPANY OF AUSTRALIA LTD
ACCOUNTS PAYABLE DEPARTMENT
PRIVATE MAIL BAG 6
CAMPBELLFIELD, VIC. AUSTRALIA, 3061

SHIP TO:
--> SAME
THE BOULEVARD, NORLANE, GEELONG
VICTORIA, AUSTRALIA
ATT'N: BRENT FRANKS

XX PRODUCTION SAMPLES

ENGINEERING DEVELOPMENT SAMPLES

CC: ENGINEERING: STEVE OFFILER

PRODUCTION CONTROL: MARIE CROSSLAND

SALES ENGINEER: JOHN BUTLER

77PSL 2-1 w/ M10 x 1.0 Thread
Qty. 10
$22 each

Coded to Index Flats:

T I 174

Shipped mating connector pair

Shipped 11/08/91

HIGHLIGHTS

Stephen B. Offiler

Week Ending 91-09-13

FORD MY'92 ELECTRONIC SPEED CONTROL DEACTIVATE PS

VALIDATION (Truck):

One Light Truck PV device which completed 500K Impulse cycles was found to be slightly wet inside, an impending leaker. Suspicion arose that the LT devices also had shortened life, so a group of six which had finished 500K was placed back on test (with switches removed). These began to leak at 621K, and all 6 were dead by 810K. These were built at the same time as the original PC sensors, 91-07-19, on AMI. Their characteristic life is the second-worst in all of our failure testing to date.

The remainder of LT validation testing continues to progress. Parts returning from Fluid Resistance are presently undergoing Impulse. Given the results above, there is a finite chance that a LT device will become a leaker short of 500K cycles. Presently, these parts have successfully completed about 280K cycles. Other phases of the PV are ongoing, including vibration, burst, humidity, salt spray, and vacuum. If all goes well with all of these tests, we are on track to complete the ISR on time (91-09-20).

VALIDATION (Pass Car):

It was decided to attempt a rebuild of validation parts in order to get back on schedule for ISR, even though the life problem is not identified/corrected yet. Two failures turned up very early, at 73K and 91K cycles. It was discovered that these two had only two pieces of Kapton. As this test continued to progress, failures began again around 200K. These, however, had 3 pieces of Kapton. We are discovering that the third Kapton station on the AMI is not very reliable.

A second attempt at rebuild was made subsequently, this time with careful monitoring to ensure that all three Kaptons were installed. These were placed on test running in parallel with the LT Fluid Res. Impulse parts. Failures began at 248K; at this point three have failed at about 280K.

A third, two-tier attempt at a modified Impulse test for Pass Car is now underway. Each tier contains 48 devices (plus spares), such that a full lot of 24 can be run on the modified test and another 24 can be set aside for possible later use on the standard test if all goes well. One lot was built on hand-line equipment, and will be cycled on the production cyclers at the standard 1450 psi, at elevated cycle rate of 640/min, and at a near-room ambient temp. The other lot was built on AMI (hand kitted, hand-loaded on AMI crimper, bypassing precrimp) and will be cycled on Stan Homol's cycler at 800 psi, 121 C, and about 200/min. The reduced cycle pressure corresponds to a converter travel of .020" and was chosen because it corresponds with a typical system pressure encountered in a fairly heavy stop.

Parts built with modified washers to reduce converter travel (plus a control lot) amassed 581K cycles without a single failure. This test was pre-empted by the attempts at rebuilds above.

Another potential variable is suggested by the failure data to-date. Every time we build test-lots of sensors along with control lots on AMI, the parts demonstrate good life. However, all failure testing has been conducted with sensors-only, while all validation attempts have been completed devices. Although no good hypothesis exists, it seems that the presence or absence of a switch may be a factor. A test of sensors-only versus completed devices versus completed device with switches removed is suggested.

HIGHLIGHTS
Stephen B. Offiler
Week Ending 91-09-13

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-MSG N#= 371589 FR=VAGS TO=PCQA SENT=09/13/91 08:19 AM
R#=085 ST=C DIV=0050 CC=00134 BY=VAGS AT=09/13/91 08:19 AM

TO:	STEVE McCOOEY	MDES	DICK GARIEPY	MFPC
	DAVE PERIPOLI	PCNE	RUSTY STRUBLE	RCS2
	RUSS JOHNSON	STEL	RAY SMITH	MDES
	CLAIRE BALTHASAR	PSWT	WAYNE CARLSON	MDES
	LOUISE ?????????	PSWT	STEVE RODREY	MDES
	LOU CAMARA	AMSD	TOM BURKE	MFPC
	ELAINE ROSE	PCQA	GENE GRAIKO	GRAI
	JIM WATT	PCQA		
CC:	TED BREDIKIN	MFPC	JOE LABARE	JNL8
	STEVE OFFILER	SBO1	DAVE CHARN	ZARN
	ED KADISEVSKIS	MDES	MIKE DEMATTIA	PCQA
	RAY TOURANGEAU	RGT2	BILL SWEET	PCNE
	JOHN KOURTESIS	MDES		
	ANDRE CHARPENTIER	MDES		
FR:	MATT SELLERS	MJS2		

SJ: EFFECTIVITY MEETING MINUTES

NEXT MEETING IS TODAY AT 3:00PM IN BLDG. 20 FIRST FLOOR BREAK AREA. PLEASE PLAN TO ATTEND. IF YOU CANNOT MAKE IT PLEASE SEND SOMEONE TO REPRESENT YOU. WE WILL UPDATE THE FOLLOWING PRIORITY ACTIONS.

EQUIPNENT RELATED ITEMS

B.A.M.

TERMINAL STAKER BACKUP TOOLS. RUSS IS WORKING ON FABRICATING ANOTHER SET FOR BOTH STATIONS.	RUSS
OUT OF NEST PROBE NEEDS TO BE PROGRAMMED TO DETECT THIS CONDITION THAT LEADS TO TABLE OVERLOADS.	STEVE N.
REPAIR CALIBRATOR-CHECK STATION LVDT BRACKETS. ALSO LOCKTIGHT LVDT CORE PINS.	STEVE N.
MOVABLE TERMINAL PICK AND PLACE PROBLEMS. ALIGNMENT INTERFERENCE CAUSING JAMS.	RUSS
NO-CONTACT SENSOR. CHOICE BETWEEN ADDING SHIFT REGISTERS ON ANI CUT-OFF STATION OR SPRING CUT-OFF ON E.A. MACHINE.	STEVE N.
WORK OUT PHANTOM DATA BUGS IN REPORT GENERATION.	WAYNE
SHORT TERN WORK TO OPTIMIZE CAL-CHECK YIELDS WITHIN CURRENT SYSTEM WEIGHTS AND SPEEDS.	MATT
EXPERIMENTATION WITH CALIBRATOR/MOTOR SPEED TO EVALUATE SOURCES OF SPRING BACK INCONSISTENCY	MATT/WAYNE STEVE R.
REVIEW METHODS TO HIGH SPEED FILM CAL-CHK STATIONS	

DURING ACTION. ALIGNMENT CONSIDERATIONS.	MATT/WAYNE STEVE R.
IMPROVEMENTS TO SCREEN INFORMATION/PRINT OUT DURING MACHINE START-UP.	WAYNE
OVERHEAD MONITORS FOR B.A.M. AND F.A.M.	STEVE M.
SEPARATE MEETING TO REVIEW SPARE PARTS ORDERING	TEAM
E.A. MACHINE (S.M. SPECIAL)	
ORDER SPARE DRIVERS TO SUPPORT EFFECTIVITY RUNS	STEVE M.
TRACK-JAM IMPROVEMENTS TO ELIMINATE RIVET FEED PROBLEMS	STEVE M.
CORRECTIONS TO TRACK BETWEEN CONTACT INSERTION AND ORBITAL RIVETING STATIONS.	STEVE M.
AUTOMATE ON-OFF CYCLE OF E.A. MACHINE	STEVE M.
ERROR CODE DISPLAY ON B.A.M. MACHINE SCREEN	STEVE M.
F.A.M.	
HENDRICKS FIX OF ALUMINUM RING FEEDER LINEAR TRACK. PARTS WILL NOT FEED TO TARGET AREA	STEVE M.
SEAL LOADER UPGRADES. NEED TO ESTABLISH A PLAN FOR IMPROVEMENT.	STEVE M.
UNLOAD STATION DEBUGS. LACK OF GRIP	RUSS/LOU
DEVICE/PART RELATED ITEMS	
ESTABLISH ALL SPC CONTROL CHARTS	MATT
BRING TO BLDG 20 DIAL IND. AND TORQUE WRENCH	CLAIRE/ LOUISE
DEDICATE MANUFACTURING RESOURCES TO PROCESS DISC LOT PILOTING NEXT WEEK. TOM BURKE/DICK G. INVOLVEMENT REQUIRED	CLAIRE
COMPLETE BUILD OF CURRENTLY APPROVED SENSOR LOTS	CLAIRE/ LOUISE
CODE SUFFICIENT ALUMINUM RINGS TO SUPPORT ALL APPROVED PILOTS. EXTERNAL SET-UP SYSTEM REQUIRED	DAVE
PACKAGING REQUIREMENTS FOR FINISHED GOODS. 77PSL2-1 AND 77PSL2-3.	RUSTY
Q.C. AUDIT REQUIREMENTS TO ALLOW FINAL PACKING	JIM/ELAINE

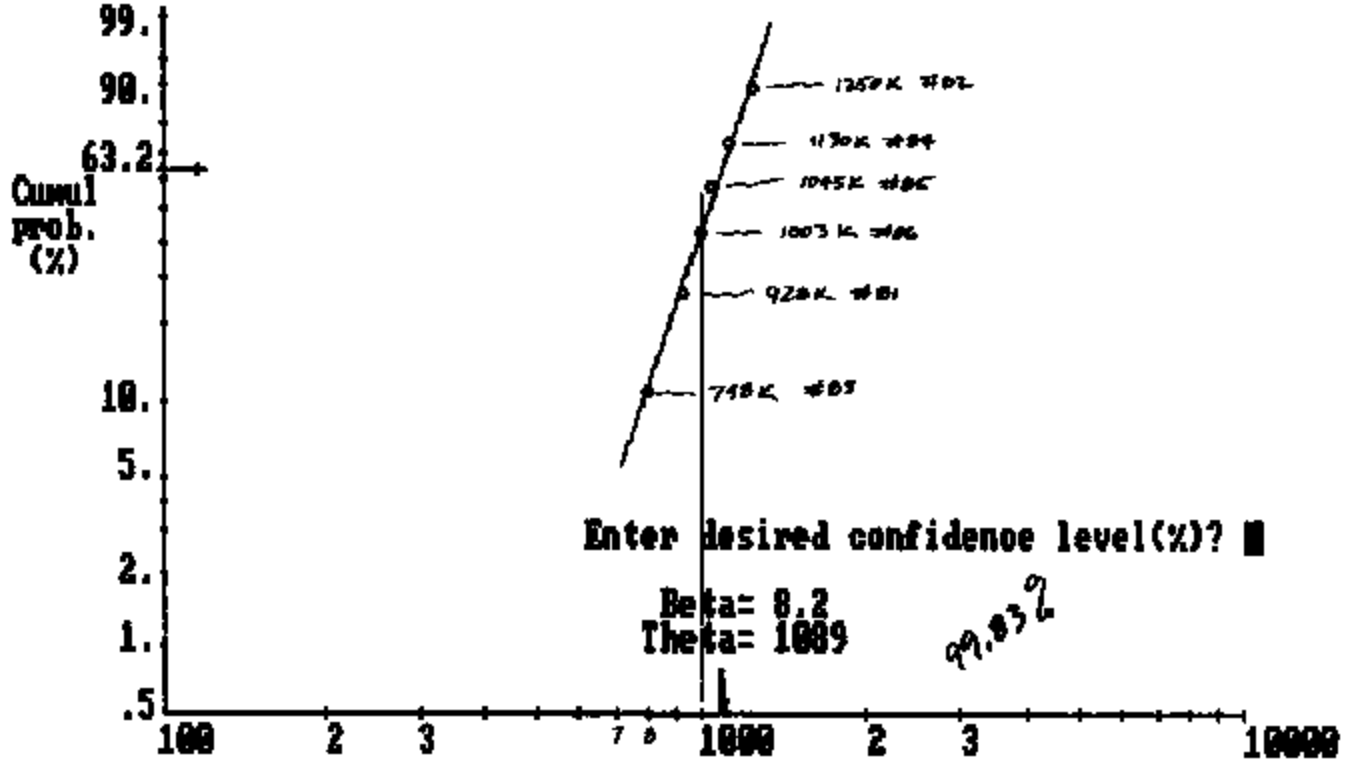
MATERIAL STATUS OF ALL 77PS COMPONENTS	*RUSTY*
MODIFICATIONS TO FORCE GAGE TO TEST BENT ARMS	*DAVE*
CUSTOMIZE SURPLUS TEST STATION TO ALLOW OFF-LINE BASE GAGING	*DAVE*
INSTALL LINK #'S FOR LABOR ENTRY	*MATT*
ENSURE ALL REQUIRED PREPARATIONS ARE MADE TO ALLOW FACILITIES TO TRANSFER EQUIPMENT BEGINNING 9/30	*STEVE M.*
EQUIPMENT TRANSFER TO BEGIN 9/30/91	*GENE GRAIKO*

REGARDS . . . MATT
X1245

PASS-CAR VALIDATION PARTS

BUILD DT 910913, HAND-LINE

W/ SWITCHES. TEST 160

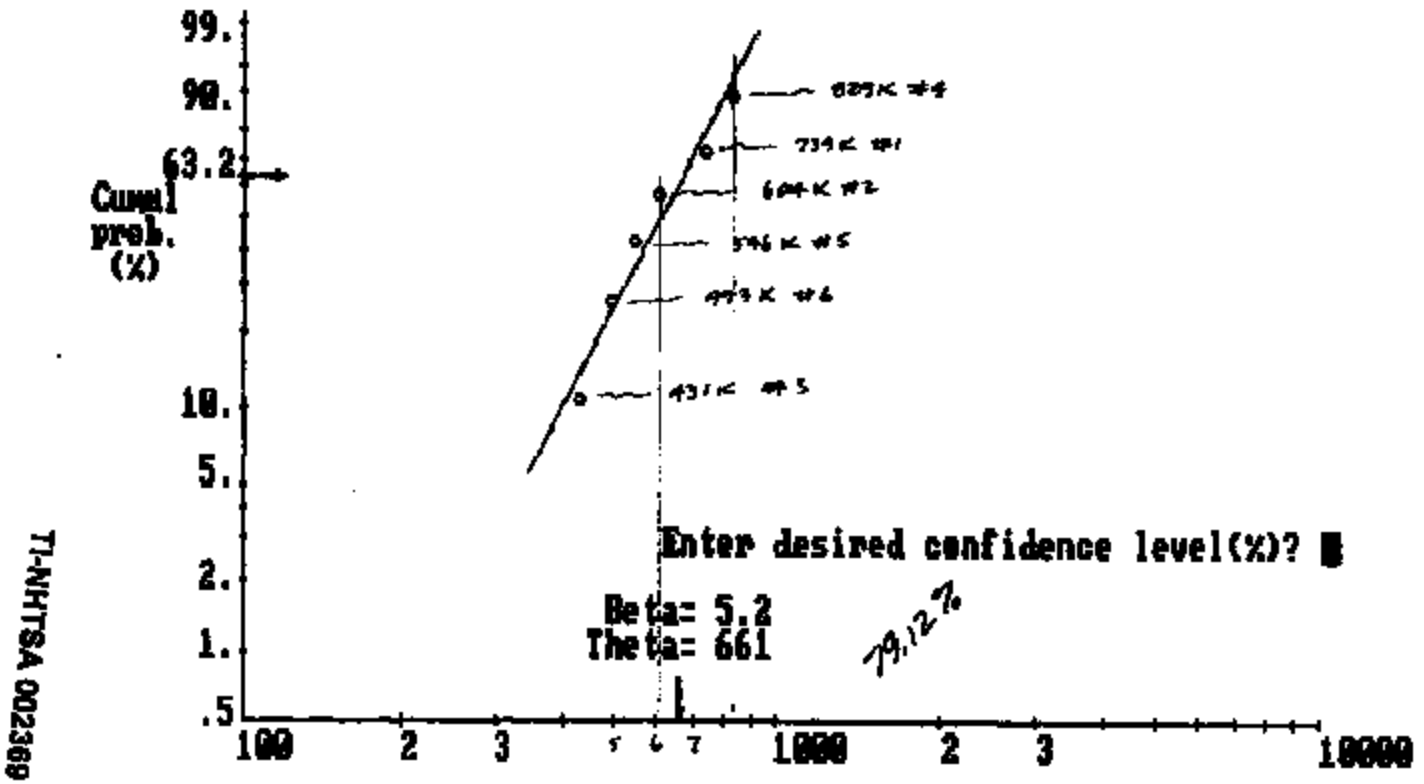


VALIDATION ATTEMPT BUILT ON AMI;
CYCLED ON ROD. + STAN'S

TEST 165

BLD 0T 910913

80
911005



TI-NHTSA 002369

-MSG M#= 403240 FM=CEARN TO=PCQA SENT=09/14/91 12:00 PM
R#=119 ST=C DIV=0050 CC=00101 BY=CEARN AT=09/14/91 12:00 PM

SEPTEMBER 14, 1991

TO:	RUSTY STRUBLE	RCS2	CC:	TOM CHARBONEAU	TC
	MIKE DeMATTIA	PCQA		JOHN KOURTESIS	MDES
	CHARLIE DOUGLAS	CPPC		STEVE MAJOR	WHLS
	DICK GARIEPY	MFPC		ANDY McGUIRK	PCQA
	PAUL KOTCH	PRK1		ED O'NEILL	EJON
	JOE LAZARZ	JML8		JOE SCHUCK	WHLS
	STEVE OFFILER	SBO1		GARY SNYDER	CPPC
	MATT SELLERS	PCME		MARTHA SULLIVAN	CPPC
	BILL SWEET	PCME		RAY TOURANGEAU	PCME
	JIM WATT	PCQA		BILL CONGDON	MFPC
	TOM BURKE	MFPC		~~SUSPE MCCOOEY~~	MDES
	CLAIRE BALTHAZAR	PSNT		ELAINE ROSE	PCQA
	TERRY RODRIGUEZ	MFPC			

FR: DAVE CEARN EARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING

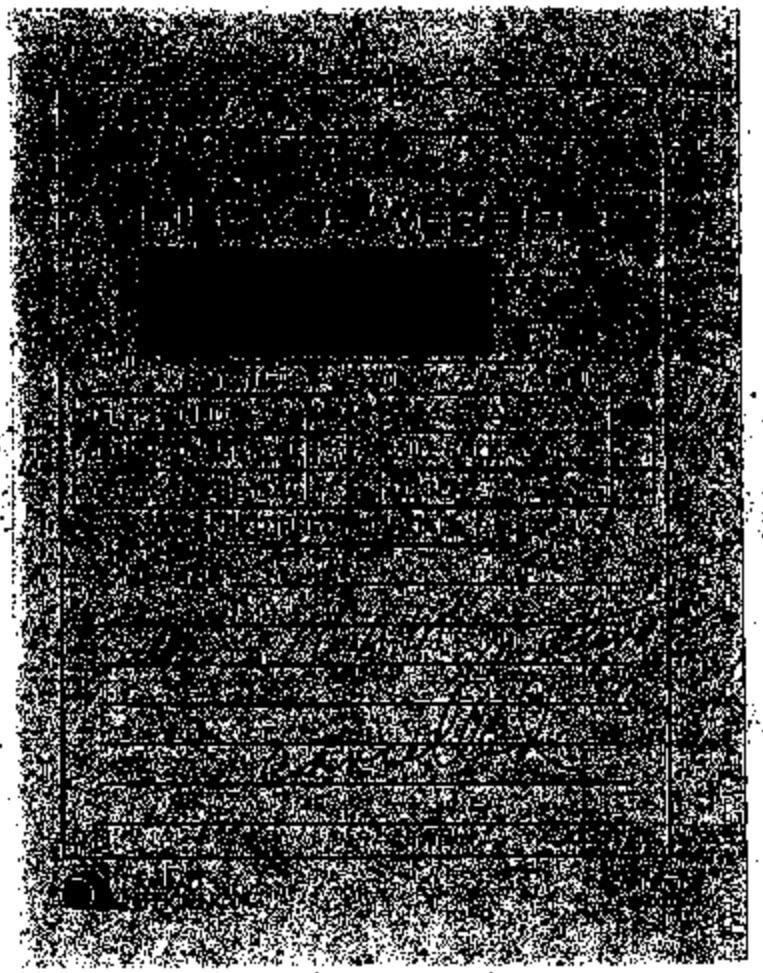
MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 09/19 (THURSDAY)
TIME: 10:00 - 11:30 AM
PLACE: MARKETING CONFERENCE ROOM

PLEASE REVIEW THE MINUTES OF THE 09/05 MEETING FOR ACTIONS.

REGARDS,
DAVE CEARN



.SG M#= 196209 FR=CSRN TO=PCQA SENT=09/06/91 02:09 PM
R#=078 ST=C DIV=0050 CC=00101 BY=CSRN AT=09/06/91 02:09 PM

cc: Bob Kelly
Fyi/Rec

SEPTEMBER 6, 1991

TO:	RUSTY STRUBLE	RCS2	CC:	TOM CHARBONNEAU	TC
	MIKE DeMATTIA	PCQA		JOHN KOURTESIS	MDES
	CHARLIE DOUGLAS	CPPC		STEVE MAJOR	WHLS
	DICK GARIEPY	MFPC		ANDY McGUIRK	PCQA
	PAUL KOTCH	PRK1		ED O'NEILL	EJON
	JOE LAZARS	JML8		JOE SCHUCK	WHLS
	STEVE OFFILER	SBO1		GARY SNYDER	CPPC
	MATT SELLERS	PCME		MARTHA SULLIVAN	CPPC
	BILL SWEET	PCME		RAY TOURANGEAU	PCME
	JIM WATT	PCQA		BILL CONGDON	MFPC
	TOM BURKE	MFPC		STEVE MCCOOEY	MDES
	CLAIRE BALTHAZAR	PSWT		ELAINE ROSE	PCQA
	TERRY RODRIGUES	MFPC			

FR: DAVE CSARN SARN

SJ: FORD CRUISE CONTROL PRESSURE SWITCH START-UP MEETING:
09/05/91 MEETING MINUTES

MEETING

THE NEXT MEETING IS SCHEDULED FOR:

DATE: 09/12 (THURSDAY)
TIME: 10:00 - 11:30 AM
PLACE: MARKETING CONFERENCE ROOM

PLEASE CALL ME IF YOU ARE NOT ABLE TO ATTEND

* = ITEMS THAT ARE NEW OR HAVE BEEN REVISED OR COMPLETED SINCE PREVIOUS MEETING

57 L/T (L5-2)	WHO	WHEN	
Hexport:			
. REPORT ON ELCO ISSUES FROM 7/22 VISIT - 10B21 STEEL/.00015" MIN. PLATE/J512 $/ THREAD CHAMF. ANGLE/THREAD CAP	KOTCH	ONGOING	
* REVISED HEXPORT PRINT W/ RADIUS ON DOGPOINT DIAMETER	OFFILER	07/11 09/12	ORIG. REV.
* ORDER 5K 10B21 HEXPORTS	CSARN	09/05 09/05	ORIG. COMP.
57 P/C (L5-3)			
Environmental Seal:			
. RECEIVE BLUE P/C GASKETS	SELLERS	TBD	
* DEFINE GAGING TORQUE SPEC W/WEATHERHEAD & K-H	MATT	09/05 09/12	ORIG. REV.
77P8			
. PROD. LINE SET-UP (RTE CARDS, ETC)	BALTHAZAR	ONGOING	
. UPDATE PRODUCTION PLANS FOR ALL SWITCHES	DOUGLAS	ONGOING	
. REPORT ON WEEKLY MFG. START-UP MTGS.	SELLERS	ONGOING	

* PRIORITIZE CLAIRE'S/TERRY'S TIME FOR MFG. START-UP ITEMS	GARIEPY	08/29 09/05 09/05	ORIG. REV. COMP.
. COMPLETE DESIGN FMEA	OFFILER	04/18 09/06	ORIG. REV.
. COMPLETE PROCESS FMEA	SELLERS	07/01 09/06	ORIG. REV.
. IS CALIBRATION ACCURACY ACCEPTABLE W.R.T. DEVICE PERFORM. AND MFG. YLDS ?	OFFILER/ SELLERS	08/08 09/12	ORIG. REV.
* COMPLETE B.A.M. STAKER MODIFICATION	SELLERS/ MCCOOEY	07/31 09/12	ORIG. REV.
* GAGE R&R STUDIES	WATT	07/15 09/12	ORIG. REV.
* UPDATE PARTS LISTS TO ADD AMI-PRODUCED SPACER AS ALTERNATE	OFFILER	10/10	
PV Testing/ISR:			
. COMPLETE TESTING AND REPORT	OFFILER	09/16 09/20	ORIG. REV.
* RECOVERY PLAN FOR P/C	CHARN	09/05 09/05	ORIG. COMP.
. FAI ON 6 L/T AND 6 P/C SWITCHES	WATT	09/12	
. PROVIDE PROCESS INFO FOR FAI	SELLERS	09/12	
. COMPLETE ISR PACKAGE FOR (9/20) DELIVERY	WATT	09/19	
Manufacturing Equipment:			
. B.A.M. DEBUG COMPLETION	SELLERS/ KOURTESIS	09/12	
* B.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/09	ORIG. REV.
* F.A.M. EFFECTIVITY RUN #1	SELLERS	07/03 09/09	ORIG. REV.
* EQUIP. MOVE TO B12	SELLERS	09/12 09/30	ORIG. REV.
Miscellaneous:			
* IDENTIFY SWITCH MOUNTING LOCATIONS & SIZE REQMTS FOR FUTURE PLATFORMS	SCHUCK	10/10	
. 57 TO 77 CONVERSION: PHASE 1 TESTING	HOMOL	05/30 09/--	ORIG. REV.

DISCUSSION

PRODUCTION PLAN HAS BEEN UPDATED; SEE BELOW.

THE HAND LINE WILL BE USED FOR BUILDING P/C SENSORS (57L5-3, 77L2-1) UNTIL A TBD TIME. SWITCHOVER TO AMI SENSORS WILL BE DETERMINED BY TEST RESULTS OVER THE NEXT COUPLE OF WEEKS.

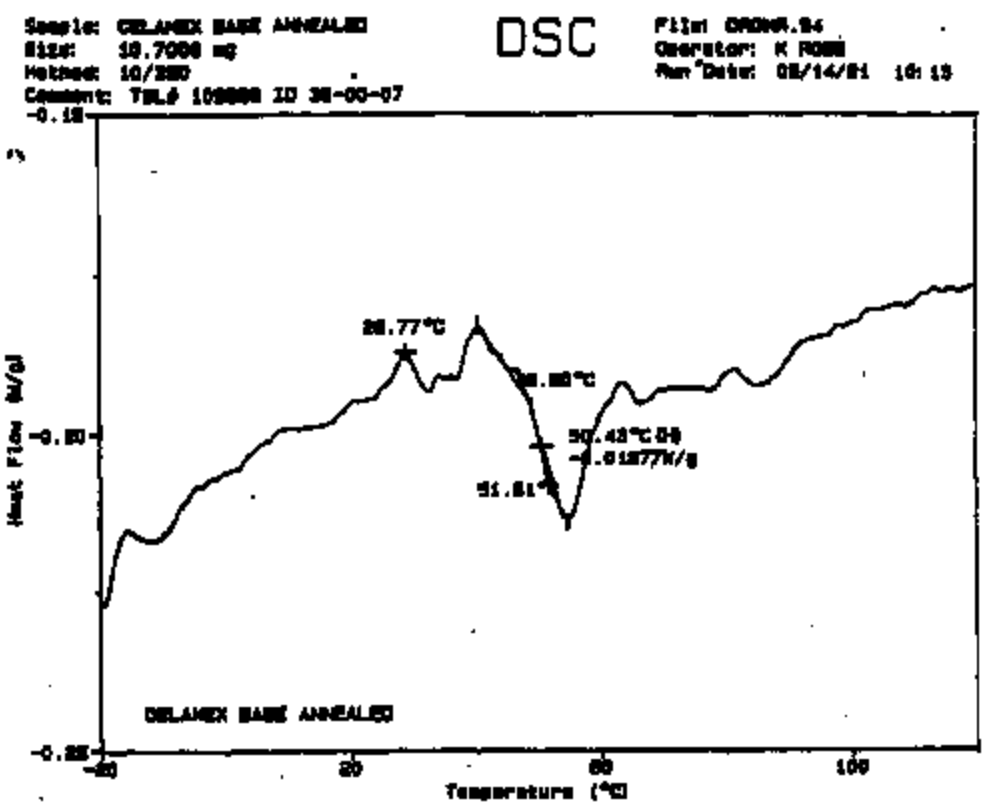
A SECOND LOT OF STANDARD P/C 77'S YIELDED SIGNIFICANTLY IMPROVED DIAPHRAGM LIFE OVER THE ORIGINAL VALIDATION PARTS; 99.77% RELIABILITY @ RATED LIFE vs. 14.69% THEREFORE, 24 P/C SWITCHES - WITH AMI BUILD SENSORS - WILL BE IMPULSE TESTED AS A FOLLOW UP TO THE PV TEST FAILURES. IF SUCCESSFUL, WE WILL BE ABLE TO COMPLETE ISR SUBMITTAL ON BOTH L/T AND P/C SWITCHES ON 9/20. AS A TOP PRIORITY, WE WILL CONTINUE TESTING TO UNDERSTAND AND IMPROVE UPON THE FACTORS INFLUENCING DIAPHRAGM LIFE.

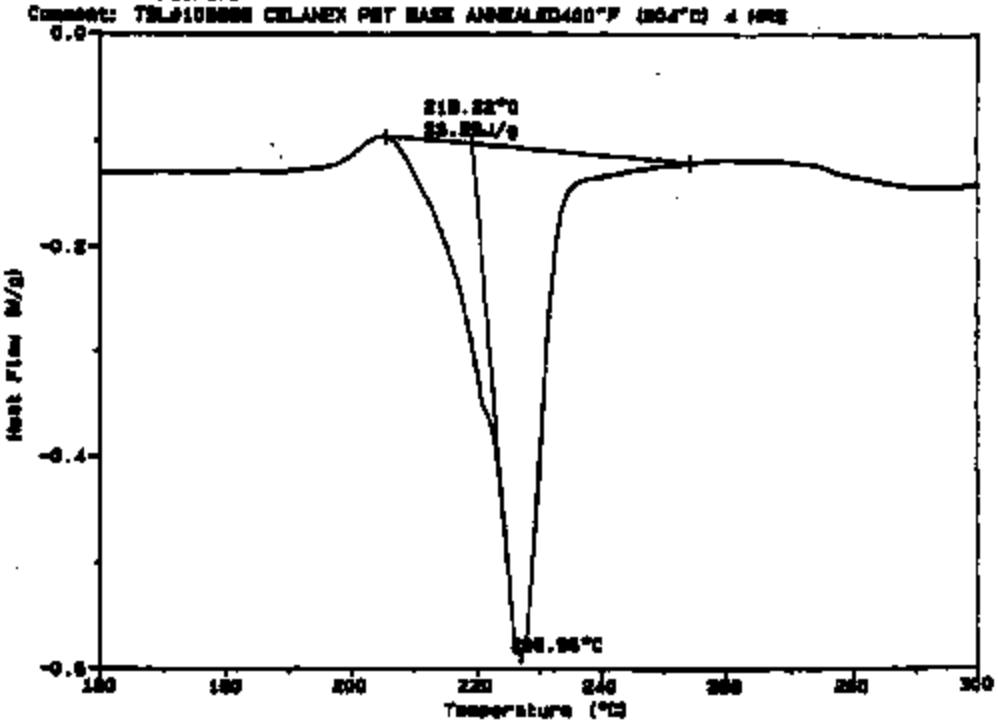
MILESTONES	PLANNED	ACTUAL
57 L/T ISIR	11/21/90	11/21/90
57 L/T JOB 1	09/03/91	
57 P/C ISIR	01/15/91	01/15/91
57 P/C JOB 1	06/03/91	
77PS ISIR	09/01/91 ORIG.	
	09/20/91 REV.	
77PS SOP (TI)est.	08/91	

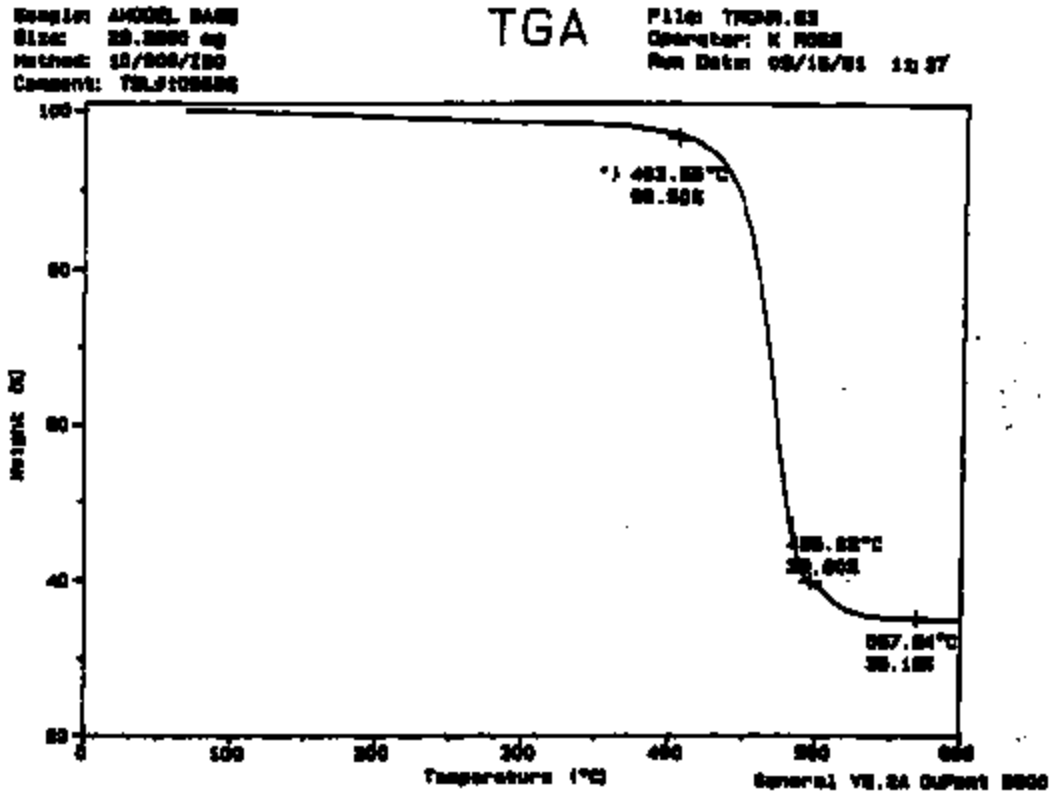
PRODUCTION PLAN BY MONTH (THOUSANDS)

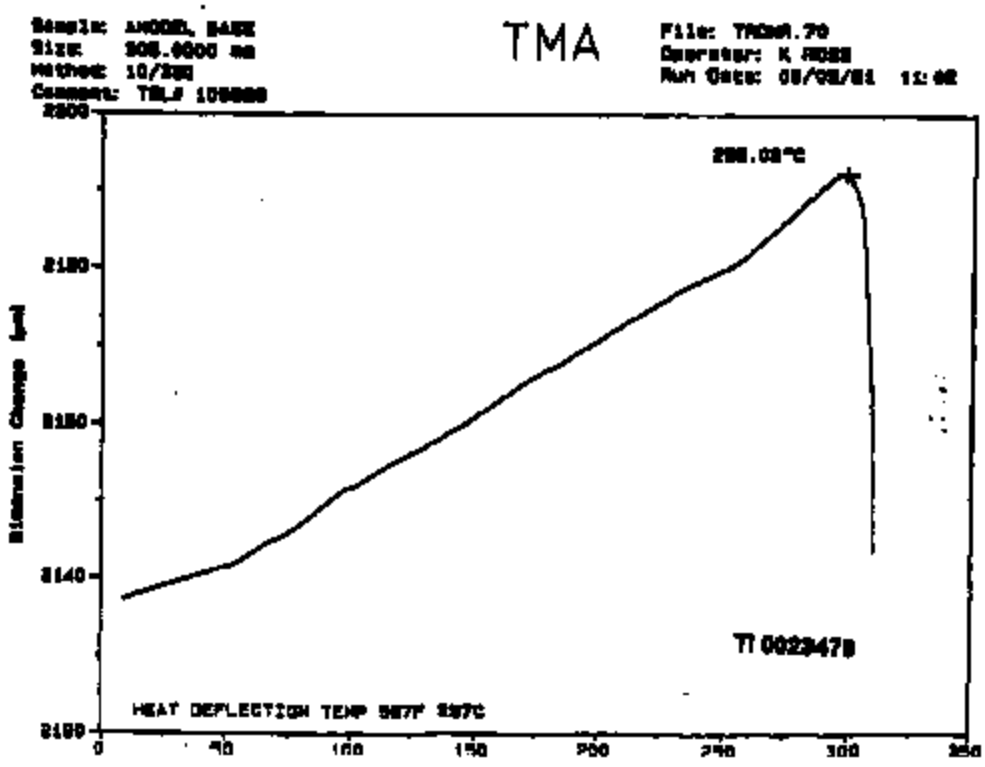
	P/C 57PSL5-3	L/T 57PSL5-2	P/C 77PSL2-1	L/T 77PSL2-3
APR	0	0	0	0
MAY	2 (COMP.)	2	0	0
JUN	0	0	0	0
JUL	0	2.3	0	0
AUG	0	2.3	0	0
SEP	25	9.3	15	12.4
equipment move to B12 starting last week of September				
OCT	0	7	0	0
NOV	0	0	25	13
DEC	0	0	25	13

REGARDS,
DAVE CHARN \37-FORD


Sample: CELANEX BASE ANNEALED
Size: 10.7000 mg
Method: 10/280
Comment: TSL# 108888 ID 38-00-07
DSC
File: CRDNR.94
Operator: K ROSS
Run Date: 08/14/01 16:13
-0.15
-0.80
-0.85
Heat Flow W/g
38.77°C
51.81°C
CELANEX BASE ANNEALED
-40
20
80
100
Temperature (°C)


Comment: TSL#108888 CELANEX PET BASE ANNEALED400°F (204°C) 4 HRS
0.0
-0.4
-0.8
Heat Flow W/g
219.22°C
-0.96°C
160
180
200
220
240
260
280
300
Temperature (°C)


TGA
100
80
60
40
20
0
100
200
300
400
500
600
Temperature (°C)

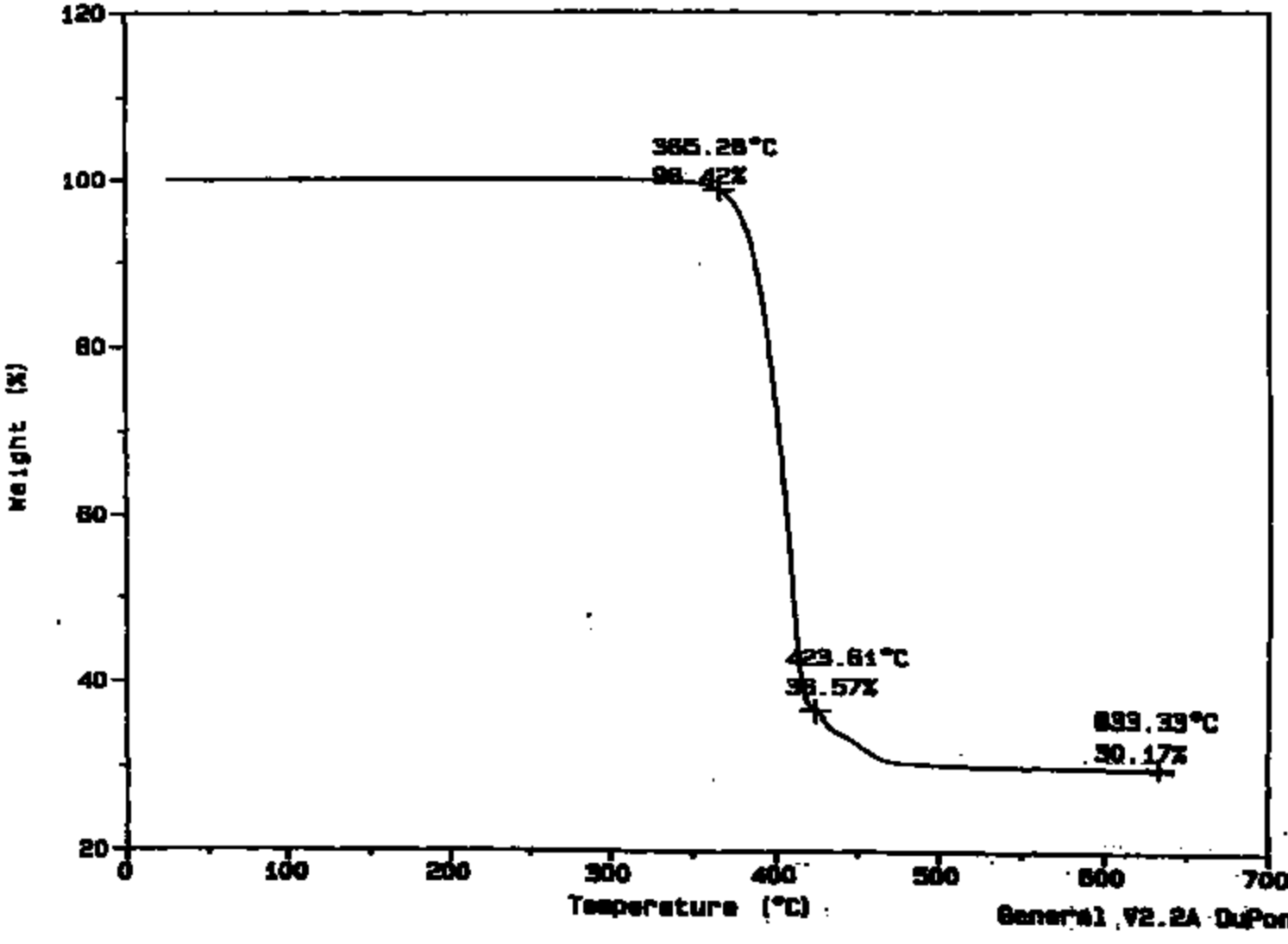

TMA
2200
2180
2160
2140
2120
0
50
100
150
200
250
300
350
Dimension Change (µm)
HEAT DEFLECTION TEMP 567F 297C

TI 0023478

Sample: CELANEX BASE
Size: 24.7630 mg
Method: 10/900/ISO
Comment: TSL#109886

TGA

File: TRONR.84
Operator: K ROSS
Run Date: 09/16/91 14:36



General V2.2A DuPont 9900

TI-NHTSA 002377

9-16-91

Pilot Makers / Mfg. Personnel

Lot 5715-2 / 5715-3 p/c
7712-2 / 7712-1

After assembly + pressure testing of 30 pc. pilot:

9 of these devices must go to QC for pre qual testing.

Sensor assembly must wait until QC accepts disc Lot #.

Note: Box of discs will be stamped Acc/Rej.

Elaine Rose

-MSG M#= 431861 FR=VAGS TO=PCQA SENT=09/16/91 01:28 PM
R#=154 ST=C DIV=0050 CC=00134 BY=VAGS AT=09/16/91 01:28 PM

TO:	STEVE McCOOEY	MDES	DICK GARIEPY	MFPC
	DAVE PERIPOLI	PCME	RUSTY STRUBLE	RCS2
	RUSS JOHNSON	STEL	RAY SMITH	MDES
	CLAIRE BALTHASAR	PSWT	WAYNE CARLSON	MDES
	LOUISE ?????????	PSWT	STEVE RODKEY	MDES
	LOU CAMARA	AMSD	TOM BURKE	MFPC
	ELAINE ROSE	PCQA	GENE GRAIKO	GRAI
	JIM WATT	PCQA	ED SMITH	PCQA
CC:	TED BREDIKIN	MFPC	JOE LASARE	JML8
	STEVE OFFILER	SBO1	DAVE CHARN	HARN
	ED KADISEVSKIS	MDES	MIKE DEMATTIA	PCQA
	RAY TOURANGEAU	RGT2	BILL SWEET	PCME
	JOHN KOURTESIS	MDES		
	ANDRE CHARPENTIER	MDES		
FR:	MATT SELLERS	MJS2		

SJ: EFFECTIVITY MEETING MINUTES

NEXT MEETING IS MONDAY 9/16 AT 3:00PM IN BLDG. 20 FIRST FLOOR BREAK AREA. PLEASE PLAN TO ATTEND. IF YOU CANNOT MAKE IT PLEASE SEND SOMEONE TO REPRESENT YOU. WE WILL UPDATE THE FOLLOWING PRIORITY ACTIONS.

EQUIPMENT RELATED ITEMS

B.A.M.

TERMINAL STAKER BACKUP TOOLS. UPPER ANVIL BACK-UPS ARE COMPLETE. MATERIAL ORDERED FOR BOTTOM TOOL TO ARRIVE NEXT WEEK. RUSS WILL THEN FAB BACK-UP BOTTOMS LESS THE CHANNEL SLOTS. — RUSS

OUT OF NEST PROBE NEEDS TO BE PROGRAMMED TO DETECT THIS CONDITION THAT LEADS TO TABLE OVERLOADS. — STEVE R.

REPAIR CALIBRATOR-CHECK STATION LVDT BRACKETS. ALSO LOCKTIGHT LVDT CORE PINS. — COMPLETE

MOVABLE TERMINAL PICK AND PLACE PROBLEMS. ALIGNMENT INTERFERENCE CAUSING JAMS. WILL BE LOOKED AT SATURDAY. A.M. — RUSS

NO-CONTACT SENSOR. SEEMS THE BEST APPROACH IS TO CUT-OFF BAD SPRINGS ON EASTERN AUTO. THEN SENSE MISSING SPRING AT THE AMI CUT-OFF STATION AND DOUBLE INDEX TO REMOVE. NEED STEVE RODKEY TO EVALUATE/IMPLEMENT. — STEVE R.

WORK OUT PHANTOM DATA BUGS IN REPORT GENERATION.. SEE MATT TO REVIEW DATA COLLECTIONS. — STEVE R.

SHORT TERM WORK TO OPTIMIZE CAL-CHECK YIELDS WITHIN CURRENT SYSTEM WEIGHTS AND SPEEDS. — COMPLETE

EXPERIMENTATION WITH CALIBRATOR/MOTOR SPEED TO EVALUATE SOURCES OF SPRING BACK INCONSISTENCY	MATT/WAYNE STEVE R.
REVIEW METHODS TO HIGH SPEED FILM CAL-CHK STATIONS DURING ACTION. ALIGNMENT CONSIDERATIONS.	MATT/WAYNE STEVE R.
IMPROVEMENTS TO SCREEN INFORMATION/PRINT OUT DURING MACHINE START-UP.	COMPLETE
OVERHEAD MONITORS FOR B.A.M. AND F.A.M.	STEVE M.
SEPARATE MEETING TO REVIEW SPARE PARTS ORDERING	TEAM
WORK TO BE DONE ON STATIONS 4 & 10 TERMINAL PRESENCE SENSORS. .025" DISCRIMINATION COMBINED WITH MICROSWITCH MUSHROOMING, ETC. LEADS TO CALLING GOOD PRODUCT BAD.	STEVE M.

B.A. MACHINE (S.M. SPECIAL)

ORDER SPARE DRIVERS TO SUPPORT EFFECTIVITY RUNS	STEVE M.
TRACK-JAW IMPROVEMENTS TO ELIMINATE RIVET FEED PROBLEMS	STEVE M.
CORRECTIONS TO TRACK BETWEEN CONTACT INSERTION AND ORBITAL RIVETING STATIONS.	COMPLETE
AUTOMATE ON-OFF CYCLE OF B.A. MACHINE. NEED SYSTEM DEVELOPED AND IMPLEMENTED ASAP.	STEVE M.
ERROR CODE DISPLAY ON B.A.M. MACHINE SCREEN. LOU TO COMPLETE BY 9/16.	LOU

F.A.M.

RING BOWL CURRENTLY RUNS ALL THE TIME. LEADS TO JAMS IN THE BOWL. JOHN K. INDICATES WE WILL SEND THE LINEAR TRACK ASS'Y TO HENDRICKS OVERNIGHT WHEN THE EQUIPMENT IS TRANSFERRED. THERE IS A DANGER OF DELAYING RE-START OF THE EQUIPMENT ONCE IT'S IN BLDG. 12. NEEDS FURTHER PLANNING FROM MECH.	STEVE M.
SEAL LOADER UPGRADES. NEED TO ESTABLISH A PLAN FOR IMPROVEMENT.	STEVE M.
JAW RE-DESIGN OF UNLOAD STATIONS NECESSARY. LACK OF HOLDING POWER IS THE PROBLEM. LOU/RUSS ARE WORKING ON A JAW RE-DESIGN.	RUSS/LOU
F.A.M. SOFTWARE STILL NOT COMPLETE. LOU TO FINISH BY 9/17. ALSO, A PRINTER NEEDS TO BE SET-UP.	LOU

DEVICE/PART RELATED ITEMS

COORDINATE ALL MANUFACTURING RELATED ITEMS. OPERATOR FOR PRESSURE TESTER, MATERIAL KITTING, MATERIAL MOVEMENTS, PACKING, ETC. . . .	DICK G.
ESTABLISH ALL SPC CONTROL CHARTS	COMPLETE
BRING TO BLDG 20 DIAL IND. AND TORQUE WRENCH	LOUISE
SUE, FROM 57PS, WILL BE OUR DEDICATED PILOT MAKER NEXT WEEK. TOM BURKE WILL COORDINATE SUE'S TIME TO COMPLETE PILOTS TIMELY.	TOM
PILOT ALL LIGHT TRUCK DISC LOTS ON TOM BURKE'S DESK BY 9/17/91.	SUE
CODE ALUMINUM CRIMP RINGS AS REQUIRED.	SUE/ DAVE
COMPLETE BUILD OF CURRENTLY APPROVED SENSOR LOTS	LOUISE
CODE SUFFICIENT ALUMINUM RINGS TO SUPPORT ALL APPROVED PILOTS. EXTERNAL SET-UP SYSTEM REQUIRED	DAVE
Q.C. AUDIT REQUIREMENTS TO ALLOW FINAL PACKING. JIM SAY'S ED SMITH WILL CORR. NEED TO TEST EACH LOT FOR DISC CRACKING.	JIM/ELAINE
MATERIAL STATUS OF ALL 77PS COMPONENTS. NEED ON HAND 20K EACH BASE IMMEDIATELY. ALSO NEED DELIVERY OF ADDITIONAL 30K MOVABLE TERMINALS.	RUSTY
MODIFICATIONS TO FORCE GAGE TO TEST BENT ARMS	DAVE
CUSTOMIZE SURPLUS TEST STATION TO ALLOW OFF-LINE BASE GAGING	DAVE
MODIFICATIONS TO Q.C. PRESSURE TESTER. JIM WATT WORKING WITH BOB ROBICHAUD.	
INSTALL LINK #'S FOR LABOR ENTRY	MATT
ENSURE ALL REQUIRED PREPARATIONS ARE MADE TO ALLOW FACILITIES TO TRANSFER EQUIPMENT BEGINNING 9/30	STEVE M.
EQUIPMENT TRANSFER TO BEGIN 9/30/91	GENE GRAIKO

REGARDS . . . MATT
X1245

SEPTEMBER 17, 1991

TO: ANDY MCKENNA
RON RUGGIERI

CC: HANK GRIFFIN

FROM: KAREN ROSS

RE: DSC,TGA TESTING TSL # 109886

WE RECEIVED 5 SAMPLES OF DIFFERENT RESINS IN BOTH THE MOLDED AND PRE-MOLDED FORMS, ALONG WITH 2 SAMPLES OF BASES WHICH WERE ANNEALED. DSC, TGA, AND TMA TESTS WERE PERFORMED ON THEM (ATTACHED). FURTHER DISCUSSION WILL BE NECESSARY IN ORDER TO FULLY UNDERSTAND THE RESULTS.

REGARDS,

KAREN ROSS

SAMPLE #1

NORYL GTX830
POLYPHENYLENE OXIDE (PPO)
G.E. PLASTICS 413-448-6341

STANYL
4/6 NYLON
DSM ENGINEERING PLASTICS
213-320-4[illegible]

MINDEL B322
POLYSULFONE MODIFIED
AMOCO PERFORMANCE PRODUCTS
800-621-4557

AMODEL 1133HS
POLYPHTHALAMIDE (PPA)
AMOCO PERFORMANCE PRODUCTS

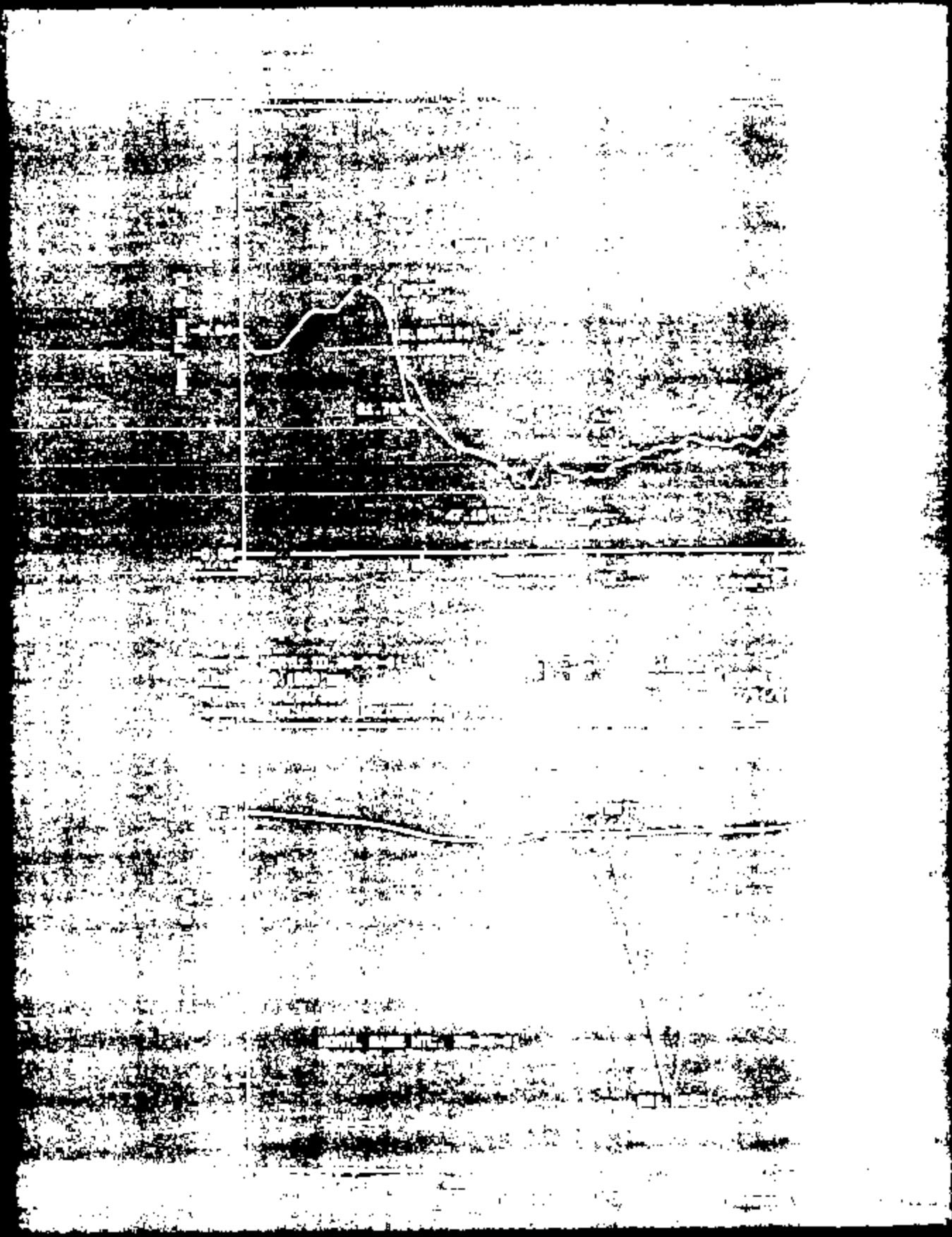
CELANEX 2500
POLYBUTYLENE TEREPHTHALATE
1908-23[illegible]

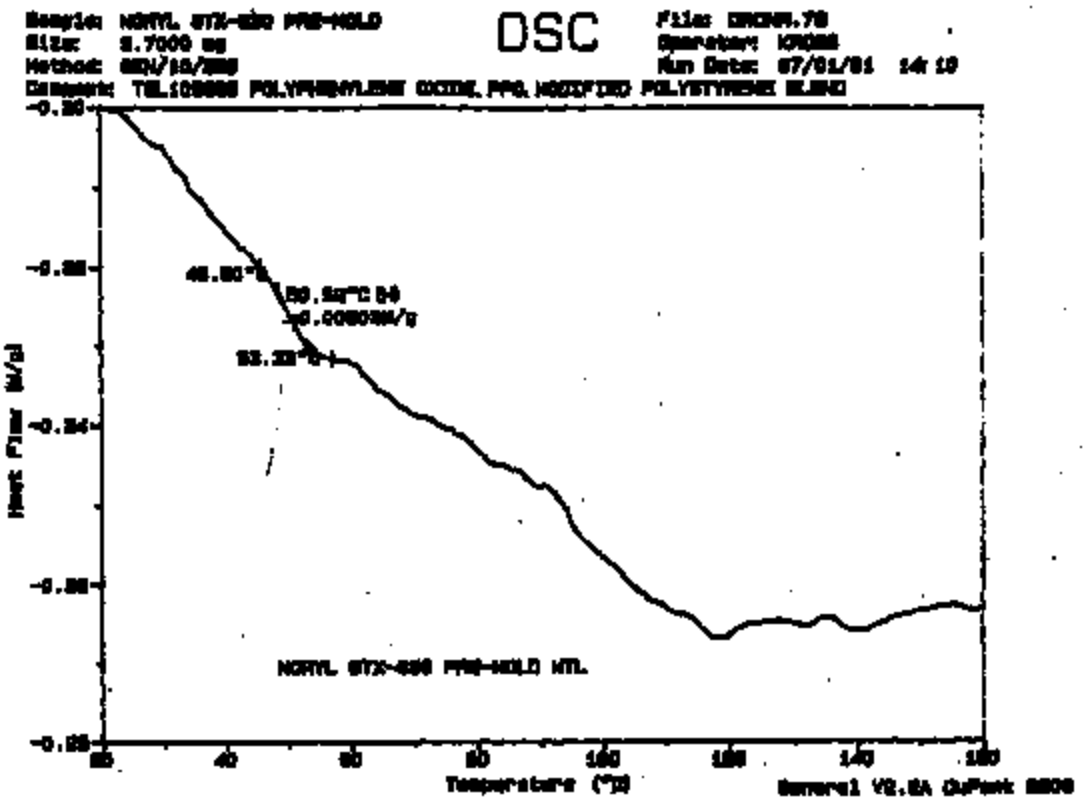
TEST RESULTS

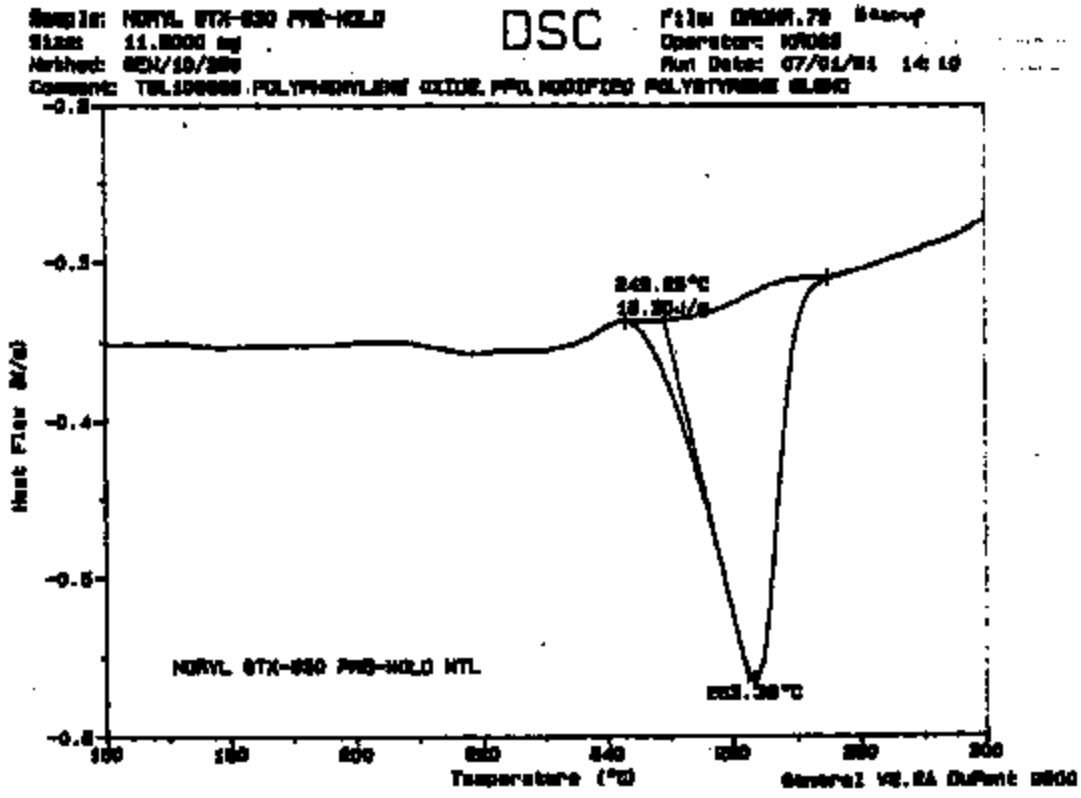
CELANEX BASE	Tg 49.48	78.92
	49.27	79.62
	Tm 227^C	
	HDT 219^C	
	30.17 % GLASS	
CELANEX PRE-MOLD	Tg 50.4	69.01
	Tm 227^C	
CELANEX BASE	Tg 51^C	
	Tm 226^C	
	HDT 218	
	29.77 % GLASS	

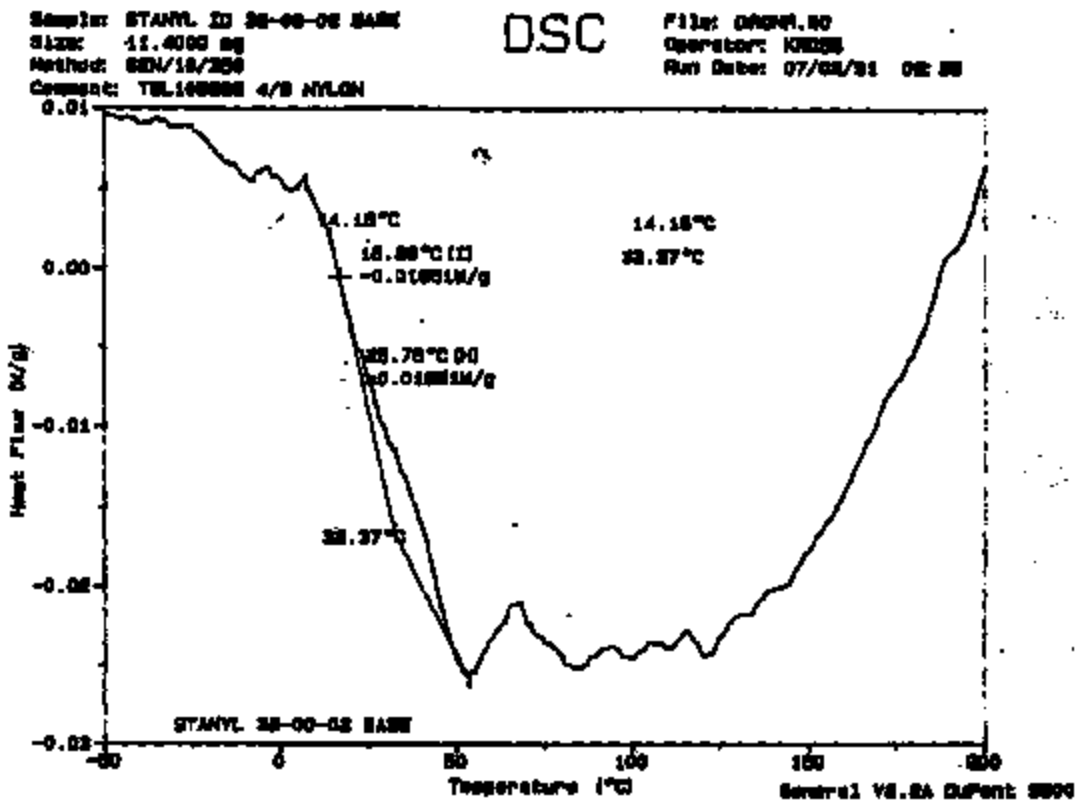
TEST RESULTS

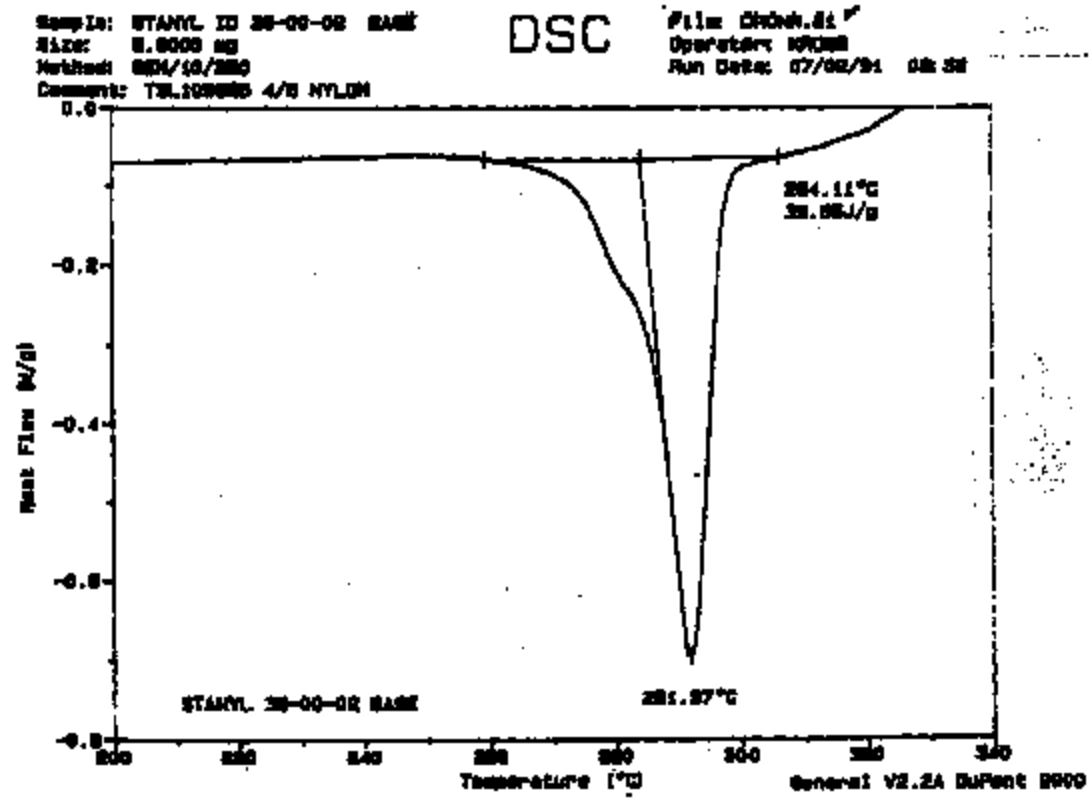
NORYL BASE	Tg 18.80^C 49.10 Tm 262^C 29.31 % GLASS HDT 1[illegible]^C
NORYL PRE-MOLD	Tg 50.92^C Tm 253^C HDT 285^C
STANYL BASE	Tg 16.86 25.78 Tm 292^C 31.46 % GLASS
STANYL PRE-MOLD	Tg 16.98^C 32.90^C Tm 292^C 27.64 % GLASS
MINDEL BASE	EXOTHERM 9.37 86.65 117.95 Tm 333^C HDT 233.13
MINDEL PRE-MOLD	Tg 16.11 80.82 EXO 124.35 Tm 252^C
AMODEL BASE	Tg 15.45 50.97 80.93 EXO 116.65 150.13 Tm 310^C HDT 298^C 35.16 % GLASS
AMODEL BASE ANNEALED	Tg 9.43 66.28 exo 117.97 150.36 Tm 319.14
AMODEL PREMOLD	Tg -18.47 12.77 75.45 -16.43 16.02 75.45 exo 120.72 Tm 252^C

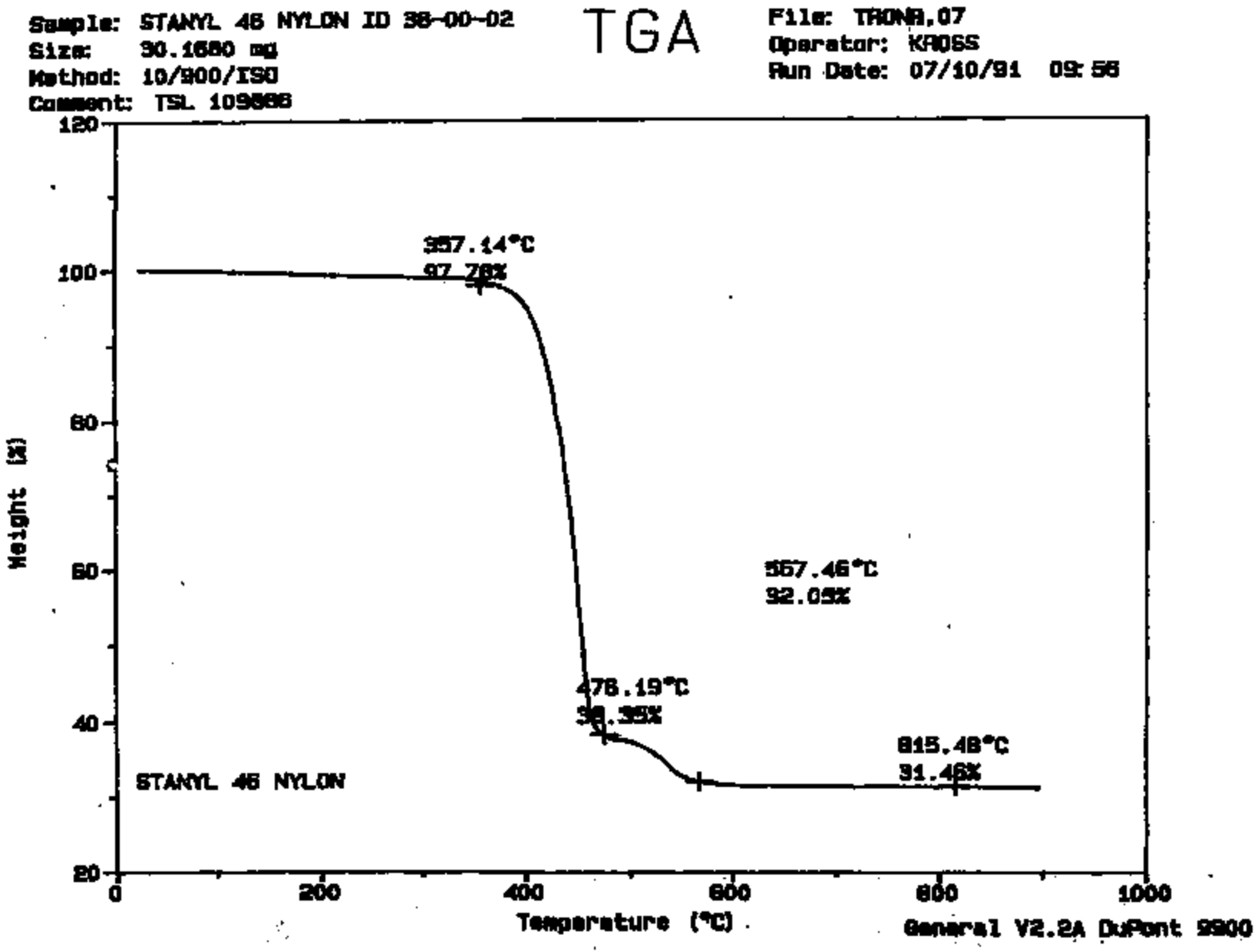



DSC
Heat Flow W/g
Temperature (°C)
NORYL GTX-830 PRE-HOLD HTL


DSC
Heat Flow W/g
Temperature (°C)
NORYL GTX-830 PRE-HOLD HTL


DSC
Heat Flow W/g
Temperature (°C)
STANYL 38-00-02 BASE
General V4.0A DuPont 2000

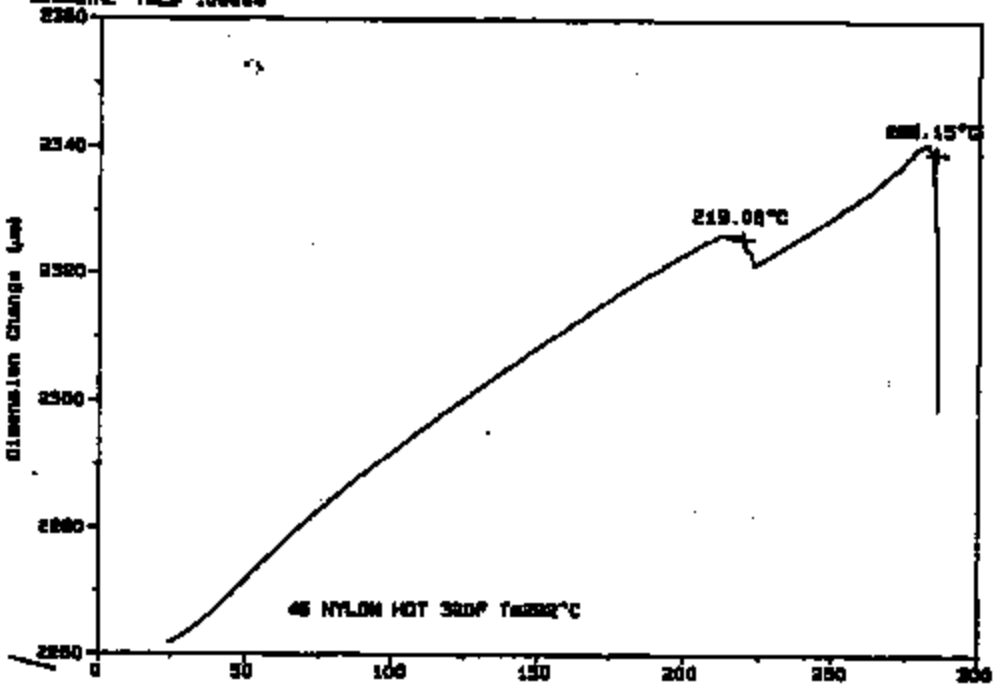

DSC
Heat Flow W/g
Temperature (°C)
STANYL 38-00-02 BASE
General V4.2A DuPont 2000



Sample: STANYL STX 630
Size: 328.0000 mm
Method: 10/200
Comment: TMA# 100885

TMA

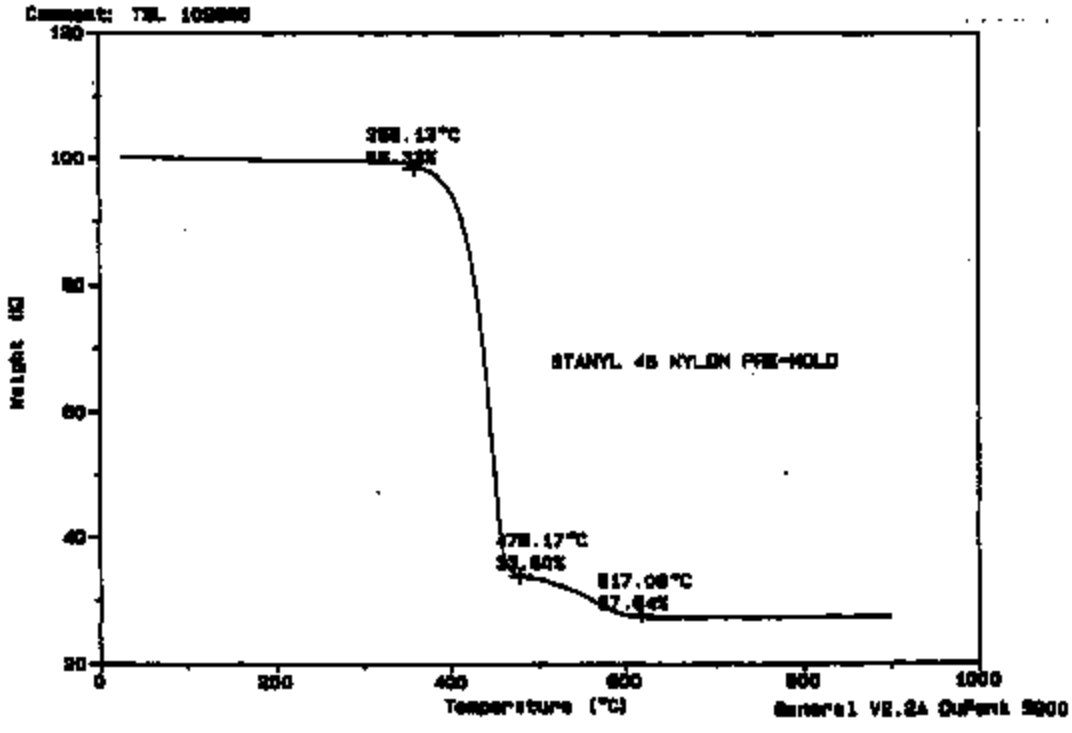
File: TRDNR.74
Operator: K ROSS
Run Date: 09/08/01 08:58

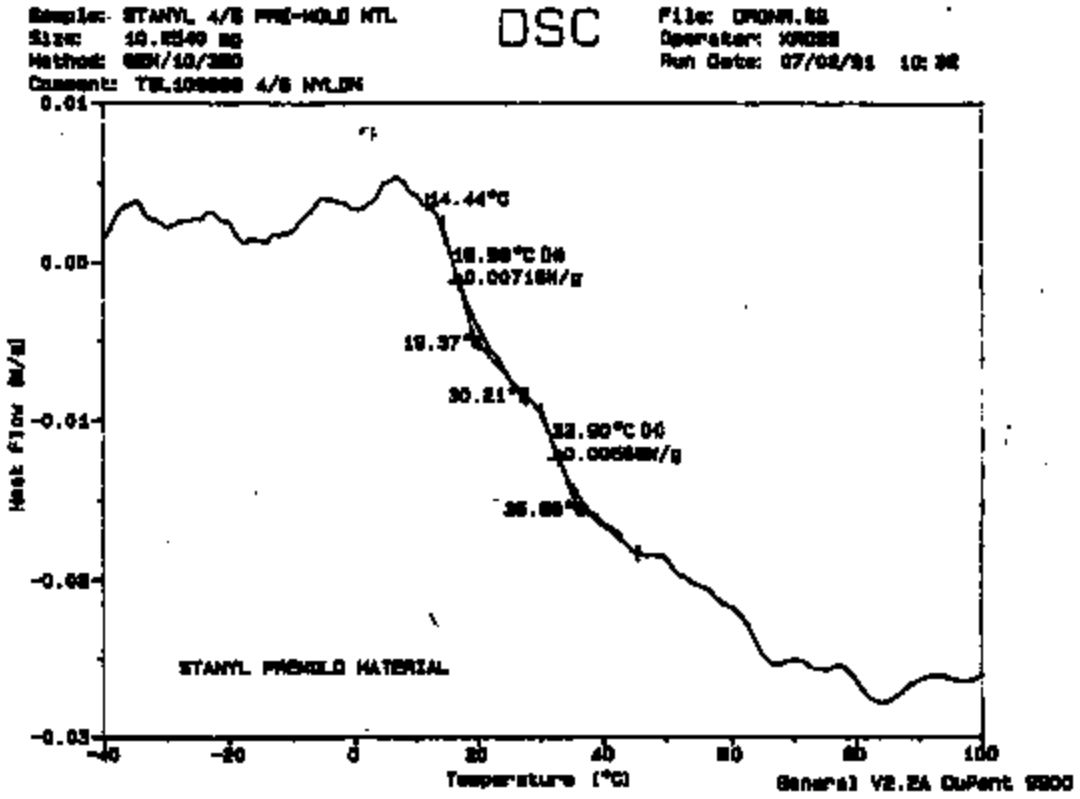


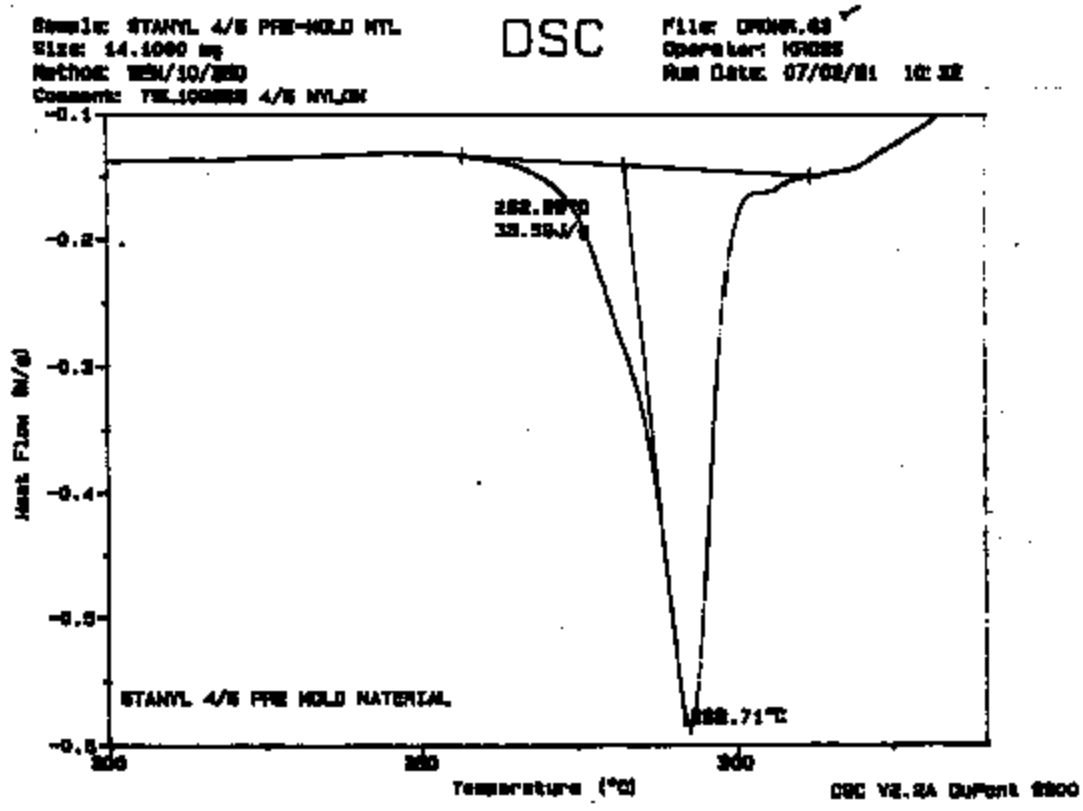
Sample: STANYL 45 PRE-HOLD MATERIAL
Size: 45.0780 mg
Method: 10/900/IRG
Comment: TGA 100886

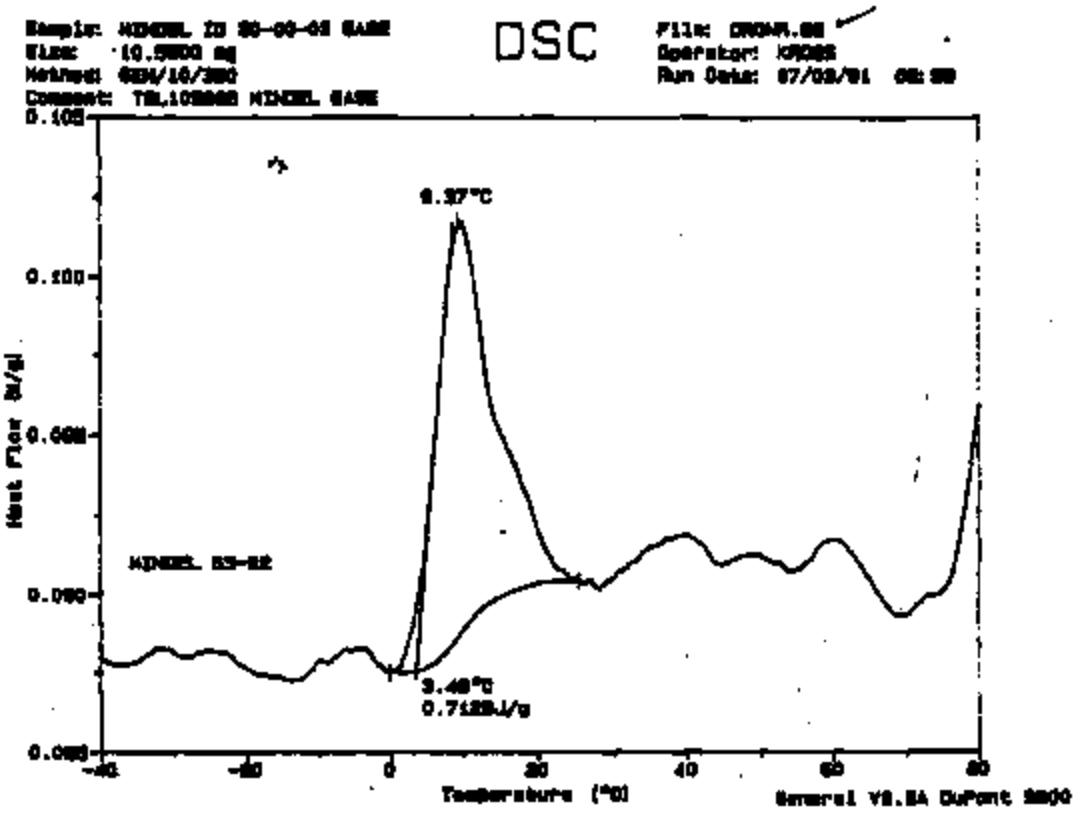
TGA

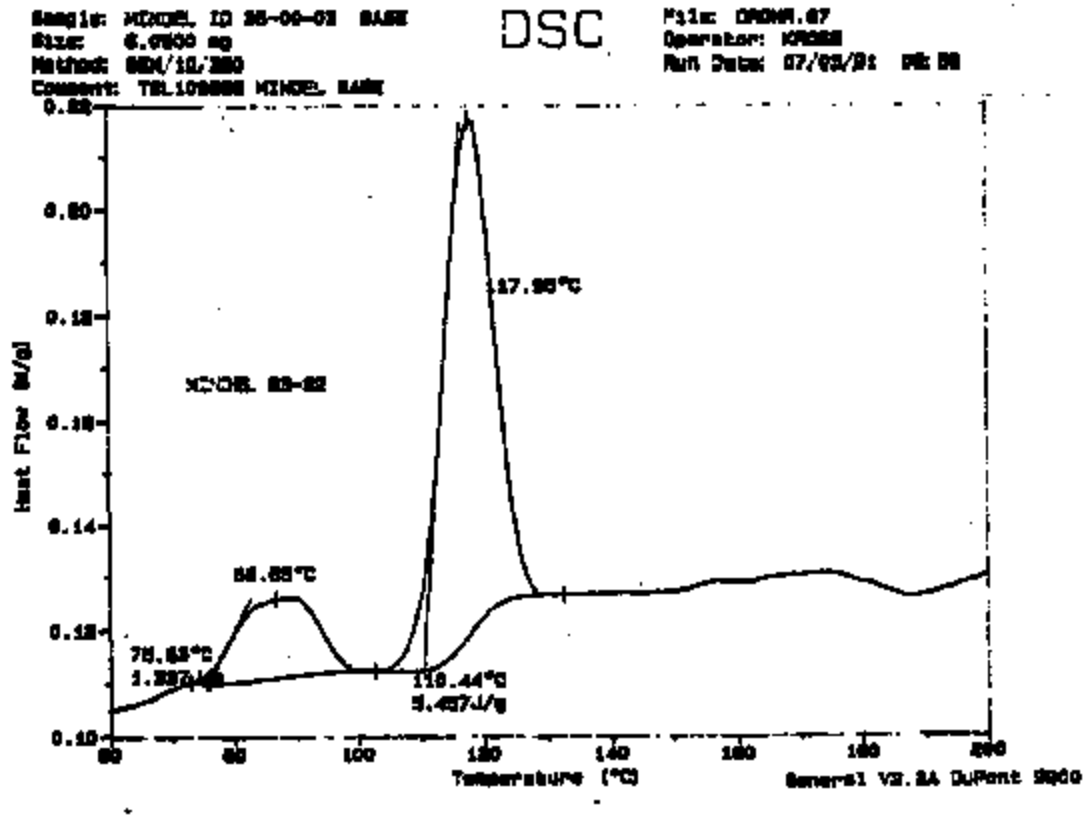
File: TRGNR.06
Operator: KROSS
Run Date: 07/11/01 08:07

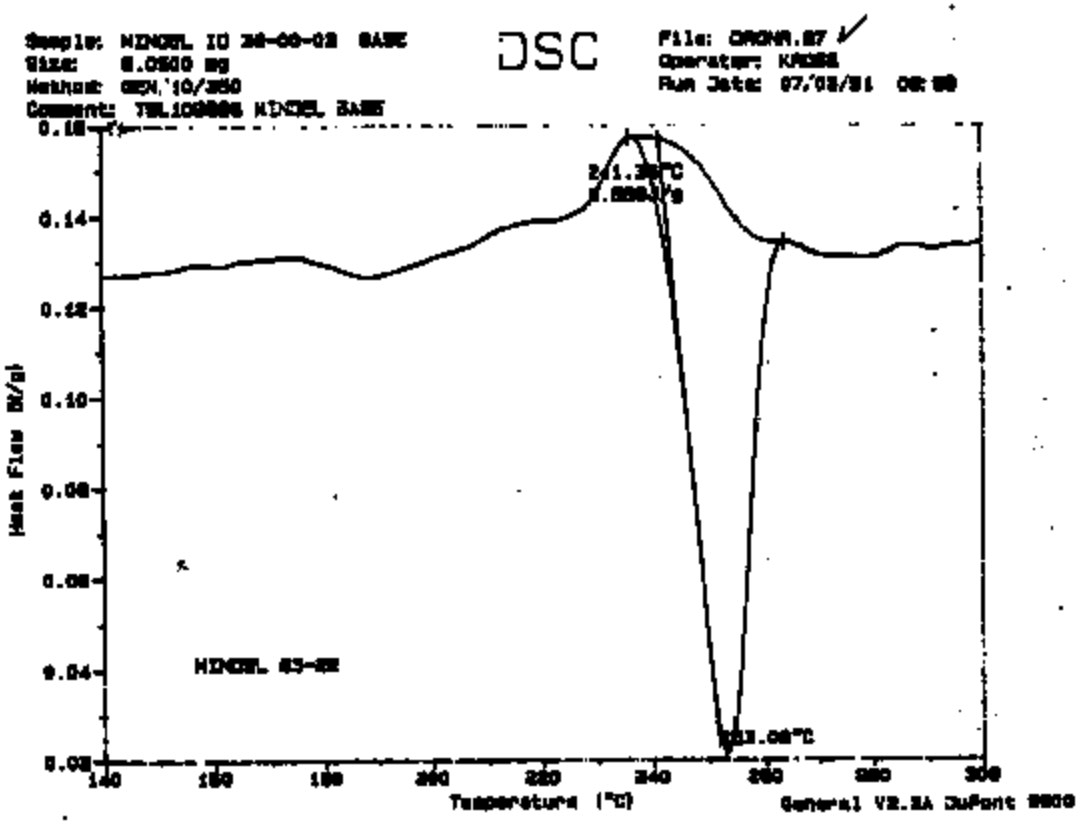


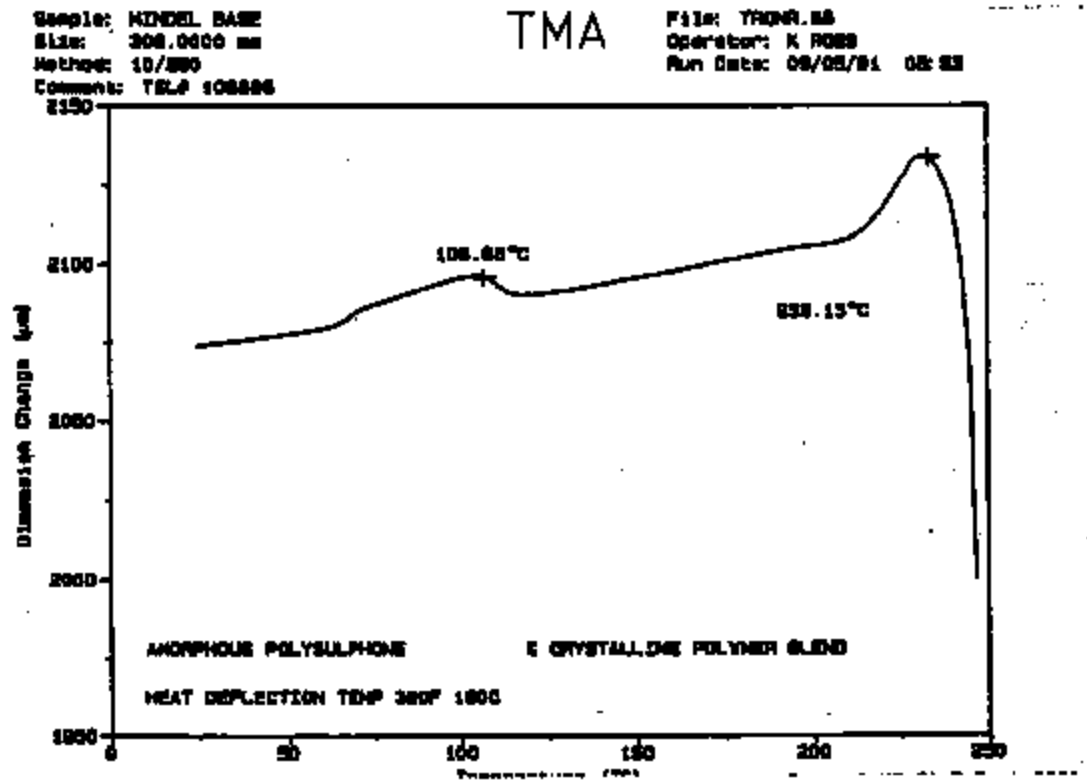

DSC
STANYL PREHOLD MATERIAL
Heat Flow W/g
Temperature (°C)
General V2.2A DuPont 9900

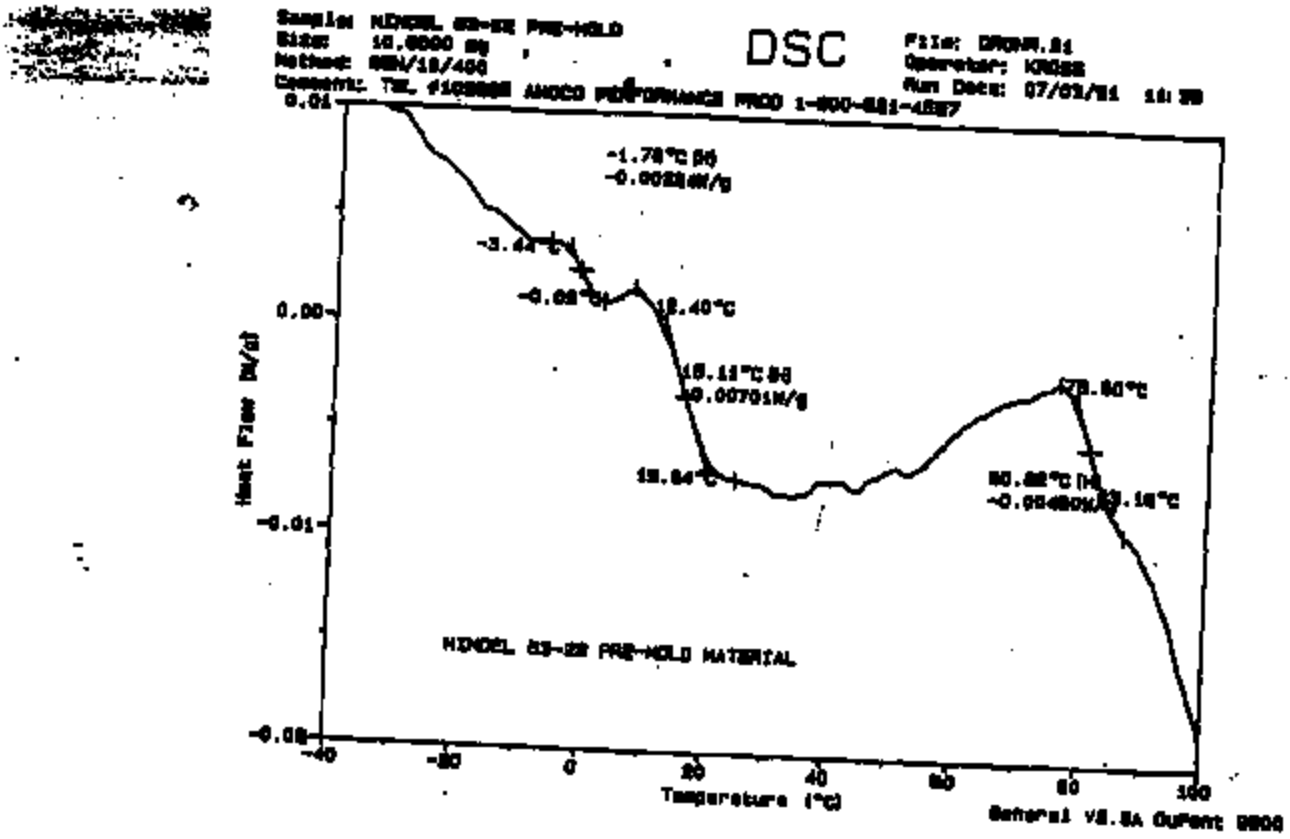

DSC
STANYL 4/6 PRE HOLD MATERIAL
Heat Flow W/g
Temperature (°C)
DSC V2.2A DuPont 9900

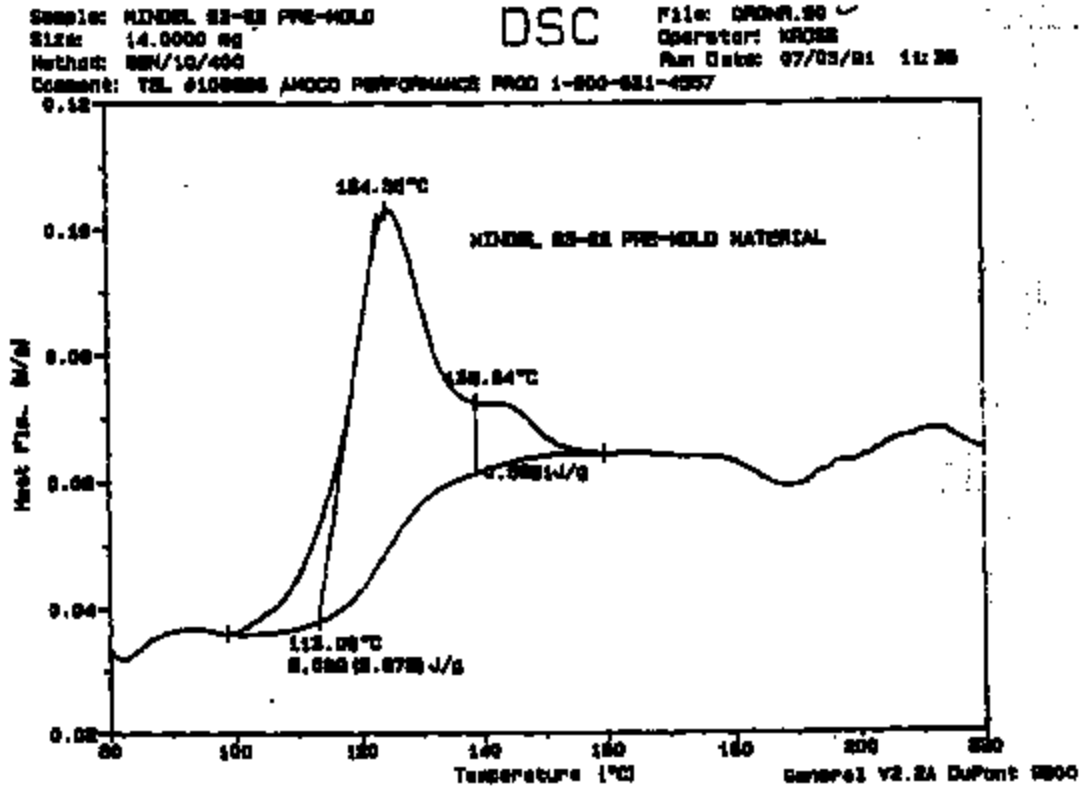

DSC
Heat Flow W/g
Temperature (°C)
9.37°C
3.48°C
0.7128J/g
Universal V3.8A DuPont 2900

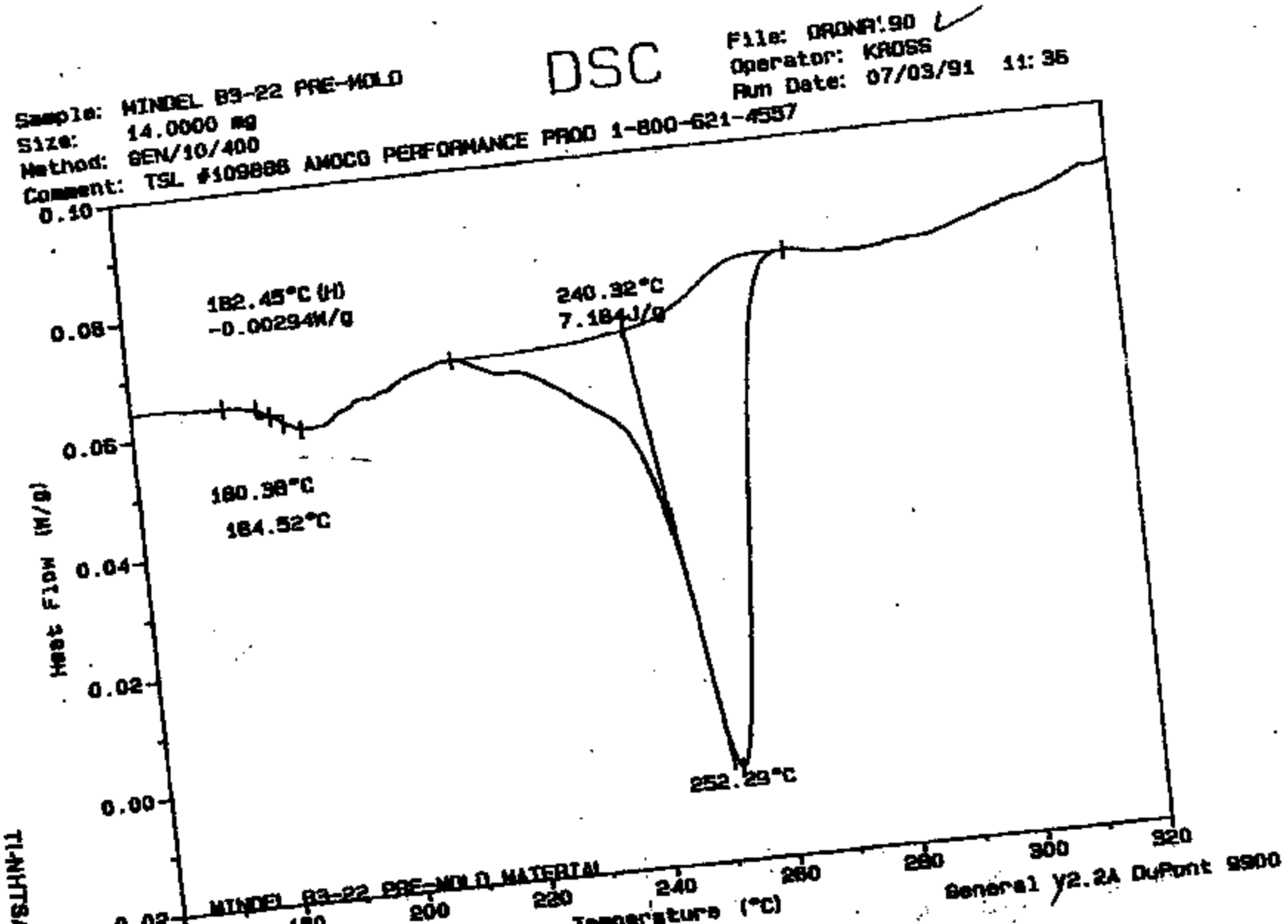

DSC
Heat Flow W/g
Temperature (°C)
17.98°C
56.85°C
78.63°C
110.44°C
5.457J/g
Universal V3.8A DuPont 2900


DSC
Heat Flow W/g
Temperature (°C)
NICKEL 63-02


TMA
Dimension Change (µm)
AMORPHOUS POLYSULPHONE
HEAT DEFLECTION TEMP 360F 180C


DSC
Heat Flow W/g
Temperature (°C)
NIKOEL 03-02 PRE-HOLD MATERIAL

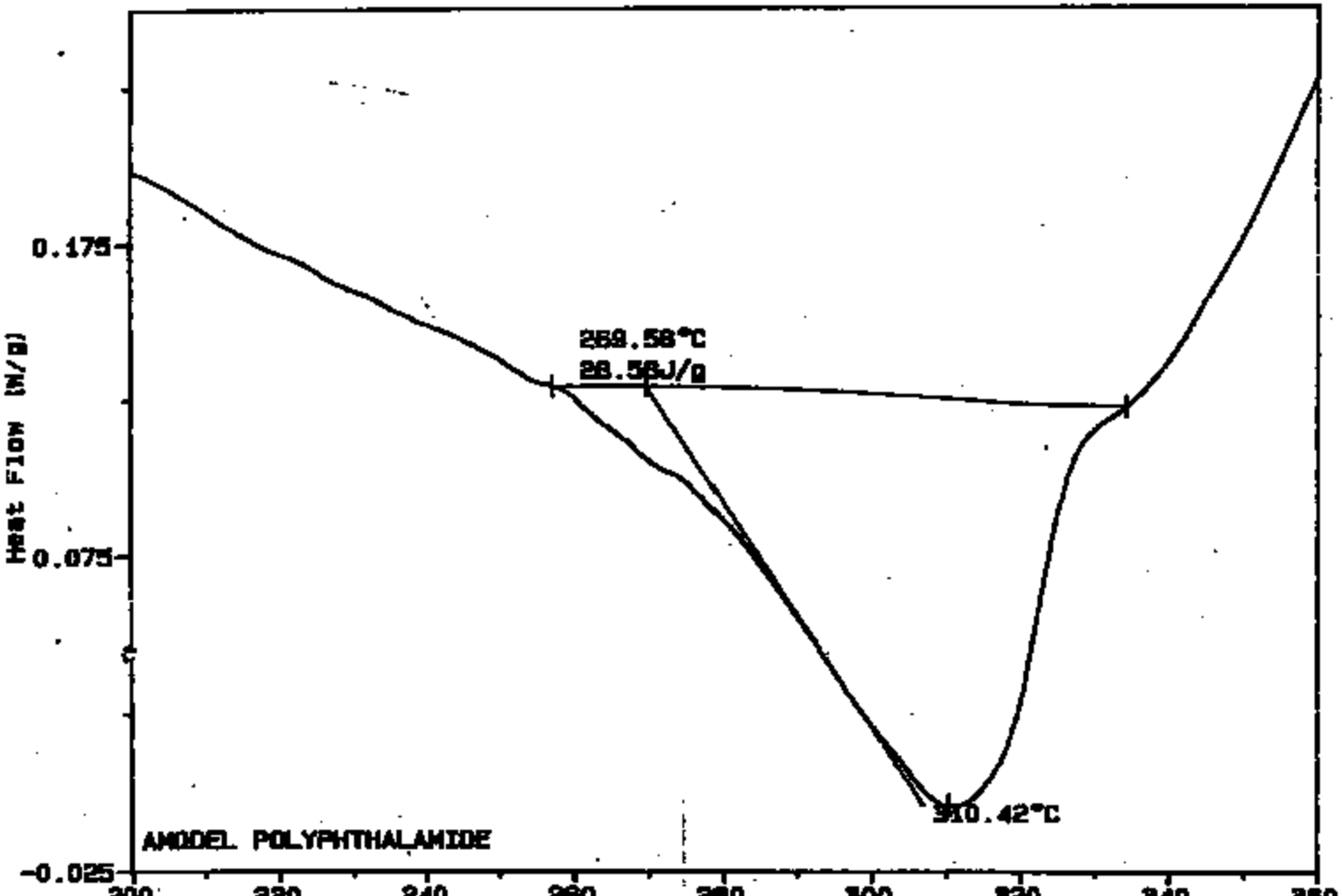

DSC
Heat Flo W/g
Temperature (°C)
NIKOEL 03-02 PRE-HOLD MATERIAL


DSC
File: DRONA!90
Operator: KROSS
Run Date: 07/03/91 11:35
Sample: MINDEL B3-22 PRE-MOLD
Size: 14.0000 mg
Method: GEN/10/400
Comment: TSL #109888 AMOCO PERFORMANCE PROD 1-800-621-4557
182.45°C (H)
-0.00294W/g
240.32°C
7.184J/g
180.38°C
184.52°C
252.29°C
Heat Flow (W/g)
0.10
0.08
0.06
0.04
0.02
0.00
MINDEL B3-22 PRE-MOLD MATERIAL
200
220
240
260
280
300
320
Temperature (°C)
General V2.2A DuPont 9900

Sample: AMODEL ID 38-00-04 BASE
Size: 10.3700 mg
Method: GEN/10/400
Comment: TSL #109866 POLYPHTHAMIDE (PPA) AMOCO PERFORMANCE PRODUCTS

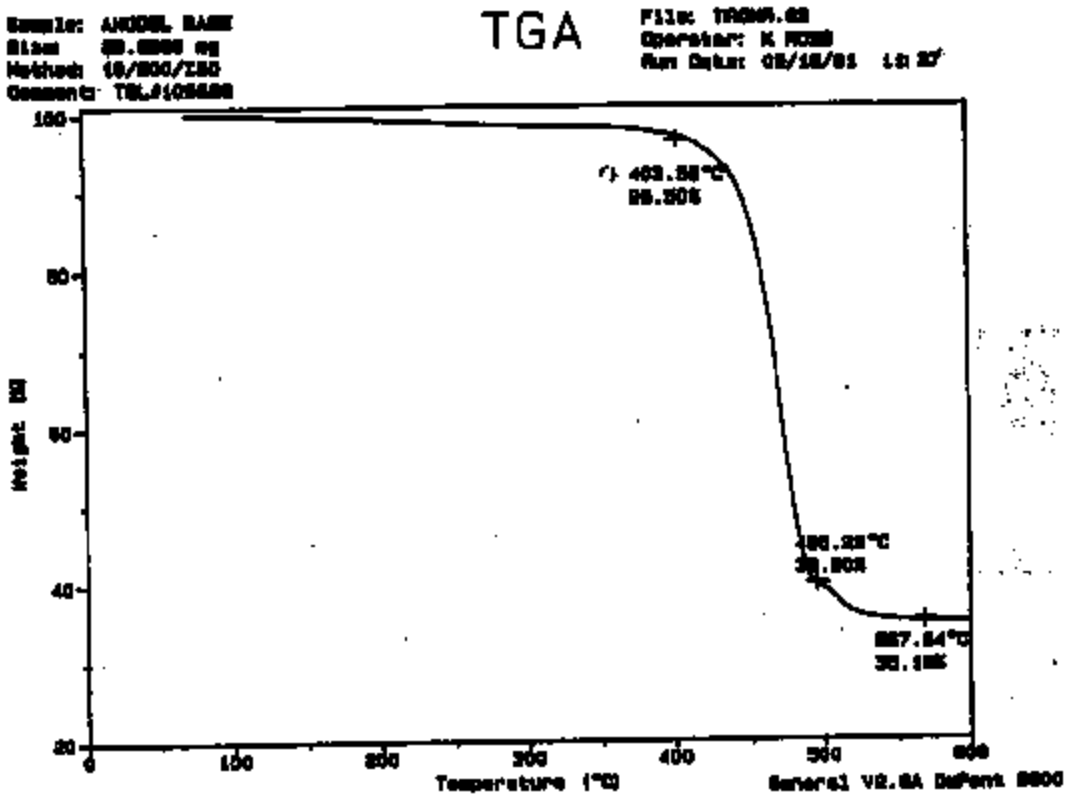
DSC

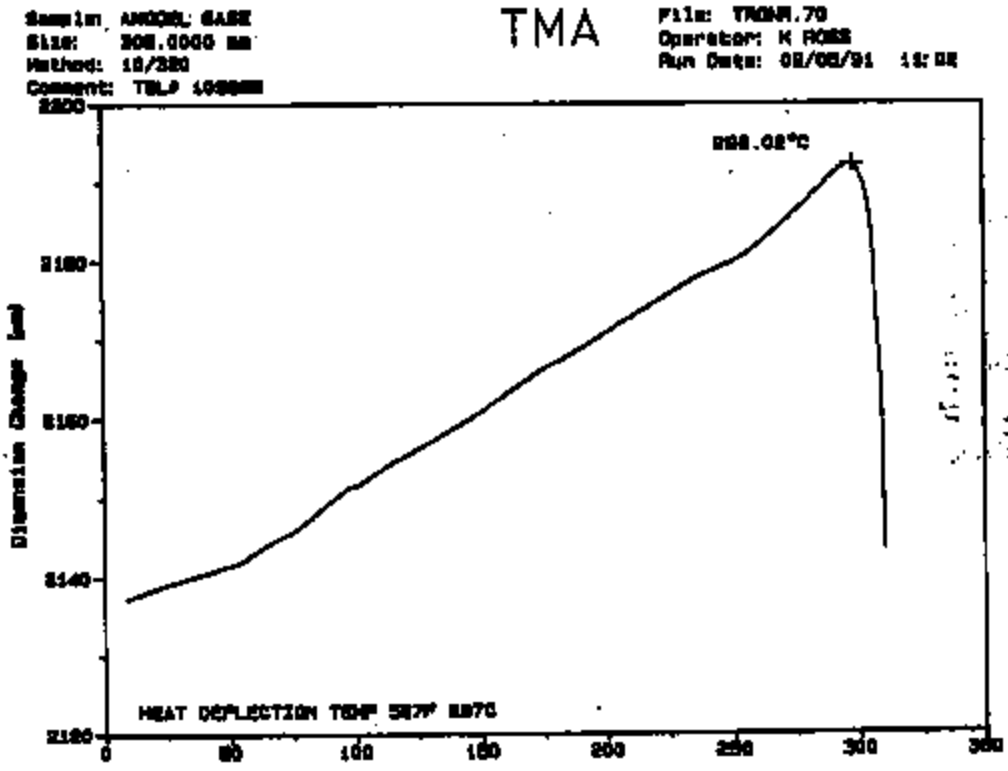
File: DRONA.92
Operator: KROSS
Run Date: 07/03/91 13:53

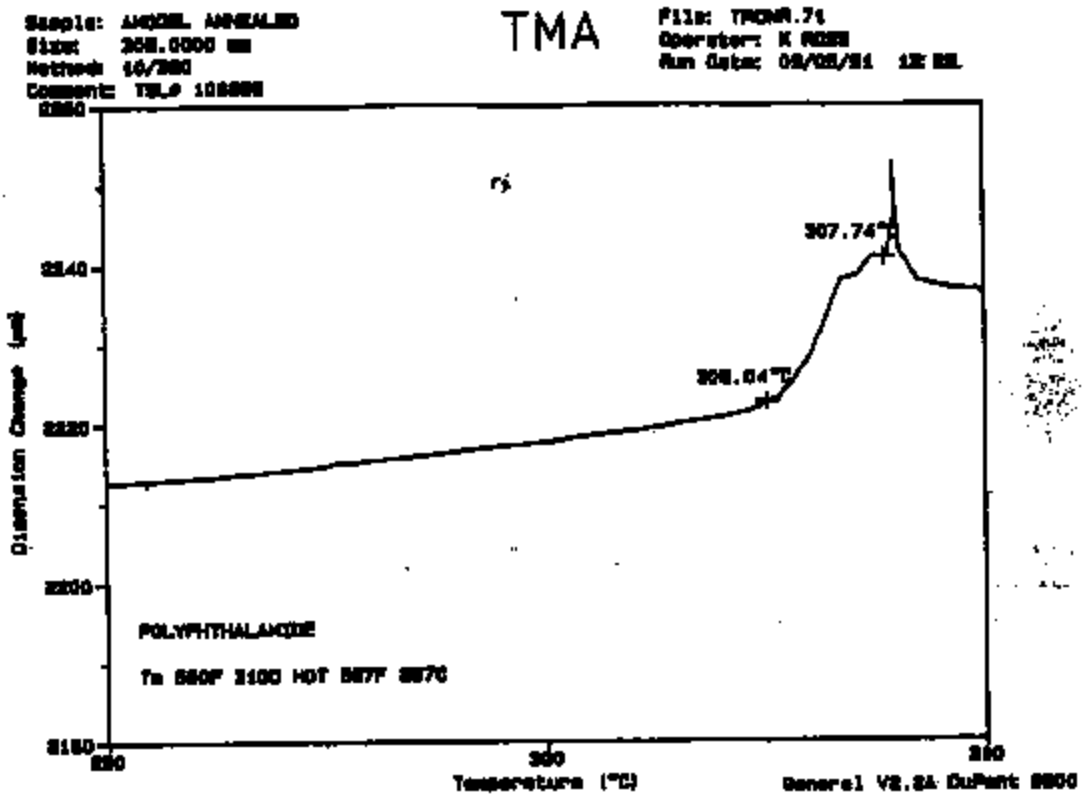


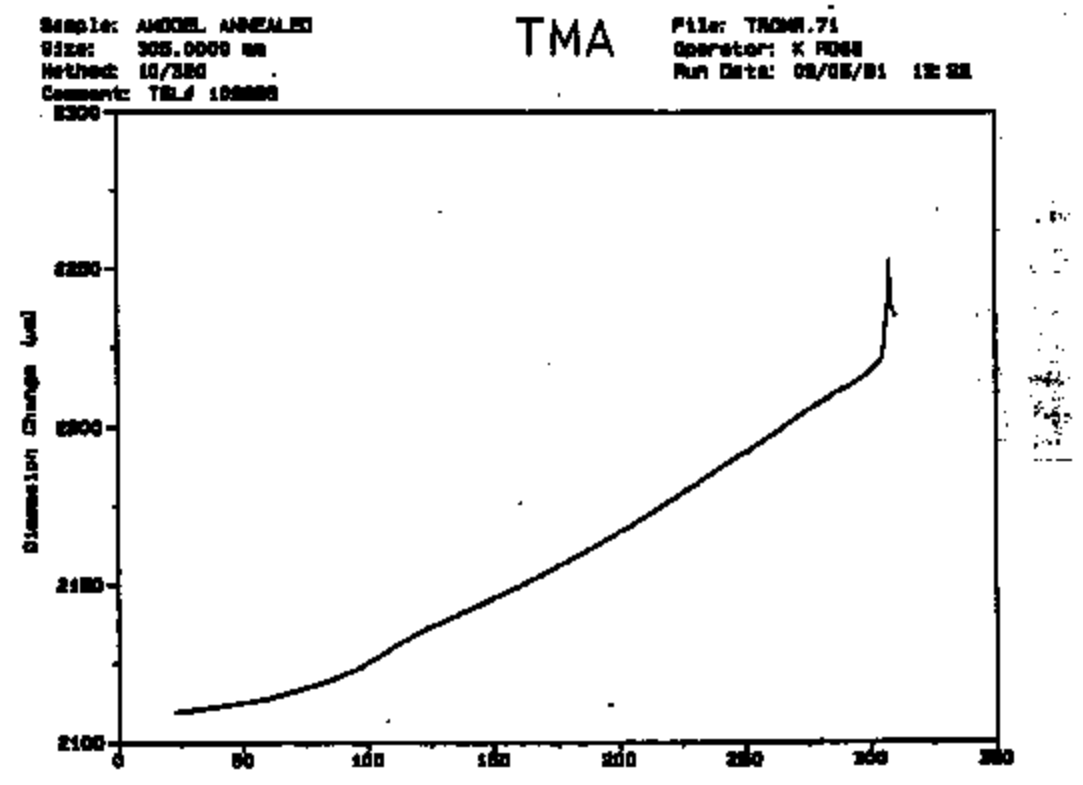
General V2.2A DuPont 9900

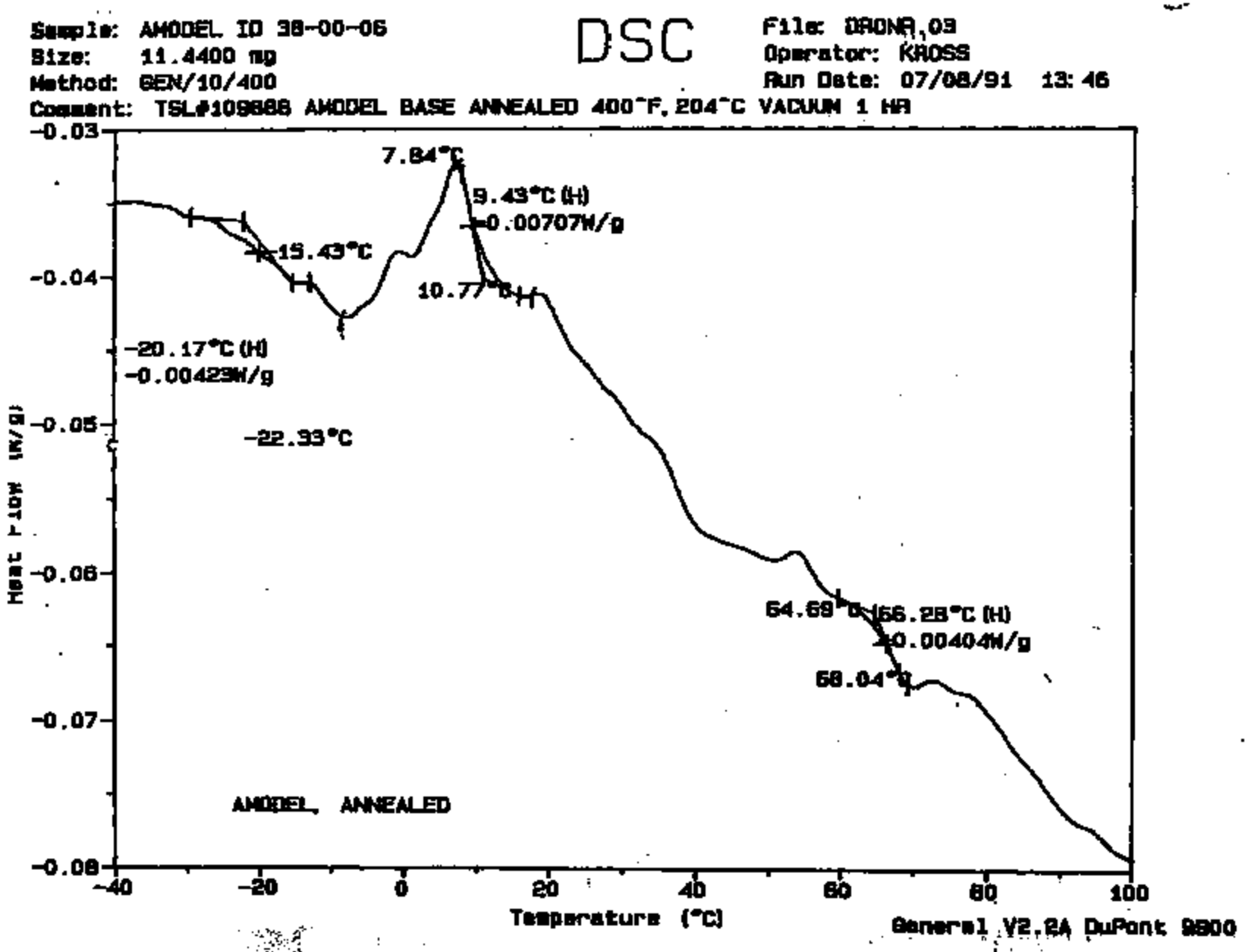
TI-NHTSA 002398


TGA
Temperature (°C)
Height (%)

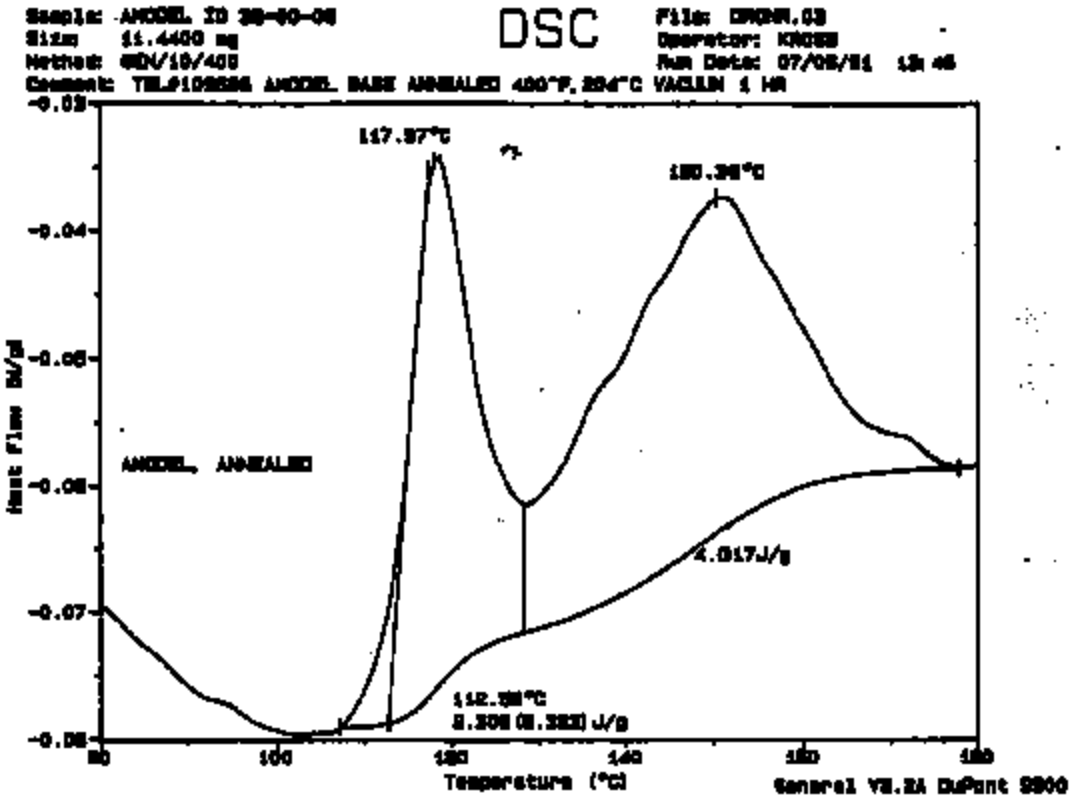

TMA
HEAT DEFLECTION TEMP
Dimension Change (um)

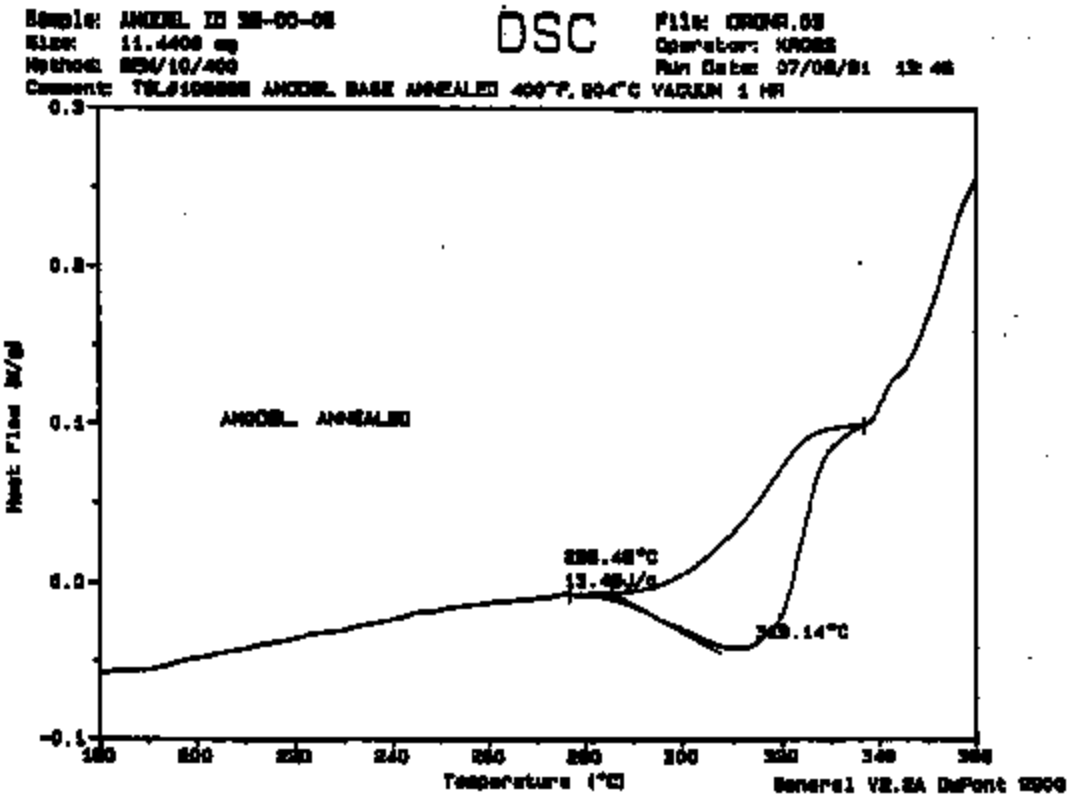

TMA
Sample: AMODEL ANNEALED
Size: 308.0000 mm
Method: 10/380
Comment: TBL# 108888
File: TRDNR.71
Operator: K ROSS
Run Date: 08/08/91 12:58
307.74°C
308.04°C
POLYPHTHALAMIDE
Tm 580F 2100 HOT 587F 307C
Dimension Change (µm)
Temperature (°C)
General V2.2A DuPont 2900

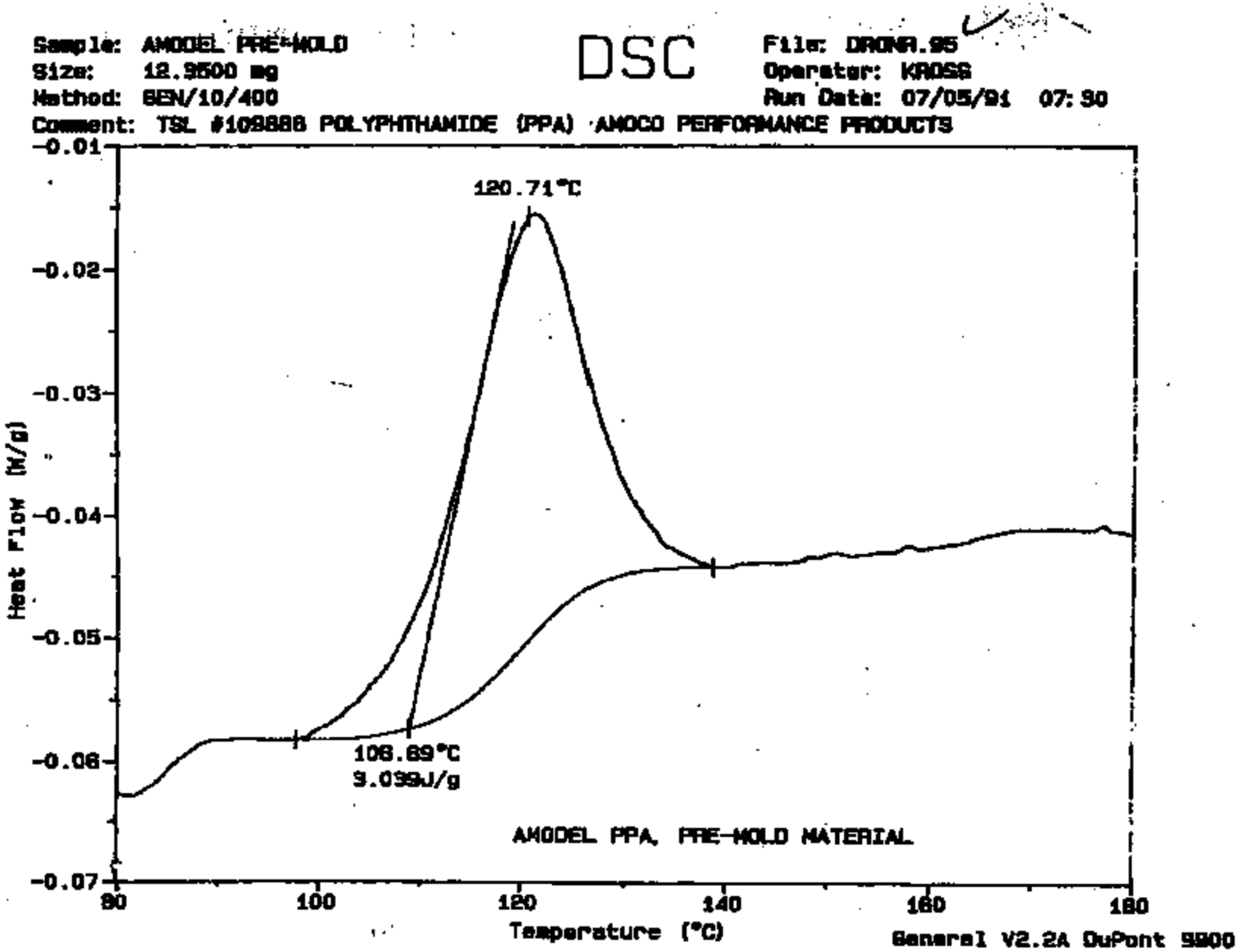

TMA
Sample: AMODEL ANNEALED
Size: 305.0000 mm
Method: 10/380
Comment: TBL# 108888
File: TRDNR.71
Operator: K ROSS
Run Date: 08/08/91 12:58
Dimension Change (µm)



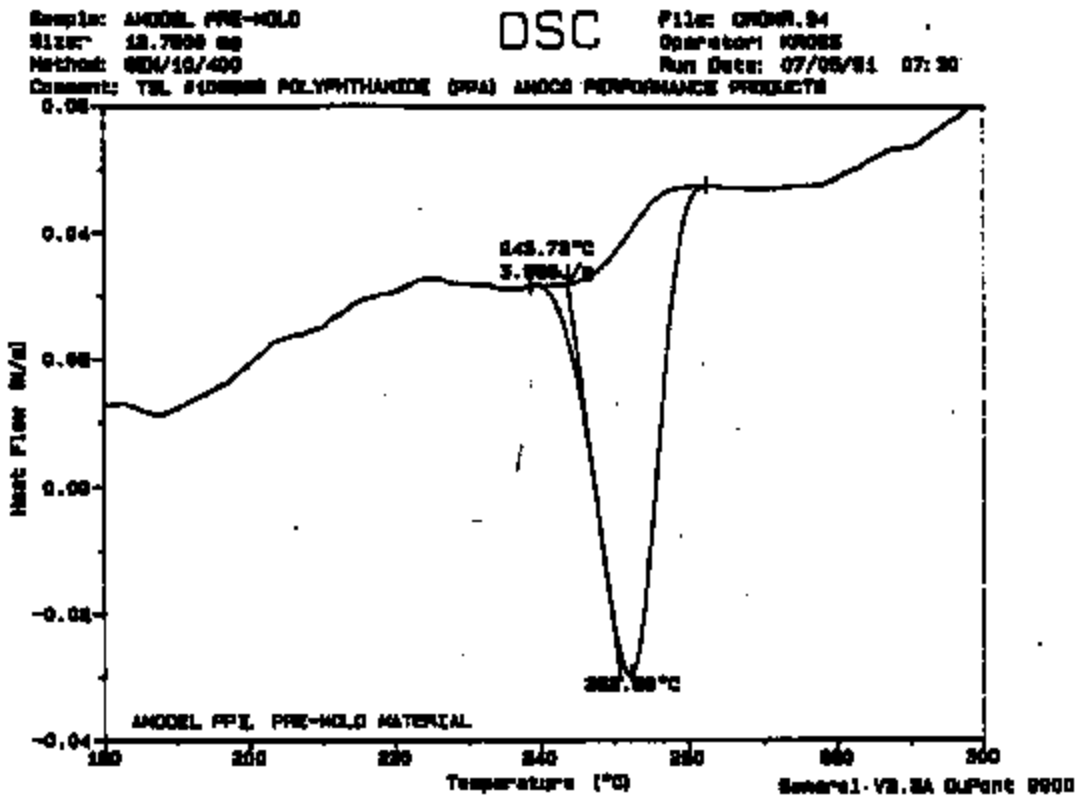
TI-NHTSA 002401

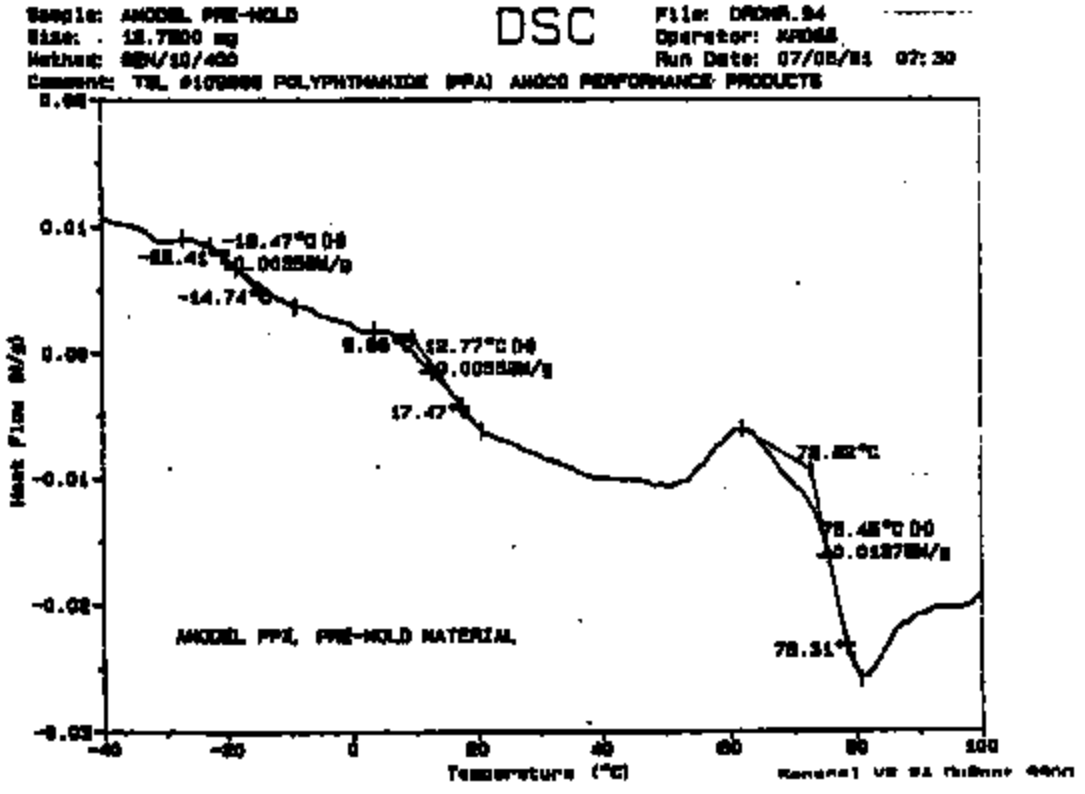

DSC
117.57°C
180.38°C
ANODEL, ANNEALED
4.017J/g
Heat Flow W/g
Temperature (°C)

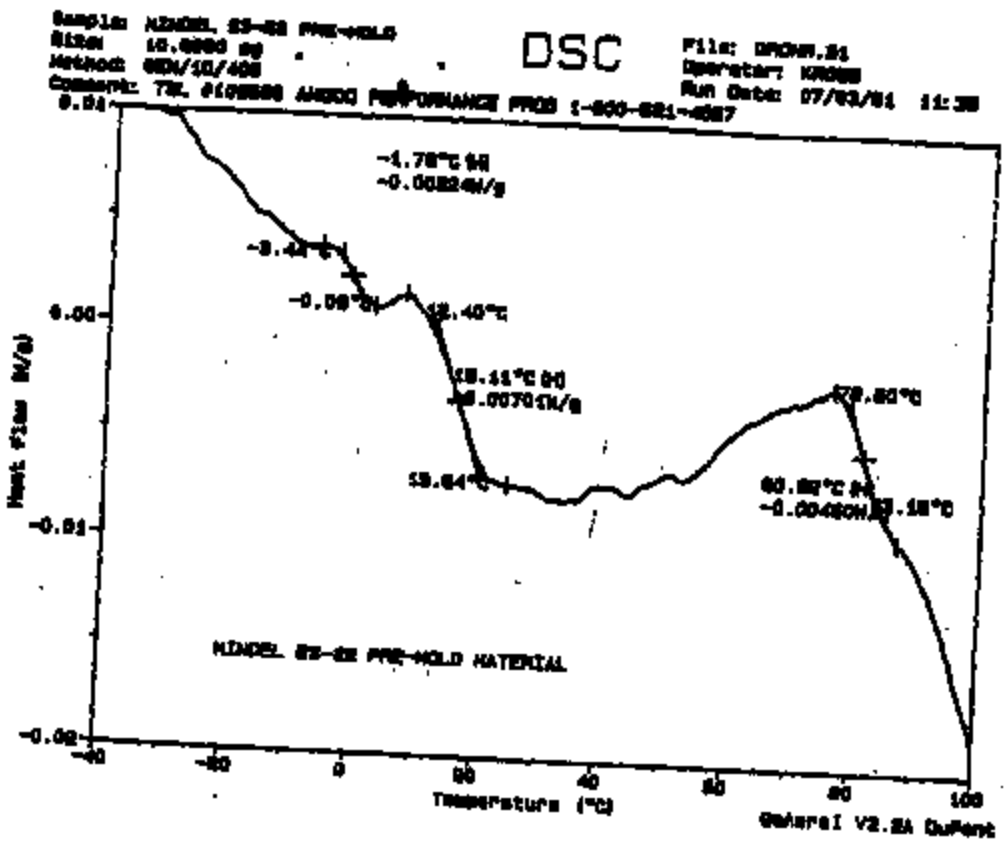

DSC
ANODEL, ANNEALED
Heat Flow W/g
Temperature (°C)

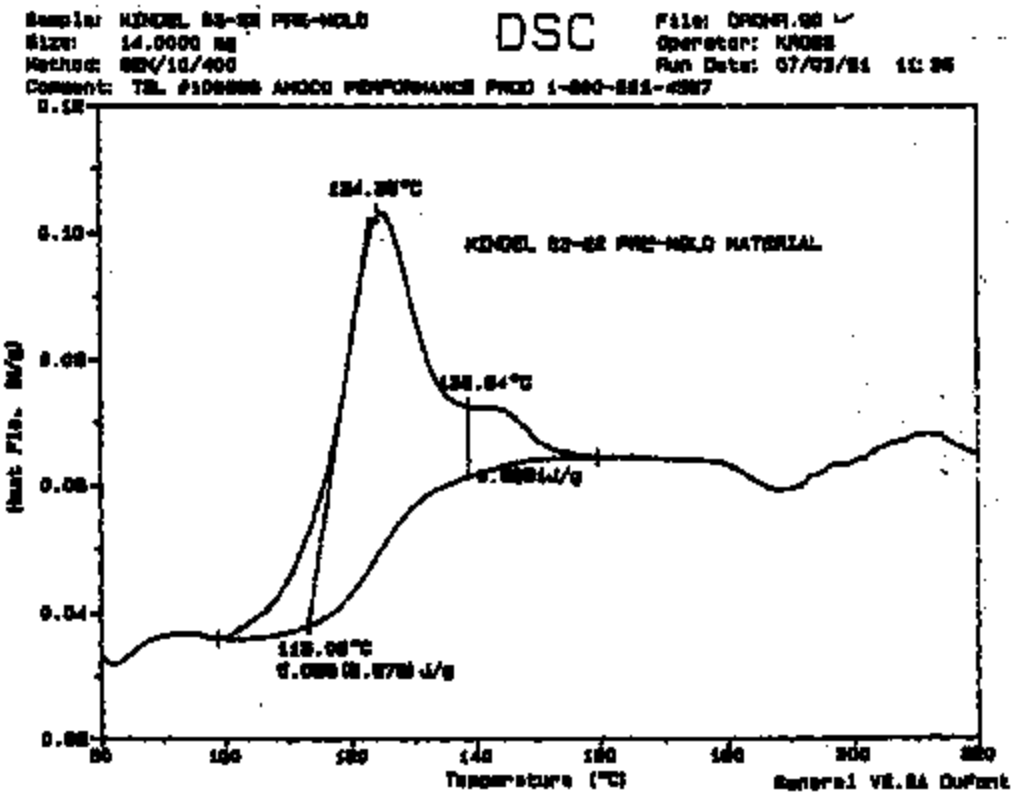


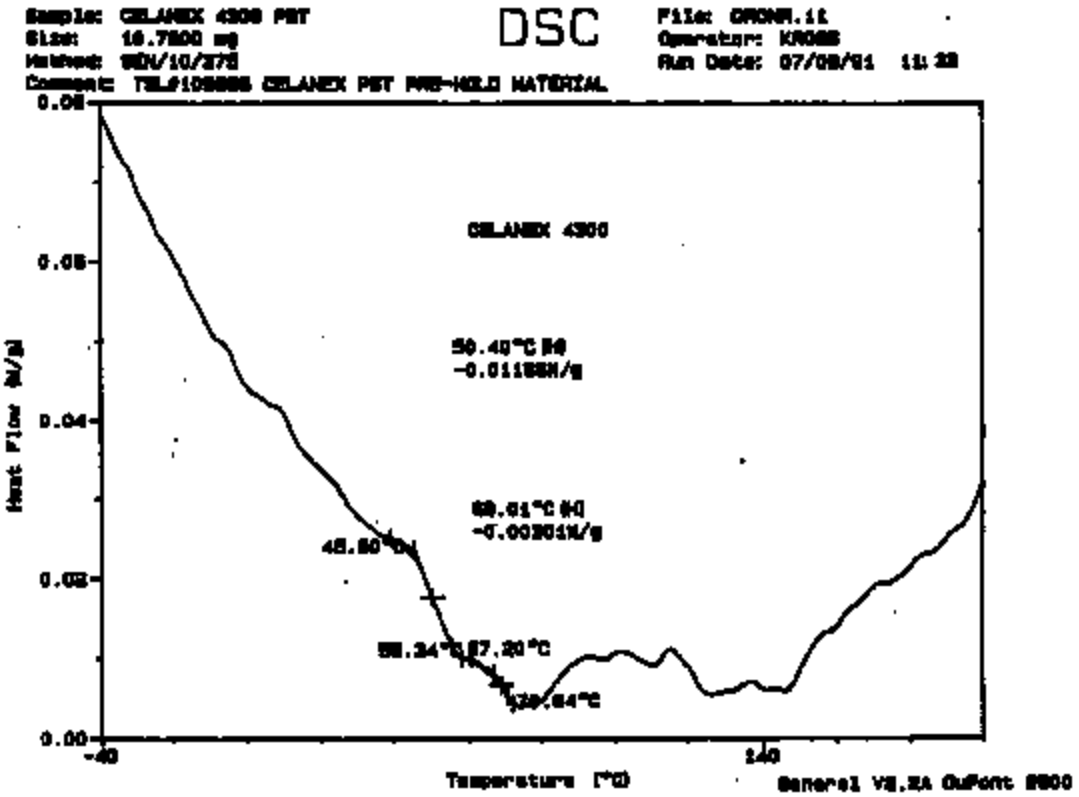
TI-NHTSA 002403

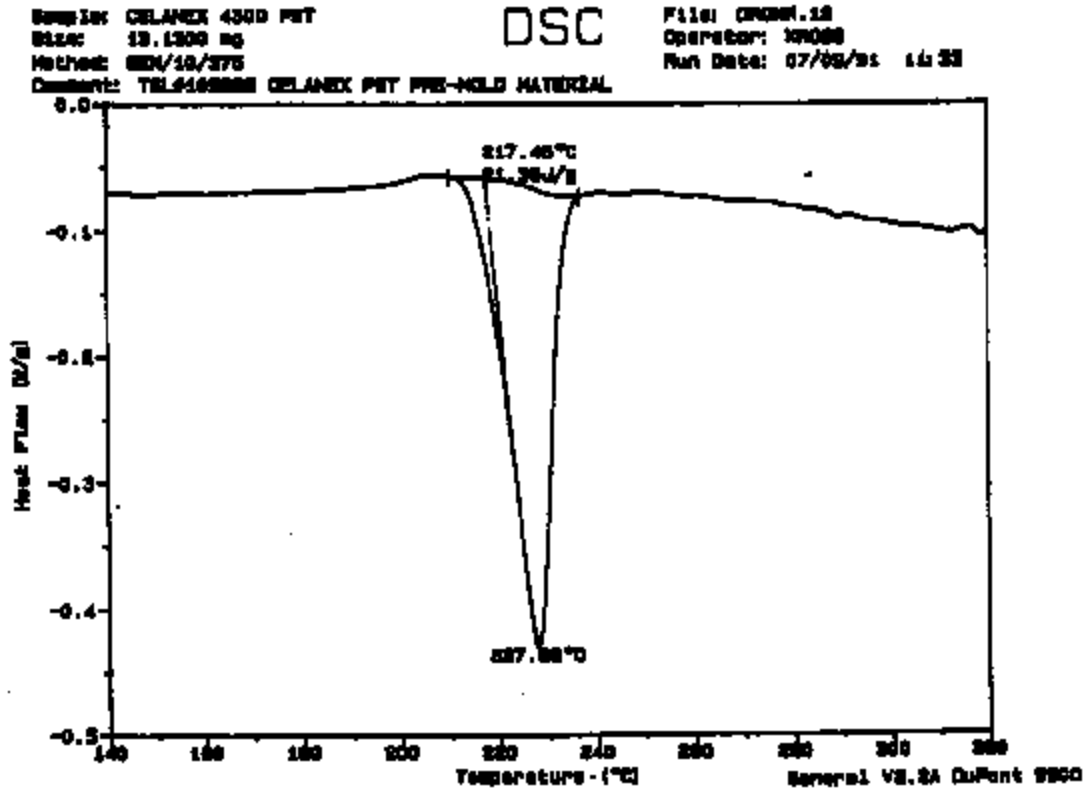

DSC
AMODEL PPE, PRE-HOLD MATERIAL
Temperature (°C)
Heat Flow W/g

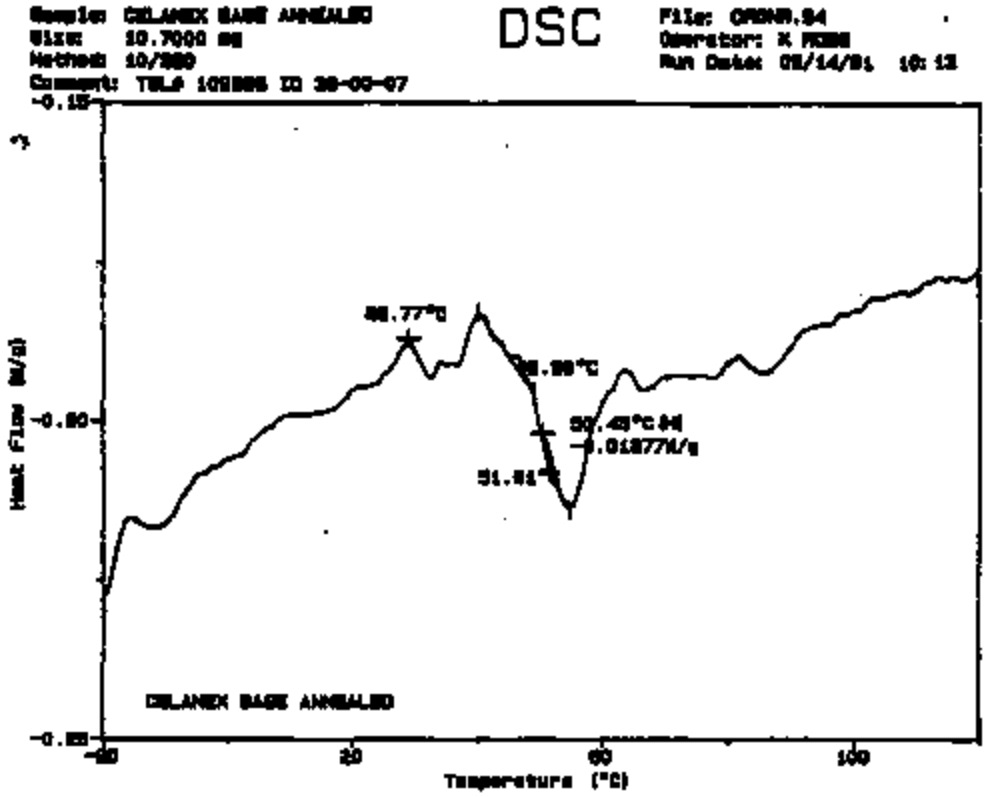

DSC
AMODEL PPE, PRE-HOLD MATERIAL
Temperature (°C)
Heat Flow W/g

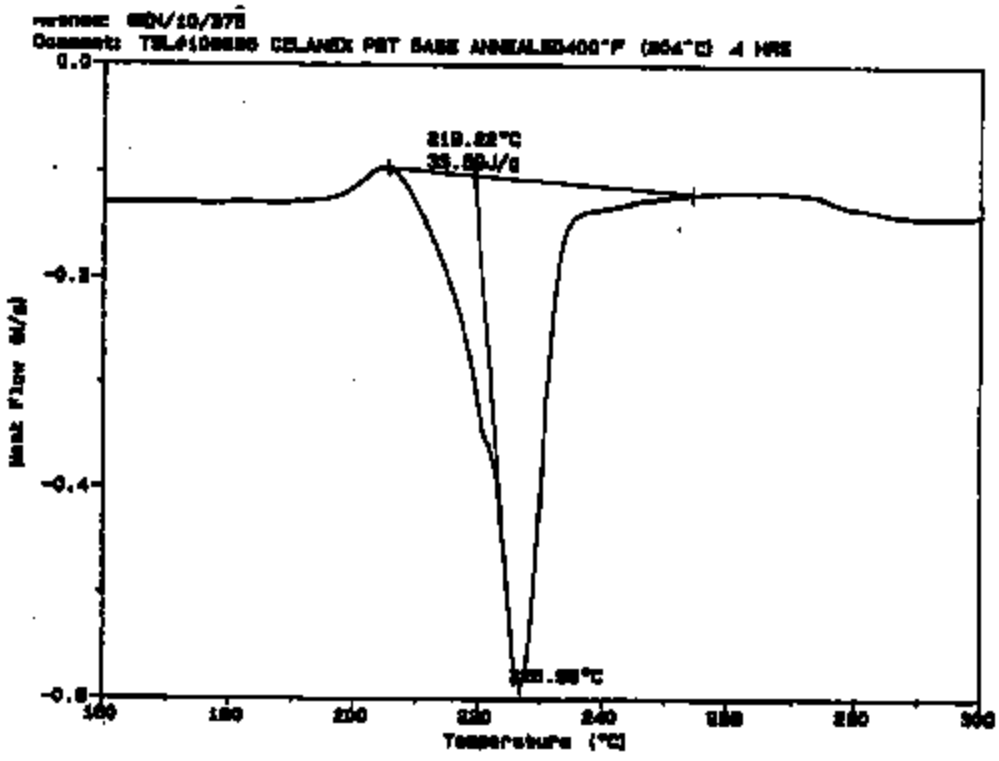

DSC
KINDEL 83-GE PRE-MOLD MATERIAL
Temperature (°C)

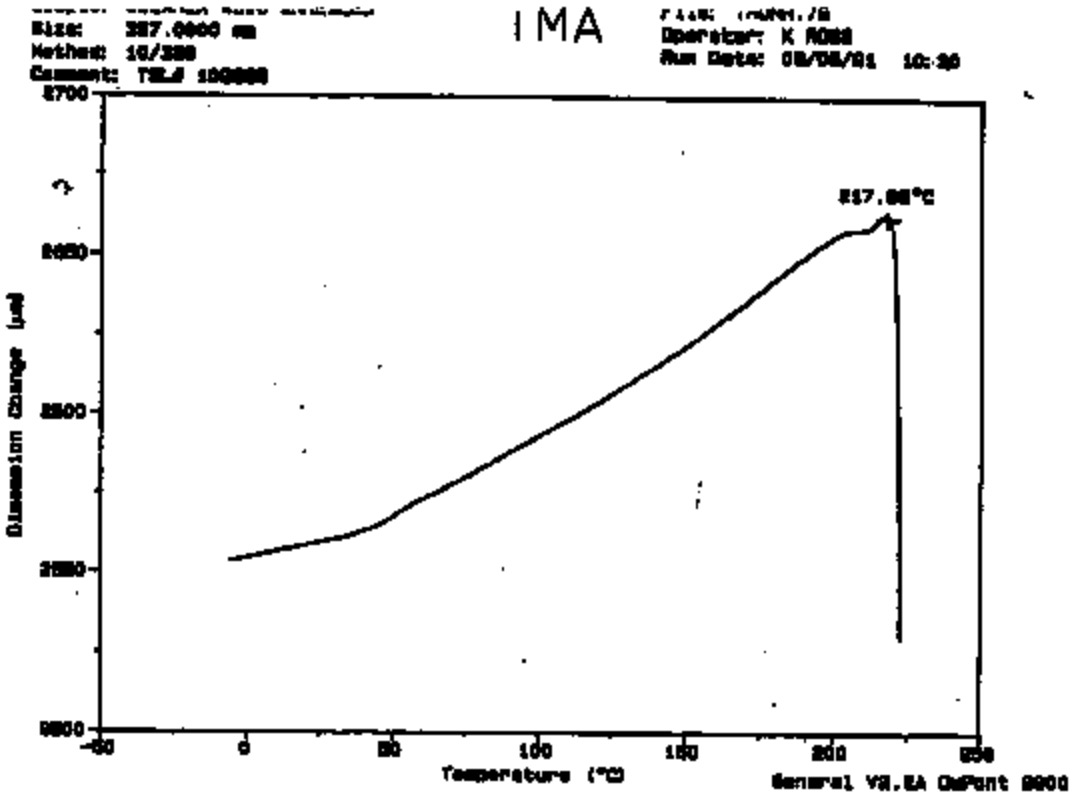

DSC
KINDEL 83-GE PRE-MOLD MATERIAL
Temperature (°C)

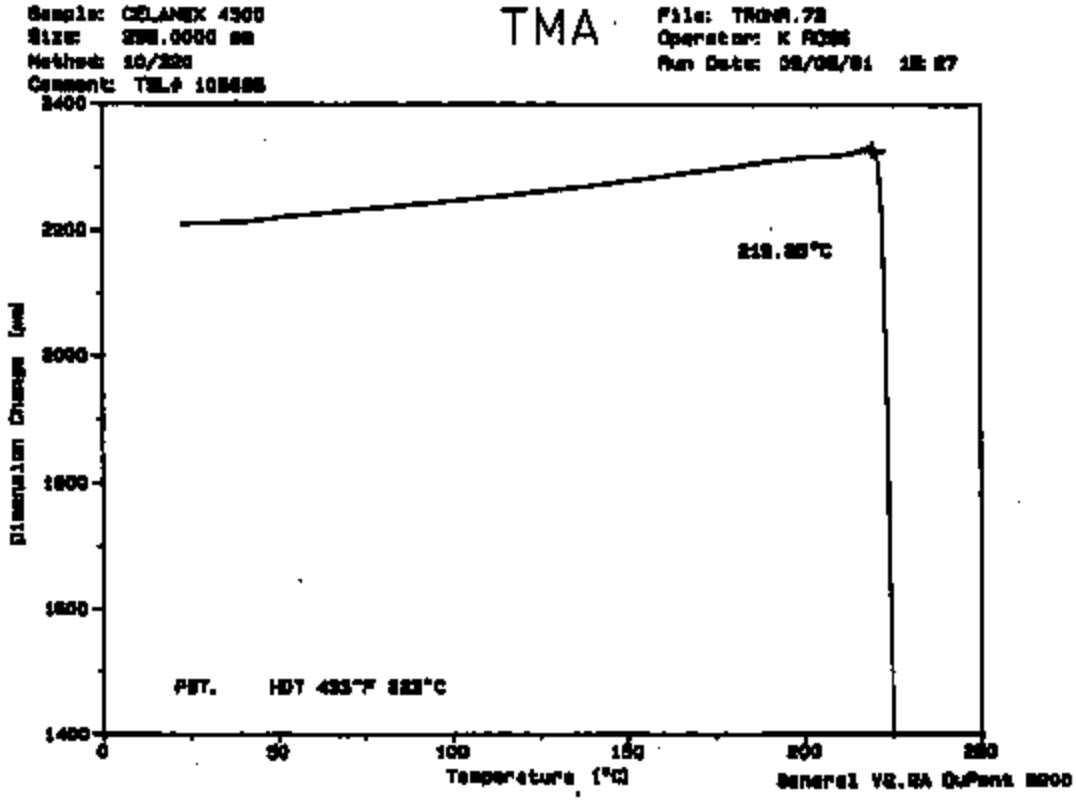

DSC
CELANEX 4300
Heat Flow W/g
Temperature (°C)
General V2.2A DuPont 2900


DSC
217.46°C
Heat Flow W/g
Temperature (°C)
General V2.2A DuPont 2900


DSC
Sample: CELANEX BASE ANNEALED
Size: 10.7000 mg
Method: 10/300
Comment: TSL# 103886 II 30-00-07
File: ORDNR.94
Operator: K ROSS
Run Date: 08/14/91 10:13
-0.15
-0.80
Heat Flow W/g
86.77°C
51.81°C
CELANEX BASE ANNEALED
-50
50
100
Temperature (°C)


Comment: TSL#103886 CELANEX PBT BASE ANNEALED400°F (204°C) 4 HRS
0.0
-0.4
-0.8
Heat Flow W/g
219.82°C
35.89J/g
100
150
200
250
300
Temperature (°C)

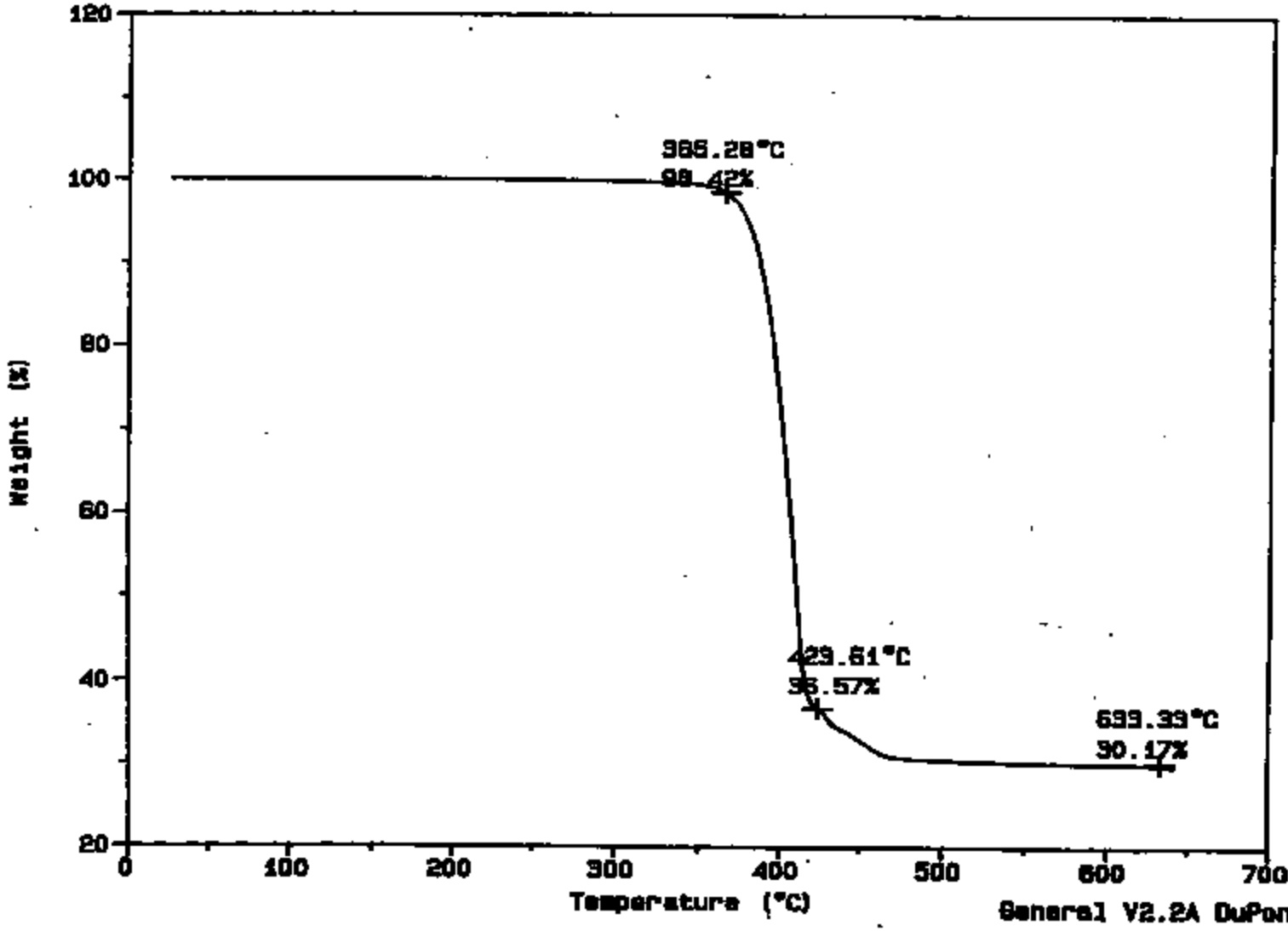

TMA
Size: 387.0000 mm
Operator: K ROSS
Run Date: 08/08/01 10:30
2700
2600
2500
2400
Dimension Change (µm)
217.88°C
-50
0
50
100
150
200
250
Temperature (°C)
General V2.2A DuPont 2900


Sample: CELANEX 4300
Size: 298.0000 mm
Method: 10/200
Comment: TEL# 108686
TMA
File: TR0NR.28
Operator: K ROSS
Run Date: 08/08/01 18:07
2400
2200
2000
1800
1600
1400
Dimension Change (µm)
218.88°C
PBT. HDT 435°F 223°C
0
50
100
150
200
250
Temperature (°C)
General V2.2A DuPont 2900

Sample: CELANEX BASE
Size: 24.7690 mg
Method: 10/900/ISO
Comment: TSL#109886

TGA

File: TRONR.84
Operator: K ROSS
Run Date: 09/16/91 14:36



General V2.2A DuPont 9900

TI-NHTSA 002409

Disc Lot # 9-4

9-17-91

1 SER 13; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 263.8; REL= 79.1; DIF= 184.7 PSI; ACTCR= 0.7ms; RELCR= 0.3

2 SER 14; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 261.8; REL= 76.4; DIF= 185.4 PSI; ACTCR= 0.1ms; RELCR= 0.2

3 SER 15; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 272.0; REL= 77.5; DIF= 194.5 PSI; ACTCR= 0.8ms; RELCR= 0.1

4 SER 16; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 269.3; REL= 77.8; DIF= 191.5 PSI; ACTCR= 0.1ms; RELCR= 0.9

5 SER 17; FIX 1; C= 0000000; BIN=6000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 260.1; REL= 83.6; DIF= 176.5 PSI; ACTCR= 0.1ms; RELCR= 0.2

6 SER 18; FIX 2; C= 0000000; BIN=6000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 247.3; REL= 71.9; DIF= 175.4 PSI; ACTCR= 0.7ms; RELCR= 0.4

7 SER 19; FIX 3; C= 0000000; BIN=6000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 251.0; REL= 86.5; DIF= 164.4 PSI; ACTCR= 0.9ms; RELCR= 0.5

8 SER 20; FIX 4; C= 0000000; BIN=6000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 257.0; REL= 84.6; DIF= 172.4 PSI; ACTCR= 0.7ms; RELCR= 0.2

9 SER 21; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 249.1; REL= 89.8; DIF= 159.3 PSI; ACTCR= 0.0ms; RELCR= 0.8

SER 22; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 289.9; REL= 91.8; DIF= 197.1 PSI; ACTCR= 0.4ms; RELCR= 0.6

SER 23; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 278.4; REL= 70.1; DIF= 208.3 PSI; ACTCR= 0.8ms; RELCR= 0.2

SER 24; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 266.3; REL= 81.6; DIF= 184.7 PSI; ACTCR= 0.8ms; RELCR= 0.6

17-SEP-1991 09:53:22.14 OPER DOOR DID NOT CLOSE 1

.t #9-7

9-17-91

.00000; BIN=6000 ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
6.5; DIF= 141.2 PSI; ACTCR= 0.7ms; RELCR= 0.2

0000000; BIN=6000 ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
.01.7; DIF= 155.7 PSI; ACTCR= 0.8ms; RELCR= 0.1

. 0000000; BIN=6000 ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
103.8; DIF= 153.6 PSI; ACTCR= 0.1ms; RELCR= 0.4

:= 0000000; BIN=6000 ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
105.6; DIF= 151.8 PSI; ACTCR= 0.7ms; RELCR= 0.1

C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
.= 106.8; DIF= 155.4 PSI; ACTCR= 0.7ms; RELCR= 0.1

; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
EL= 103.0; DIF= 148.3 PSI; ACTCR= 0.0ms; RELCR= 0.7

3; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
REL= 106.0; DIF= 158.5 PSI; ACTCR= 0.1ms; RELCR= 0.1

4; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
REL= 96.0; DIF= 166.2 PSI; ACTCR= 0.1ms; RELCR= 0.8

IX 1; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
; REL= 101.2; DIF= 156.6 PSI; ACTCR= 0.3ms; RELCR= 0.2

FIX 2; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
.9; REL= 114.8; DIF= 143.1 PSI; ACTCR= 0.1ms; RELCR= 0.6

. FIX 3; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
3.5; REL= 108.6; DIF= 154.9 PSI; ACTCR= 0.7ms; RELCR= 0.5

4; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
45.0; REL= 112.2; DIF= 152.8 PSI; ACTCR= 0.0ms; RELCR= 0.6

~1991 06:54:43.83 DPER DOOR DID NOT CLOSE 1

13; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
241.4; REL= 106.7; DIF= 134.8 PSI; ACTCR= 0.7ms; RELCR= 0.1

14; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
:= 268.5; REL= 115.6; DIF= 152.9 PSI; ACTCR= 1.0ms; RELCR= 0.2

15; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
:= 267.6; REL= 117.1; DIF= 149.9 PSI; ACTCR= 0.9ms; RELCR= 0.2

FIX 4; C= 0000000; BIN=6000 ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
DIF= 136.3 PSI; ACTCR= 0.0ms; RELCR= 1.0

Dist
Lot # 9-8

9-17-91

1 SER 1; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 255.2; REL= 119.7; DIF= 135.5 PSI; ACTCR= 0.1ms; RELCR= 0.1

2 SER 2; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 259.1; REL= 115.1; DIF= 143.9 PSI; ACTCR= 0.1ms; RELCR= 0.2

3 SER 3; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 250.9; REL= 110.2; DIF= 140.6 PSI; ACTCR= 1.6ms; RELCR= 0.1

4 SER 4; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 263.5; REL= 108.4; DIF= 155.1 PSI; ACTCR= 0.0ms; RELCR= 0.0

5 SER 5; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 260.1; REL= 119.7; DIF= 140.4 PSI; ACTCR= 0.0ms; RELCR= 1.1

6 SER 6; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 249.2; REL= 113.5; DIF= 135.7 PSI; ACTCR= 0.0ms; RELCR= 0.1

7 SER 7; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 261.0; REL= 111.1; DIF= 149.9 PSI; ACTCR= 0.0ms; RELCR= 0.0

8 SER 8; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 253.8; REL= 105.1; DIF= 148.6 PSI; ACTCR= 0.0ms; RELCR= 0.5

17-SEP-1991 09:03:38.46 OPER DOOR DID NOT OPEN 1

9 SER 9; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 255.0; REL= 113.2; DIF= 141.8 PSI; ACTCR= 0.0ms; RELCR= 0.8

SER 10; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 276.9; REL= 121.4; DIF= 155.5 PSI; ACTCR= 1.0ms; RELCR= 0.2

SER 11; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 266.9; REL= 124.2; DIF= 142.7 PSI; ACTCR= 0.9ms; RELCR= 0.2

SER 12; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 256.0; REL= 123.6; DIF= 131.4 PSI; ACTCR= 0.0ms; RELCR= 0.1

SER 13; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 258.1; REL= 109.9; DIF= 148.3 PSI; ACTCR= 0.9ms; RELCR= 0.0

SER 14; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 256.2; REL= 115.8; DIF= 140.4 PSI; ACTCR= 0.1ms; RELCR= 0.3

SER 15; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 250.0; REL= 115.2; DIF= 134.8 PSI; ACTCR= 0.7ms; RELCR= 0.2

SER 16; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 265.4; REL= 112.2; DIF= 153.1 PSI; ACTCR= 0.1ms; RELCR= 0.0

SER 17; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=25.6; LEAK RATE= 2.9
ACT= 263.3; REL= 111.7; DIF= 151.4 PSI; ACTCR= 0.1ms; RELCR= 1.1

ACT= 246.6; REL= 107.0; DIF= 139.5 PSI; ACTCR= 0.0ms; RELCR= 0.1

SER 19; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=25.6; LEAK RATE= 2.9
ACT= 254.9; REL= 114.5; DIF= 140.4 PSI; ACTCR= 0.0ms; RELCR= 0.5

SER 20; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=25.6; LEAK RATE= 2.9
ACT= 251.8; REL= 106.7; DIF= 145.1 PSI; ACTCR= 0.7ms; RELCR= 0.2

SER 21; FIX 1; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT= 254.3; REL= 107.2; DIF= 147.1 PSI; ACTCR= 0.0ms; RELCR= 0.1

SER 22; FIX 2; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT= 257.2; REL= 113.0; DIF= 144.2 PSI; ACTCR= 0.1ms; RELCR= 0.0

SER 23; FIX 3; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT= 263.6; REL= 122.2; DIF= 141.5 PSI; ACTCR= 0.8ms; RELCR= 0.3

SER 24; FIX 4; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT= 258.1; REL= 110.9; DIF= 147.2 PSI; ACTCR= 0.8ms; RELCR= 0.2

SER 25; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT= 266.2; REL= 114.4; DIF= 151.8 PSI; ACTCR= 0.0ms; RELCR= 0.8

SER 26; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT= 247.8; REL= 117.7; DIF= 130.1 PSI; ACTCR= 0.7ms; RELCR= 0.4

SER 27; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT= 272.5; REL= 105.4; DIF= 167.1 PSI; ACTCR= 0.8ms; RELCR= 0.6

SER 28; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT= 264.2; REL= 116.2; DIF= 148.0 PSI; ACTCR= 0.1ms; RELCR= 0.1

SER 29; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT= 262.9; REL= 120.1; DIF= 142.9 PSI; ACTCR= 0.8ms; RELCR= 0.2

SER 30; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT= 259.2; REL= 113.1; DIF= 146.1 PSI; ACTCR= 0.0ms; RELCR= 0.0

SER 31; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT= 266.0; REL= 115.4; DIF= 150.6 PSI; ACTCR= 0.8ms; RELCR= 0.3

SER 32; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT= 255.3; REL= 115.2; DIF= 140.2 PSI; ACTCR= 0.1ms; RELCR= 0.1

17-SEP-1991 09:07:03.53 TEST STATION PRESSURE LEAK TIMEOUT 1

SER 33; FIX 1; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT= 0.0; REL= 0.0; DIF= 0.0 PSI; ACTCR= 0.0ms; RELCR= 0.0

SER 34; FIX 2; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT= 0.0; REL= 0.0; DIF= 0.0 PSI; ACTCR= 0.0ms; RELCR= 0.0

SER 35; FIX 3; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT= 0.0; REL= 0.0; DIF= 0.0 PSI; ACTCR= 0.0ms; RELCR= 0.0

SER 36; FIX 4; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT= 0.0; REL= 0.0; DIF= 0.0 PSI; ACTCR= 0.0ms; RELCR= 0.0

17-SEP-1991 09:07:12.40 OPEN DOOR DID NOT OPEN 1

1 Disc Lot# 9-8

9-17-91

1 SER 1; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 255.2; REL= 119.7; DIF= 135.5 PSI; ACTCR= 0.1ms; RELCR= 0.1

2 SER 2; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 259.1; REL= 115.1; DIF= 143.9 PSI; ACTCR= 0.1ms; RELCR= 0.2

3 SER 3; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 250.9; REL= 110.2; DIF= 140.6 PSI; ACTCR= 1.6ms; RELCR= 0.1

4 SER 4; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.0; LEAK RATE= 2.4
ACT= 263.5; REL= 108.4; DIF= 155.1 PSI; ACTCR= 0.0ms; RELCR= 0.0

5 SER 5; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 260.1; REL= 119.7; DIF= 140.4 PSI; ACTCR= 0.0ms; RELCR= 1.1

6 SER 6; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 249.2; REL= 113.5; DIF= 135.7 PSI; ACTCR= 0.0ms; RELCR= 0.1

7 SER 7; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 261.0; REL= 111.1; DIF= 149.9 PSI; ACTCR= 0.0ms; RELCR= 0.0

8 SER 8; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.3; MRRD=25.7; LEAK RATE= 2.4
ACT= 253.8; REL= 105.1; DIF= 148.6 PSI; ACTCR= 0.0ms; RELCR= 0.5

17-SEP-1991 09:03:38.46 DPER DOOR DID NOT OPEN 1

9 SER 9; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 255.0; REL= 113.2; DIF= 141.8 PSI; ACTCR= 0.0ms; RELCR= 0.8

SER 10; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 276.9; REL= 121.4; DIF= 155.5 PSI; ACTCR= 1.0ms; RELCR= 0.2

SER 11; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 266.9; REL= 124.2; DIF= 142.7 PSI; ACTCR= 0.9ms; RELCR= 0.2

SER 12; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.6; MRRD=26.4; LEAK RATE= 2.6
ACT= 255.0; REL= 123.6; DIF= 131.4 PSI; ACTCR= 0.0ms; RELCR= 0.1

SER 13; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 258.1; REL= 109.9; DIF= 148.3 PSI; ACTCR= 0.9ms; RELCR= 0.0

SER 14; FIX 2; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 256.2; REL= 115.8; DIF= 140.4 PSI; ACTCR= 0.1ms; RELCR= 0.3

SER 15; FIX 3; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 250.0; REL= 115.2; DIF= 134.8 PSI; ACTCR= 0.7ms; RELCR= 0.2

SER 16; FIX 4; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=26.2; LEAK RATE= 2.7
ACT= 265.4; REL= 112.2; DIF= 153.1 PSI; ACTCR= 0.1ms; RELCR= 0.0

SER 17; FIX 1; C= 0000000; BIN=6000 ; MRRU=90.0; MRRD=25.6; LEAK RATE= 2.9
ACT= 263.3; REL= 111.9; DIF= 151.4 PSI; ACTCR= 0.1ms; RELCR= 1.1

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ACT=  246.6; REL=  107.0; DIF= 139.5 PSI; ACTCR=    0.0ms; RELCR=    0.1

SER   19; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=25.6; LEAK RATE= 2.9
ACT=  254.9; REL=  114.5; DIF= 140.4 PSI; ACTCR=    0.0ms; RELCR=    0.5

SER   20; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=25.6; LEAK RATE= 2.9
ACT=  251.8; REL=  106.7; DIF= 145.1 PSI; ACTCR=    0.7ms; RELCR=    0.2


SER   21; FIX 1; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT=  254.3; REL=  107.2; DIF= 147.1 PSI; ACTCR=    0.0ms; RELCR=    0.1

SER   22; FIX 2; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT=  257.2; REL=  113.0; DIF= 144.2 PSI; ACTCR=    0.1ms; RELCR=    0.0

SER   23; FIX 3; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT=  263.6; REL=  122.2; DIF= 141.5 PSI; ACTCR=    0.0ms; RELCR=    0.3

SER   24; FIX 4; C= 0000000; BIN=GOOD ; MRRU=91.6; MRRD=26.2; LEAK RATE= 2.6
ACT=  258.1; REL=  110.9; DIF= 147.2 PSI; ACTCR=    0.0ms; RELCR=    0.2


SER   25; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT=  266.2; REL=  114.4; DIF= 151.8 PSI; ACTCR=    0.0ms; RELCR=    0.8

SER   26; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT=  247.8; REL=  117.7; DIF= 130.1 PSI; ACTCR=    0.7ms; RELCR=    0.4

SER   27; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT=  272.5; REL=  105.4; DIF= 167.1 PSI; ACTCR=    0.0ms; RELCR=    0.6

SER   28; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.1; MRRD=26.1; LEAK RATE= 3.5
ACT=  264.2; REL=  116.2; DIF= 148.0 PSI; ACTCR=    0.1ms; RELCR=    0.1


SER   29; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT=  262.9; REL=  120.1; DIF= 142.9 PSI; ACTCR=    0.0ms; RELCR=    0.2

SER   30; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT=  259.2; REL=  113.1; DIF= 146.1 PSI; ACTCR=    0.0ms; RELCR=    0.0

SER   31; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT=  266.0; REL=  115.4; DIF= 150.6 PSI; ACTCR=    0.0ms; RELCR=    0.3

SER   32; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.9; MRRD=27.0; LEAK RATE= 2.6
ACT=  255.5; REL=  115.2; DIF= 140.2 PSI; ACTCR=    0.1ms; RELCR=    0.1


17-SEP-1991 09:07:03.53  TEST STATION PRESSURE LEAK TIMEOUT          1


SER   33; FIX 1; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT=    0.0; REL=    0.0; DIF=   0.0 PSI; ACTCR=    0.0ms; RELCR=    0.0

SER   34; FIX 2; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT=    0.0; REL=    0.0; DIF=   0.0 PSI; ACTCR=    0.0ms; RELCR=    0.0

SER   35; FIX 3; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT=    0.0; REL=    0.0; DIF=   0.0 PSI; ACTCR=    0.0ms; RELCR=    0.0

SER   36; FIX 4; C= 0100405; BIN=LEAK ; MRRU= 0.0; MRRD= 0.0; LEAK RATE= 0.0
ACT=    0.0; REL=    0.0; DIF=   0.0 PSI; ACTCR=    0.0ms; RELCR=    0.0


17-SEP-1991 09:07:12.41  OPER DOOR DID NOT OPEN          1
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TI-NHTSA 002415

Start ATI	9469 Liesbm.	9-8	Pass/Fail							
	50K	cont.	✓							
	50K	cont	✓							
	50K	cont.	✓							
	50K	cont.	✓							
	50K	cont	✓							
	50K	cont	✓							
	50K	cont.	✓							
	50K	cont	✓							
	50K	cont.	✓							
	50K	cont.	✓							
TOTAL:	500000									
END.										

Disc Lot # 9-4

9-17-91

1 SER 13; FIX 1; C= 0000000; BIN=0000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 263.8; REL= 79.1; DIF= 184.7 PSI; ACTCR= 0.7ms; RELCR= 0.3

2 SER 14; FIX 2; C= 0000000; BIN=0000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 261.8; REL= 76.4; DIF= 185.4 PSI; ACTCR= 0.1ms; RELCR= 0.2

3 SER 15; FIX 3; C= 0000000; BIN=0000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 272.0; REL= 77.5; DIF= 194.5 PSI; ACTCR= 0.6ms; RELCR= 0.1

4 SER 16; FIX 4; C= 0000000; BIN=0000 ; MRRU=90.0; MRRD=22.9; LEAK RATE= 2.7
ACT= 269.3; REL= 77.8; DIF= 191.5 PSI; ACTCR= 0.1ms; RELCR= 0.9

5 SER 17; FIX 1; C= 0000000; BIN=0000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 260.1; REL= 83.6; DIF= 176.5 PSI; ACTCR= 0.1ms; RELCR= 0.2

6 SER 18; FIX 2; C= 0000000; BIN=0000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 247.3; REL= 71.9; DIF= 175.4 PSI; ACTCR= 0.7ms; RELCR= 0.4

7 SER 19; FIX 3; C= 0000000; BIN=0000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 251.0; REL= 86.5; DIF= 164.4 PSI; ACTCR= 0.9ms; RELCR= 0.5

8 SER 20; FIX 4; C= 0000000; BIN=0000 ; MRRU=91.1; MRRD=22.0; LEAK RATE= 2.7
ACT= 257.0; REL= 84.6; DIF= 172.4 PSI; ACTCR= 0.7ms; RELCR= 0.2

9 SER 21; FIX 1; C= 0000000; BIN=0000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 249.1; REL= 89.8; DIF= 159.3 PSI; ACTCR= 0.0ms; RELCR= 0.8

SER 22; FIX 2; C= 0000000; BIN=0000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 288.9; REL= 91.8; DIF= 197.1 PSI; ACTCR= 0.4ms; RELCR= 0.6

SER 23; FIX 3; C= 0000000; BIN=0000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 278.4; REL= 70.1; DIF= 208.3 PSI; ACTCR= 0.8ms; RELCR= 0.2

SER 24; FIX 4; C= 0000000; BIN=0000 ; MRRU=90.4; MRRD=22.0; LEAK RATE= 3.5
ACT= 266.3; REL= 81.6; DIF= 184.7 PSI; ACTCR= 0.8ms; RELCR= 0.6

17-SEP-1991 09:53:22.14 OPER DOOR DID NOT CLOSE 1

Disc Lot #9-7

9-17-91

1 SER 1; FIX 1; C= 0000000; BIN=GOOD ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
ACT= 247.7; REL= 106.5; DIF= 141.2 PSI; ACTCR= 0.7ms; RELCR= 0.2

2 SER 2; FIX 2; C= 0000000; BIN=GOOD ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
ACT= 257.4; REL= 101.7; DIF= 155.7 PSI; ACTCR= 0.8ms; RELCR= 0.1

3 SER 3; FIX 3; C= 0000000; BIN=GOOD ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
ACT= 257.4; REL= 103.8; DIF= 153.6 PSI; ACTCR= 0.1ms; RELCR= 0.4

4 SER 4; FIX 4; C= 0000000; BIN=GOOD ; MRRU=89.7; MRRD=25.4; LEAK RATE= 2.7
ACT= 257.4; REL= 105.6; DIF= 151.8 PSI; ACTCR= 0.7ms; RELCR= 0.1

5 SER 5; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
ACT= 262.2; REL= 106.8; DIF= 155.4 PSI; ACTCR= 0.7ms; RELCR= 0.1

6 SER 6; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
ACT= 251.3; REL= 103.0; DIF= 148.3 PSI; ACTCR= 0.0ms; RELCR= 0.7

7 SER 7; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
ACT= 264.5; REL= 106.0; DIF= 158.5 PSI; ACTCR= 0.1ms; RELCR= 0.1

8 SER 8; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.7
ACT= 262.2; REL= 96.0; DIF= 166.2 PSI; ACTCR= 0.1ms; RELCR= 0.8

9 SER 9; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
ACT= 257.9; REL= 101.2; DIF= 156.6 PSI; ACTCR= 0.3ms; RELCR= 0.2

SER 10; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
ACT= 257.9; REL= 114.8; DIF= 143.1 PSI; ACTCR= 0.1ms; RELCR= 0.6

SER 11; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
ACT= 243.5; REL= 108.6; DIF= 134.9 PSI; ACTCR= 0.7ms; RELCR= 0.5

SER 12; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.4; MRRD=26.2; LEAK RATE= 3.4
ACT= 245.0; REL= 112.2; DIF= 132.8 PSI; ACTCR= 0.0ms; RELCR= 0.6

17-SEP-1991 08:54:43.83 OPER DOOR DID NOT CLOSE 1

SER 13; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
ACT= 241.4; REL= 106.7; DIF= 134.8 PSI; ACTCR= 0.7ms; RELCR= 0.1

SER 14; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
ACT= 268.5; REL= 115.6; DIF= 152.9 PSI; ACTCR= 1.0ms; RELCR= 0.2

SER 15; FIX 3; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
ACT= 267.0; REL= 117.1; DIF= 149.9 PSI; ACTCR= 0.9ms; RELCR= 0.2

SER 16; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=25.9; LEAK RATE= 2.5
ACT= 249.8; REL= 111.5; DIF= 138.3 PSI; ACTCR= 0.0ms; RELCR= 1.0

SER 17; FIX 1; C= 0000000; BIN=GOOD ; MRRU=90.2; MRRD=25.4; LEAK RATE= 2.1
ACT= 256.1; REL= 110.1; DIF= 146.0 PSI; ACTCR= 1.3ms; RELCR= 0.5

ACT= 247.0; REL= 112.2; DIF= 134.8 PSI; ACTCR= 0.0ms; RELCR= 0.3

SER 19; FIX 3; C= 0000000; BIN=8000 ; MRRU=90.2; MRRD=25.4; LEAK RATE= 2.1
ACT= 261.8; REL= 101.6; DIF= 160.2 PSI; ACTCR= 0.0ms; RELCR= 0.3

SER 20; FIX 4; C= 0000000; BIN=8000 ; MRRU=90.2; MRRD=25.4; LEAK RATE= 2.1
ACT= 250.7; REL= 114.4; DIF= 136.3 PSI; ACTCR= 0.8ms; RELCR= 1.1

17-SEP-1991 08:55:40.31 OPER DOOR DID NOT CLOSE 1

SER 21; FIX 1; C= 0000000; BIN=8000 ; MRRU=90.3; MRRD=26.1; LEAK RATE= 3.6
ACT= 259.4; REL= 107.6; DIF= 151.8 PSI; ACTCR= 0.1ms; RELCR= 0.4

SER 22; FIX 2; C= 0000000; BIN=8000 ; MRRU=90.3; MRRD=26.1; LEAK RATE= 3.6
ACT= 258.5; REL= 108.0; DIF= 150.5 PSI; ACTCR= 0.0ms; RELCR= 0.2

SER 23; FIX 3; C= 0000000; BIN=8000 ; MRRU=90.3; MRRD=26.1; LEAK RATE= 3.6
ACT= 266.9; REL= 104.9; DIF= 161.9 PSI; ACTCR= 0.9ms; RELCR= 0.4

SER 24; FIX 4; C= 0000000; BIN=8000 ; MRRU=90.3; MRRD=26.1; LEAK RATE= 3.6
ACT= 246.8; REL= 107.6; DIF= 139.2 PSI; ACTCR= 0.7ms; RELCR= 0.2

SER 25; FIX 1; C= 0000000; BIN=8000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.6
ACT= 255.1; REL= 115.9; DIF= 139.1 PSI; ACTCR= 0.0ms; RELCR= 0.5

SER 26; FIX 2; C= 0000000; BIN=8000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.6
ACT= 262.8; REL= 114.0; DIF= 148.8 PSI; ACTCR= 0.7ms; RELCR= 0.1

SER 27; FIX 3; C= 0000000; BIN=8000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.6
ACT= 253.6; REL= 114.9; DIF= 138.8 PSI; ACTCR= 0.0ms; RELCR= 0.2

SER 28; FIX 4; C= 0000000; BIN=8000 ; MRRU=90.2; MRRD=26.1; LEAK RATE= 2.6
ACT= 265.9; REL= 108.0; DIF= 157.9 PSI; ACTCR= 0.8ms; RELCR= 1.0

17-SEP-1991 08:57:22.08 OPER DOOR DID NOT CLOSE 1

SER 29; FIX 1; C= 0000000; BIN=8000 ; MRRU=89.2; MRRD=25.5; LEAK RATE= 2.5
ACT= 266.2; REL= 113.3; DIF= 152.9 PSI; ACTCR= 0.7ms; RELCR= 0.2

SER 30; FIX 2; C= 0000000; BIN=8000 ; MRRU=89.2; MRRD=25.5; LEAK RATE= 2.5
ACT= 245.5; REL= 105.2; DIF= 140.2 PSI; ACTCR= 0.0ms; RELCR= 0.5

SER 31; FIX 3; C= 0000000; BIN=8000 ; MRRU=89.2; MRRD=25.5; LEAK RATE= 2.5
ACT= 256.0; REL= 106.7; DIF= 149.3 PSI; ACTCR= 0.8ms; RELCR= 0.5

SER 32; FIX 4; C= 0000000; BIN=8000 ; MRRU=89.2; MRRD=25.5; LEAK RATE= 2.5
ACT= 251.8; REL= 104.7; DIF= 147.1 PSI; ACTCR= 0.0ms; RELCR= 0.5

17-SEP-1991 08:58:06.50 OPER DOOR DID NOT CLOSE 1

17-SEP-1991 09:00:30.80 OPER DOOR DID NOT CLOSE 1

Start AT/ 9-13-91	3:15 pm	9-5A 9-5B	PASS/Fail			
	50K	CONT.	✓			
	50K	CONT	✓			
	50K	CONT.	✓			
	50K	CONT.	✓			
	50K	CONT	✓			
	50K	CONT	✓			
	50K	CONT.	✓			
	50K	CONT.	FAILED	9-5A #3	9-5A #5	
	50K	CONT.	[illegible]	9-5A #3	9-5A #5	
	50K	CONT.		9-5A #3	9-5A #5	9-5B #1
Total:	500000.					
END. 5:50 AM 9-15-91						

Post Inspection

		ACT	REL	MVD	
9-5A	#1	262	89	1.7	
	2	259	10.2	30% [illegible] high - ⊖ @ 250 N/C @ 262 [illegible] @ 2[illegible]	
	N/C 3	278	92	⊖	
	4	262	94	6.6	⊖ MVD/AIR @ 255
	N/C 5	265	93	⊖	
9-5B	#1 (N/C)	271	93	⊖	
	2	265	95	1.4	⊖ MVD/AIR @ 245
	3	260	100	14.0	⊖ MVD/AIR @ 235
	4	265	93	8.4	
	5	268	89	10.7	⊖ MVD @ 255 N/C @ 200

FINAL INSPECTION 7/P8L2-1

DATE: 9-17-91
DISC LOT 9-4
REEL #
LOT #
WASHER LOT 87

CUSTOMER P/N F3TA-9F724-AA
MAT.I.D.
CUP LOT # 60
CONV.LOT 143
QTY.

DISC LOT 9-7
REEL # 2
LOT # 4
WASHER LOT 91N-

MAT.I.D. 74868-AA3-2
CUP LOT # 66
CONV. LOT 146
QTY. 2000

	TEST	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
1	ACTUATION	263.8	264.8	272.0	267.3	260.1	247.3	251.0	257.0	249.1	247.7	267.4	257.4	257.4	262.9	251.3	244.5	262.9	257.1
	RELEASE	74.4	76.4	77.5	77.8	93.6	71.9	86.5	84.6	89.8	106.5	101.7	112.8	105.6	106.8	103.0	106.0	96.0	[illegible]
2	VOLT DROP	—	—	—	—	—	✓	✓	—	—	—	—	—	—	—	✓	✓	—	—
3	CUR. LEAK	—	—	—	—	—	✓	✓	—	—	—	—	—	—	—	✓	✓	—	—
4	PROOF	—	—	—	—	—	✓	✓	—	—	—	—	—	—	—	✓	✓	—	—
5	IMPULSE	✓	✓	✓	✓	✓	—	—	—	—	✓	✓	✓	✓	✓	—	—	—	—
	ACTUATION	258	255	267	251	252	—	—	—	—	250	258	271	256	263	—	—	—	—
	RELEASE	90	85	86	95	84	—	—	—	—	107	106	117	110	110	—	—	—	—
	VOLT DROP	4.3	2.5	102.9	3.1	2.3	—	—	—	—	.1	2.1	16.7	5.5	1.5	—	—	—	—
	CUR. LEAK						—	—	—	—			[illegible]			—	—	—	—
	PROOF						—	—	—	—						—	—	—	—
7	BURST						—	—	—	—						—	—	—	—
8	DIMSIONAL	—	—	—	—	—	—	—	✓	✓	—	—	—	—	—	—	—	✓	✓
	VISUAL																		
9	TERM. STR	—	—	—	—	—	—	—	✓	✓	—	—	—	—	—	—	—	✓	✓
	ACTUATION	—	—	—	—	—	—	—			—	—	—	—	—	—	—		
	RELEASE	—	—	—	—	—	—	—			—	—	—	—	—	—	—		
	VOLT DROP	—	—	—	—	—	—	—			—	—	—	—	—	—	—		
	CUR. LEAK	—	—	—	—	—	—	—			—	—	—	—	—	—	—		
	PROOF	—	—	—	—	—	—	—			—	—	—	—	—	—	—		

#3 INT. MVD - RUNS HIGH

9-5

17-SEP-1991 13:22:02.76 OPER DOOR DID NOT OPEN 1

SER 33; FIX 1; C= 0002000; BIN=RLCR ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 231.5; REL= 99.8; DIF= 131.7 PSI; ACTCR= 0.6ms; RELCR= 200.0

SER 34; FIX 2; C= 0002000; BIN=RLCR ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 254.3; REL= 101.7; DIF= 152.6 PSI; ACTCR= 0.6ms; RELCR= 54.3

SER 35; FIX 3; C= 0000000; BIN=GOOD ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 238.0; REL= 79.8; DIF= 158.1 PSI; ACTCR= 0.0ms; RELCR= 1.7

SER 36; FIX 4; C= 0000000; BIN=GOOD ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 249.1; REL= 84.5; DIF= 164.6 PSI; ACTCR= 0.0ms; RELCR= 1.3

87 's

SER 37; FIX 1; C= 0001000; BIN=ACCR ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 244.8; REL= 84.2; DIF= 160.6 PSI; ACTCR= 11.1ms; RELCR= 0.3

SER 38; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 236.5; REL= 86.7; DIF= 149.9 PSI; ACTCR= 1.9ms; RELCR= 0.5

SER 39; FIX 3; C= 0002000; BIN=RLCR ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 224.9; REL= 86.4; DIF= 138.5 PSI; ACTCR= 0.0ms; RELCR= 108.8

SER 40; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 229.8; REL= 91.5; DIF= 138.3 PSI; ACTCR= 3.3ms; RELCR= 0.4

98 's

17-SEP-1991 13:23:21.68 OPER DOOR DID NOT CLOSE 1

SER 41; FIX 1; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 283.6; REL= 69.0; DIF= 214.6 PSI; ACTCR= 0.0ms; RELCR= 0.5

SER 42; FIX 2; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 276.1; REL= 89.7; DIF= 186.4 PSI; ACTCR= 0.7ms; RELCR= 0.7

SER 43; FIX 3; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 279.0; REL= 78.2; DIF= 200.8 PSI; ACTCR= 0.7ms; RELCR= 0.3

SER 44; FIX 4; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 281.4; REL= 86.8; DIF= 194.6 PSI; ACTCR= 0.0ms; RELCR= 0.5

17-SEP-1991 13:24:26.94 OPER DOOR DID NOT CLOSE 1

SER 45; FIX 1; C= 0000000; BIN=GOOD ; MRRU=89.1; MRRD=22.7; LEAK RATE= 2.5
ACT= 274.2; REL= 75.6; DIF= 198.6 PSI; ACTCR= 0.0ms; RELCR= 1.1

SER 46; FIX 2; C= 0000000; BIN=GOOD ; MRRU=89.1; MRRD=22.7; LEAK RATE= 2.5
ACT= 291.3; REL= 80.9; DIF= 210.4 PSI; ACTCR= 0.8ms; RELCR= 0.2

SER 47; FIX 3; C= 0000000; BIN=GOOD ; MRRU=89.1; MRRD=22.7; LEAK RATE= 2.5
ACT= 262.6; REL= 81.9; DIF= 180.7 PSI; ACTCR= 0.7ms; RELCR= 0.1

In Lab

START AT:	9-15-91 4:20PM	9-5	PASS/FAIL							
	50K	CONT.	✓							
	50K	CONT	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
TOTAL:	500000									
END.										

Short AT/	9-19-91 10:40	8-7	pass/fail							
	50K	cont.	✓							
	50K	cont	✓							
	50K	cont.	✓							
	50K	cont.	✓							
	50K	cont	✓							
	50K	cont	✓							
	50K	cont.	✓							
	50K	cont.	✓							
	50K	cont.	✓							
	50K	cont.	✓							
Total:	500000									
END.										

Start AT, 9-13-91	3:15 pm	9-5 A 9-5 B	PASS/FAIL			
	50K	CONT.	✓			
	50K	CONT	✓			
	50K	CONT.	✓			
	50K	CONT.	✓			
	50K	CONT.	✓			
	50K	CONT	✓			
	50K	CONT.	✓			
	50K	CONT.	FAILED	9-5A #3	9-5A #5	
	50K	CONT.	[illegible]	9-5A #3	9-5A #5	
	50K	CONT.		9-5A #3	9-5A #5	9-5B #1
Total:	500000					
END. 5:50 pm 9-15-91						

Post Inspection

		ACT	REL	MVD	
9-5A	#1	262	89	1.7	
	2	289	102	30% runs high - Ø @ 250 N/C @ 262 open @ 284	
	(N/C) 3	27A	92	Ø	
	4	262	94	6.6	Ø MVD/N/C @ 255
	(N/C) 5	265	93	Ø	
9-5B	#1	(N/C) 277	93	[illegible]	
	2	265	95	1.4	Ø MVD/N/C @ 245
	3	260	100	14.0	Ø MVD/N/C @ 235
	4	265	93	8.4	
	5	268	89	10.7	Ø MVD @ 255 N/C @ 260

TI-NHTSA 002425

Start AT/ 9/19/91	3:15 PM	9-5A 9-5B	PASS/Fail						
	50K	CONT.	✓						
	50K	CONT	✓						
	50K	CONT.	✓						
	50K	CONT.	✓						
	50K	CONT	✓						
	50K	CONT	✓						
	50K	CONT.	✓						
	50K	CONT.	FAILED	9-5A #3	9-5B #5				
	50K	CONT.	✓	9-5A #3	9-5A #5				
	50K	CONT.		9-5A #3	9-5A #5	9-5B #1			
Total:	500000								
END. 5:50 AM 9-16-91									
				Post Impeller					
			Act	Ref	MVD				
9-5A	#1		266	89	1.7				
	2		284	102	30 Runs	high - @ @ 250 N/C @ 262 and @ 2			
	N/C 3		278	92	↓				
	4		262	94	6.6	@ MVD/N/C @ 255			
	N/C 5		265	93	↓				
9-5B	#1	N/C	277	92	↓				
	2		265	95	1.4	@ MVD/N/C @ 245			
	3		260	100	14.0	@ MVD/N/C @ 255			
	4		265	93	8.4				
	5		268	89	10.7	@ MVD @ 255 : N/C @ 260			

FINAL INSPECTION . 77[illegible]2-8

DATE: 9-17-91
DISC LOT 9-4
REEL #
LOT #
WASHER LOT 97

CUSTOMER P/N [illegible]
MAT.I.D.
CUP LOT # 60
COMM.LOT 143
QTY.

DISC LOT 9-7
REEL # 2
LOT # 4
WASHER LOT 9/N

MAT.I.D. 74[illegible]-A83-2
CUP LOT # 66
COMM. LOT 146
QTY. 2000

TEST	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
1 ACTUATION	263.8	262.8	242.0	248.3	260.1	272.3	251.4	267.0	249.1	247.7	257.4	251.4	262.4	248.9	251.3	244.5	262.7	[illegible]
RELEASE	79.1	76.4	77.5	77.8	83.6	71.9	86.5	84.6	89.8	[illegible]	101.7	103.3	105.6	106.8	113.0	106.4	96.0	[illegible]
2 VOLT DROP	---	---	---	---	---	✓	✓	---	---	---	---	---	---	---	✓	✓	---	---
3 CUR.LEAK	---	---	---	---	---	✓	✓	---	---	---	---	---	---	---	✓	✓	---	---
4 PROOF	---	---	---	---	---	✓	✓	---	---	---	---	---	---	---	✓	✓	---	---
5 IMPULSE	✓	✓	✓	✓	✓	---	---	---	---	✓	✓	✓	✓	✓	---	---	---	---
ACTUATION	258	255	262	(89) 251	252	---	---	---	---	250	258	2.11	256	263	---	---	---	---
RELEASE	90	85	86	95	84	---	---	---	---	107	106	112	110	110	---	---	---	---
VOLT DROP	4.3	2.5	102.8	3.1	2.3	---	---	---	---	.1	2.1	14.0	5.5	1.5	---	---	---	---
CUR.LEAK						---	---	---	---			NO CHANGE (CO[illegible])			---	---	---	---
PROOF						---	---	---	---						---	---	---	---
7 BURST						---	---	---	---						---	---	---	---
8 DIMSIONAL	---	---	---	---	---	---	---	✓	✓	---	---	---	---	---	---	---	✓	✓
VISUAL																		
9 TERM. STR	---	---	---	---	---	---	---	✓	✓	---	---	---	---	---	---	---	✓	✓
ACTUATION	---	---	---	---	---	---	---			---	---	---	---	---	---	---		
RELEASE	---	---	---	---	---	---	---			---	---	---	---	---	---	---		
VOLT DROP	---	---	---	---	---	---	---			---	---	---	---	---	---	---		
CUR.LEAK	---	---	---	---	---	---	---			---	---	---	---	---	---	---		
PROOF	---	---	---	---	---	---	---			---	---	---	---	---	---	---		

#3 INT. HVD - RUNS HIGH

TI-NHTSA 002427

9-5

17-SEP-1991 13:22:02.76 OPER DOOR DID NOT OPEN 1

SER 33; FIX 1; C= 0002000; BIN=RLCR ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 231.5; REL= 99.8; DIF= 131.7 PSI; ACTCR= 0.6ms; RELCR= 200.0

SER 34; FIX 2; C= 0002000; BIN=RLCR ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 254.3; REL= 101.7; DIF= 152.6 PSI; ACTCR= 0.6ms; RELCR= 54.3

SER 35; FIX 3; C= 0000000; BIN=GOOD ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 238.0; REL= 79.8; DIF= 158.1 PSI; ACTCR= 0.0ms; RELCR= 1.7

SER 36; FIX 4; C= 0000000; BIN=GOOD ; MRRU=89.9; MRRD=22.8; LEAK RATE= 3.0
ACT= 249.1; REL= 84.5; DIF= 164.6 PSI; ACTCR= 0.0ms; RELCR= 1.3

87 .S

SER 37; FIX 1; C= 0001000; BIN=ACCR ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 244.8; REL= 84.2; DIF= 160.6 PSI; ACTCR= 11.1ms; RELCR= 0.3

SER 38; FIX 2; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 236.5; REL= 86.7; DIF= 149.9 PSI; ACTCR= 1.9ms; RELCR= 0.5

SER 39; FIX 3; C= 0002000; BIN=RLCR ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 224.9; REL= 86.4; DIF= 138.5 PSI; ACTCR= 0.0ms; RELCR= 108.8

SER 40; FIX 4; C= 0000000; BIN=GOOD ; MRRU=90.0; MRRD=23.5; LEAK RATE= 2.2
ACT= 229.8; REL= 91.5; DIF= 138.3 PSI; ACTCR= 3.3ms; RELCR= 0.4

98 .S

17-SEP-1991 13:23:21.68 OPER DOOR DID NOT CLOSE 1

SER 41; FIX 1; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 283.6; REL= 69.0; DIF= 214.6 PSI; ACTCR= 0.0ms; RELCR= 0.5

SER 42; FIX 2; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 276.1; REL= 89.7; DIF= 186.4 PSI; ACTCR= 0.7ms; RELCR= 0.7

SER 43; FIX 3; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 279.0; REL= 78.2; DIF= 200.8 PSI; ACTCR= 0.7ms; RELCR= 0.3

SER 44; FIX 4; C= 0000000; BIN=GOOD ; MRRU=91.3; MRRD=21.7; LEAK RATE= 2.5
ACT= 281.4; REL= 86.8; DIF= 194.6 PSI; ACTCR= 0.0ms; RELCR= 0.5

17-SEP-1991 13:24:26.94 OPER DOOR DID NOT CLOSE 1

SER 45; FIX 1; C= 0000000; BIN=GOOD ; MRRU=89.1; MRRD=22.7; LEAK RATE= 2.5
ACT= 274.2; REL= 75.6; DIF= 198.6 PSI; ACTCR= 0.0ms; RELCR= 1.1

SER 46; FIX 2; C= 0000000; BIN=GOOD ; MRRU=89.1; MRRD=22.7; LEAK RATE= 2.5
ACT= 291.3; REL= 80.9; DIF= 210.4 PSI; ACTCR= 0.8ms; RELCR= 0.2

SER 47; FIX 3; C= 0000000; BIN=GOOD ; MRRU=89.1; MRRD=22.7; LEAK RATE= 2.5
ACT= 262.6; REL= 81.9; DIF= 180.7 PSI; ACTCR= 0.7ms; RELCR= 0.3

START AT:	9/29/ 1:15 PM.	9-8	PASS/ Fail							
	50K	CONT.	✓							
	50K	CONT	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT	✓							
	50K	CONT	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
TOTAL:	500000									
END.										

-MSG #= 60311 FR=SBO1 TO=PCQA SENT=09/18/91 03:06 PM
Rf=045 ST=C DIV=0050 CC=00101 BY=SBO1 AT=09/18/91 03:05 PM

To:	Dave Czarn	XARN
	~~Tom Cherbonneau~~	TC
	Jim Natt	PCQA
	Mike DeMattia	PCQA

CC- Elaine FYI/Sarah

From: STEPHEN B. OFFILER SBO1

Subj: The following message is for your information
-******** ORIGINAL MSG # 01218394 RECEIVED ON 09/18 AT 12:30 FOLLOWS ********-

September 18, 1991

To: Gary Snyder

Cc: Steve Offiler
Charlie Douglas
Steve Major
Martha Sullivan

Fm: Joe Sabuck

Sj: CCPS ISN

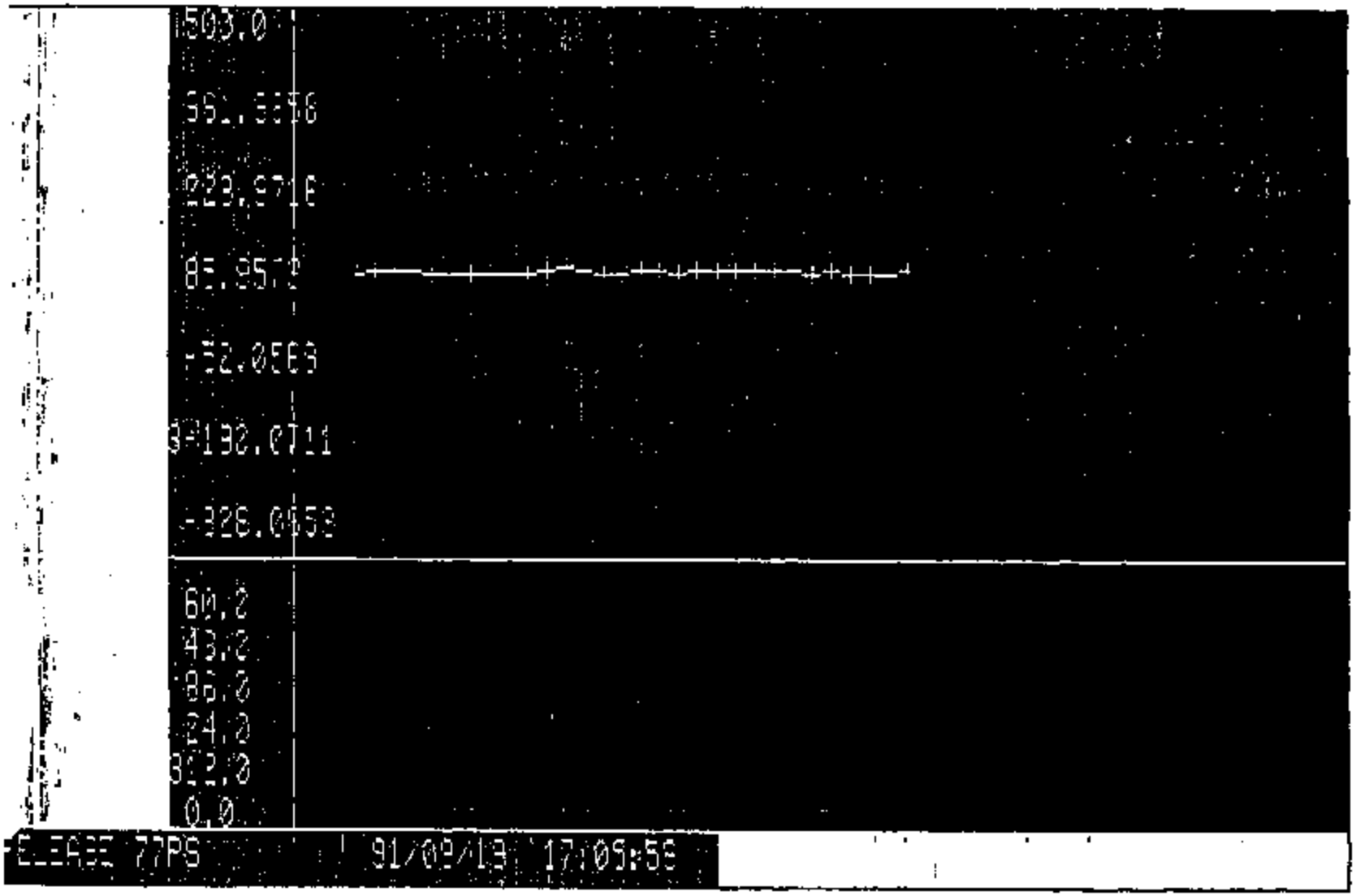
Bruce Pease was made aware of our Passcar ISN exception on 09/16/91. That being, impulse testing performed with 24 virgin units, rather than the 12 fluid/12 virgin mix. Since the Passcar HGSC launch is being held up due to the AODE Transmission launch delay, combined with our S7PS fall back, he wants TI to concentrate on fixing the 77PS automation situation and ISN at that time.

Fred Sandershot was notified today, 9/18/91. He was amiable to Bruce's position. However, he needs the 77PS Light Truck ISN number today. I will be meeting with him on 9/23/91 to explain in more detail.

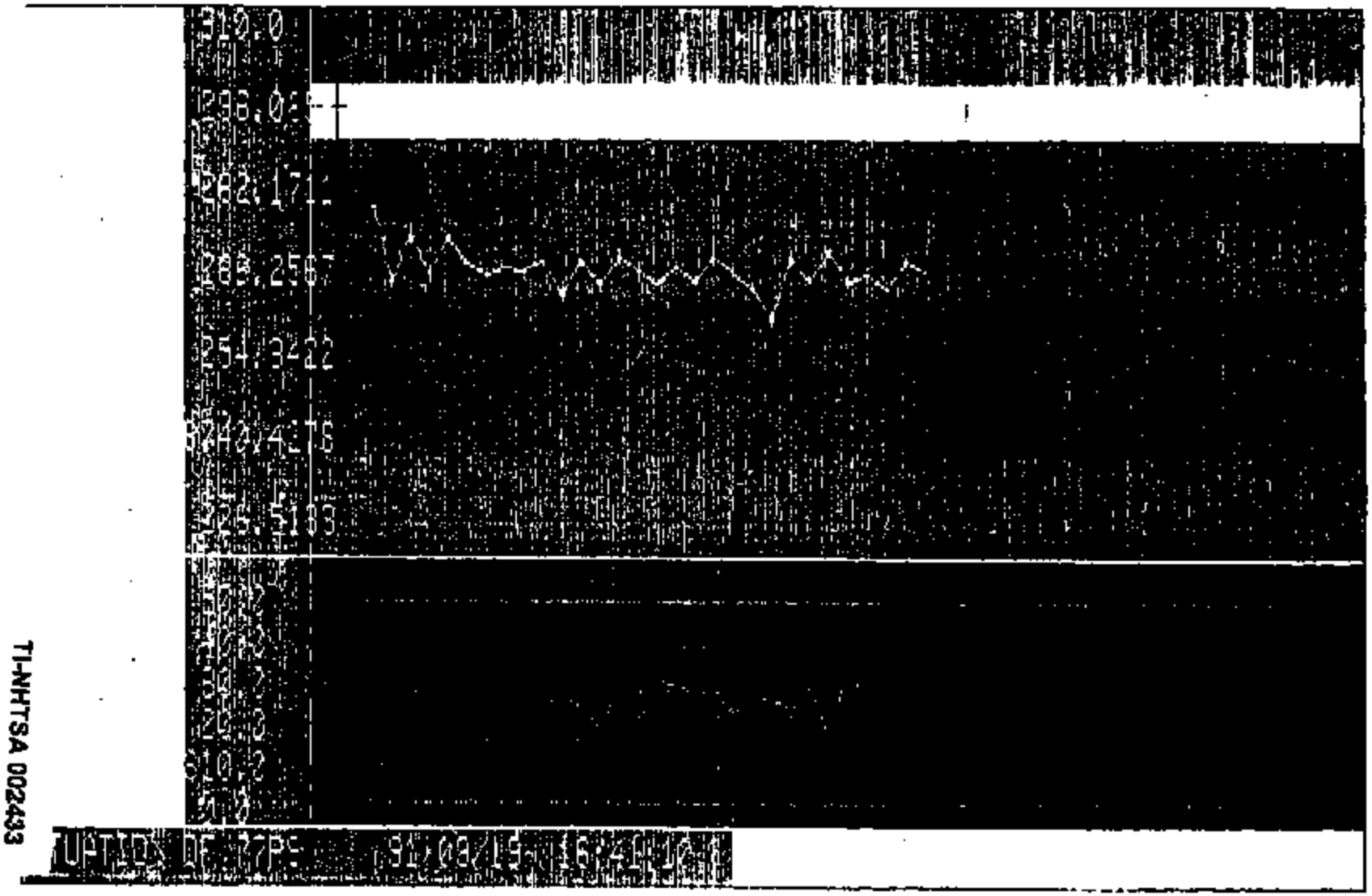
Regards,
Joe (WHL8) 313-553-1557

In Lot

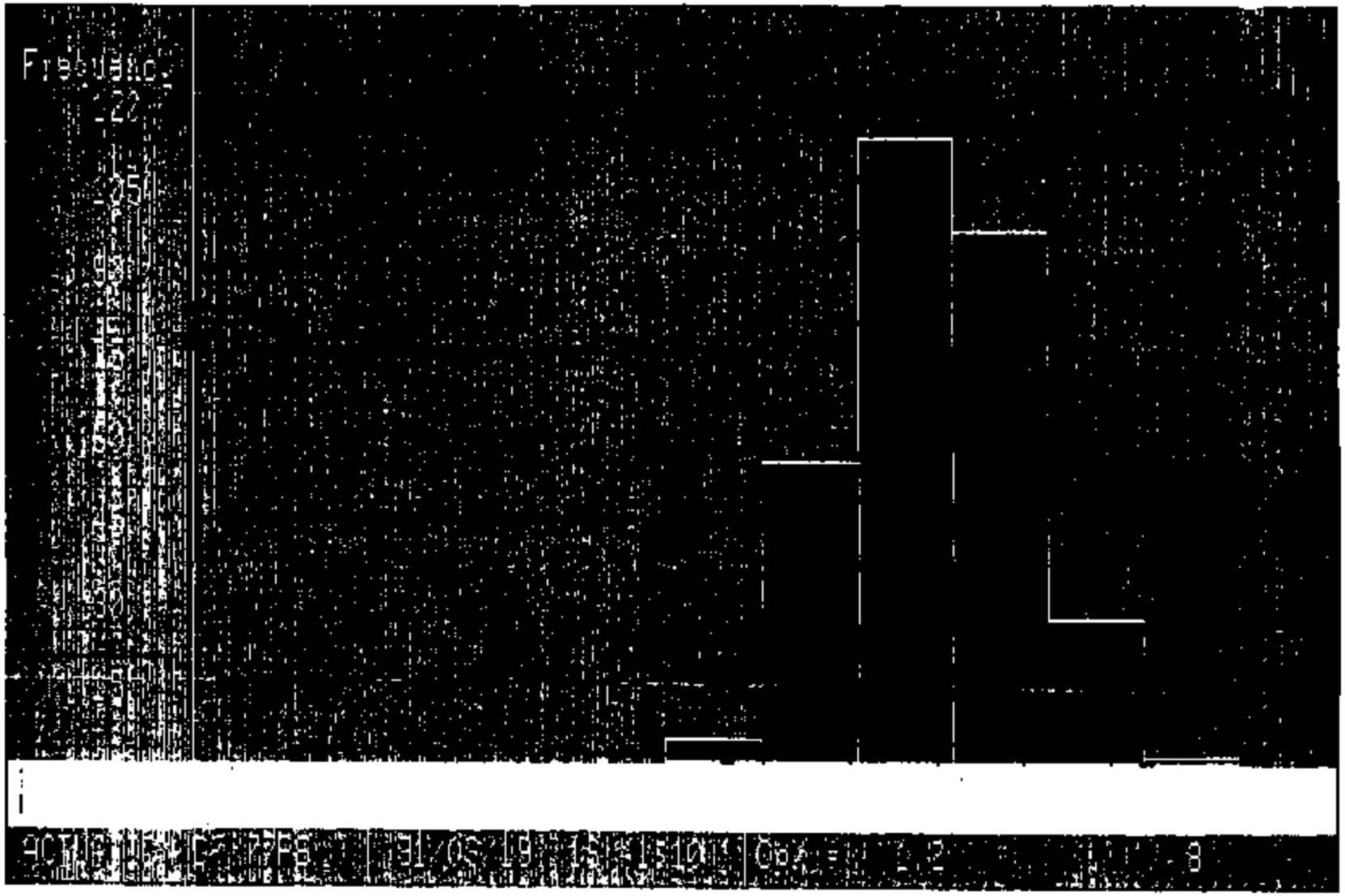
Start AT:	9-18-91 4:26 PM	9-5	PASS/FAIL							
	50K	cont.	✓							
	50K	cont	✓							
	50K	cont.	✓							
	50K	cont.	✓							
	50K	cont	√							
	50K	cont	√							
	50K	cont.	√							
	50K	cont.	√							
	50K	cont.	√							
	50K	cont.	√							
Total:	500.0									
END.										



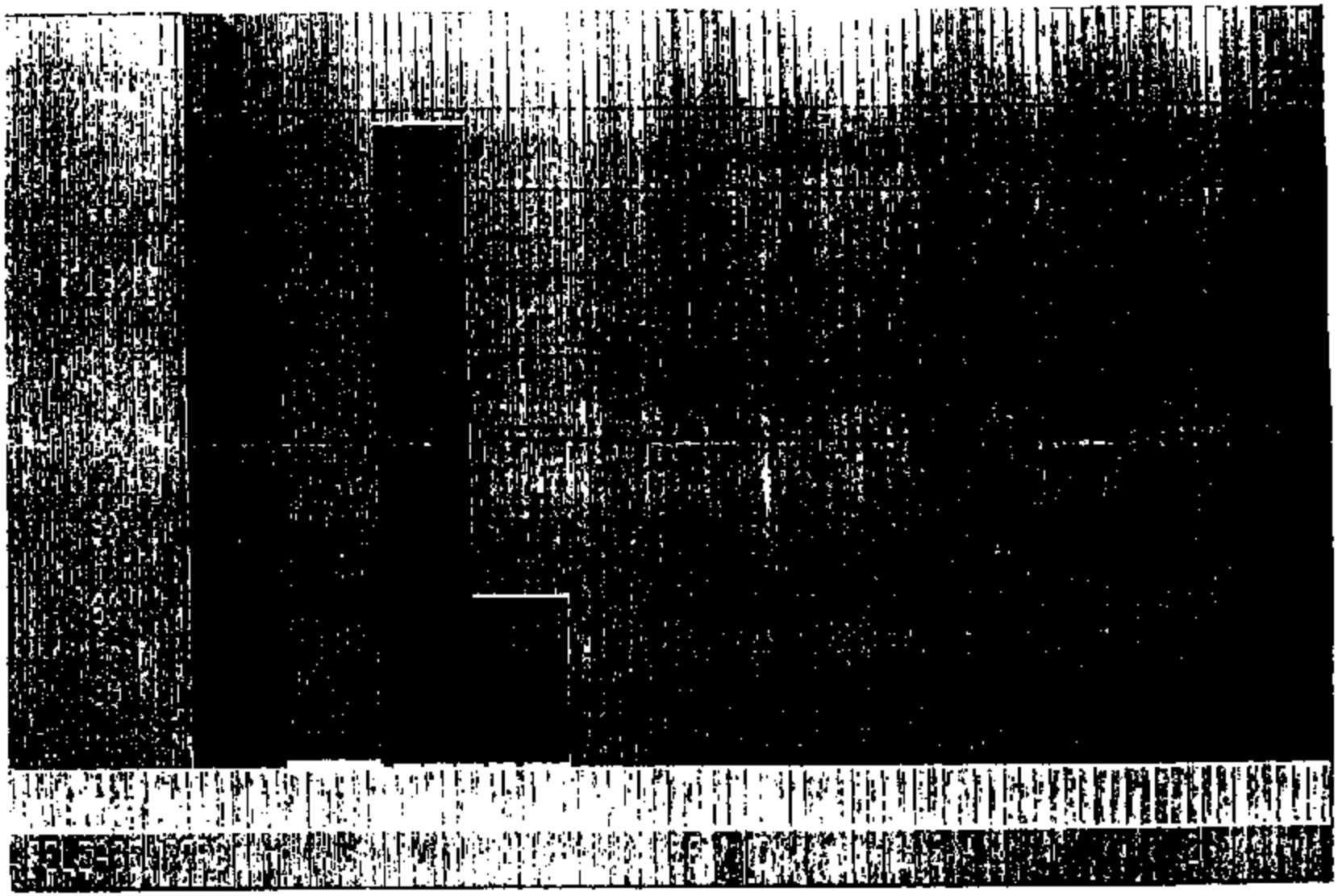
cale perator lot overlay very n imits



cale perator lot overlay very n imits



uit ivisions ast i p [redacted] perator very n



uit ivisions ast i p perator very n

START AT:	9-19-91 10:40	8-7	PASS/FAIL							
	50K	CONT.	✓							
	50K	CONT	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
	50K	CONT.	✓							
TOTAL:	500000									
END.										

REPORT OF [illegible] TESTING
FORD PASSENGER CAR
ELECTRONIC SPEED CONTROL
DEACTIVATION PRESSURE SWITCH
PB/91/49

TEXAS INSTRUMENTS

TI-NHTSA 002437

REPORT OF ISR TESTING
FORD PASSENGER CAR
ELECTRONIC SPEED CONTROL
DEACTIVATION PRESSURE SWITCH
PS/91/49

TEXAS INSTRUMENTS INCORPORATED
CONTROL PRODUCTS DIVISION
PRECISION CONTROLS DEPARTMENT
34 FOREST STREET
ATTLEBORO, MA 02703

TEST LOT NO.	TEST	DEVICE
TESTED BY		
APPROVED BY	TEXAS INSTRUMENTS — MATERIALS & CONTROLS GROUP, ATTLEBORO, MA 02703	DOC.
DATE 91-09-30		PAGE

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TABLE OF CONTENTS

1.0 GENERAL

1.1 Customer: Ford Motor Company, Passenger Engineering

1.2 TI Part Number: 77PSL2-1

1.3 Customer Part Number: F2VC-9F924-AB

1.4 Specifications: Ford Engineering Specification number (delta) ES-F2VC-9F924-AA

1.5 Date of Completion: 910920

1.6 Quantity of Units Tested: 104

1.7 Disposition of Tested Units:

1.7.1 Devices 156-15-37 thru -42 were destroyed in Burst testing (3.5)

1.7.2 All other devices are retained under quarantine.

1.8 TI test series number: 156-15-104

1.9 TI Pressure Switch test report number: PS/91/49

2.0 OBJECTIVE

This battery of tests was performed to demonstrate the ability of 77P8L2-1 to conform to customer specifications given in (delta) ES-F2VC-9F924-AA, in fulfillment of the requirements of the Initial Sample Report. Units tested were built using fully qualified production components and production assembly equipment.

TEST LOT NO.	TEST	DEVICE
TESTED BY		
APPROVED BY	TEXAS INSTRUMENTS — MATERIALS & CONTROLS GROUP, ATTLEBORO, MA 02703	DOC.
DATE 91-05-20		PAGE

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3.0 TEST PROCEDURES AND RESULTS

All switches were tested to Ford Engineering Specification (delta) ES-F2VC-9F924-AA. A copy of this ES is included in Appendix 4.1. Procedural details are therefore omitted from the presentation of results in most cases. In those instances where the ES procedure methodology is modified, a complete explanation of the actual procedure is presented. For all tests, raw data is included in Appendix 4.2.1.

A flow chart is included in the ES (frame 4 of 18), as follows: All test devices are to be subject to an initial characterization consisting of Calibration, Voltage Drop, Current Leakage, and Proof. Devices are then divided into groups per the flow chart and subject to the indicated tests in the indicated order. Finally, devices are subject to a final characterization. However, it became necessary to deviate from this exact procedure as described below. We believe that this alternate procedure still meets the intent of the ES.

During the first phase of Impulse (3.10) testing (12 virgin devices) it was discovered that the pressure-sensing assemblies were improperly built, resulting in a reduction in life of the diaphragm. During investigation of the root cause of diaphragm problems, it was learned that the final crimp station on the automatic assembly equipment experiences this problem only on this particular part; all other devices built on this equipment are not subject to this. Witness the good results obtained with the Light Truck (F3TA-9F924-AA) version of this test (see data in Appendix 4.2.7), built on the automatic assembly equipment, as supporting evidence.

3.0 TEST PROCEDURES AND RESULTS, CONTINUED

While analysis and permanent corrective actions are ongoing, it was also learned that the manual assembly equipment which performs the final crimp produces pressure-sensing assemblies which have acceptable life. This equipment was used 4Q90 during validation of F2VC-9F924-BB (TI P/N 57PSL5-3) which uses exactly the same pressure sensing assembly, as well as to produce the rebuilt Impulse devices (157-15-81 thru -104) and will continue to be used until such time as the permanent corrective actions are in place on the automatic equipment and re-validation is completed.

To expedite completion of the switch validation, 12 of the rebuilt parts were not subjected to the Fluid Resistance test (3.9). However, this will not affect the results of the Impulse test in any way, since the various fluids do not come into contact with the diaphragm. Invoking similarity with the Light Truck (F3TA-9F924-AA) version of this test which was run simultaneously, all devices undergoing Fluid Resistance in this test easily passed their subsequent Impulse test.

TEST LOT NO.	TEST	DEVICE
TESTED BY		
APPROVED BY	TEXAS INSTRUMENTS MATERIALS & CONTROLS GROUP ATTLEBORO, MA 02703	DOC.
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3.1 CALIBRATION

3.1.1 Procedure: Calibration is checked at room temperature using ambient air as the pressure medium. Calibration settings, as specified on the part drawing, are actuation (electrical contacts opening) at 200 - 300 psig, and release (contacts reclosing) at 40 psig minimum. For the purpose of stabilization, actuation values are recorded on the sixth cycle, after subjecting the switch to two (2) pressure cycles to 800 psig minimum and back to zero, followed by three (3) cycles to 1.1 times actuation pressure minimum and back to zero. The change in continuity is measured while conducting 750 +/- 50 milliamps at 13.0 +/- 1.0 volts DC.

3.1.2 Equipment: Custom TI designed and built pressure check station, using Heise Model CM96365 pressure gage calibrated on a regular quarterly schedule. Continuity change measured on custom TI designed and built equipment meeting the above electrical parameters.

3.1.3 Initial Results: All 72 original devices tested were found to be within specification.

3.1.4 Final Results: 42 surviving original devices were found to be within specification. 6 were destroyed in Burst (3.5), 24 were aborted from Impulse (3.10). 24 additional devices which underwent Impulse but had no initial characterization were also found to be within specification at the completion of testing.

3.2 VOLTAGE DROP

3.2.1 Equipment: Fluke Model 8020B Digital Multimeter, calibrated quarterly, used in conjunction with the continuity equipment in 3.1.2.

3.2.2. Initial results: The average voltage drop was 4.9 millivolts, and the standard deviation was 1.9. All values are significantly below the specification of 200 millivolts maximum.

3.2.3 Final results: The average voltage drop was 6.4 millivolts, and the standard deviation was 3.5.

TEST LOT NO.	TEST	DEVICE
TESTED BY		
APPROVED BY	TEXAS INSTRUMENTS MATERIALS & CONTROLS GROUP ATTLEBORO, MA 02703	DOC.
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3.3 CURRENT LEAKAGE

3.3.1 Equipment: Associated Research HyPot test unit used as power source for 500 VAC, 60 Hz test circuit. Fluke Model 8020B Digital Multimeter, calibrated quarterly, used to measure voltage drop across a series resistance of one megohm (+/- 5%).

3.3.2 Initial results: Measuring terminals to case with switch closed; measuring terminals to case with switch open; and measuring between the terminals: the maximum current leakage observed was 2.3 microamps. All values are significantly below the specification of 100 microamps.

3.3.3. Final results: Same three measurements per device as 3.3.2. All current leakage values were consistent with initial results. All values are significantly below the specification of 100 microamps.

3.4 PROOF

3.4.1 Procedure: Calibration readings were recorded only after proof testing. Test pressure was 3000 psi per the part drawing.

3.4.1 Equipment: Enerpak model P-392 hydraulic hand pump using Enerpak hydraulic fluid as the pressure medium. Hydraulic fluid is removed from the devices using a combination of vacuum and residue-free solvent Sprayon(TM) Hi-Tech 02002 TF Electrical Contact Cleaner. US Gauge #33714 reading to 5000 psig with 100 psi increments, resolvable to 50 psi., calibrated quarterly. Custom TI designed and built safety enclosure.

3.4.2 Initial Results: No evidence of fluid leakage and no drop in test pressure was observed on any device.

3.4.3 Final Results: No evidence of fluid leakage and no drop in test pressure was observed on any device.

3.5 BURST

3.5.1 Devices tested: 156-15-37 thru -42.

3.5.2 Procedure: A pressure of 7000 psig was applied and held for 30 seconds minimum. Pressure was then increased slowly until failure. Failure is typically signalled by a sudden drop in test pressure of several hundred psi, which corresponds with the first point at which some internal component reaches irreversible plastic deformation and causes an increase in internal volume. The peak pressure attained as this occurs is defined as the bursting point.

3.5.3. Equipment: same as 3.4.1., with the addition of Enerpak gauge reading to 10,000 psig with 100 psi increments, resolvable to 50 psi., calibrated quarterly.

3.5.4. Results: All six devices passed 30 seconds at 7000 psig without evidence of fluid leakage or drop in test pressure. The failure point defined in 3.5.2 was recorded, and a Weibull plot generated. See data section 4.2.2. Using the statistical acceptance criteria from the ES (frame 3 of 18), a minimum Weibull slope (beta) of 31.5 and a minimum Characteristic Life (theta) of 7680.7 psi was calculated at 90% confidence. The 0.72 reliability at 90% confidence is 7414 psi. Thus, the parts exceed the burst specification of 7000 psig by 414 psi at the Ford-specified confidence and reliability levels.

3.6 VIBRATION

3.6.1 Devices tested: 156-15-43 thru -48.

3.6.2 Equipment: Vibration table, Ling, model A395 with Hewlett-Packard model 5427 controls. Air tank with 350 psig minimum pressurized Nitrogen used to actuate devices with at least 1.1 times maximum actuation specification on part drawing; 300 psig * 1.1 = 330 psi minimum.

3.6.3 Results: All six switches met the acceptance criteria in the ES (frame 9 of 18; section III. I. 2.).

3.7 VACUUM

3.7.1 Devices tested: 156-15-49, -50, -52 thru -55.

3.7.2 Equipment: Kinney vacuum pump. Sensotec pressure transducer range 0-25 psia calibrated quarterly, with Fluke model 8020B Digital Multimeter readout, calibrated quarterly.

3.7.3 Results: All six devices met the acceptance criteria in the ES (frame 10 of 10; section III. K. 2.).

3.8 TEMPERATURE CYCLE

3.8.1 Devices tested: 156-15-56 thru -61.

3.8.2 Equipment: Thermotron model S-4 Mini-Max environmental chamber capable of -55 C to +200 C, humidity uncontrolled. Custom TI designed and built cycler, utilizing Enerpak integrated hydraulic pressure source, TI315 Programmable Logic Controller, Moog servovalve and controller, Simpson signal generator, and opposing-piston fluid isolators, to produce a hydraulic-fluid flow-type primary with a brake-fluid dead-end-type secondary terminated with a 24-station manifold equipped with internal heaters. Capability to 5 Hz at 0-1450 psig cycle. Custom TI designed and built 24 station Switch Monitor Circuit which automatically stops the cycler in the event of abnormal switch action, defined as continuity change which does not track the signal from the signal generator. Thermocouple readouts calibrated quarterly.

3.8.3 Results: All six devices met the acceptance criteria in ES (frame 11 of 18; section III. L. 2.). Data sheet in section 4.2.4 shows actual fluid and ambient temperatures attained at each cycle.

3.9 FLUID RESISTANCE

3.9.1 Devices tested: 156-15-01 thru -36.

3.9.2 Equipment: Fluids as called out in ES table (frame 12 of 18); appropriate beakers and storage apparatus; vented hood.

3.9.3 Results: The 36 devices were divided into groups as follows for subsequent testing. Results of these tests are reported below.

3.9.3.1 Impulse (3.10), -01 thru -12

3.9.3.2 Terminal Strength (3.11), -13 thru -24.

3.9.3.3 Humidity (3.12), -25 thru -30.

3.9.3.4 Salt Spray (3.13), -31 thru -36.

3.10 IMPULSE

3.10.1 Devices tested: 156-15-81 thru -104.

3.10.2 Procedure: 24 virgin devices were run as opposed to 12 virgins and 12 from Fluid Resistance. This is discussed in detail in section 3.0. The parameters given in the ES (frame 7 of 18, section III. E. 1.) are followed explicitly.

3.10.3 Equipment: same as 3.8.2 with the addition of a 12-station inductive load bank, per the schematic found in the ES (frame 18 of 18; figure 4.) used in the last 25K cycles.

3.10.4 Results/Discussion: Pre-characterization was not performed. After completion of the 500K cycles, all 24 devices passed the acceptance criteria found in the ES (frame 7 of 18, section III. E. 2).

This test may be regarded as the one of the most rigorous. This test is run at elevated temperature (135 C fluid), elevated pressure (1450 psig, 2 Hz), and total cycles (applying brakes 5 times per mile for 100,000 miles) which exceed conditions typically found in actual motor vehicles.

3.11 TERMINAL STRENGTH

3.11.1 Devices tested: 156-15-13 thru -24.

3.11.2 Equipment: Custom TI designed and built fixtures for gaging terminal movement after force application and for application of impact via a pendulum. This equipment is regularly used on the 57PS/77PS assembly lines in testing to TI Quality Assurance Specifications.

3.11.3 Results: All twelve devices passed the acceptance criteria found in the ES (frame 10 of 18; section III. J. 2.).

3.12 HUMIDITY

3.12.1 Devices tested: 156-15-25 thru -30.

3.12.2 Equipment: Humidity chamber RK model 5S.

3.12.3 Results/Discussion: Please note that performing a full characterization per the ES consists of actuation, release, millivolt drop, current leakage, and proof. This battery of tests when performed on six (6) devices takes approximately 2 hours to complete. Therefore "Within 15 minutes..." called out in the ES (frame 8 of 18, section III. G. 2. a.) is an acceptance requirement that is physically impossible to meet. Every effort is made to complete final characterization within the two hour period stated above.

All six devices passed the acceptance criteria found in the ES (frame 8 of 18; section III. G. 2.).

TEST LOT NO.	TEST	DEVICE
TESTED BY		
APPROVED BY	TEXAS INSTRUMENTS MATERIALS & CONTROLS GROUP ATTLEBORO, MA 02703	DOC.
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3.13 SALT SPRAY

3.13.1 Devices tested: 156-15-31 thru -36.

3.13.2 Equipment: Harshaw salt spray chamber.

3.13.3 Results: All six devices passed the acceptance criteria found in the ES (frame 8 of 18, section III. H. 2.).

TEST LOT NO.	TEST		DEVICE
TESTED BY			
APPROVED BY	TEXAS INSTRUMENTS	MATERIALS & CONTROLS GROUP ATTLEBORO, MA 02703	DOC.
DATE 91-08-20			PAGE 18

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Appendix 4.1
Ford Engineering Specification
(delta) ES-F2VC-9F924-AA

TEST LOT NO.	TEST	DEVICE
TESTED BY		
APPROVED BY	TEXAS INSTRUMENTS MATERIALS & CONTROLS GROUP ATTLEBORO, MA 02703	DOC.
DATE 11-08-90		PAGE 20

FORM 9295

Engineering Specification

PART NAME	PART NUMBER
SWITCH ASSEMBLY - SPEED CONTROL DEACTIVATE	▽ ES-F2VC-9F924-AA

LET																			
FR																			
LET																			
FR																			

DATE	LET	FR	REVISIONS	DR	CK

REFERENCE

PREPARED/APPROVED BY

CHECKED BY | DETAILED B

CONCURRENCE/APPROVAL SIGNATURES

DESIGN ENGINEERING SUPERVI

DESIGN ENGINEERING MGT

MANUFACTURING ENGRG.

QUALITY CONTROL

PURCHASING

SUPPLIER QUALITY ASSISTAN

ELECTRONICS DIVISIC

TI-NHTSA 002458

SWITCH ASSEMBLY - SPEED CONTROL DEACTIVATE

I. General

This specification covers the test requirements for the speed control deactivate switch -9F924- used in the electronic speed control system. Design changes on the switch assembly or its components shall not be made without compliance to Section V of this specification and written approval from the releasing Production Engineering Office.

This engineering specification is a supplement to the released drawing on the above part, and all requirements herein must be met in addition to all other requirements of the part drawing. Minimum measures necessary for demonstrating compliance to these requirements are given in each section.

The engineering tests, sample sizes, and test frequencies contained within this engineering specification reflect the minimum requirements established to provide a regular evaluation of conformance to design intent. The engineering test program is intended as a supplement to normal material inspections, dimensional checking and in-process controls, and should in no way adversely influence other inspection operations.

QI suppliers may implement different test sample sizes and frequencies providing these changes have been included in an alternate Control Plan approved by the design responsible Product Engineering Office and concurred in by SQA.

II. PRODUCTION VALIDATION AND IN-PROCESS TESTS

- Production Validation (PV) Tests must be completed satisfactorily with parts from production tooling (and processes where possible) before ISIR approval and authorization for shipment of production parts can be effected. Parts must be revalidated completely, or per Section V whenever any change is made which could possibly affect part function or performance.

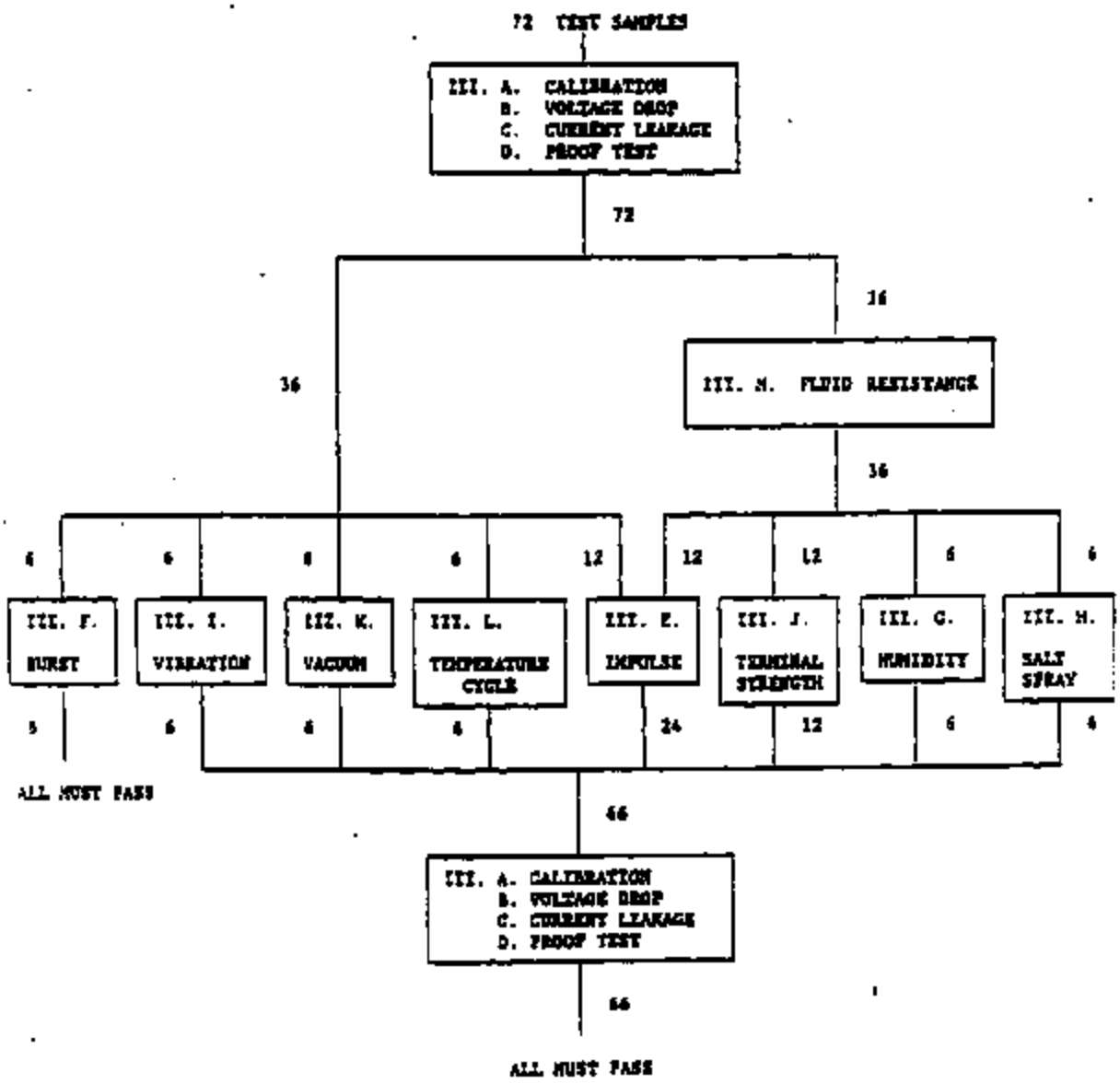
- In-Process Test Phase 1 (IP-1) - IP-1 tests are used to demonstrate process capability and must be completed using initial production parts from production tooling and processes prior to first production shipment approval. IP-1 tests are to continue in effect until process capability is demonstrated.

- In-Process Tests Phase 2 (IP-2) - IP-2 test program may be implemented only after process capability has been established. Tests must be completed with production parts on a continuing basis. Samples for these tests must be selected on a random basis to represent the entire production population as much as possible. In the event that any of the requirements in these tests is not met, the reaction plan specified in Ford Q101 Section III.E.3, "ES Test Performance Requirements" shall be invoked.

SECTION III. TABLE OF TESTS

Item	Test Name Functional Tests	PRODUCTION VALIDATION Minimum Sample Size	PRODUCTION VALIDATION Statistical Test Acceptance Criteria	IN-PROCESS IP-1 Minimum Sample Size	IN-PROCESS IP-1 Statistical Test Acceptance Criteria	IN-PROCESS IP-2 Minimum Sample Size	IN-PROCESS IP-2 Statistical Test Acceptance Criteria
III. ▽ A	Calibration	72	P90-.96	100%	All Must Pass	100%	All Must Pass
B	Voltage Drop	72	P90-.96	12/Mo.	P90-.84	4/Lot	" " "
C	Current Leakage	72	P90-.96	3/Mo.	P90-.56	4/Lot	" " "
D	Proof Test	72	P90-.96	12/Mo.	P90-.84	4/Lot	" " "
F	Burst	6	P90-.72	3/Mo.	P90-.56	4/Lot	" " "
I	Vibration	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90 .72
J	Terminal Strength	12	P90-.84	6/Mo.	P90-.72	4/Lot	All Must Pass
K	Vacuum	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
L	Temperature Cycle	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
M	Fluid Resistance	36	P90-.94	36/12Mo	P90-.94	36/12Mo.	P90-.94
	Durability Tests						
III. G	Impulse	24	P90-.90	12/Mo.	P90-.84	3/3 Mo.	P90-.56
I	Humidity	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72
H	Salt Spray	6	P90-.72	3/Mo.	P90-.56	6/6 Mo.	P90-.72

PRODUCTION VALIDATION FLOW CHART



III. TEST PROCEDURES AND REQUIREMENTS

▽ A. Calibration

1. Test Requirements

a. Switch calibration is to be checked at room temperature (16°C-35°C) using ambient air or equivalent.

b. Calibration settings shall be specified on the part drawing with the settings checked after 2 or more pressure cycles with ambient air, or equivalent. Pressure cycle range is to be determined by the manufacturer to insure switch calibration stability. The cut-in and differential set points are to be measured while conducting 750 ± 50 milliamperes while 13.0 ± 1.0 volts D.C. is applied. The cut-in point is to be checked with increasing pressure.

c. The cut-out point is to be checked with decreasing pressure, and the differential set point is to be calculated using the cut-in pressure minus the cut-out pressure.

2. Acceptance Requirements

a. Nonconformance is defined as any switch point which falls outside the tolerance band specified on the part drawing.

B. Voltage Drop

1. Test Requirements

a. Voltage drop is to be measured after 2 or more cycles with ambient air or equivalent from 0 to 10,000 ± 172 KPa (1450 ± 25 PSI) while conducting 750 ± 50 milliamps and 13.0 ± 1.0 volts D.C. is applied to the switch. Under these conditions with the switch closed the voltage drop is to be measured. Millivolt connection interface at terminals to be less than 10 millivolts.

2. Acceptance Requirements

a. Nonconformance is defined as a voltage drop in excess of 200 millivolts.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

C. Current Leakage

1. Test Requirements

a. Current leakage is to be checked with 500 volts, 60 Hz alternating current.

b. Current leakage is to be checked:

(1) Between the switch leads with the contacts open.
(2) Between the lead and the switch housing with contacts closed.
(3) Between either lead and switch housing with the contacts open.

2. Acceptance Requirements

a. Nonconformance is defined as any leakage current in excess of one hundred (100) microampere.

D. Proof Test

1. Test Requirements

a. Subject sample switches to Section A to establish their initial switching pressures.

b. Proof test is to be conducted using brake fluid or equivalent as the pressure medium. Test pressure shall be as specified on the part drawing. Test pressure shall be isolated from pressure source and held for not less than 30 seconds.

c. Recheck the switches to Section A.

2. Acceptance Requirements

a. No evidence of fluid leakage, seepage, or drop in test pressure greater than 430 KPa.(62 PSI) is permitted.

b. A change in cut-in and cut-out pressures greater than ± 5% from the initial value is not permitted.

c. The test samples must be destroyed after testing.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

E. Impulse

1. Test Requirements

a. Test the switch for a total of 500,000 cycles. Cycle pressure between (low) 0-276 KPa (0-40 psi) and (high) 10,000 ± 345 KPa (1450 ± 50 psi).

1) 0 - 475,00 cycles: 13 ± 1 volts,trace current to monitor function.

2) 475,001 - 500,000 cycles: 13 ± 1 volts D.C., 750 ± 50 ma., per figure 4.

b. Brake fluid temperature to be 135 ± 14°C and ambient temperature to be 107°C min.

c. Cycle rate is to be 110-130 cycles per minute.

d. Switch must open and close each cycle.

2. Acceptance Requirements

a. After impulse test check to sections A, B, C, & D using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, & D.

c. Samples used for this test must be destroyed after all testing is completed.

F. Burst

1. Test Requirement

a. Burst strength is to be checked using brake fluid or equivalent as the pressure medium.

b. Pressurize the switch to 48.3 MPa (7000 PSI) minimum and hold for 30 seconds minimum.

2. Acceptance Requirements

a. Nonconformance is defined as any evidence of fluid leakage or seepage from the switch or threads. Samples used for this test must be destroyed after testing is completed.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

G. Humidity

1. Test Requirements

a. Mount the switch in the test port in a humidity chamber. Currently released mating electrical connector must be installed before start of test.

b. Subject the switch to ten (10) continuous humidity cycles as follows:

(1) Raise temperature to 65 +10/-2 °C over 2.5 hours; at 90-98% relative humidity.

(2) Hold 3 hours at 65 +10/-2 °C at 90-98% relative humidity.

(3) Lower temperature to 25 +10/-2 °C over 2.5 hours; at 80-98% relative humidity.

2. Acceptance Requirements

a. Within 15 minutes after completion of the tenth humidity cycle check the switch to sections A, B, C, D, using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D.

H. Salt Spray

1. Test Requirements

a. Mount the switch in the test port in a salt spray chamber. The currently released mating electrical connector and wiring must be installed prior to start of test.

b. Expose the switch assembly to 72 hours of salt spray per ASTM B-117.

2. Acceptance Requirements

a. After exposure, check the switch to sections A, B, C, D, using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test must be destroyed after all testing is completed.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

I. Vibration

1. Test Requirements

a. Mount the switch in the test port and attach the currently released mating electrical connector before start of test.

b. Switches are to be vibrated in all 3 planes with electrical continuity being monitored during the entire test. See Figure 1 for switch orientation in the 3 planes. Vibration tests are to be conducted at room temperature using brake fluid, ambient air, or equivalent as the pressure medium.

c. Internal pressure shall be maintained at 0 KPa G. when the switch is in the closed position and 1.1 times max actuation pressure shown on print when the switch is in the open position.

d. Vibrate the switch at 1.5 mm displacement (peak-to-peak) while varying the frequency uniformly from 5 to 50 to 5 Hz over a 5 minute period.

e. Vibrate the switch in alternate one-hour periods in the open and closed positions for a total of 8 hours in each plane. (Total test time is 24 hours).

2. Acceptance Requirements

a. After the entire vibration sequence check the switches to sections A, B, C, or D using the procedure established in each section.

b. Nonconformance is defined as any evidence of leakage or any change in electrical continuity/discontinuity during the vibration cycles, or any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test must be destroyed after all testing is completed.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

J. Terminal Strength

1. Test Requirements

a. Mount the switch in the test port.

(1) Apply a 89 ± 9 N axial force to each terminal.

(2) With a pendulum apply a 45 ± 5 N impact force to the switch housing at the connector end, perpendicular to the centerline axis of the switch. See Figure 2 for force application point and direction.

2. Acceptance Requirements

a. Check the switch to sections A, B, C, and D using the procedures established in each section.

b. Nonconformance is defined as any terminal or housing fracture, or any switch not meeting the criteria in sections A, B, C, or D.

K. Vacuum

1. Test Requirements

a. Mount the switch in the test port. Vacuum tests are to be conducted at room temperature using ambient air as the pressure medium.

b. Subject the switch to 5 cycles of vacuum from atmospheric pressure (760 mm Hg) to an absolute pressure of 3-6 mm Hg. Maintain the vacuum for a minimum of 60 seconds.

2. Acceptance Requirements

a. Check the switch to sections A, B, C, and D using the procedure established in each section.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, and D.

3 mm Hg = 0.058 psi = 0.400 K Pa

6 mm Hg = 0.116 psi = 0.800 K Pa

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

L. Temperature Cycle

1. Test Requirements

a. Mount switches in test ports; test to be run using currently released brake fluid.

b. Repeat the following procedure 25 times.

(1) Lower the switch and fluid temperature to at least -40°C.

(2) Cycle the switches ten times at 10 seconds/cycles. One cycle consists of a pressure variation from 0 - 276 KPa.G (0-40 psi) to 10,000 ± 345 KPa.G (1450 ± 50 PSI). Note: Switch must open and close each cycle.

(3) Raise switch and fluid temperature to 38°C minimum.

(4) Repeat Step 2.

c. At completion of Step b, check switches per sections A, B, C, and D.

2. Acceptance Requirements

a. Nonconformance is defined as any evidence of switch fluid leakage, seepage, or not meeting the criteria of sections A, B, C, and D.

M. Fluid Resistance

1. Test Requirements

a. Mount the switch in the test port and orient as installed in the vehicle.

b. Install the currently released mating electrical connector (with wire leads) to the switch.

c. Sequentially, immerse the switch into each of the specified fluids, at a temperature of 23 ± 2 °C, for 5 ± 1 second. Remove the switch and drain and store the switch for the specified time at room temperature, prior to immersing into the next fluid.

III. TEST PROCEDURES AND REQUIREMENTS (cont'd)

Fluid	Drain Time	Storage Time
Reference Fuel C ASTM D471	60 ± 5 min.	none
10W40 Engine Oil	24 ± 1 hour	14 days
Ethylene Glycol/ Water 50/50 by Volume	24 ± 1 hour	24 ± 1 hour
Brake Fluid DOT 3	24 ± 1 hour	48 ± 1 hour
Automatic Transmission/ Power Steering Fluid (same) ESP-M2C138-CJ	24 ± 1 hour	14 days
Isopropyl Alcohol/ Water 50/50 by Volume	24 ± 1 hour	none
Reference Fuel C, ASTM D471 with Methyl Alcohol 85/15 by Volume	24 ± 1 hour	none

d. Per the Flow Chart, subject the prescribed number of immersed switches to the post immersion tests specified below:

III. E. Impulse
III. G. Humidity
III. H. Salt Spray
III. J. Terminal Strength

Acceptance Requirements

a. Switches must fully meet the requirements of the specified post immersion test.

b. Nonconformance is defined as any switch not meeting the criteria in sections A, B, C, or D. Samples used for this test must be destroyed after all testing is completed.

IV. STATISTICAL ANALYSIS METHODS

A. For FV, IP-1 and IP-2 tests, all samples tested must pass. Having all the required sample size pass will provide data to support the conclusion that the switch has a minimum reliability R, at a given confidence of C. The notation Pc-R is interpreted as minimum reliability equal to R, at a confidence C; thus P90-.80 means a minimum reliability of 80% at 90% confidence.

B. All samples must pass in the statistical test acceptance criteria stated for tests with 100% frequency; or samples from lots, which could have a variable size.

V. REVALIDATION REQUIREMENTS

A. No change in design, material, process or component supplier shall be made without prior approval from the releasing Product Engineering Office. As part of approving a change, the releasing Product Engineering Office will establish the portion of the Product Validation tests required to be run to revalidate the switch. The following table is to be used as a guide in determining the type of tests required for revalidation requirements.

RUNNING CHANGE REVALIDATION

Component	Process or Material Change or New Supplier
1. Terminals, Contacts, or Connector	III, B, C, E, G, H, I, J, L, M.
2. Case or Housing	All Tests
3. Disc or Diaphragm	III, A, D, E, F, I, K, L.
4. Fitting or Fluid Connection	III, D, E, F, H, I, M.

5. Annual revalidation is not required on carryover switches.

VI. LOT DEFINITION

A lot is defined as no more than eight (8) hours of production up to 4,000 pieces. If shifts extend beyond eight (8) hours, or more than 4,000 pieces are produced in a shift, the product must be separated into at least two lots.

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VII. RECORD RETENTION

A. Recording and record retention shall conform with Ford Q-101.

B. Production Validation test results and analysis are to be forwarded to the releasing Product Engineering Office before approval for shipment of production parts can be granted.

C. In-Process test results shall be available at the supplier's manufacturing facility for the releasing Product Engineering Office and Ford SQA or its representatives to review on request.

VIII. INSTRUCTIONS AND NOTES

All switches are to be identified with the Ford part number, supplier identification, and a date code indicating final assembly.

All test equipment and test procedures for testing to this specification must be approved by the releasing Product Engineering Office and no change in equipment or procedure may be made without their written concurrence.

Test port configuration is shown in Figure 3.

O-rings, if used in the design, shall be free from cuts, nicks, abrasions or any other damage which would result in a fluid leak.

All switches must have a shipping cap installed over the port threads to prevent contamination. All shipping caps must be approved by the releasing Product Engineering Office prior to production incorporation.

All switches that do not pass the calibration test are to either be readjusted and rechecked, or scrapped. (Salvage of component parts permitted with 100% reinspection).

If product nonconformance occurs for test Sections III. B, C, D, E, F, and J, production shall be stopped and the problem corrected. All production lots shall be sorted 100% prior to shipment. Suspected nonconformance of any shipped parts shall be reported immediately to the releasing Product Engineering Office.

If nonconformance of the statistical acceptance criteria occurs for test Sections III. G, H, I, K, L and M, a cause to recall the subject weeks production and to stop production may result.

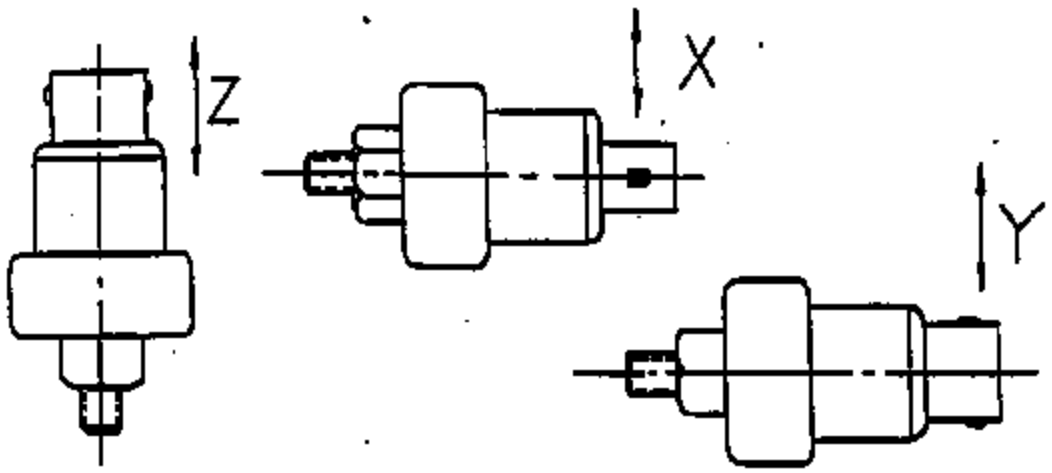
IX. COMPILATION OF REFERENCE DOCUMENTS

ASTM B-117, Salt Spray Testing

Ford Q-101, Quality System Standard - 1988 Edition

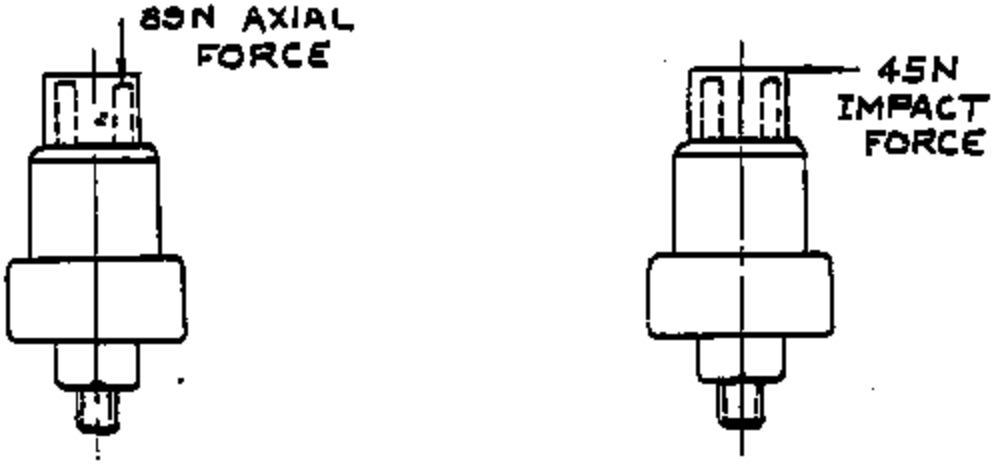
ES-FOEB-14A464-AA, Specification - SLV Assy - Wire Connector

ES-F2VF-9C735-AA, Specification - Servo Assembly Speed Control



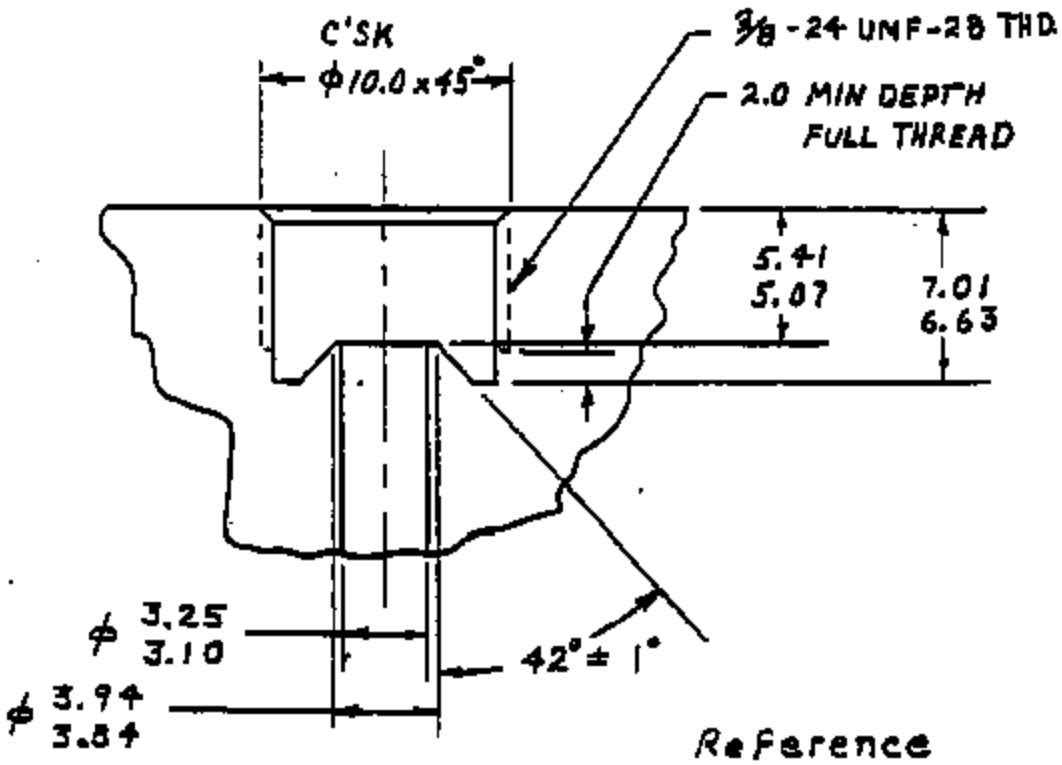
VIBRATION TEST - SWITCH ORIENTATION

FIGURE 1.



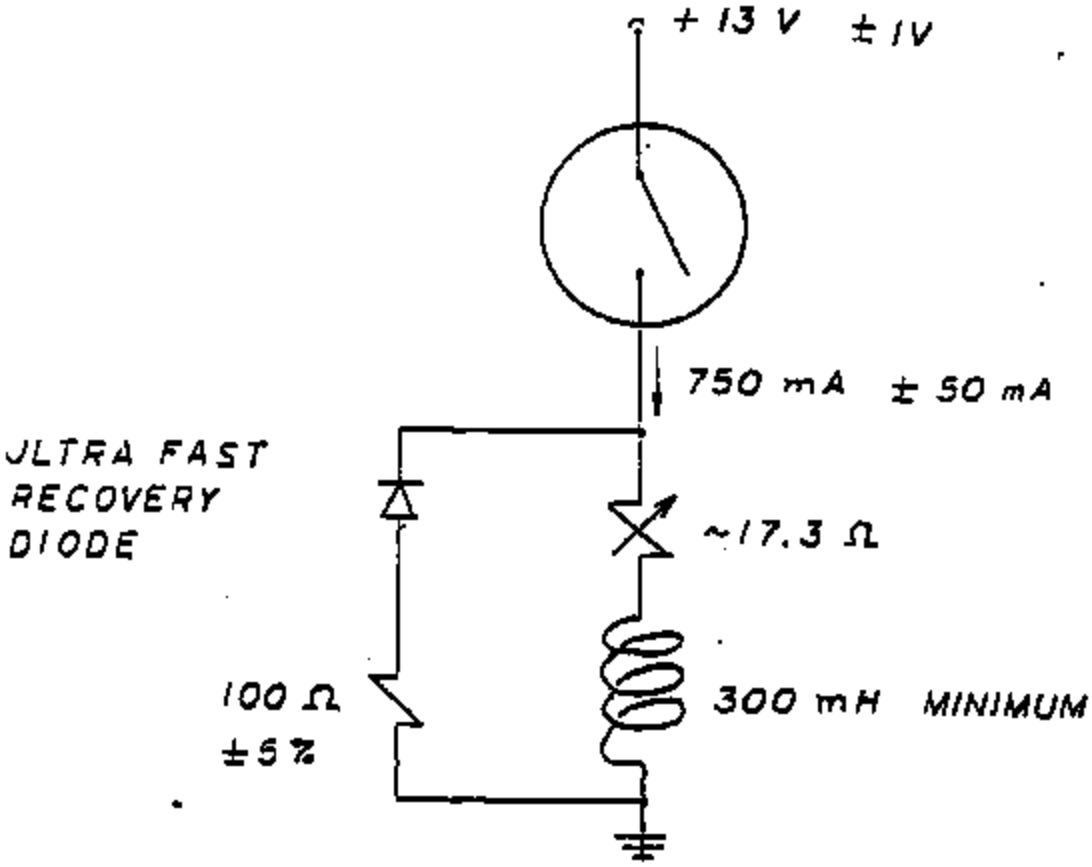
TERMINAL STRENGTH - LOAD ORIENTATION

FIGURE 2.



TEST FIXTURE PORT CONFIGURATION

FIGURE 3



DEACTIVATE SWITCH
TEST SET UP

FIGURE 4