

EA02-025

FORD

10/27/03

BOOK 28 OF 61

PART 4 OF 5

BOX 23 OF 28

SUFFIX	DATE CODE	RO#	RO#	CRIMP
AA	2112	69390	51	LIGHT
AA	2112	40539	51	LIGHT
AA	2112	311968	A	RUSTED (OBSCURED)
AA	2113	141132	1	SUBSTANTIAL
AA	2113	59514	1	SUBSTANTIAL
AA	2113	173402	A	SUBSTANTIAL
AA	2113	73038	A	SUBSTANTIAL
AA	2113	40351	51	RUSTED (OBSCURED)
AA	2113	45747	A	RUSTED (OBSCURED)
AA	2113	309290	A	SUBSTANTIAL
AA	2113	94741	6	LIGHT
AA	2113	60163	A	RUSTED (OBSCURED)
AA	2113	368695	1	LIGHT
AB	2114	19098	1	SUBSTANTIAL
AB	2114	77245	1	SUBSTANTIAL
AB	2114	78281	A	SUBSTANTIAL
AB	2114	204572	2	LIGHT
AB	2114	35664	51	SUBSTANTIAL
AB	2114	53275	-	SUBSTANTIAL
AB	2114	96445	1	SUBSTANTIAL
AB	2114	27028	1	LIGHT
AB	2114	68333	51	RUSTED (OBSCURED)
AB	2114	127513	1	SUBSTANTIAL
AB	2114	966080	C	SUBSTANTIAL
AB	2114	134878	1	SUBSTANTIAL
AB	2114	51193	1	SUBSTANTIAL
AB	2114	89452	1	RUSTED (OBSCURED)
AB	2114	57632	B	SUBSTANTIAL
AB	2114	93724	50	RUSTED (OBSCURED)
AB	2114	88522	A	SUBSTANTIAL
AB	2114	61643	1	SUBSTANTIAL

Inspection Pre-crimp marks
by lab tech.

3713 8363

1/14/00
SR

OCT 19 '99 10:08 PM A KAREN@LITIS

09/01/93

3713 8364

GRAND TOTAL

PLAN & REPORT

1741

SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
				5591	10263	12750	16890	16713	19635	20752
				4851	11161	2615	6837	1552	1922	6130
										2117
					1006	10720	23253	10760	11670	6097
										500
										21
										215
										12
										41
				6871	12360	11110	18090	11315	19635	20752

REPORT #10

MONTHLY YEAR PRODUCTION
AT PLANT AND VEHICLE LINE
ANNUAL REPORT

09/01/92

3 of 4

PLANT/ CARLINE	1991 AUG.	1991 SEPT.	1991 OCT.	1991 NOV.	1991 DEC.	1992 JAN.	1992 FEB.	1992 MAR.	1992 APR.	1992 MAY	1992 JUNE	1992 JULY	1992 AUG.	1992 YEAR TOTAL
ATLANTA	12847	21942	24144	11251	13634	16875	21128	12833	22041	23046	26213	16738		245433
ATL. TARDUS	14486	17635	16736	7321	11344	12323	17948	15315	15949	19472	19620	13499		183999
ATL. EAGLE	4341	4323	7384	3829	4190	4350	3144	3742	6891	5574	6593	3829		81634
CHICAGO	11001	20373	23787	19742	18133	16397	28939	23882	22319	35543	21200	19268	10839	149929
CHI. TARDUS	9839	16759	16569	12000	1337	12151	12308	13928	16185	19821	19112	13713	6893	184953
CHI. EAGLE	2742	4018	7218	1934	3898	4444	3711	7132	4834	3713	3884	3533	3166	83871
DETROIT	1787	7346	8864	1852	3958	3862	3609	9347	8216	13283	13211	5269	184	79280
DET. MUSTANG	1281	7348	8864	1852	3958	3862	3609	9347	8216	13283	13211	5269	184	79280
DET. MUSTANG	7810	12093	1521	4390	7368	6713	14281	12031	14281	14486	14238	14849		127043
DET. T-BIRD	4284	8823	3814	2738	4335	4821	8508	6433	8493	8515	9128	4615		77709
DET. CORVETTE	2646	1062	2697	1398	3035	3623	3693	5378	5894	5971	4482	4014		49254
DET. MUSTANG		9997	18229	12935	3624	13912	13146	19626	18093	17993	17892	13834	8083	156372
DET. CORVETTE	12574	20610	16741	18848	9525	8855	18487	21393	19393	17673	14298	13861	8348	215635
DET. MUSTANG														
DET. CORVETTE	6267	14414	17672	18465	6478	3888	3584	14567	8589	10017	12672	1872	3363	20499
DET. TRUCK	3325	3871	1546	2888	1531	3183	1247	3627	1428					25720
DET. ESCORT	3942	8543	38188	8677	3327	8758	2317	18840	7161					84779
DET. MUSTANG	12192	14888	15913	3611	11188	18363	3788	16182						184830
DET. ESCORT	22193	14888	15913	3611	11188	18363	3788	16182						184830
DET. MUSTANG	36384	36337	48748	34323	25805	38886	37888	37388	33644	33149	33181	24840	19815	616126
DET. ESCORT	7928	1887	8129	7868	4370	7231	7821	7585	6912	6825	6815	5032	3749	83197
DET. ESCORT	38976	28738	31517	27234	21023	26784	18778	28673	24896	26124	26346	19888	16246	338932
DET. TRUCK	7838	11359	12718	4741	4863	4318	7323	8224	7889	18331	8272	8388		101943
DET. TRUCK	3841	8116	9336	3564	6215	3231	3653	6134	5829	8494	6488	6281		76427
DET. TRUCK	1969	2847	3174	1181	1832	1867	1878	2088	1578	2848	2172	2107		25516
DET. TRUCK	3374	13339	14974	3658	9801	9113	9758	12833	3704	9118	13038	6368	3199	118804
DET. TRUCK	3374	13379	14974	3658	9801	9113	9758	12833	3704	9118	13038	6368	3199	118804
DET. TRUCK	1156	3483	3181	1489	1768	1628	1818	3873	4119	4337	1649			28337
DET. TRUCK	3182	18438	9787	4263	5385	4862	5248	11977	12346	12868	4837			85436
DET. TRUCK	6116	18392	11834	4963	2484	4542	3581	9488	12783	13835	9817			92818
DET. TRUCK	4714	18392	11838	4967	2484	4542	3581	9488	12783	13835	9817			92818
DET. TRUCK	18569	16695	14808	11783	13134	11886	13154	18696	18126	28388	17828	14634	1968	186321
DET. TRUCK	2439	12345	10338	7239	8328	8337	9737	13641	11178	14653	11625	18213	7913	128912
DET. TRUCK	2118	4130	8438	4484	4426	3832	3839	4833	4168	5715	3949	4421	1813	37609
DET. TRUCK	2348	11731	18889	16802	14636	19875	19864	28284	38359	18936	11889	12231	1277	783572

P.03/10

313 398 2318 TO 8385

OCT 19 '99 18:08 FR A WAREHOUSE

92

1992 MODEL YEAR PRODUCTION
BY MAKE AND VEHICLE LINE

09/01/92

REPORT 710

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PLANT/ CARLINE	1991														YEAR TOTAL
	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.		
L.C. LT. TRK.	2348	11231	9889	18982	14634	19873	19884	31204	20257	19934	17810	13212	7277	343512	
SAFARI		10417	31846	9005	9166	13793	9844	86321	19193	13433	21284	6328	13097	157811	
SAF. TRUCK		1639	8041	8302	6411	10933	6752	81632	13341	9346	14826	4613	9077	110010	
SAF. TRUCK		3786	2183	2621	2733	2798	2792	4009	3733	4087	5328	1917	3988	42813	
ONLY 4WD.															
VILLAGE															
QUEST															
QUEST TRK.	2729	10297	9754	4831	8694	8905	13461	13448	9214	11678	12339	1124	7878	110136	
OFF. LT. TRK.	2729	10297	9754	4831	8694	8905	13461	13448	9214	11678	12339	1124	7878	110136	
ST. LOUIS	10334	18073	18272	11201	8033	11876	16329	17730	16131	16824	16783	12686	7510	180416	
ARROWHEAD	10334	18073	18272	11201	8033	11876	16329	17730	16131	16824	16783	12686	7510	180416	
VIRGO	13263	16650	19191	2636	12586	6597	14444	21623	13408	13373	13541	9837		150012	
VIR.															
VIR. NAME	434	829	944	805	784	801	933	1024	106					3732	
VIR. COM.	3493	4726	3437	1823	2987	3381	3764	4248	3612	3346	3379	2418		40872	
KENTUCKY TR.	2448	2068	2631	1886	1893	1889	4885	4581	3928	3994	3815	1961		17443	
TOT. PROD.	18983	293346	316731	200636	191324	224329	258643	233492	209614	294692	294679	177819	84830	3213304	

T-BIRD	4284	8033	5824	3330	4535	4831	1388	6473	8493	8513	9128	6433		77789	
TRUCK	2439	10071	10171	13631	8438	10212	14439	25293	25312	23999	26151	14834	12032	258978	
ESCORT	13334	25423	26019	14336	16335	19123	1085	27483	7149					169689	
MUSTANG	1707	7348	8050	1932	3594	3062	3188	9367	8316	11319	11211	5249	184	79288	
TRUCK	13335	13894	13323	20136	12781	24476	36148	31262	22134	25304	28732	27622	4893	268034	
TRUCK															
TRUCK	3118	7138	7584	7083	1381	6238	6221	10924	12119	9882	12377	6336	4993	101222	
TRUCK															
TRUCK	3493	4726	3437	1823	2987	3381	3764	4248	3612	3346	3379	2418		40872	
TRUCK															
TRUCK	626	829	944	805	784	801	933	1024	106					3732	
TRUCK															
TRUCK	3644	4063	3697	1590	3015	2682	1493	9374	3894	3971	4402	4014		49234	
TRUCK	3123	8345	14886	10439	7364	8996	3897	14893	12133	11283	13693	8374	3418	121330	
TRUCK	3123	3871	3566	2888	1531	3105	1247	3627	1428					25720	
TRUCK															
TRUCK	10336	18073	18272	11201	8033	11876	16329	17730	16131	16824	16783	12686	7510	180416	
TRUCK	1949	1043	3174	1181	3052	1087	1828	2048	1970	2848	2172	2187		35316	
TRUCK	3997	18229	11923	3124	13812	13184	19676	18093	17953	17892	13034	9003		166372	
TRUCK	20574	28138	31511	27234	21833	26728	29673	28684	26324	28346	19888	16866		318932	
TRUCK	16744	26037	29874	18281	33329	17886	17883	18931	32034	32728	20169	9832		264770	
TRUCK	2448	2068	2631	1886	1893	1889	4885	4581	3928	3994	3815	1961		17443	
TRUCK	19348	46834	36234	36336	41188	42122	49128	37932	44723	32744	32438	27083	21146	563728	
TRUCK															
TRUCK	18983	293346	316731	200636	191324	224329	258643	233492	209614	294692	294679	177819	84830	3213304	

3713 8366

P.04/10

313 388 2318 TO 00286

OCT 19 '99 18189 FR A WARRBOUTIS

1992 MODEL YEAR 34
BY PLANT AND YEAR
91 92
MIN. DEC. JAN. FEB.

1993 MODEL YEAR PRODUCTION
BY PLANT AND VEHICLE LINE

2 of 4

3713 8988

OCT 19 '99 10:10 PM A KARABULIS

[illegible]

2017 2018 2019 2020
1. 2017 2018 2019 2020
Fiscal Year 2017 2018 2019 2020

1993 MODEL YEAR PRODUCTIONS
BY CLASS AND VEHICLE LINE

LEP01 #31

91/03/204

✎ **of** ✎

PLANT/ CASH/INE	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	YEAR TOTAL
F.C. LT. INC. NOKVILLE	0743 3264	10410 0848	10743 08000	15551 13078	10752 7500	19906 14335	10653 13340	27325 07100	15004 14323	15493 10101	10704 20126	9636 5603	1007 5396	201047 153214
NOK. TUPON NOK. TUPON NOK. TUPON	3733 0531 3687	6363 2473 5817	7038 3042 6401	9449 4147 7242	5330 2252 10625	10052 4303 10278	10124 3124 12000	13506 5676 13591	10068 6277 12003	17672 5430 12043	14010 4334 13442	4000 1683 6911	7204 1132 9106	100015 13505 131948
VILLAGE MEAT ONTARIO NOK.	2306 1381 2090	3436 3091 11037	4062 0430 12071	4530 2714 12250	6055 3970 10131	7437 4030 12336	7423 4303 10350	0444 5162 14540	7934 4750 12671	7936 4717 13095	0440 5022 15754	4272 2630 4300	0421 403 9335	05070 46070 165922
OLF. LT. INC. OF LORIS	2002 0410	11037 20700	12911 32041	12700 17700	10131 10700	12336 11209	12110 14745	14540 20700	13011 20021	13095 21659	15754 22916	4300 10745	9335 21013	165922 231500
ARMONIA WILSON	0410 10310	20700 04107	12041 21700	17700 25000	10700 10700	11209 10773	14745 10712	20700 17000	20021 14000	21659 13402	22916 16403	10745 7030	21013 7030	231500 170700

TOT. FORD.	19073	296864	325843	287338	271496	261775	287843	379328	358952	354465	383516	288738	211254	3054780
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T-DINO	1404	10070	12650	10300	8177	9251	10710	11473	17400	9400	12050	6482	10570	131001
TEEN	14090	10261	97790	10260	12370	10350	10103	20012	20000	20070	11450	11797	4705	230291
SCORP	27605	21291	21720	10305	21639	19621	10020	34000	93353	24013	30290	17000	20212	377000
MONSTER	8339	7147	3000	6770	4301	4000	10730	10337	11070	10043	12130	0579	9002	114220
YACHT	29307	46250	42701	37000	20570	20773	10430	41330	30709	39001	42300	21001	17002	450700
.....														
TOPAL	1410	10772	7245	6203	7000	7013	7310	8095	9703	10010	11020	5000	2530	00705
.....														
CONF.	3091	3730	3727	3000	0003	3000	3223	3070						
.....														
ULLAGE	2300	3070	0002	0320	0000	7037	7023	0000	0000	0000	0000	0000	0000	0000
MOSE		3070	3070	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
CONF.	1101	2071	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
CHALLA	2210	0710	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
SMALL	7000	0000	11000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
IRACE	5100	0770	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
.....														
ARMSTAR	0000	20710	22000	07700	10700	11200	10700	20700	20023	21000	22010	11200	21010	731000
BRIDGE	2000	20700	21000	2000	1700	1270	1000	3000	0021	3170	3000	1000	1001	0000
CHAMLINE	0300	10000	0000	11001	12000	17107	10000	23000	10000	10700	10000	10000	10000	200000
EXPLODER	4000	20000	30000	27000	25100	27000	27000	27000	27000	27000	27000	27000	27000	27000
LARGE		3301	30700	30000	31000	31000	31000	31000	31000	31000	31000	31000	31000	31000
NAVY INC	5000	0070	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
EV. INCK	2000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
GRAND TANK	10000	20000	20000	20000	27000	20700	20700	20700	20700	20700	20700	20700	20700	20700
* ALL VOLUMES INCLUDE 40 & 50 UNITS														

* ALL VALUES INCLUDE 4P & 5P HOURS.

J. A. MURPHY 10459-470863
Prattville 8 Million Pounds Annular

P. 003/10

313 388 2348 TO 03286

OCT 15 '99 18:11 FR A KNOXBLVD15

1993 MODEL YEAR PRODUCTION BY PLANT AND VEHICLE LINE

414234
5 of 6

REPORT #31

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* ALL VOLUMES INCLUDE CD & 50 UNITS.

Production & Option Program

93

1991 MODEL YEAR PRODUCTION
BY PLANT AND VEHICLE LINE

01/03/91
6 of 6

REPORT #11

PLANT/ CHASSIS	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	YEAR TOTAL
K.C. LT. TRK.													201649
OSCEOLA													753214
RAM. TRUCK													100619
RAM. TRUCK													63595
WILD CAT	8222	8495	7887										355672
VILLAGE	8222	8495	7887										100794
WILLY													66828
WILLYS TRK.													145022
WIP. LT. TRK.	21059	17818	16612	1091									145922
WY. TRUCK	21059	17818	16612	1091									200708
WY. TRUCK													177008
WY. TRUCK													32370
WY. TRUCK													26798
WY. TRUCK													40036
WY. TRUCK	81848	56234	26018	1091									4125302

WY. TRUCK	2090												133489
WY. TRUCK	21932	23664	651										238293
WY. TRUCK													425109
WY. TRUCK													114228
WY. TRUCK													458709
WY. TRUCK													90705
WY. TRUCK													26798
WY. TRUCK	8222	8495	7887										100794
WY. TRUCK													32370
WY. TRUCK	1020												46828
WY. TRUCK	6604	6463	1745										81450
WY. TRUCK													133333
WY. TRUCK													78167
WY. TRUCK	21059	17818	16612	1091									200708
WY. TRUCK													32370
WY. TRUCK	2674												200917
WY. TRUCK	10550												134462
WY. TRUCK													351509
WY. TRUCK													40036
WY. TRUCK	81848	56234	26018	1091									500174
WY. TRUCK													4125302

J. A. PORTER (M/L) - CHASSIS

3713 8372

by
p/h

93

by
VL

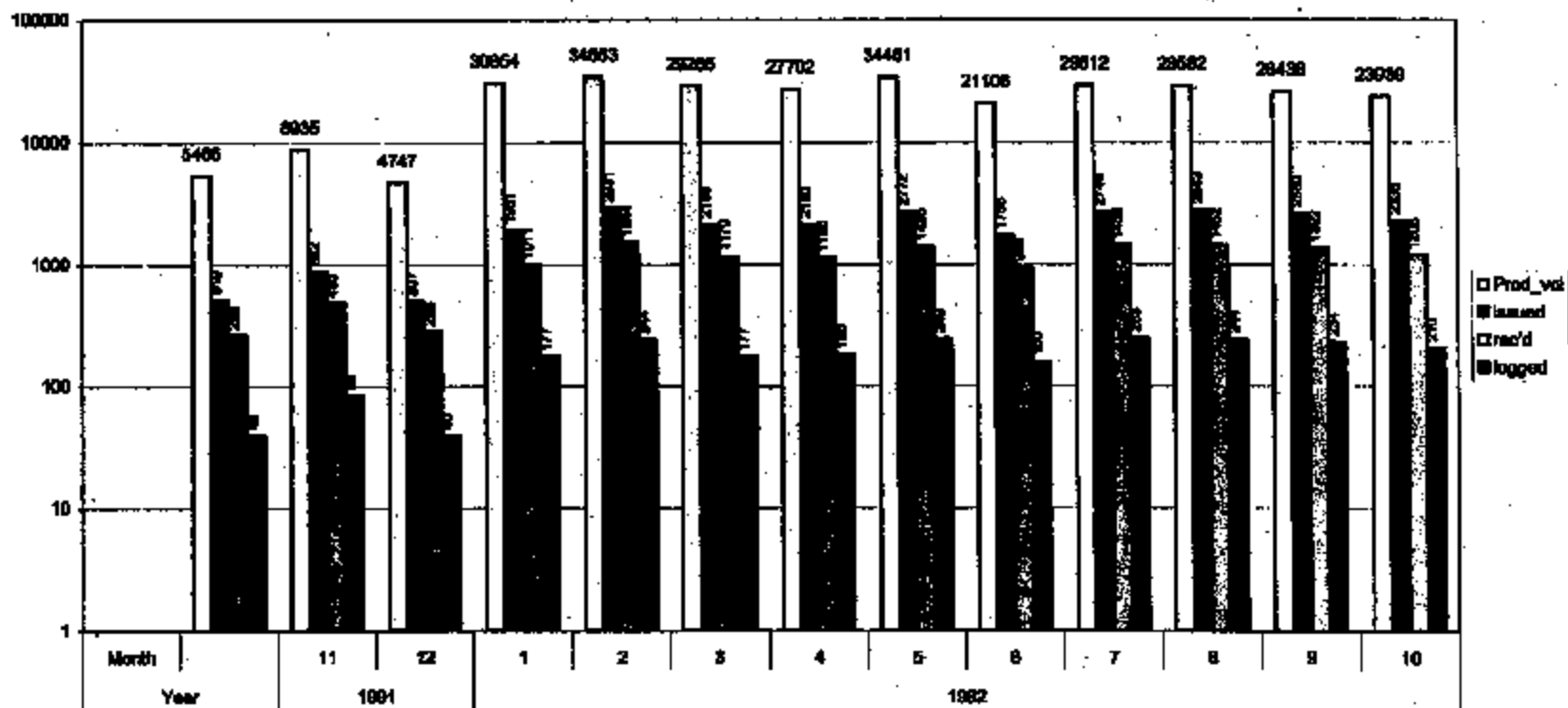
93

P. 10/10

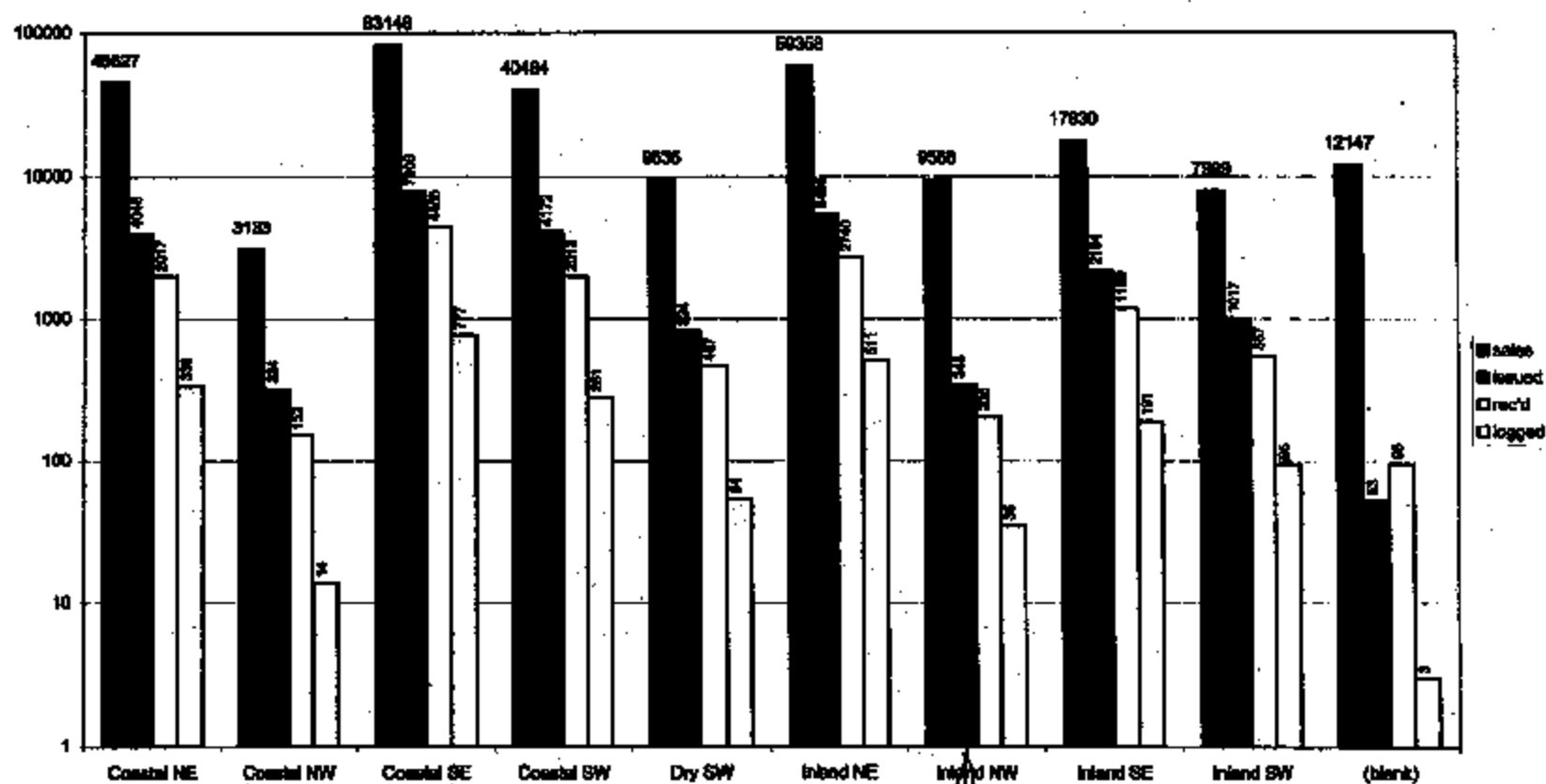
313 350 2318 TO 83266

OCT 19 '99 18:12 FR A KREBOUTIS

Production data of Vehicles



Region

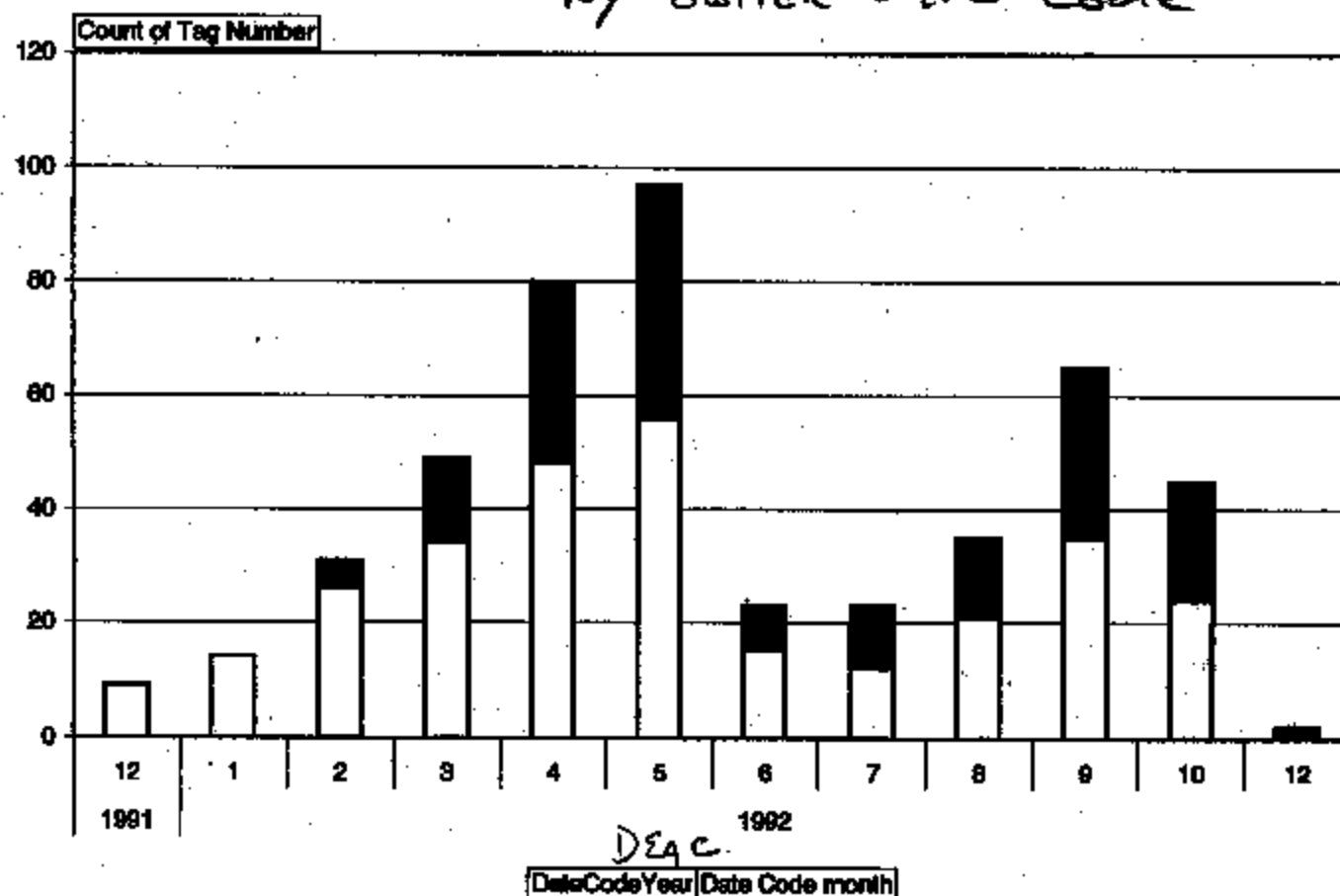


Need to issue
more tags.

Does the
sample represent
the population?

Returned Deac Switches With Data codes After Car Build date
473 cars from first 2300 returns

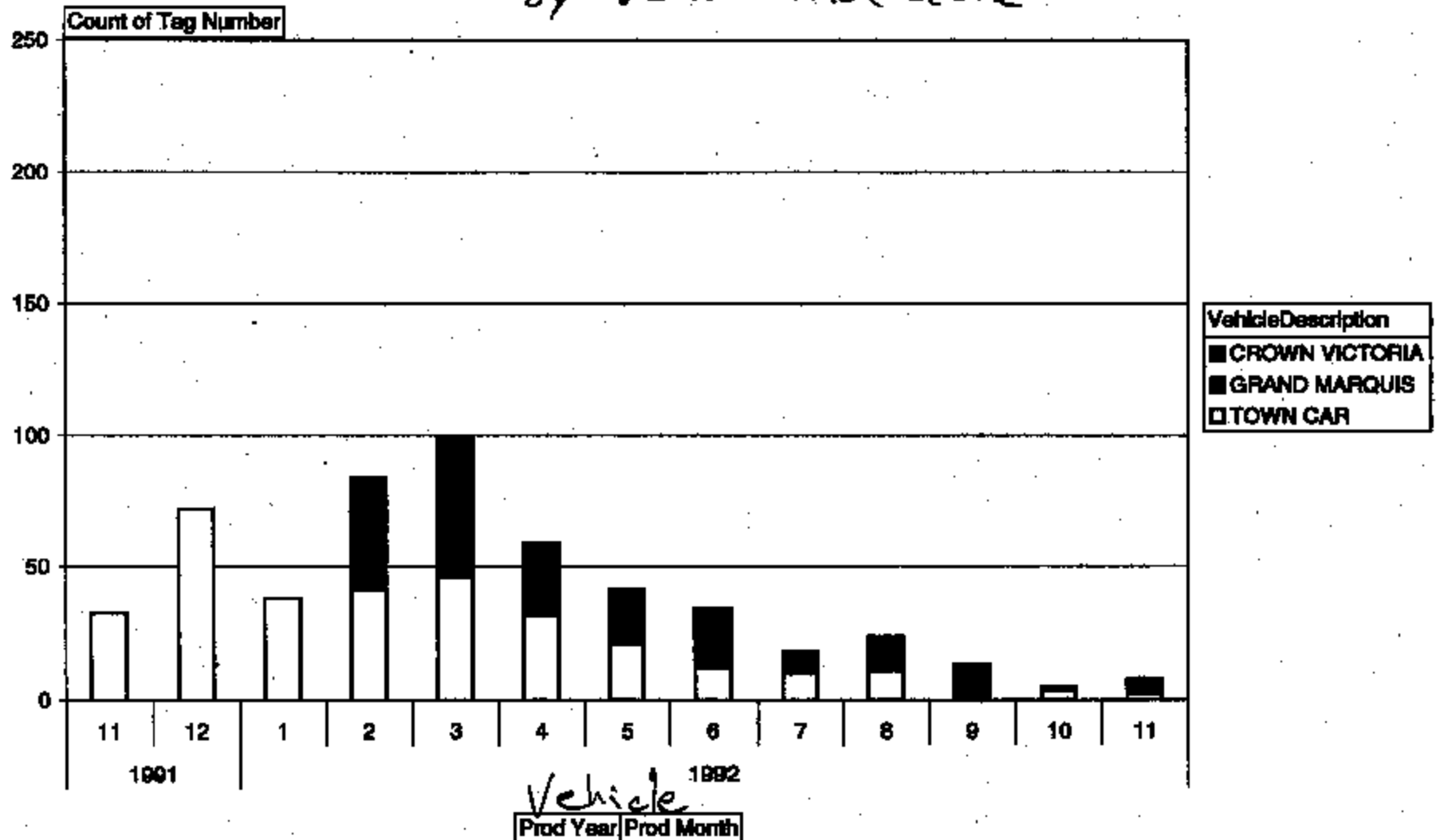
by Switch Date Code



Vehicle Description	
CROWN VICTORIA	61
GRAND MARQUIS	117
TOWN CAR	295
	<u>473</u>

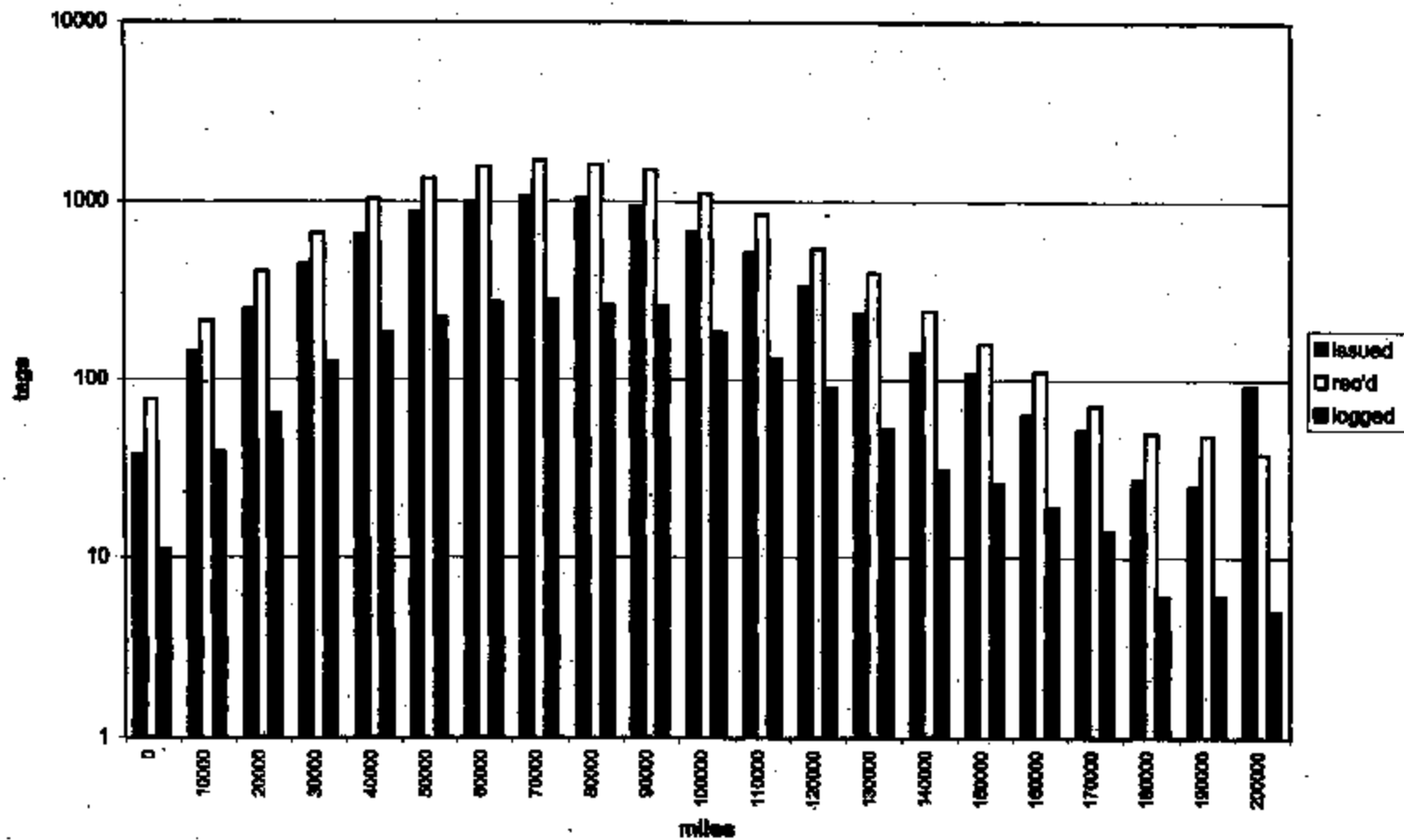
Returned Dec Switches With Date codes After Car Build date
528 cars from first 2300 returns

by Veh. Build date



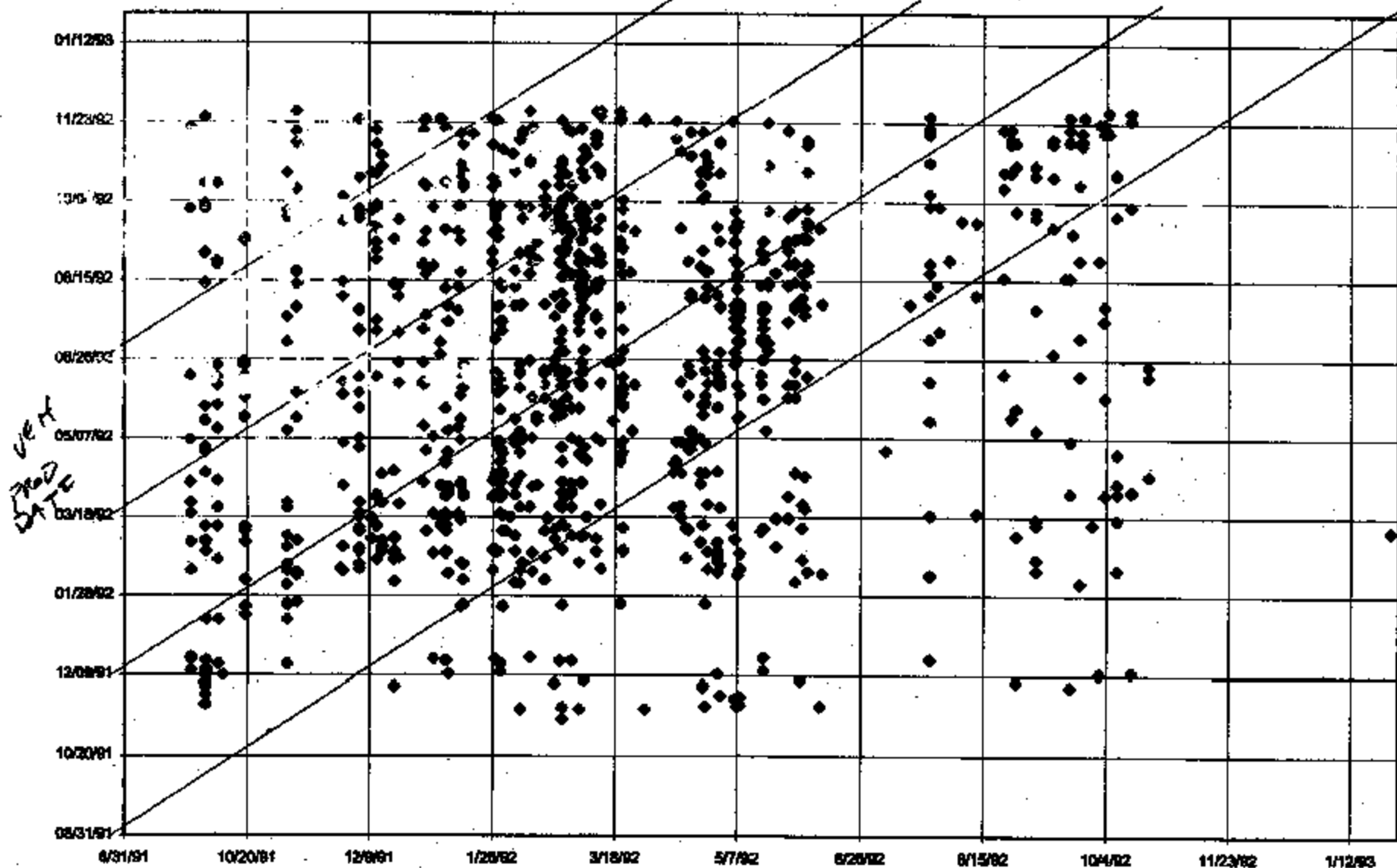
3713 8376

Mileage Distribution



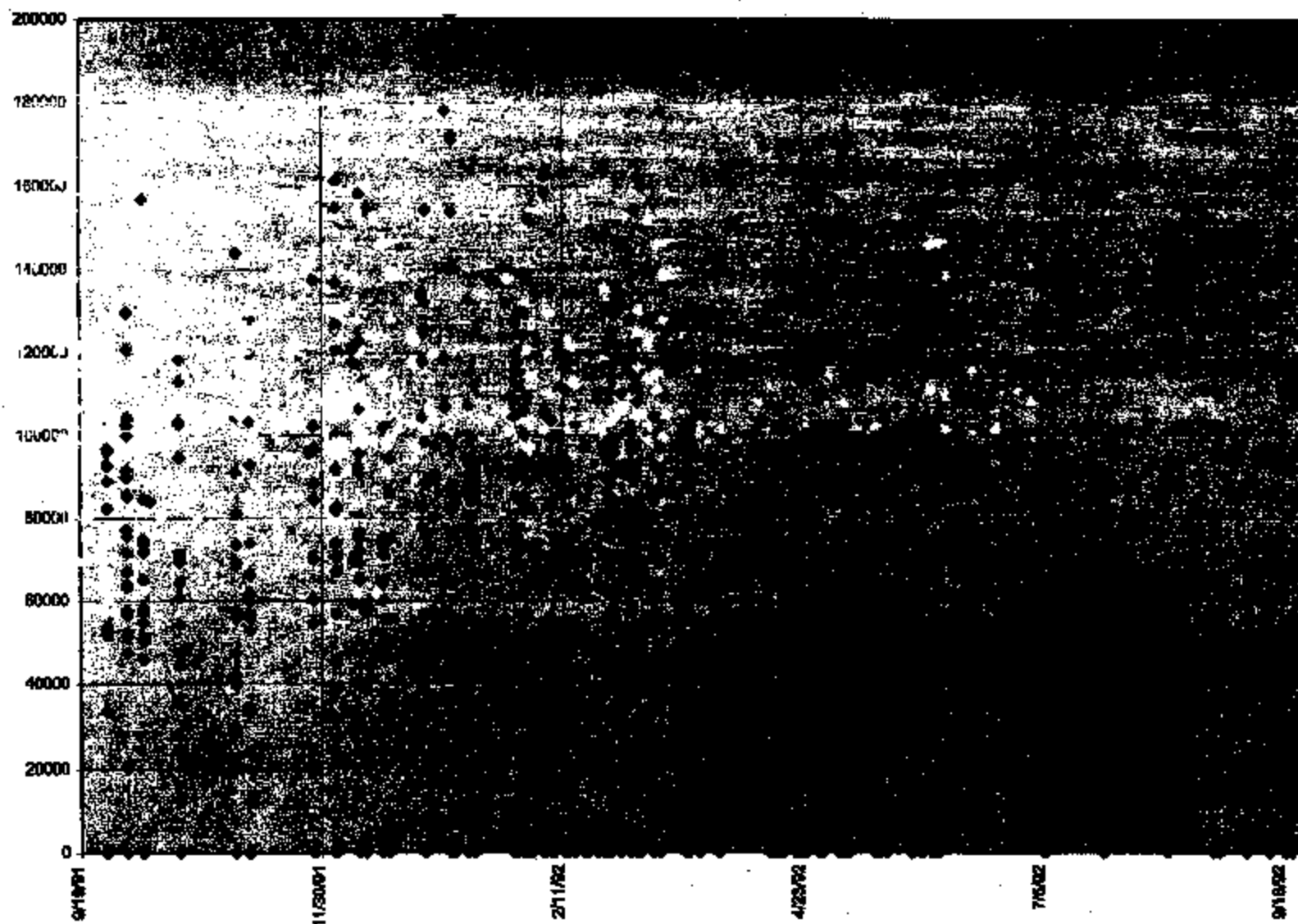
Prod'n Data v Date Code

1100 parts
10/26/99



Miles v Date Code

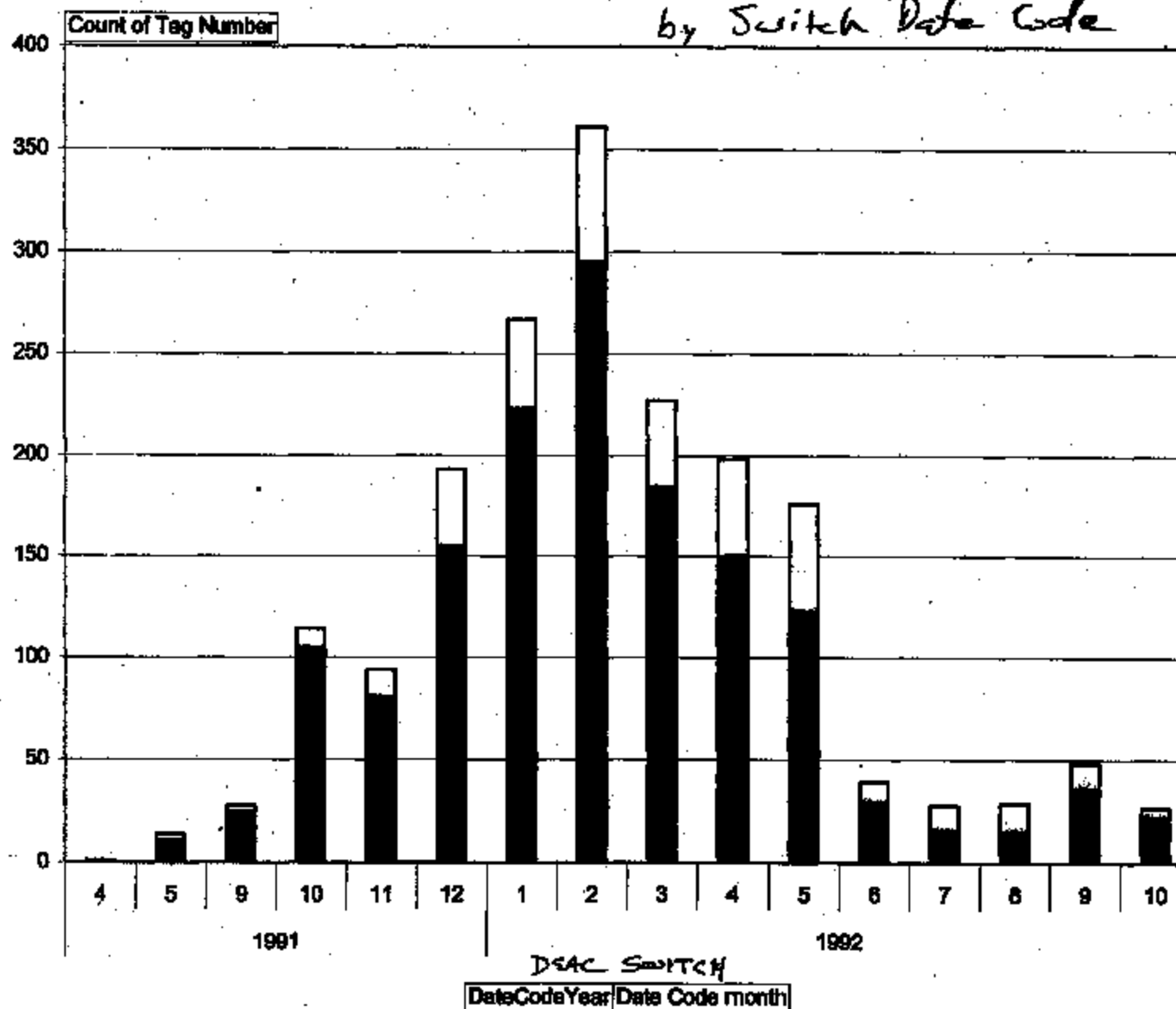
1100 parts
10/26/99



3713 8379

BPS DATE CODES BEFORE VEH. PROD. DATE

by Switch Date Code



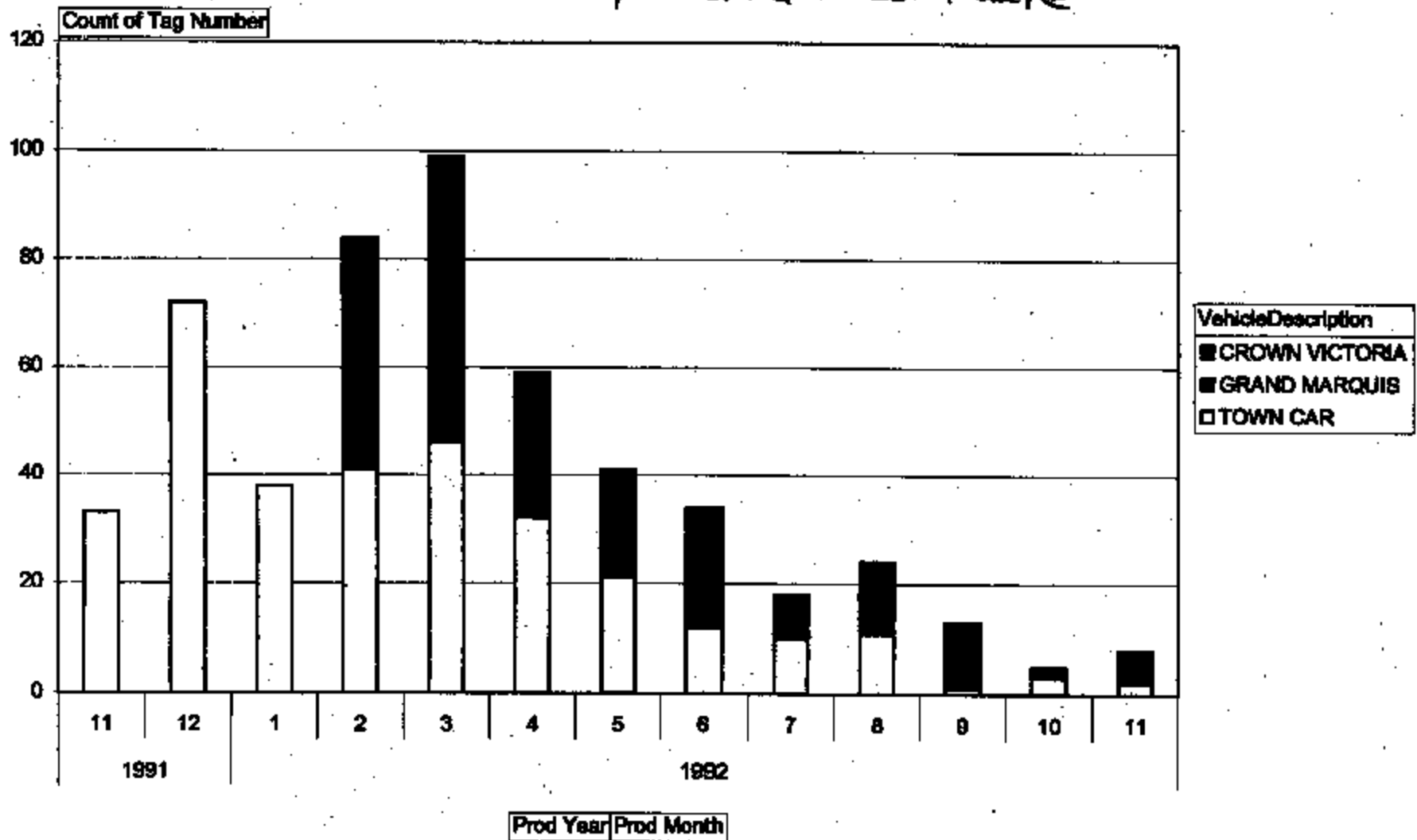
VehicleDescription	
CROWN VICTORIA	373
GRAND MARQUIS	626
TOWN CAR	846

1845
out of 2298

3719 B360

Returned Deac Switches With Date codes After Car Build date
528 cars from first 2300 returns

by Vehicle Build date



9713 8361

Logged Analysis

Heat Damage Pivot

DATE CODE

Count of Tag Number	
State	Total
FL	4
GA	2
MO	1
MS	1
NC	1
SC	1
TX	2
Grand Total	12

Count of Tag Number	
Calendar Date	Total
10/02/91	1
11/27/91	1
12/04/91	1
01/13/92	1
01/30/92	1
02/05/92	1
02/21/92	2
03/04/92	1
04/13/92	1
09/18/92	1
09/19/92	1
(blank)	
Grand Total	12

Count of Tag Number	
miles group	Total
10000	1
40000	4
70000	1
80000	2
90000	2
130000	1
250000	1
Grand Total	12

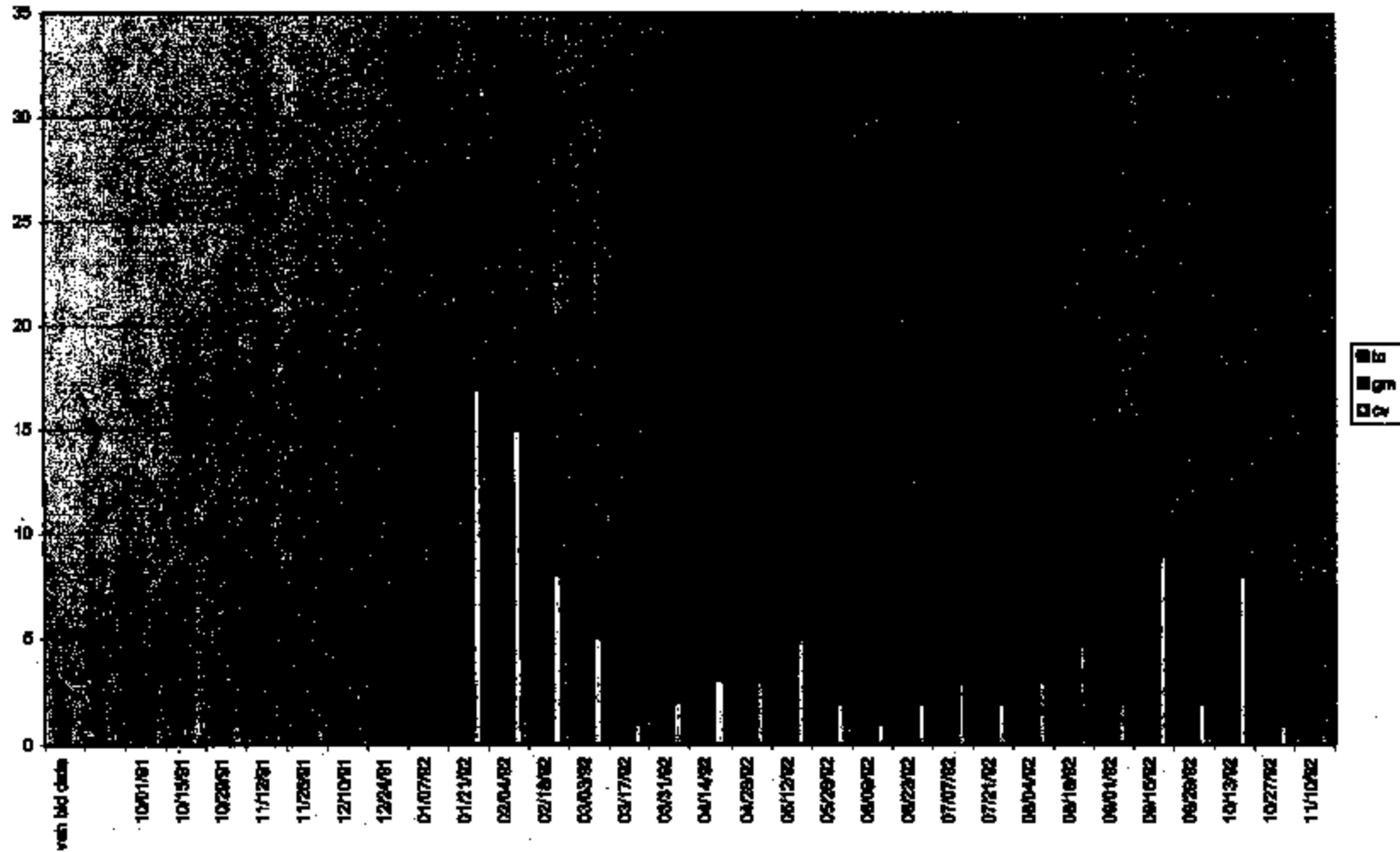
BUILD DATE

Count of Tag Number		
Prod Year	Prod month	Total
1991	12	1
1991 Total		1
1992	3	3
	4	2
	5	1
	6	1
	7	1
	9	2
	10	1
1992 Total		11
Grand Total		12

③ NON-OE DATES

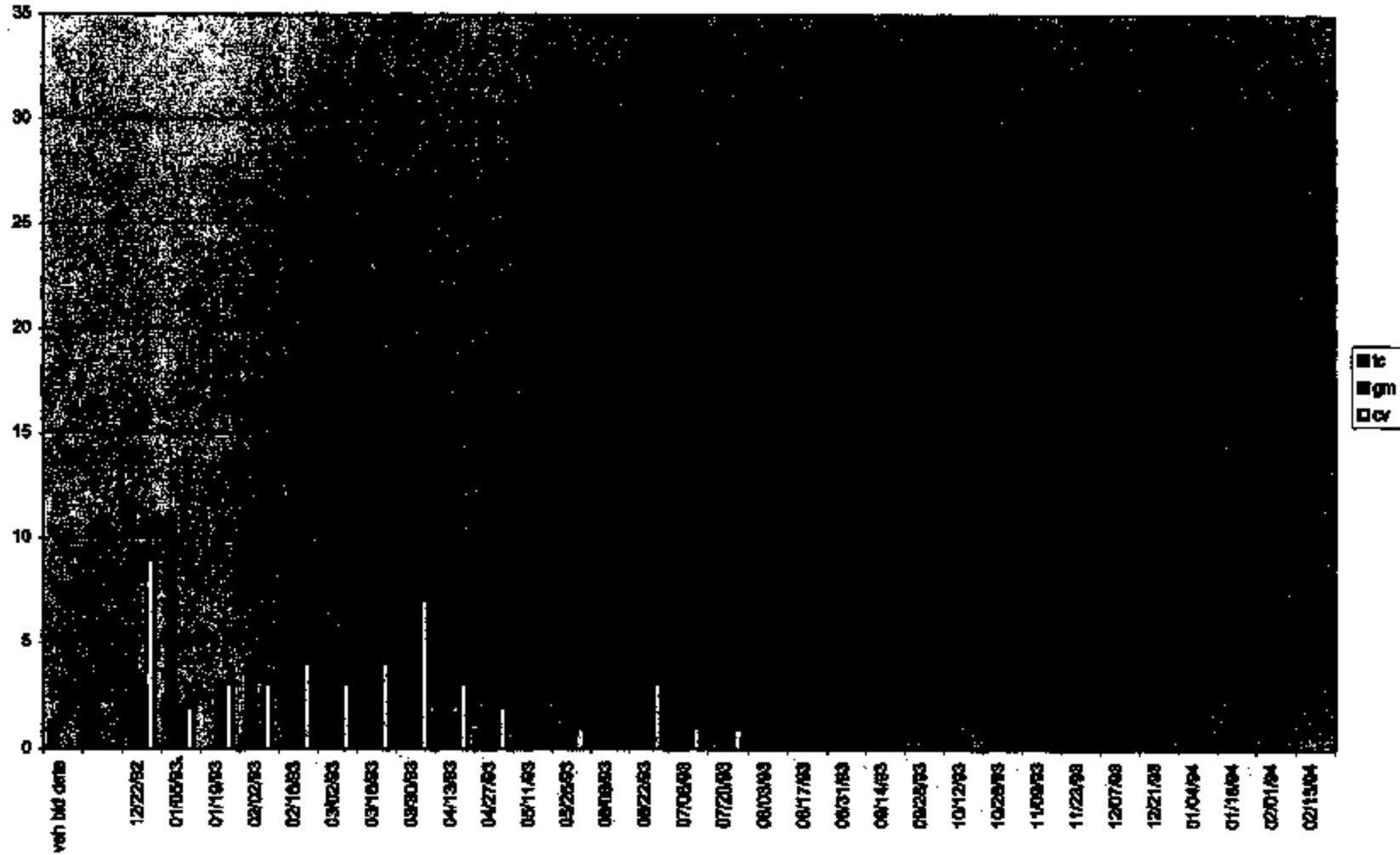
MY 92/93

Bps Warranty claims v Build date



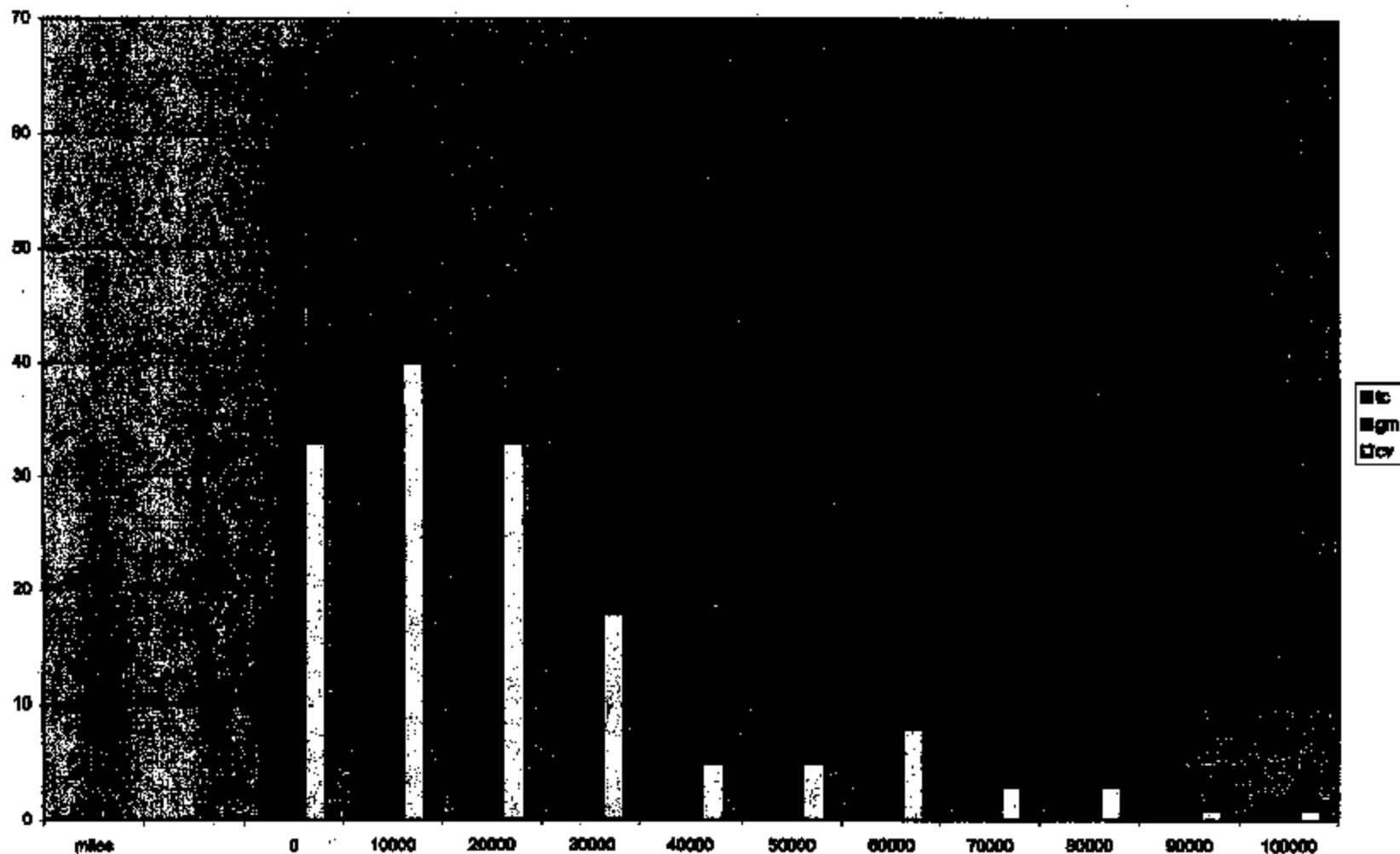
Sheet4 Chart 3

Bpa Warranty claims v Build date



MY 92/93

Bps Warranty Claims v Mileage



150

50
7500

3713 8386

Ford		Material Move Request		FOR INTRA-COMPANY MOTOR VEHICLE SHIPMENTS ONLY (Not to Be Used by Common Carrier)		0549503	
FROM: BLDG 5				TO: EXPORT FAILURE ANALYSIS			
Department		Department No.		Department		Department No.	
		7402					
Building				Building			
AVT 5							
Check One: ☐ Room ☐ Bay ☐ Crib		For Information, Contact		Phone		Date	
Number						11/10/99	
Check One: ☐ Room ☐ Bay ☐ Crib		Number					
Max. Weight	Qty.	Part Number	Description ** (For Hazardous Materials: Description and Classification)		Purpose (E.J.A., Test, Build, Job, Etc.)		
		96652-AA	DEAC. SWITCH & CONNECTOR FROM RECALL 99SIS		FAILURE ANALYSIS		
		BOXES	Box #9179488 8 Boxes				
		918195	917878 5 Boxes				
Any hazardous materials must be properly identified, classified, packaged and labeled in accordance with the requirements of Title 49 Code of Federal Regulations.							
NOTE: * An "X" MUST be placed in this column when shipping hazardous materials. ** List all hazardous materials that do not otherwise.				Signature of Requester		H.M.T.C.R. Approval	
MAY 1993 3258				Steve Reimer		John G. L.	

50
SR

9182129

873
395
488
089
part of ~ 129

part
482
1221
996
1380
N 580
4589

Ford		Material Move Request		FOR INTRA-COMPANY MOTOR VEHICLE SHIPMENTS ONLY (Not to Be Used by Common Carrier)		0549514	
FROM: Steve Reimer		TO: EXPONENT FAILURE ANALYSIS					
Department T-402		Department No.		Department		Department No.	
Building AVTS				Building FAAMINGTON HILLS			
Check One: ☐ Room ☐ Bay ☐ Crib Number		For Information, Contact Phone		Check One: ☐ Room ☐ Bay ☐ Crib Number		Date 11/18/99	
Haz. Mat'l	Qty.	Part Number	Description ** (For Hazardous Materials: Description and Classification)		Purpose (E.I.A., Test, Build, Job, Etc.)		
		24 BOXES	XW7Z 9GG52 AA		FAILURE ANALYSIS		
			9181448 (14 BOXES)				
Any Hazardous article listed above must be properly described, classified, packaged and labeled in accordance with the requirements of Title 49, code of Federal Regulations.							
NOTE: * An "X" MUST be placed in this column when shipping hazardous materials. ** List all hazardous materials first — do not abbreviate.			Signature of Requester S. Reimer		H.M.T.C.R. Approval SJR		

MAY 1999 3258

77PSL2-1: Impulse Data Results 11/91 - 12/92

preliminary draft summary of TI record search findings of May 14-17 1999

summary by Steve Heringhaus & Andy McGuirk May 19th 1999

TI P/N: 77PSL2-1

Ford P/N: F2VC-9F924-AB

Tested at 'room temp' per manufacturing ES requirements

<u>Date</u>	<u>Lot</u> <u>Size</u>	<u>Qty</u> <u>Impulse</u> <u>Tested</u>	<u>Qty</u> <u>Leak</u>
26-Nov-91	4,000	10	-
26-Nov-91	4,000	10	-
5-Dec-91	4,000	10	-
5-Dec-91	4,000	10	-
9-Dec-91	4,000	10	-
9-Dec-91	2,000	5	-
11-Dec-91	4,000	10	-
11-Dec-91	4,000	10	-
13-Dec-91	4,000	10	-
14-Dec-91	4,000	10	-
16-Dec-91	4,000	10	-
16-Dec-91	4,000	10	-
2-Jan-92	4,000	10	-
6-Jan-92	4,000	10	-
7-Jan-92	2,000	5	-
8-Jan-92	4,000	10	-
8-Jan-92	4,000	10	-
14-Jan-92	4,000	10	-
14-Jan-92	4,000	10	-
15-Jan-92	4,000	10	-
23-Jan-92	2,000	5	-
31-Jan-92	4,000	10	-
2-Feb-92	1,650	5	-
4-Feb-92	4,000	10	-
5-Feb-92	4,000	10	-
6-Feb-92	4,000	10	-
10-Feb-92	4,000	10	-
11-Feb-92	4,000	10	-
12-Feb-92	4,000	10	-
12-Feb-92	4,000	10	-
14-Feb-92	4,000	10	-
14-Feb-92	4,000	10	-
14-Feb-92	4,000	10	-
15-Feb-92	4,000	10	-
24-Feb-92	4,000	10	-
26-Feb-92	4,000	10	-
26-Feb-92	4,000	10	-
28-Feb-92	4,000	10	-
28-Feb-92	4,000	10	-
28-Feb-92	4,000	10	-
6-Mar-92	4,000	10	-
10-Mar-92	4,000	10	-

3713 8388

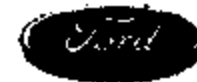
77PSL2-1: Impulse Data Results 11/81 - 12/92

11-Mar-92	4,000	10	-
12-Mar-92	4,000	10	-
18-Mar-92	4,000	10	-
23-Apr-92	2,000	5	-
2-May-92	2,000	5	-
5-May-92	2,000	5	-
6-May-92	2,000	5	-
14-Sep-92	2,000	5	-
22-Sep-92	4,000	10	-
30-Sep-92	4,000	10	-
7-Oct-92	4,000	10	-
7-Oct-92	4,000	10	-
16-Oct-92	4,000	10	-
21-Oct-92	2,000	5	-
20-Oct-92	4,000	10	-
29-Oct-92	4,000	10	-
29-Oct-92	4,000	10	-
30-Oct-92	4,000	10	-
4-Nov-92	4,000	10	-
10-Nov-92	4,000	10	-
10-Nov-92	4,000	10	-
11-Nov-92	4,000	10	-
17-Nov-92	2,000	5	-
20-Nov-92	4,000	10	-
4-Dec-92	2,000	5	-
9-Dec-92	2,000	5	-
14-Dec-92	2,000	5	-
16-Dec-92	4,000	10	-
16-Dec-92	4,000	10	-
16-Dec-92	4,000	10	-
21-Dec-92	2,000	5	-
21-Dec-92	4,000	10	-

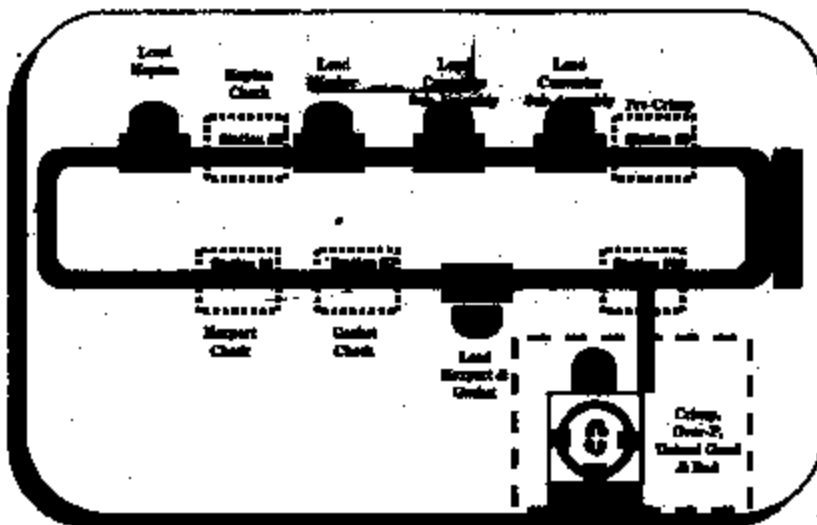
Totals units	265,650	665	-
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Ford - Electronic Speed Control Deactivation Pressure Switch TI P/N 77PSL Series



Manual Sensor Assembly - TI Mexico



Hand Line - Crimping Station

45° Station

90° Station

Dial Nest: Operator loads pre-crimped sensor into nest

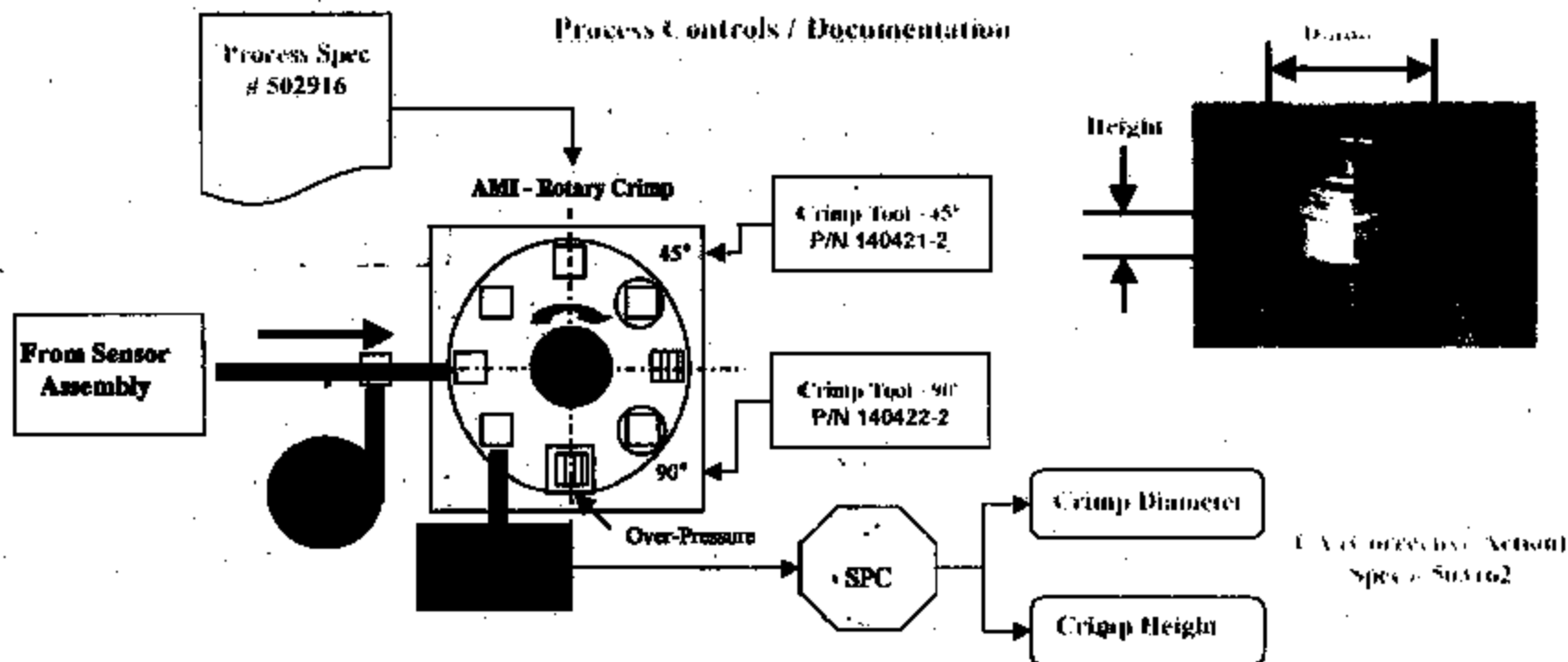


O-ring Station

Operator Station - Operator places O-ring on sensor and feeds into sensor nest

Conveyor from Sensor Assembly Belt



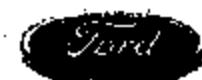


Crimp Logic / Sequence of Events:

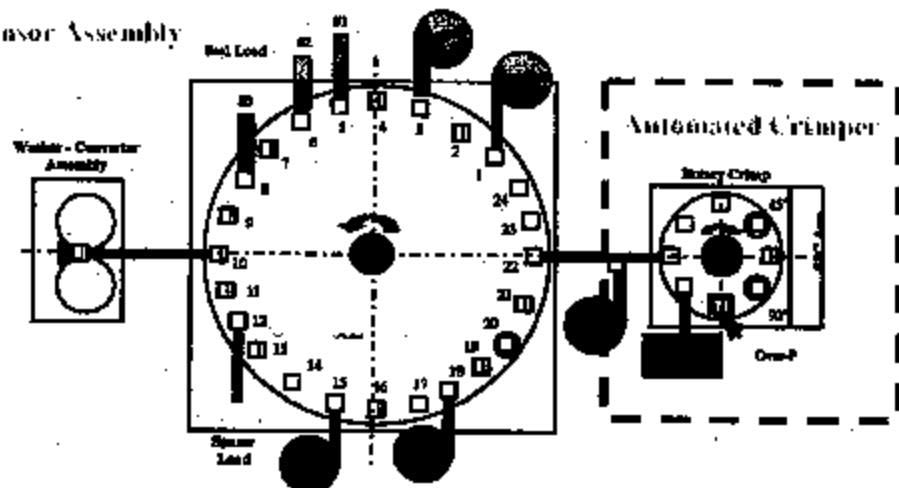
- All tooling home
- Part presence sense
- Send cylinder down until down stroke sensor is activated
- Hold cylinder down
- Send cylinder home
- Repeat cycle



Ford - Electronic Speed Control Deactivation Pressure Switch TI P/N 77PSL Series



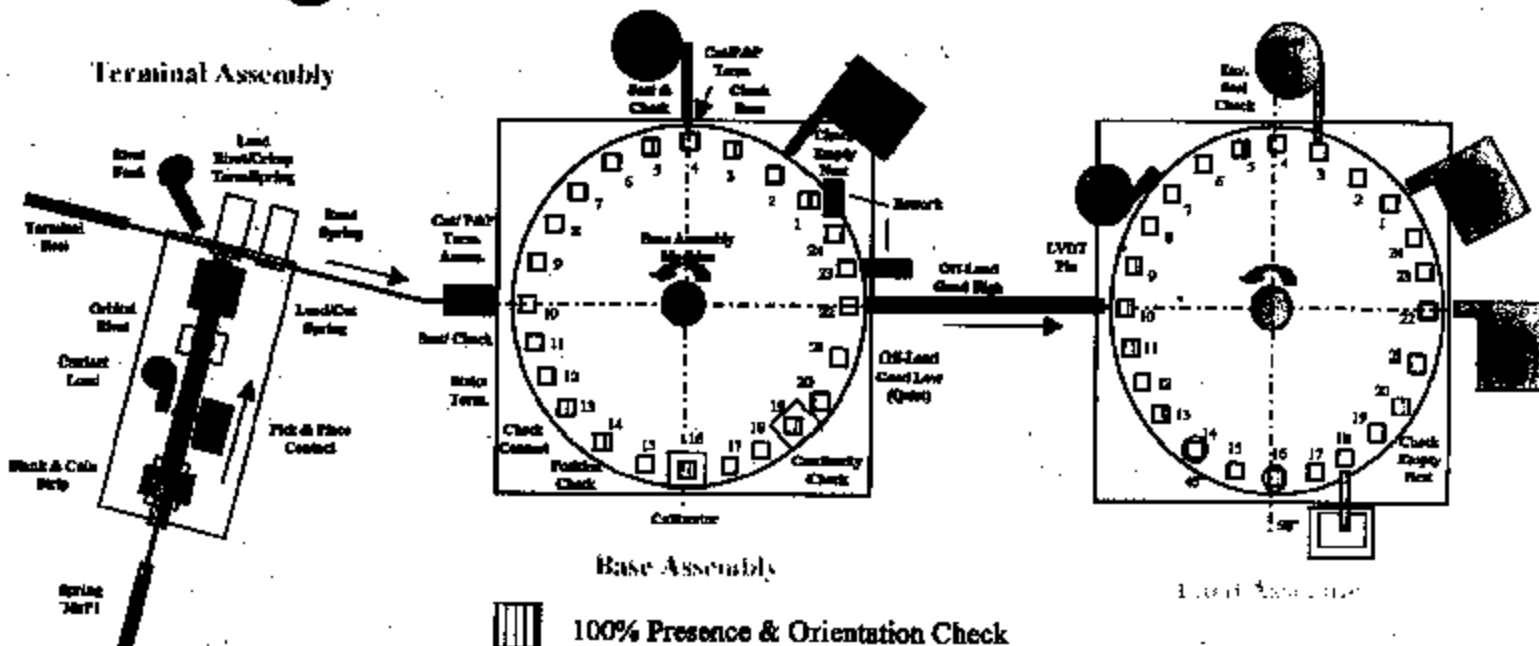
Sensor Assembly



77PSL Pressure Switch



Terminal Assembly

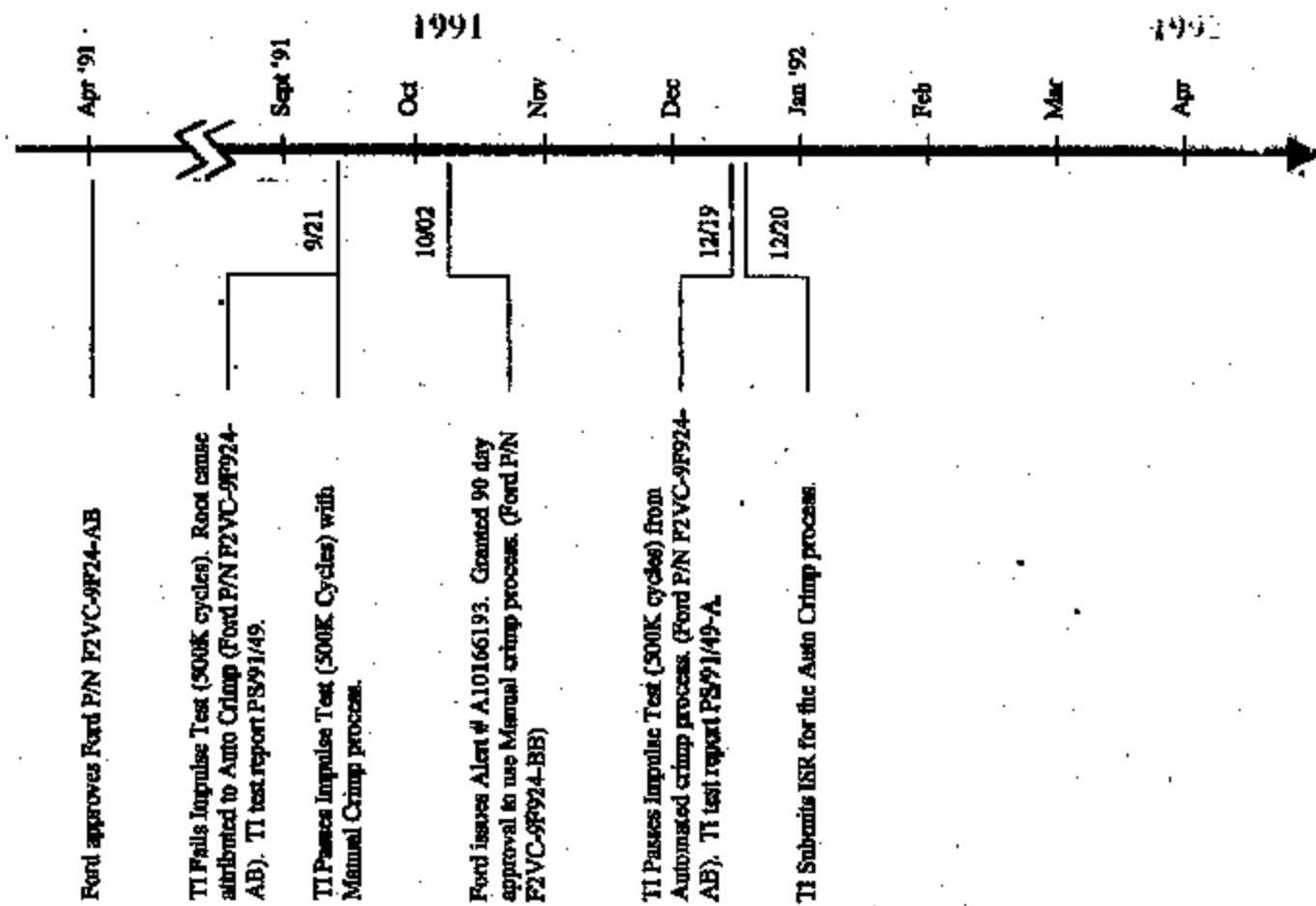




Ford - Electronic Speed Control Deactivation Pressure Switch TI P/N 77PSL Series

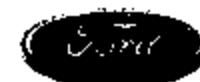


Timeline: F2VC-9F924-AB (TI P/N 77PSL2-1)





**Ford - Electronic Speed Control Deactivation Pressure Switch
TI P/N 77PSL Series**



Automatic vs. Hand Line Equipment

	<u>Auto Crimper</u>	<u>Hand Line</u>
Equipment Manufacturer	Black & Webster	Black & Webster
Load Method	Auto	Manual
Control Unit	5TI PLC	A/B PLC
Crimp Cylinders	American Cylinder	American Cylinder
Pressure Medium	Air	Air
Sensors (Up & Down)	Canfield Sensors	Canfield Sensors
Crimp Tool P/N:		
- 45°	140421-2	140421-2
- 90°	140422-2	140422-2
Process Controls Used:	Up & Down stroke sensors PLC control Over-Pressure Verification Crimp Height Crimp Diameter	Up & Down stroke sensors PLC control Over-Pressure Verification Crimp Height Crimp Diameter



**Ford - Electronic Speed Control Deactivation Pressure Switch
TI P/N 77PSL Series**



Automated Crimp Equipment

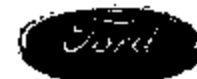


45° Station

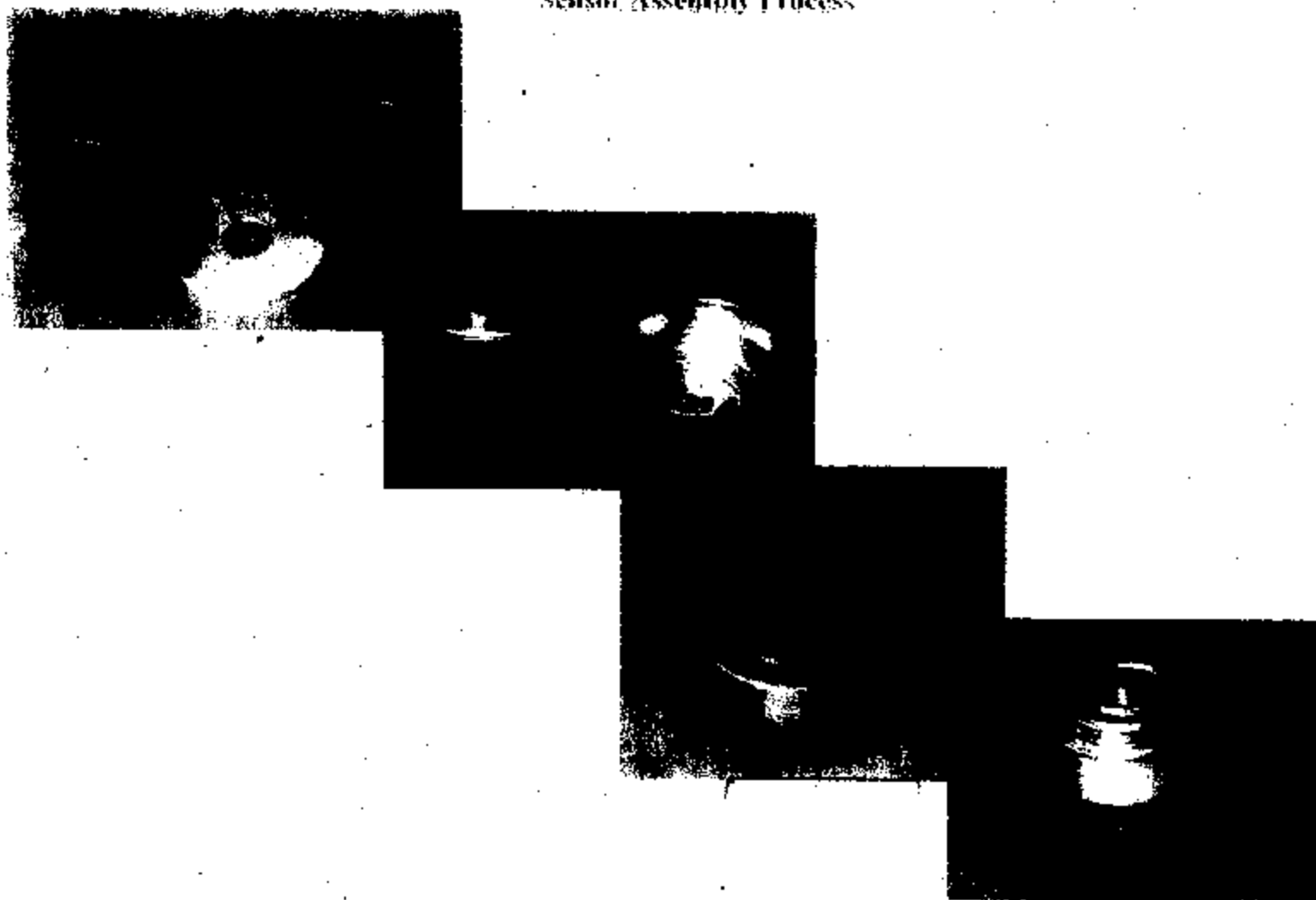
90° Station



**Ford - Electronic Speed Control Deactivation Pressure Switch
TI P/N 77PSL Series**



Sensor Assembly Process

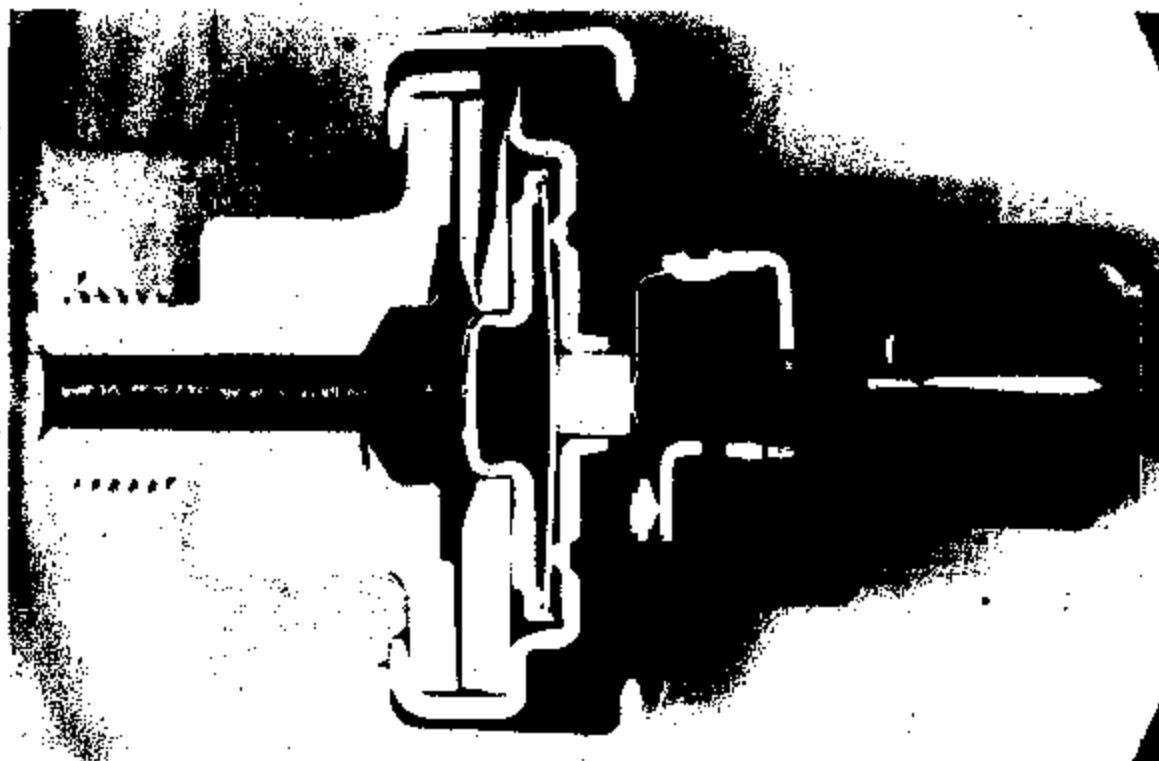




Ford - Electronic Speed Control Deactivation Pressure Switch
TI P/N 77PSL Series



Switch X-Section



Document #: 503531

POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS (PROCESS FMEA)

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R.G.L/DEA

PREPARED BY: MATT SELLERS

MODEL YEAR(S)/VEHICLE(S): 53/57/77/80/87PG

DESIGN/QUALITY/PG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.): 04/28/06
FMEA REVISION: C

ID	Function Requirements	Potential Failure Mode	Potential Effects of Failure	S C V	O C V	Failure Consequence (Effects of Failure)	S C V	O C V	Failure Consequence (Effects of Failure)	S C V	O C V	Recommended Controls	Responsibility & Target Completion Date	Action Results				
														Action Taken	S C V	O C V	D C V	R. P. N.
1	FEED AND ASSEMBLE HEADPORT TO NEST.	DOES NOT FEED	NO SUBSEQUENT ASSEMBLY PERMISSIBLE YIELD LOSS	5	1	MACHINE ERROR	1	5	PREVENTATIVE MAINT. 100% PRESENCE CHECK VERIFY OPERATION OF CHECK PROBE	1	5							
		DOES NOT NEST PROPERLY	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5	1	DEFECT IN NEST, MACHINE ERROR	1	5	PREVENTATIVE MAINT. 100% PRESENCE CHECK	1	5							
		LOADS MULTIPLE HEADPORT	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5	1	MACHINE ERROR	1	5	PREVENTATIVE MAINT. 100% PRESENCE CHECK	1	5							
2	CONFIRM HEADPORT PRESENCE AND STYLE	FAILS TO IDENTIFY OUT OF RANGE HEADPORT	WRONG HEADPORT	5	1	SET-UP ERROR	1	5	SET-UP MASTERS	1	5							
3	FEED AND ASSEMBLE GASKET TO HEADPORT GLAND	MISPLACED GASKET	LEAK BURST RESISTANCE DEGRADATION	9	1	MACHINE ERROR	1	9	100% FUNCTION TEST	1	9							
		NO GASKET	LEAK BURST RESISTANCE DEGRADATION	9	1	MACHINE ERROR OPERATOR INTERVENTION	1	9	CONTINUITY PROBE CYCLING AUDITS 100% FUNCTION TEST CONTINUITY PROBE	1	9							
		MULTIPLE GASKET	LEAK BURST RESISTANCE DEGRADATION YIELD LOSS	9	1	OPERATOR INTERVENTION	1	9	100% FUNCTION TEST	1	9							
4	CONFIRM GASKET PRESENCE	FAILS TO IDENTIFY GASKET OR OUT OF PLACE GASKET	LEAK	9	1	MACHINE ERROR	1	9	SET-UP MASTERS	1	9							
5	BLANK AND ASSEMBLE (2) SEALS	ONLY (1) SEAL LOADED	REDUCED DIAPHRAGM LIFE	8	1	OPERATOR DOES NOT TURN ON SPD STATION	1	8	PROCESS SPECS	1	8							
		NO SEAL LOADED	LEAK	8	1	MACHINE ERROR	1	8	MACHINE SET-UP MATERIAL KITTING 100% FUNCTION TEST	1	8							
		IMPROPERLY CUT SEAL	LEAK DIAPHRAGM LIFE FAILURE YIELD LOSS	8	1	MACHINE ERROR	1	8	CONTINUITY PROBE 100% FUNCTION TEST	1	8							
									CONTINUITY PROBE CYCLING AUDITS PREVENTATIVE MAINT.									

3713 6399

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R.GILDEA

FMEA DATE (ORIG) 04/28/86

FMEA REVISION: C

MODEL YEAR(S)/VEHICLE(S): 52/57/77/MDN2/P8

ORIGIN QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

Item	Process Description	Potential Failure Modes	Potential Effects of Failure	S e v e r i t y	O c c u r r e n c e	D e t e c t i o n	Potential Cause(s) Mechanism(s) of Failure	S e v e r i t y	O c c u r r e n c e	D e t e c t i o n	Recommended Action(s)	Responsibility to Target Completion Date	Action Results				
													Action Taken	S e v e r i t y	O c c u r r e n c e	D e t e c t i o n	R P N
6	CONFIRM (S) SEAL PRESENCE.	MISPLACED SEAL	LEAK REDUCED DIAPHRAGM LIFE	9	1	1	MACHINE ERROR OR STATIC	1	1	1	100% FUNCTION TEST CONTINUITY PROBE ANTI-STATIC STATION PREVENTIVE MAINT. CYCLING AUDITS						
		MORE THAN (S) SEALS LOADED	SHIFT IN SET POINTS	9	1	1	STATIC BUILD UP	1	1	1	ANTI-STATIC STATION						
		FAILS TO IDENTIFY MISSING OR OUT OF PLACE SEALS	LEAK	9	1	1	MACHINE ERROR	1	1	1	SET-UP MASTERS						
		WHERE APPLICABLE, BLANK AND ASSEMBLE (DND) SEAL FOR BRAKE APPLICATION	NO SEAL LOADED	9	1	1	MACHINE ERROR	1	1	1	100% FUNCTION TEST						
		IMPROPERLY CUT SEAL	LEAK DIAPHRAGM LIFE FAILURE PREVENTS SUBSEQUENT ASSEMBLY YIELD LOSS	9	1	1	MACHINE ERROR	1	1	1	CONTINUITY PROBE 100% FUNCTION TEST CONTINUITY PROBE CYCLING AUDITS PREVENTIVE MAINT.						
		MISPLACED SEAL	LEAK REDUCED DIAPHRAGM LIFE	9	1	1	MACHINE ERROR OR STATIC	1	1	1	100% FUNCTION TEST CONTINUITY PROBE ANTI-STATIC STATION PREVENTIVE MAINT. CYCLING AUDITS						
7	WHERE APPLICABLE, CONFIRM (DND) SEAL PRESENCE.	MORE THAN (1) SEAL LOADED	SHIFT IN SET POINTS	9	1	1	STATIC BUILD UP	1	1	1	ANTI-STATIC STATION						
		FAILS TO IDENTIFY MISSING OR OUT OF PLACE SEAL	LEAK	9	1	1	MACHINE ERROR	1	1	1	SET-UP MASTERS						
		FEED AND ASSEMBLE CONVERTER TO WASHER	MISSED CONVERTER	9	1	1	MACHINE MISFEED	9	1	1	100% PRESENCE CHECK 100% FUNCTION TEST						
8	FEED AND ASSEMBLE CONVERTER TO WASHER	MISSED WASHER	INOPERATIVE DEVICE	9	1	1	MACHINE MISFEED	9	1	1	100% PRESENCE CHECK						
		UPSIDE DOWN WASHER	LEAK SHIFT IN DEVICE SET POINTS REDUCED KAPTON LIFE	9	1	1	MACHINE MISFEED	1	1	1	100% FUNCTION TEST POKE YOKO LBL TRACK						
							OPERATOR ERROR				100% FUNCTION TEST CYCLING AUDITS						
10	FEED AND ASSEMBLE WASHER/CONVERTER ASSEMBLY	DISLODMENT OF CONVERTER	INOPERATIVE DEVICE	9	1	1	AMI PICK AND PLACE ERROR	1	1	1	OPERATOR SET-UP 100% FUNCTION TEST						

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: RGLDEA

MODEL YEAR(S)/VEHICLE(S): 52/577/00/07PS

DESIGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.): 04/28/96

FMEA REVISION: C

Item	Process Function Requirement	Potential Failure Modes	Potential Effects of Failure	S E V	C O C C	Potential Cause(s) Mechanism(s) (if any)	O C C U R	Current Process Controls	D E T E C T I O N	R E S P O N S I B I L I T Y	Recommended Controls	Responsibility & Target Completion Date	Action Results				
													Action Taken	S e v	O c c	D e t	R. P. N.
11	CONFIRM WASHER CONVERTER ASSEMBLY PRESENCE	NON- CONCENTRIC PLACEMENT	MISPLACED KAPTON REDUCED KAPTON LIFE MISPLACED DISC INOPERATIVE DEVICE	8		ARM PICK AND PLACE ALIGNMENT ERROR	1	100% PRESENCE CHECK PREVENTIVE MAINT. CYCLING AUDITS OPERATOR SET-UP	1	8							
		FAILS TO LOAD ASSEMBLY	NO SUBSEQUENT ASSEMBLY PERMISSIBLE YIELD LOSS	5		MACHINE ERROR	1	100% FUNCTION TEST 100% PRESENCE CHECK PREVENTIVE MAINT. CYCLING AUDITS PREVENTIVE MAINT.	1	5							
		LOADS MULTIPLE ASSEMBLIES	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5		MACHINE ERROR	1	100% PRESENCE CHECK VERIFY OPERATION OF CHECK PROBE PREVENTIVE MAINT.	1	5							
		FAILS TO IDENTIFY WASHER OR OUT OF PLACE WASHER CONVERTER ASSEMBLY	INOPERATIVE DEVICE	9		MACHINE ERROR	1	100% PRESENCE CHECK YIELD MONITORING	1	9							
12	BLANK AND ASSEMBLE SPACER	MISPLACED SPACER	REDUCED DISC LIFE CONTINUITY FAILURE LOSS OF CALIBRATION DRIFT OVER LIFE	7		MACHINE ERROR	1	100% FUNCTION TEST CONTINUITY PROBE CYCLING AUDITS TRAPPED DISC PROBE	1	7							
		NO SPACER	REDUCED DISC LIFE LOSS OF CALIBRATION DRIFT OVER LIFE	7		MACHINE ERROR TOOL DULL, BROKEN, OR OTHERWISE MALF	1	100% FUNCTION TEST CONTINUITY PROBE CYCLING AUDITS PREVENTIVE MAINT.	1	7							
		IMPROPERLY OUT SPACER TOO LARGE	REDUCED DISC LIFE LOSS OF CALIBRATION DRIFT OVER LIFE CONTINUITY FAILURE	7		MACHINE ERROR TOOL DULL, BROKEN, OR OTHERWISE MALF	1	100% FUNCTION TEST CONTINUITY PROBE CYCLING AUDITS PREVENTIVE MAINT.	1	7							
		IMPROPERLY OUT SPACER TOO SMALL	REDUCED DISC LIFE LOSS OF CALIBRATION DRIFT OVER LIFE	7		MACHINE ERROR TOOL DULL, BROKEN, OR OTHERWISE MALF	1	100% FUNCTION TEST CONTINUITY PROBE CYCLING AUDITS PREVENTIVE MAINT.	1	7							
		2 OR MORE SPACERS LOADED	CONTINUITY FAILURE	7		STATIC BUILDUP	1	ANTI-STATIC STATION	1	7							

3713 9400

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R.GILDEA

MODEL YEAR(S)/VEHICLE(S): 55/57/77/80/87 P8

DESIGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.) 04/28/96
FMEA REVISION: C

ID	Process Description	Potential Failure Event	Potential Effect(s) of Failure	S C O R E	O C C U R R E N C Y	P O T E N T I A L C O N S E Q U E N C E S	C U R R E N T C O N T R O L S	S C O R E	R E C O M M E N D E D A C T I O N	R E S P O N S I B I L I T Y	T A R G E T C O M P L E T I O N D A T E	Action Results				
												Action Taken	S C O R E	O C C U R R E N C Y	D E T R I M I N G	R. P. M.
13	CONFIRM SPACER PRESENCE	FAILS TO IDENTIFY MISSING OR OUT OF PLACE SPACER	LOSS OF CALIBRATION DRIFT OVER LIFE REDUCED DISC LIFE	7		MACHINE ERROR	1	7	SET-UP MASTERS	1	7					
14	FEED AND ASSEMBLE DISC	MISPLACED DISC (TRAPPED)	CONTINUITY FAILURE	8		MACHINE ERROR	3	16	PRESSURE PROBE TRAPPED DISC PROBE 100% FUNCTION TEST	1	16					
		UPSIDE DOWN DISC	CONTINUITY FAILURE	6		MACHINE ERROR	3	18	100% DISC PROBE TRAPPED DISC PROBE 100% FUNCTION TEST	1	18					
		MULTIPLE DISC	CONTINUITY FAILURE ACTUATION FAILURE	5		MACHINE ERROR	3	15	100% DISC PROBE TRAPPED DISC PROBE	1	15					
		WRONG DISC	LOSS OF CALIBRATION AUDIBLE SNAP ON QUIET APPLICATIONS	5		MISSING	1	16	100% FUNCTION TEST DISC BLIPS ROUTE SLIPS	1	16					
		MISSING DISC	CONTINUITY FAILURE	6		MACHINE ERROR	1	5	100% DISC PROBE 100% FUNCTION TEST	1	5					
15	CONFIRM DISC PRESENCE	FAILS TO IDENTIFY MISSING OR OUT OF PLACE DISC	INOPERATIVE DEVICE	7		MACHINE ERROR	1	7	YIELD MONITORING	1	7					
16	FEED AND ASSEMBLE CUP	MISSING CUP	NO DEVICE OPERATION	8		MACHINE INDEX ERROR	1	8	100% PRESENCE CHECK 100% FUNCTION CHECK	1	8					
		MISALIGNMENT OF INTERNAL COMPONENTS	INOPERATIVE DEVICE LEAK	8		MISALIGNED AND FICK AND PLAGE	1	9	TRAPPED DISC PROBE 100% FUNCTION TEST CYCLING AUDITS	1	9					
		MULTIPLE CUPS LOADED	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	8		MACHINE ERROR	1	8	100% PRESENCE CHECK	1	8					
		LOW RATIO CUP LOADED IN PLACE OF HIGH RATIO CUP	SHIFT IN DEVICE SET POINTS EXCESSIVE SPRING PRE- LOAD CREEP CONTINUITY FAILURE	8		MISSING ERROR	1	6	100% FUNCTION CHECK	1	6					
						OPERATOR ERROR			KAN BAN LOT CONTROL							

3713 8401

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R. GILDEA

MODEL YEAR(S)/VEHICLE(S): 92/97/77/80/87 FS

DSGN QUALIFIED RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.) 04/28/98

FMEA REVISION: C

SN	Process Function Description	Potential Failure Mode	Potential Effects of Failure	S	O	D	C	P	R	Recommended Action(s)	Responsibility & Target Completion Date	Action Results				
												Action Taken	S	O	D	R, P, N
17	CONFIRM CLIP PRESENCE	HIGH RATIO CLIP LOADED IN PLACE OF LOW RATIO CLIP	SHIFT IN DEVICE SET POINTS	8						100% FUNCTION CHECK	1	6				
		INSUFFICIENT SPRING PRE- LOAD CRIMP CONTINUITY FAILURE								OPERATOR ERROR						
										KAN BAN LOT CONTROL						
18	PRE-CRIMP SENSOR ASSEMBLY	UNDER CRIMP	DISLODGE OF INTERNAL COMPONENTS DURING TRANSFER TO PICK UP STATION	6						OPERATOR SET-UP	1	15				
										PRESSURE TOO LOW						
		OVER CRIMP	DIFFICULT FINAL CRIMP DUE TO SIDE WALL	6						100% FUNCTION TEST PREVENTIVE MAINT.						
										EXCESS PRESSURE	1	15				
19	PROBE FOR TRAPPED DISC	FAILS TO IDENTIFY MISSING OR TRAPPED DISC	INOPERATIVE DEVICE CONTINUITY FAILURE	7						SET-UP ERROR						
										SET-UP INSPECTION						
20	TRANSFER PRE-CRIMPED SENSOR ASSEMBLY TO SENSOR CRAMPER	DISLODGED INTERNAL COMPONENTS	LEAK CONTINUITY FAILURE	8						MACHINE ERROR	1	7				
										INSUFFICIENT PRE- CRIMP						
		FAILS TO TRANSFER	EMPTY PICK, NO EFFECT ON SUBSEQUENT OPERATIONS	8						PREVENTIVE MAINT.	1	6				
		TRANSFERS MULTIPLE SENSOR ASSEMBLY'S	SENSOR DAMAGE	6						100% FUNCTION TEST SET-UP INSPECTION						
										PREVENTIVE MAINT.	1	6				
21	UNLOAD BAD PARTS SENSOR ASSEMBLIES	FAILS TO UNLOAD	EMPTY PICK, NO EFFECT ON SUBSEQUENT OPERATIONS	8						OPERATOR AWARENESS	1	8				
										TRAINING						
22	CHECK EMPTY NEST	FAILS TO IDENTIFY OCCUPIED NEST	NESTPORT LOADED ONTO OCCUPIED NEST	6						UNLOAD FAILURE	1	8				
										EMPTY NEST PROBE						
										UNLOAD FAILURE	1	8				
23	WHERE APPLICABLE, PLACE EXTERNAL O-RING ON HEXPORT	FAILS TO PLACE O-RING OR PAD	IF UNDETECTED IN SUBSEQUENT OPERATION COULD CAUSE LEAK IN APPLICATION	6						100% O-RING CHECK ON CRIMP TABLE	3	54				
										ADD O-RING CHECK TO FINAL FUNCTION TEST AS A PERMANENT FIX	MFG. ENGINEERING	COMPLETE 12/99	3	3	1	14

3713 BA02

MODEL YEAR(S)/VEHICLE(S): 52/87/77/80/87PS

DESIGN/ILLUSTRATION RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.) 04/28/86
FMEA REVISION: C

Item	Problem Description	Potential Failure Mode	Potential Effects of Failure	S/N	Frequency of Occurrence	Current Process Controls	S/N	R. E. M.	Recommended Action	Responsibility & Target Completion Date	Action Results							
											Action Taken	S. v	O. c	D. e	R. P. N			
						NO O-RING PRESENT AT TRACK DUE TO EMPTY BOWL FEED, CONTAMINATION IN TRACK, MISALIGNED TRACK O-RING STATION NOT ACTIVATED			O-RING STATION P.M. ROUTE SLP AND VISUAL AIDS FOR O-RING REQUIREMENTS									
						PICK & PLACE WORN, MISALIGNED OR NOT DESIGNED PROPERLY PICK NOT LOCATED PROPERLY DUE TO MISALIGNED STOP OR CONTAMINATION NOT STRIPPER PIN FAILS TO REMOVE O-RING			100% VISUAL INSPECTION AT PRESSURE TEST AND PACKING									
	PLACES TWO O- RINGS ON ONE PART	HIGH ASSEMBLY TORQUE		4		PICK STOP FAILS TO RELEASE PICK AT END OF CYCLE	1	24	100% MULTIPLE O-RING CHECK ON CRIMP TABLE			ADD O-RING CHECK TO FINAL FUNCTION TEST	MPG, ENG.	COMPLETE 12/88	4	2	1	8
		POTENTIAL INABILITY TO FULLY ASSEMBLE IN APPLICATION		5			2	80	100% VISUAL INSPECTION AT PRESSURE TEST AND PACKING P.M. FOR O-RING STATION						11	2	1	10
	O-RING DAMAGED BY FEED SYSTEM OR PICK & PLATE	POSSIBLE LEAK IN APPLICATION		8		PICK & PLACE AND FEED SYSTEM WORN OR NOT DESIGNED PROPERLY	1	12	P.M. FOR PICK & PLACE AND FEED SYSTEM									
									DESIGN VERIFICATION THROUGH DEBUG AND PROCESS HISTORY Q.C. AUDIT FROM EACH LOT SUBJECTED TO FLUID LEAK CHECK									
	THREADS DAMAGED BY PICK & PLACE	MAY RESULT IN HIGH INSTALLATION TORQUE		4		PICK & PLACE AND FEED SYSTEM WORN, MISALIGNED OR NOT DESIGNED PROPERLY PICK NOT LOCATED PROPERLY	2	18	P.M. FOR PICK & PLACE AND FEED SYSTEM									
		FINISHED DEVICE WILL NOT ASSEMBLE AT CUSTOMER		11			2	10	DESIGN VERIFICATION THROUGH DEBUG AND PROCESS HISTORY Q.C. AUDIT FROM EACH LOT SUBJECTED TO THREAD QUALITY CHECK									
	O-RING NOT LOCATED PROPERLY ON THE ASSY.	MAY RESULT IN HIGH INSTALLATION TORQUE		4		PICK & PLACE AND FEED SYSTEM WORN, MISALIGNED OR NOT DESIGNED PROPERLY PICK NOT LOCATED PROPERLY	2	16	P.M. FOR PICK & PLACE AND FEED SYSTEM									
		POTENTIAL O-RING DAMAGE DURING ASSEMBLY RESULTING IN LEAK		5			1	15	DESIGN VERIFICATION THROUGH DEBUG AND PROCESS HISTORY									

3713 8403

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R.GILDEA

MODEL YEAR(S)/VEHICLE(S): 52/57/77/80/87P6

DSGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG): 04/29/96

FMEA REVISION: C

ID	Process Step/Function	Potential Failure Mode	Potential Effects of Failure	S C V	C O N	Potential Cause(s) Mechanism(s) or Failure	S C V	Current Process Controls	S C V	Recommended Actions	Responsibility & Target Completion Date	Action Results				
												Actions Taken	S C V	C O N	D R T	R. P. M.
24	TRANSFER SENSOR ASSEMBLY TO ROTARY CRIMP NEST	FAILS TO TRANSFER	PRE-CRIMPED SENSOR ASSEMBLY LOADED ONTO OCCUPIED NEST	5		UNLOAD FAILURE	1	YIELD MONITORING	1	8						
25	40 DEGREE CRIMP SENSOR ASSEMBLY	UNDER CRIMP	LOSS OF SPD CONTROL OF DIAMETER OR HEIGHT POTENTIAL DAPHYRAM LIFE PROBLEM	9		PRESSURE TOO LOW TOOL WEAR/BREAKAGE	1	SPC DIA. AND HEIGHT PROCESS SPD SET-UP PREVENTIVE MAINT. 100% FUNCTION TEST CYCLING AUDIT	1	9						
		OVER CRIMP	CRIMP DIAMETER TOO LARGE CAUSING DIFFICULT FINAL ASSY COMPONENT DAMAGE POTENTIAL DAPHYRAM LIFE PROBLEM	11		PRESSURE TOO HIGH	1	SPC DIA. AND HEIGHT PROCESS SPD SET-UP PREVENTIVE MAINT. 100% FUNCTION TEST CYCLING AUDIT	1	8						
		IMPROPER CRIMP	COMPONENT DAMAGE CRIMP DIAMETER AND HEIGHT OUT OF SPEC.	11		OPERATOR SET-UP NO DSG. TOOL IN 45 DEG. STATION WRONG DIE GEOMETRY	3	SPC DIA. AND HEIGHT PROCESS SPD SET-UP PREVENTIVE MAINT. 100% FUNCTION TEST CYCLING AUDIT	1	10						
		FAILS TO CRIMP	COMPONENT DAMAGE AT 40 DEGREE CRIMP CRIMP DIAMETER AND HEIGHT OUT OF SPEC.	11		MACHINE MALFUNCTION SET-UP ERROR	1	PREVENTIVE MAINT. SET-UP - SPEC	1	5						
		IMPROPER TOOL REGISTRATION	MINOR REGISTRATION ERROR: SENSOR DIAMETER OUT OF ROUND SENSOR HEIGHT UNEVEN MAJOR REGISTRATION ERROR - COMPONENT DAMAGE	11		SENSOR ERROR MAINTENANCE SET- UP ERROR	1	SPC DIA. AND HEIGHT PREVENTIVE MAINT.	1	5						
26	VERIFY O-RING PRESENT ON SENSOR	FAILS TO DETECT MISSING O- RING	PART WILL BE UNLOADED INTO GOOD BIN AND COULD CAUSE LEAK IN APPLICATION IF UNDETECTED IN APPLICATION	5		PROBE MISALIGNED, WORN OR IMPROPERLY DESIGNED PROBE CONTAMINATION PROBE STATION NOT ACTIVATED	2	MASTER E DEVICES REDUNDANT O-RING CHK ON FINAL FUNCTION OK ALIGNMENT TOOL VISUAL INSPECTION PROBE P.M.'S	1	10						

3713 8404

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R.GILDEA

MODEL YEAR(S)/VEHICLE(S): 52/57/77/80/87P8

DESIGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.) 04/29/98
FMEA REVISION: C

Item	Process Function/Description	Failure Mode	Potential Effects of Failure	S	O	C	P	D	R	Recommended Action(s)	Responsibility & Target Completion Date	Action Results					
												Actions Taken	S	O	C	R. P. N.	
		FAILS TO DETECT O-RING PRESENT	PART WILL BE UNLOADED INTO BAD BIN RESULTING IN YIELD LOSS	3						PROBE MISALIGNED, WORK OR IMPROPERLY DESIGN/PROBE CONTAMINATION PART ALIGNMENT IN NEXT	2	MASTER DEVICES ALIGNMENT TOOL PROBE DESIGN PROVEN THROUGH DESIGN & PROCESS HISTORY PROBE P.M.'S	1				
		FAILS TO DETECT TWO O-RINGS PRESENT	PART WILL BE UNLOADED INTO GOOD BIN POSSIBLY RESULTING IN HIGH INSTALLATION TORQUE AT 875/1 INCH	4						PROBE MISALIGNED, WORK OR IMPROPERLY DESIGNED PROBE CONTAMINATION PROBE STATION NOT ACTIVATED	3	MASTER DEVICES ALIGNMENT TOOL PROBE P.M.'S ROUTE SLIPS VISUAL INSPECTION	2	18			
		O-RING DAMAGED BY PROBE TIP	LEAK IN APPLICATION	5						PROBE MISALIGNED, WORK OR IMPROPERLY DESIGN/PROBE	1	PROBE DESIGNED TO MINIMIZE THREAD CONTACT PROBE P.M.'S PROBE DESIGN PROVEN THROUGH DESIGN AND PROCESS HISTORY	2	10			
27	NO DEGREE CRIMP SENSOR ASSEMBLY	UNDER CRIMP	BURST RESISTANCE DEGRADED LEAK CRIMP HEIGHT OUT OF SPEC. DIFFICULT FINAL ASSEMBLY CRIMPING	8						PRESSURE TOO LOW TOOL WEAR/REWORK AS DES. TOOL IN 80 DEG. STATION	1	8PC. DIA. AND HEIGHT PROCESS SPEC SET-UP P.M./Q.C. AUDITS 100% FUNCTION TEST CYCLING AUDITS	1	9			
		OVER CRIMP	CRIMP DIAMETER TOO LARGE CAUSING DIFFICULT FINAL ASSEMBLY	6						PRESSURE TOO HIGH	1	8PC. DIA. AND HEIGHT PROCESS SPEC SET-UP PREVENTIVE MAINT. 100% FUNCTION TEST CYCLING AUDITS	1	6			
28	OVER-PRESSURE SENSOR ASSEMBLY	INSUFFICIENT OP	DRIFT OVER LIFE OR CALIBRATION CHANGE LEADING TO YIELD LOSS	9						IMPROPER DESIGN OF OP HEAD INCORRECT OP SETTINGS INADEQUATE SEAL PLACEMENT	1	100% FUNCTION TEST. MIN 1 PRESSURE LEVEL GAGE	1	9			
29	UNLOAD GOOD SENSOR ASSEMBLY	FAILS TO UNLOAD GOOD SENSOR	TABLE WONT INDEX PART NEXT CYCLE (EMPTY NEST FAILURE)	2						LOOSE/ MISADJUSTED OR IMPROPERLY DESIGNED PICKUP	2	EMPTY NEST PROBE NEST/CRUMPER P.M.'S	1	4			
			YIELD/UPTIME LOSS	2							1	PLAN DESIGN PROVEN THROUGH DESIGN & PROCESS HISTORY	1	2			

3713 8405

PROCESS: AUTOMATED SENSOR ASSEMBLY

PROCESS RESPONSIBILITY: R.GILDEA

MODEL YEAR(S)/VEHICLE(S): 2007/77/80/87 PS

DSGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.) 04/29/96
FMEA REVISION: C

ID	Process Function (Description)	Potential Failure Mode	Potential Effects of Failure	S	O	Process Cause(s) Mechanism of Failure	D	Current Process Controls	S	O	Recommended Action(s)	Responsibility & Target Completion Date	Action Results				
													Action Taken	S e v	O c c	D u r	R. P. N.
30	PICK & UNLOAD ASSEMBLY W/O O-RINGS	THREAD DAMAGE	POSSIBLY RESULTING IN HIGH INSTALLATION TORQUE	4	1	JAW WORK, MISALIGNED OR IMPROPERLY DESIGNED	2	JAW P.A.L'S JAWS DESIGNED TO MINIMIZE THREAD CONTACT DESIGN PROVEN THROUGH DEBUG & SOPHISTICATED TESTING	2	10							
		FAILS TO UNLOAD BAD SENSOR	TABLE MONT INDEX PAST NEXT CYCLE (EMPTY NEST FAILURE)	2	1	LOOSE/ MISALIGNED OR IMPROPERLY DESIGNED PICK UP JAW	2	EMPTY NEST PROBE NEST COMPARE PARTS JAW DESIGN PROVEN THROUGH DEBUG & PROCESS SOPHISTICATED TESTING	1	4							
			UPTIME LOSS	2	1		1		1	2							
		THREAD DAMAGE	POSSIBLY RESULTING IN HIGH INSTALLATION TORQUE AT CUSTOMER	4	1	JAW WORK, MISALIGNED OR IMPROPERLY DESIGNED	2	JAW P.A.L'S JAWS DESIGNED TO MINIMIZE THREAD CONTACT DESIGN PROVEN THROUGH DEBUG & SOPHISTICATED TESTING	2	10							
01	CHECK EMPTY NEST.	FAIL TO IDENTIFY OCCUPIED NEST.	SENSOR ASSEMBLY LOADED ONTO OCCUPIED NEST.	1	1	UNLOAD FAILURE	1	YIELD MONITORING	1	5							

3713 8406

POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS (PROCESS FMEA)

PROCESS: AUTOMATED FINAL ASSEMBLY

PROCESS RESPONSIBILITY: ROBERT GILDEA

PREPARED BY: MATT SELLERS

MODEL YEAR(S)/VEHICLE(S): 67/77/87PS

DESIGN/QUALITY RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILDEN

FMEA DATE (CHRG.): 4/28/86

FMEA REVISION: 2

Rank	Process Function Description	Potential Failure Mode	Potential Effect on Customer	S	C	Potential Cause/Effect of Failure	D	F	Current Process Controls	S	C	Recommended Actions	Responsibility & Target Completion Date	Action Results				
														Action Taken	S	C	D	R. P. N.
1	ASSEMBLE CRIMP RING TO NEXT AND CHECK.	DOES NOT FULLY SEAT	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5	1	MACHINE ERROR	1	5	PREVENTIVE MAINT.	1	5							
2	ASSEMBLE SENSOR ASSEMBLY TO NEXT AND CHECK.	DOES NOT FULLY SEAT	DIFFICULT SUBSEQUENT OPERATIONS	5	1	OUT OF ROUND SENSOR ASSEMBLY MACHINE ERROR	5	45	PREVENTIVE MAINT. DIA. HT. SPC. 100% HEIGHT CHECK	5	45	SEE "CRIMP RING DISTORTED" ON PAGE 4	MECHANIZATION	INCREASE CODE FONT SIZE	5	1	1	5
3	ASSEMBLE ENVIRONMENTAL SEAL TO NEXT AND CHECK.	MISSED SEAL	INTERNAL CORROSION OVER CRACKED BASE DURING CRIMPING	7	1	MACHINE ERROR	5	35	100% PRESSURE BASE TORQUE SPC.	1	35							
		MIS-PLACED SEAL	INTERNAL CORROSION OVER CRACKED BASE DURING CRIMPING DAMAGED TRANSFER PIN ON LIFE	7	1	MACHINE ERROR	5	35	100% PRESSURE BASE TORQUE SPC.	1	35							
		MULTIPLE SEALS	LOSS OF CALIBRATION CRACKED BASE DURING CRIMPING	7	1	UN-OUT GASKET SECTION	1	7	POKE WORK AROUND FEED ENGAGEMENT.	1	7							
4	ASSEMBLE TRANSFER PIN AND CHECK.	WRONG SIZE PIN SELECTED	CRIMP OPERATION REDUCED CYCLE LIFE SHIFT IN CALIBRATION	7	1	OPERATOR ERROR MISREAD	1	7	ROUTE CARDS PILOT ROUTE SHEETS 100% FUNCTION TEST CRIMP MONITORING P-CHART SPC. HIGH TEMPERATURE CONTINUITY AUDITS HYPOT AUDITS AT ELEVATED TEMPERATURE.	1	7							
		MISPLACED PIN	NO DEVICE OPERATION	5	1	MACHINE ERROR	1	5	HEIGHT PROBE 100% FUNCTION TEST.	1	5							
5	ASSEMBLE BASE ASSEMBLY AND CHECK.	WRONG BASE ASSEMBLY	LOSS OF LOT CONTROL WRONG SPECIFICATION	5	1	OPERATOR ERROR MISREAD	1	5	ROUTE CARDS 100% FUNCTION TEST CRIMP MONITORING VISUAL INSPECTION P-CHART SPC. HIGH TEMPERATURE CONTINUITY AUDITS HYPOT AUDITS AT ELEVATED TEMPERATURE.	1	5							
		DISLODMENT OF PIN	DEVICE WILL NOT OPERATE	5	1	PICK AND PLACE ERROR	1	5	100% FUNCTION TEST PREVENTIVE MAINT.	1	5							
		DISLODMENT OF SEAL	CRACKED BASE DAMAGED TRANSFER PIN ON LIFE	7	1	PICK AND PLACE ERROR	1	7	100% FUNCTION TEST PREVENTIVE MAINT. BASE TORQUE SPC.	1	7							
6	CRIMP FINAL DEVICE	CRIMP DIAMETER OUT OF SPEC	VIOLATION OF CUSTOMER ENVELOPE INTERNAL CORROSION	7	1	INCORRECT HEAD PRESSURE WORN CRIMP DIE BROKEN CRIMP DIE	1	7	PREVENTIVE MAINT. BASE TORQUE SPC. CRIMP DIAMETER SPC. CRIMP TO A SPEC. POKE WORK FUNCTION TESTER.	1	7							
		CRIMP HEIGHT	VIOLATION OF CUSTOMER	7	1	INCORRECT HEAD	1	7	PREVENTIVE MAINT.	1	7							

3713 8407

PROCESS: AUTOMATED FINAL ASSEMBLY

PROCESS RESPONSIBILITY: ROBERT GILDER

MODEL YEAR(S)/VEHICLE(S): 07/07/07P8

DISSEM/ALMFG RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILDEN

FMEA DATE (ORIG.): 4/28/06
FMEA REVISION: E

Seq#	Process Description	Possible Failure Mode	Potential Failure Effects	S	O	D	Potential Consequence Mechanism (if Failure)	C	Current Process Controls	D	S	Recommended Action(s)	Responsibility & Target Completion Date	Action Results				
														Action Taken	S	O	D	R. P. N.
		OUT OF SPEC	ISWELIFE INTERNAL CORROSION				PRESSURE, WORN CRIMP DIE, BROKEN CRIMP DIE.		RIDE TORQUE SPC, CRIMP HEIGHT SPC, CRIMP TO A STOP, POSS YOKE FUNCTION TESTER.									
		CRACKED BASE	INTERNAL CORROSION	7			WORN CRIMP DIE, BROKEN CRIMP DIE, HIGH HEAD PRESSURE	3	PREVENTIVE MAINT. TORQUE SPC, CRIMP TO A STOP.	1	21							
7	VACUUM CLEAN	FAILS TO CLEAN ADEQUATELY	CONTAMINATION CONCERN	7			CLOGGED FILTER	2	PREVENTIVE MAINT. MAINTENANCE	1	14							
8	UNLOAD GOOD DEVICES	FAILS TO UNLOAD	HEBPORT LOADED ONTO OCCUPIED NEST.	8			UNLOAD FAILURE	1	PREVENTIVE MAINT.	1	5							
9	UNLOAD BAD PARTS FINAL ASSEMBLER	FAILS TO UNLOAD	HEBPORT LOADED ONTO OCCUPIED NEST.	9			UNLOAD FAILURE	1	EMPTY NEST PROBE	1	8							
10	CHECK EMPTY NEST.	FAILS TO IDENTIFY OCCUPIED NEST.	CRIMP RING LOADED ONTO OCCUPIED NEST.	8			UNLOAD FAILURE	1	YIELD MONITORING	1	9							

3713 8408

POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS (PROCESS FMEA)

PROCESS: AUTOMATED BASE ASSEMBLY

PROCESS RESPONSIBILITY: ROBERT GILDEA

PREPARED BY: MATT SELLERS

MODEL YEAR/VEHICLE(S): 77/87PS

DESIGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN / JIM WATT / MARY MILKEY

FMEA DATE (ORIG.): 4/29/88
FMEA REVISION: B

ID	Process Function Requirements	Potential Failure Mode	Potential Effect(s) of Failure	S	C	I	D	F	E	Current Process Controls	Recommended Actions	Responsibility & Target Completion Date	Action Results				
													Actions Taken	P	O	D	R.
1	FEED AND ASSEMBLE BASE TO NEST.	DOES NOT FEED	NO SUBSEQUENT ASSEMBLY PERMISSIBLE WELD LOSS	5						MACHINE ERROR	1 PREVENTIVE MAINT. 100% PRESENCE CHECK VERIFY OPERATION OF CHECK PROBE PREVENTATIVE MAINT.	1 5					
		DOES NOT NEST PROPERLY	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5						DEBRIS IN NEST; MACHINE ERROR	1 PREVENTATIVE MAINT. 100% PRESENCE CHECK PREVENTATIVE MAINT.	1 5					
		LOADS MULTIPLE BASES	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5						MACHINE ERROR	1 PREVENTATIVE MAINT. 100% PRESENCE CHECK	1 5					
2	CONFIRM BASE PRESENCE	FAILS TO IDENTIFY MISSING BASE	NO SUBSEQUENT ASSEMBLY PERMISSIBLE	5						SET-UP ERROR	1 PREVENTATIVE MAINT.	1 5					
3	CUT-OFF STATIONARY TERMINAL AND INSERT INTO BASE	CUT NOT CENTERED	WILL NOT SEAT INTO BASE TERMINAL POSITION OUT OF SPEC.	5						MACHINE RAPID AIR INDEX ERROR	1 100% PILOT PROBE SENSOR. TERMINAL POSITION SPC.	1 5					
		TERMINAL NOT FULLY INSERTED INTO BASE	TERMINAL HEIGHT OUT OF SPEC. FAILURE OF CALIBRATION	5						TOOL WEAR ON CUT OFF. TOOL BREAKAGE ON CUT-OFF. INSERTION PROBE WEAR. INSERTION PROBE BREAKAGE	2 TERMINAL HEIGHT SPC. 100% PILOT PROBE SENSOR. PREVENTATIVE MAINT. 100% INSERTION DISTANCE SENSOR.	1 15					
4	BLANK SPRING	WOLE LOCATIONS INCORRECT	WILL NOT ALLOW SUBSEQUENT OPERATION.	5						TOOL BREAKAGE SET-UP ERROR	1 VISUAL INSPECTION DURING SPC. SET-UP INSPECTION	1 5					
		WOLE LOCATIONS MISSING	WILL NOT ALLOW SUBSEQUENT OPERATION.	5						TOOL BEVERAGE SET-UP ERROR	1 VISUAL INSPECTION DURING SPC. SET-UP INSPECTION	1 5					
		TRANSFER PIN PLUMP MISSING INCORRECT	REDUCED SPRING LIFE	5						TOOL BEVERAGE SET-UP ERROR	1 SET-UP INSPECTION SET-UP INSPECTION BUMP HEIGHT SPC. VISUAL INSPECTION DURING SPC.	1 5					
5	RIVET SPRING TO MOVABLE TERMINAL STRIP.	INSUFFICIENT RIVETING	LOOSE SPRING	5						WORN DRIVER BROKEN DRIVER INCORRECT SET-UP	3 SPRING TORQUE SPC. RIVET HEIGHT SPC. SET-UP INSPECTION PREVENTATIVE MAINT	1 15					
		EXCESSIVE RIVETING	LOOSE SPRING. DAMAGED SPRING	5						INCORRECT SET-UP HEIGHT	3 SPRING TORQUE SPC. RIVET HEIGHT SPC. PREVENTATIVE MAINT. RIVET HEIGHT SPC.	1 15					
		RIVET MISSING	NO SPRING. DEVICE WILL NOT OPERATE	5						WASPEED	5 SET-UP INSPECTION 100% PRESENCE SENSOR. 100% PRESENCE CHECK	1 15	RIVETER RE-DESIGN PENDING	MECHANIZATION	RIVETER RE-DESIGN COMPLETE CAPABILITY ASSESSMENT FROM FTR	2 1 1 2	
6	INSERT AND RIVET MOVABLE CONTACT TO SPRING	INSUFFICIENT ROLL	LOOSE CONTACT	5						WORN ANVIL BROKEN ANVIL INCORRECT SET-UP HEIGHT	1 ROLL DIAMETER ON SPC. SET-UP INSPECTION PREVENTATIVE MAINT.	1 5					

PROCESS RESPONSIBILITY: ROBERT GILDEA

MODEL YEAR/SAVEHICLE/ST: 77/07P8

DESIGN/QUAL/MFG RESPONSIBILITY: SEAN MULLIGAN / JIM WATT / MARY MILKEY

PMEA DATE (ORIG.) 4/29/98

FMEA REVISION: 8

[illegible]

PROCESS: AUTOMATED BASE ASSEMBLY

PROCESS RESPONSIBILITY: ROBERT GILDEA

MODEL YEAR(S)/VEHICLE(S): 77/77PS

DSG/QUALMFG RESPONSIBILITY: SEAN MULLIGAN / JIM WATT / MARY MILKEY

FMEA DATE (OF 83): 4/28/98

FMEA REVISION: 0

Item	Process Element Description	Potential Failure Mode	Potential Effects of Failure	S e v e r i t y	O c c u r r e n c e	P o t e n t i a l C a u s e s / Mechanism of Failure	D e t e c t i o n	C u r r e n t C o n t r o l	S e v e r i t y	O c c u r r e n c e	R e c o m m e n d e d A c t i o n	Responsibility & Target Completion Date	Action Results				
													Action Taken	S e v e r i t y	O c c u r r e n c e	D e t e c t i o n	R. P. N.
13	WHERE APPLICABLE: UNLOAD LOW GAGE BASE ASSEMBLY.	HIGH GAGE BASE UNLOADED INTO LOW GAGE CHUTE	INSUFFICIENT SPRING PRELOAD, LOWER ACTUATION PRESSURE AT ELEVATED TEMPERATURE.	5		SOFTWARE ERROR, OPERATOR ERROR.	3	SET-UP INSPECTION, P-CHART SPC, ELEVATED TEMPERATURE CONTINUITY CHECKS, 100% FUNCTION TEST.	1	15							
14	UNLOAD HIGH GAGE-OR- STANDARD GAGE BASE ASSEMBLY.	LOW GAGE BASE UNLOADED INTO HIGH GAGE CHUTE	EXCESSIVE SPRING PRE- LOAD, HIGHER ACTUATION PRESSURE AT LOWER TEMPERATURE.	5		SOFTWARE ERROR, OPERATOR ERROR.	3	SET-UP INSPECTION, P-CHART SPC, ELEVATED TEMPERATURE CONTINUITY CHECKS, 100% FUNCTION TEST.	1	15							
16	UNLOAD BAD CALIBRATION BASE ASSEMBLY.	FAILS TO UNLOAD	YIELD LOSS	5		UNLOAD ERROR	1	YIELD LOSS MONITORING	1	5							
18	UNLOAD BAD PARTS BASE ASSEMBLY.	FAILS TO UNLOAD	BASE LOADED ONTO OCCUPIED NEST.	5		UNLOAD FAILURE	1	EMPTY NEST PROBE	1	5							
17	CHECK EMPTY NEST.	FAILS TO IDENTIFY OCCUPIED NEST.	BASE LOADED ONTO OCCUPIED NEST.	5		UNLOAD FAILURE	1	YIELD MONITORING	1	5							

3713 8411

POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS (PROCESS FMEA)

PROCESS: AUTOMATED FINAL FUNCTION TEST

PROCESS RESPONSIBILITY: RUGILDEA

PREPARED BY: MATT SELLERS

MODEL YEAR(S)/VEHICLE(S): ALL HYDRAULIC PS

DESIGN QUALITY RESPONSIBILITY: SEAN MULLIGAN, JIM WATT, MARY MILKEY

FMEA DATE (ORIG.): 04/28/06
FMEA REVISION: 3

Item	Process Element Description	Potential Failure Mode	Potential Effects of Failure	S/N	Failure Description (Mechanism)	S/N	Current Process Controls	S/N	Recommended Action(s)	Responsibility (S/N) Completion Date	Action Results				
											Action Taken	S N	O A C	D A T E	R. P. N.
1	ELATION/SHO - CONTINUITY - ACTIVATION - RELEASE - DIFFERENTIAL - CREEP / AUDIBLE SHIP - LEAK	CALIBRATION OF SENSOR INCORRECT	SHIP DEPARTING PRODUCT - BONAP-BOOD PRODUCT.	1	NO TRANSDUCER OUT OF CALIBRATION. PUMP RATES WRONG. PUMPED MICROPHONE. BROKEN FOOD PAIL. OPERATOR SET-UP ERROR.	1	CALIBRATION MASTERS ON SPC	1	7						
2	MAX. SHIP HEIGHT CHECK	DID NOT DETECT OVERHEAT SHIP	LOW BARE ROTATIONAL TORQUE.	7	ADJUSTMENT ERROR.	1	MAKING FLUG CASE CHECK.	1	7						
3	WARNING OTHER SENSOR	DID NOT DETECT WARNING OTHER	POTENTIAL LEAK IN APPLICATION	7	SENSOR WORK MISALIGNMENT	1	OTHER DETECTION MASTER STATION PMA	1	7						
4	ASSEMBLY THREAD PROTECTOR	FAIL TO LOAD THREAD PROTECTOR	THREAD PROTECTOR FALLS OFF DURING SUBSEQUENT HANDLING.	7	LOADER ERROR.	1	100% VISUAL INSPECTION.	1	7						
5	SCREW TESTER ID MARK	FAIL TO SCREW	PRODUCT NOT IDENTIFIABLE AS BEING TESTED GOOD.	7	MAINTENANCE ERROR.	1	VISUAL INSPECTION.	1	7						
		WRONG TESTER ID	WRONG TESTER SUSPECTED.		MAINTENANCE ERROR.		MANUAL INSPECTION.								
6	UNLOAD	FAIL TO UNLOAD	TRACK JAM	6	MACHINE ERROR	1	OPERATOR VISUAL.	1	6						
7	WHERE APPLICABLE: CONTINUITY CHECK AT ELEVATED TEMPERATURE	FAIL TO DETECT MIS-PRINED DEVICE	CONTINUITY FAILURE	7	OPERATOR ERROR	1	OPERATION PROCEDURES	1	7						
					SET-UP ERROR		OPERATOR TRAINING								
8	WHERE APPLICABLE: WYDOT CHECK AT ELEVATED PRESSURE	FAIL TO DETECT MIS-PRINED DEVICE	CONTINUITY FAILURE	7	OPERATOR ERROR	1	OPERATION PROCEDURES	1	7						
					SET-UP ERROR		OPERATOR TRAINING								
9	WHERE APPLICABLE: CONTINUITY CHECK UNDER VACUUM	FAIL TO DETECT VACUUM DEPENDENT SENSORS	CONTINUITY FAILURE	7	OPERATOR ERROR	1	OPERATION PROCEDURES	1	7						
					SET-UP ERROR		OPERATOR TRAINING								
10	INSPECT AND PACK FINISHED DEVICES	WRONG PARTS	PARTS SHIPPED TO WRONG LOCATION	7	INCORRECT PACKING LABEL. OPERATOR ERROR	1	PACK AUDIT VISUAL STANDARDS KAM/BN	1	7						

Process Controls

<u>Operation</u>	<u>Fault</u>	<u>Process Control</u>	<u>Control Method</u>
Assemble sensor & crimp ring in nest	Machine error Out of round sensor	100% height check	Controlled by PLC
Assemble Environmental seal & check	Missing seal Misplaced seal Multiple seals	100% height check	Controlled by PLC
Assemble Pin	Creep Calibration shift	100% Check with LVDT	SPC P-Chart
Assemble Base Assembly	Wrong base assembly No base	100% part presence	SPC P-Chart 100% Pressure Test
Crimp Final Device	Wrong Crimp Height Wrong Crimp Diameter Torque	Crimp pressures Cylinder adjustments	SPC X-Bar & R Poka-Yoke SPC P-Chart
Function Test	Actuation Failure Release Failure Differential Failure	Actuation Masters Ramp Masters	SPC X-Bar & R SPC X-Bar & R
	Actuation Creep Release Creep Coarse Leak Millivolt Drop	Custom Pressure Tester	Vax System Program



**Ford - Electronic Speed Control Deactivation Pressure Switch
TI P/N 77PSL Series**



Process Controls

<u>Operation</u>	<u>Fault</u>	<u>Process Control</u>	<u>Control Method</u>
Hexport Feed	Fails to Load Wrong/Mixed Hexport	100% Check with LVDT	Set-Up block
Gasket	Fails to Load Misplaced	100% reflective sensor check	Set-Up Masters SPC P-Chart
Kapton #1 & #2	Fails to Load One seal only Improperly cut seal	100% Continuity Check	SPC P-Chart
Kapton #3 (if Necessary)	Fails to Load Improperly cut seal	100% Continuity Check	SPC P-Chart
Washer	Fails to Load Upside down	100% Presence Check Orientation control on feed bowl	100% Pressure Test
Converter	Fail to load onto washer	100% Presence Check	100% Pressure Test
Spacer	Fails to Load	100% presence check with continuity probe	SPC P-Chart
Disc	Fails to Load Upside down Two Discs	100% Height probe	Operator set-up 100% Pressure Test
Cup Feed	Fails to Load	Height Probe	Operator set-up
Pre-Crimp	Trapped Disc	Low Pin Probe	SPC P-Chart
45 & 90 degree crimp	Fails to Crimp Improper crimp	Stroke made sensors	SPC X-Bar & R Poka-Yoke
Over Pressure	Drift over life Calibration Change	Minimum pressure gauge	Controlled by PLC
Unload good devices	Fails to unload good device	Empty nest sensor	Controlled by PLC

CS0PRO20

Parts Entry and Return System
MAINTAIN Basic Recall Requirement Information

07/20/99 15:43

REQUIREMENT NUMBER: 12559
ACTION CODE (A,C,D):Last Maint Date: 07/16/99
Last Maint ID: LPBAC84

Status: A
 Recall Classification: QRES
 RAC: FED
 RAC Location: S1
 Tag Color: YL
 Chargeback Eligibility: Y
 All Parts: N
 Effective Date (MM-DD-YYYY): 06 - 28 - 1999
 Expiration Date (MM-DD-YYYY): 05 - 17 - 2000
 Country Code: USA

D-2025

F1=Help F2=Init F3=Exit F4=Menu

F10=Fwd F11=Conf F12=LPBAC

Post-It Fax Note	7671	Date	1-3-00
To	STEVE REYNOLDS	From	CHUCK WASH
On/Off		On	WPRC
Phone #	03286	Phone #	74453
Fax #	04145	Fax #	

3713 8415

CS0PRO21

Parts Entry and Return System
Maintain Model Year/Vehicle Type Data

07/20/99 15:43:43

REQUIREMENT NUMBER: 12559 / QRE8

Last Maint Date: 07/16/99
Last Maint Id: LPBAC84

Model Years:...		Select All	Automatic Year Roll			
2001	2000	1999	1998	1997	1996	
1995	1994	X 1993	X 1992	1991	1990	
1989	1988	1987	1986	1985		

Obsolete Years:

Vehicle Type:.. C "C" = Car
"L" = Light Truck - North America
"T" = Light Truck - Europe
"H" = Heavy Truck

F1=Help F2=Init F3=Exit F4=Menu

F9=Last F10=Fwd

F12=Rtn
LPBAC84

3713 8418

CS0PRO22

Parts Entry and Return System
Maint Requirement Part

07/20/99 15:43:52

REQUIREMENT NUMBER: 12559

/ QRE8

WCC CODE:

PART TYPE:

Last Maint Date:

Copy Rqmt Number:

Last Maint Id:

A	-Unpacked Part Number-				Packed	
C	Prefix Base	Suffix		Engineering Part	ML	Motorcraft Part
-	XW72	9G652	AA	XW739G652AA		

F1=Help F2=Init F3=Exit F4=Menu F5=Top F6=Bot F7=Prev F8=Next F9=Last F10=Fwd
F11=Conf F12=Rtn
MD07-TOP OF DATA LPBAC84

3713 8417

CS0PRO29

Parts Entry and Return System
Maintain Ranges/Calibrations

07/20/99 15:44:07

REQUIREMENT NUMBER: 12559 / QRES Last Maint Date: 07/16/19
Last Maint Id: LPBAC84

AC	---Start---	---Ranges---	---End---
Vehicle Mileage/Kilometers:..			
Prod Date: (MM-DD-YYYY).....	11 - 04 - 1991		11 - 30 - 1992
Warr Date: (MM-DD-YYYY).....	01 - 01 - 0101		01 - 01 - 0101
Days in Service.....			
Days on Lot.....			
VIN Prod Sequence Number.....			
Total Repair Amt:.....	000000000		000000000
Total Parts Amt on Repair:...	000000000		000000000
Total Labor Amt on Repair:...	000000000		000000000

Vehicle	AC	AC	AC	AC	AC
Calibration:					

F1=Help F2=Init F3=Exit F4=Menu

F10=Fwd F11=Conf F12=Rtn
LPBAC84

3713 8418

CS0PRO26

Parts Entry and Return System
Maint Plant/World MFG ID Data

07/20/99 15:45:19

REQUIREMENT NUMBER: 12559 / QRE8

Last Maint Date: 07/16/99

Last Maint ID: LPBAC84

SEL	Plant CD	Plant Description	SEL WMI CD	WMI Desc
	R	HERMOSILLO (MEXICO)	3MA	MEXICO
	T	EDISON	1FT	USA
	U	LOUISVILLE	1FM	USA
	U	LOUISVILLE	1FT	USA
	V	KENTUCKY TRUCK - MED/HVY TRUCK	1FC	USA
	V	KENTUCKY TRUCK - MED/HVY TRUCK	1FD	USA
	V	KENTUCKY TRUCK - MED/HVY TRUCK	1FT	USA
	W	WAYNE	1FA	USA
X	X	ST. THOMAS	2EA	CANADA
X	X	ST. THOMAS	2ME	CANADA
X	Y	WIXOM	1LN	USA
	Z	ST. LOUIS	1FD	USA
	Z	ST. LOUIS	1FM	USA
	Z	ST. LOUIS	1FT	USA

F1-Help F2-Init F3-Exit F4-Menu
M006-MORE RECORDS AVAILABLE

F7-Prev F8-Next F9-Last F10-Fwd

F12-Rtn
LPBAC84

3713 8419

01/03/2000 15:14

3133174452

QC WPRC

PAGE 00/03

CS0PRO24

Parts Entry and Return System
Maintain Requirement Vehicle Line

07/20/99 15:44:01

REQUIREMENT NUMBER: 12559 / QRE8

Last Maint Date: 07/16/99
Last Maint Id: LPBAC84

Vehicle	CAPRIN	CONT	COUGAR	X	CRNVIC
Lines	ESCORT	ESCT91	FESTV		FIESCL
	GRANAD	GRDMRQ	MARK		MONDEO
	MUST	ORIN91	PROBE		SABLE
	SAPHIR	SIERRA	TAURUS		TBIRD
	TEMPO	TOPAZ	TOWN		TRACER

Obsolete Vehicle Lines

F1=Help F2=Init F3=Exit F4=Menu

F9=Last F10=Fwd

F12=Rtn
LPBAC84

3713 8420

JAN 03 '00 14:39

3133174452

PAGE.06

CS0FR023

Parts Entry and Return System
Maint Cycle Data

07/20/99 15:43:56

Requirement Number: 12559 / QRES
Cycle Type: W Base Part:Last Maint Date:
Last Maint Id:

--Unpacked Part Number--		A	S	Non	P	Qty/	Qty/	Recall/	----- Cycle -----	
Prefix Base	Suffix	C	t	Cal	R	Type	Type	Cycle	Start	End
XW7Z	9G652 AA	A	E	Y	0100	0000	0000012	06-28-1999	05-17-2000	

F1=Help F2=Init F3=Exit F4=Menu F5=Top F6=Bot F7=Prev F8=Next
M007-TOP OF DATAF10=Fwd F11=Conf F12=Rtn
LPBAC84

CSOPRO34

Parts Entry and Return System
Maint Basic Return Requirement Program Code Data

07/20/99 15:44:23

RECALL REQUIREMENT NUMBER: 12559 / QRE8 Last Maint Date: 07/16/99
INCLUDE STD PROGRAM CODES: Y Last Maint Id: LPBAC84

Pgm Y
Code N

Pgm Y
Code N

Pgm Y
Code N

Pgm Y
Code N

Pgm Y
Code N

F1-Help F2=Init F3=Exit F4=Menu F7=Prev F8=Next

F10=Fwd

F12=Rtn
LPBAC84

3713 8422

CS0PRO31

Parts Entry and Return System
Maintain Return Requirement Claim Type Codes

07/20/99 15:44:28

RECALL REQUIREMENT NUMBER: / QRES

Last Maint Date: 07/16/99

INCLUDE STANDARD CLAIM TYPES: Y

Last Maint Id: LPBAC84

Claim Type	Y/N	Claim Code
Warranty		1
Recall		2

F1=Help F2=Init F3=Exit F4=Menu

F9=Last F10=Fwd

F12=Rtn
LPBAC84

3713 8423

* Note printed by SREIMERS on 29 Jul 1999 at 11:08:13 *

From: SREIMERS--DRBN007 Date and time 07/29/99 11:07:27
To: SREIMERS--DRBN007 Reimers, S. J.

FROM: Steve Reimers USAET(UTC -04:00)
Subject: 99815 - Disposition of old service parts
Per Amy Cheff telecon this morning. F2VY-9F924-A sold 20 parts in 1992, 140 parts in 1993, 363 parts in 1994. F2VY-2B091-B sold 0 parts. F2AE-2B091-B sold 187 parts in 1992, 248 parts in 1993.

Steve Reimers building 5 3E008
RVT Chassis E/E System Applications mail drop 5011
39-03286 SREIMERS sreimers@ford.com fax 39-04145 ;>
*** Forwarding note from ALLESE --DRBN006 07/28/99 16:45 ***
To: ACHEFF --DRBN006
Cc: ALLESE --DRBN006 SREIMERS--DRBN007

FROM: Al Leese USAET(UTC -04:00)
Subject: 99815 - Disposition of old service parts

Can you check and forward your answer to Steve on this? Originally I sent the request to Arlene but I believe this was your program. Please call if you have any questions. Thanks/

Regards,
Alvin Leese, Recall/Service Programs Department, FCSD
Ph# (313) 390-8877, FAX (313) 845-1024
Diagnostic Service Center II (DSCII), 435
*** Forwarding note from SREIMERS--DRBN007 07/28/99 13:52 ***
To: ALLESE --DRBN006

FROM: Steve Reimers USAET(UTC -04:00)
Subject: 99815 - Disposition of old service parts
Did you ever get an answer to this?

Steve Reimers building 5 3E008
RVT Chassis E/E System Applications mail drop 5011
39-03286 SREIMERS sreimers@ford.com fax 39-04145 ;>
*** Forwarding note from ALLESE --DRBN006 06/09/99 16:40 ***
To: AMARTIN4--DRBN006
Cc: ALLESE --DRBN006 SREIMERS--DRBN007

FROM: Al Leese USAET(UTC -04:00)
Subject: 99815 - Disposition of old service parts

Arlene, Steve Reimers is closing out the 14d on 99815. Only one question remains. We hope that you can help us find the answer.

Did FCSD order any of the following service parts BEFORE 11/31/92:
F2VY9F924A (Brake Pressure Deactivation Switch)
F2VY2B091B (Switch and Brake Proportioning Valve Assembly)

If NONE of the above parts were ordered for service before 11/31/92 everything is AOK.

If SOME were ordered on or BEFORE 11/31/92.....what would be their

BPS | Team Mtg

5/26/99

GREG Stevens, Joe Kafati, Fred Kahl,
 Fred Porter, Me, Andy McQuirk*,
 Steve Beringhaus* (op?)

* @ TI.

12/20/91 ~ PASSED IMPULSE TEST WITH
 AUTOMATED CRIMPER USING
 MANUAL DIE GEOMETRY.

- Process used for 72K & 82K
 Series parts.

- Crimper is dedicated this product.
 - Volume is high enough to use the
 capacity.

- Crimp occurs in two steps

Sample BB 13 12/91

BB 65 12/10/91

~~1529~~ 5' 1
 1440 6:15
 1447 4:10

470

F2K

Service parts 9/92

- Field Return Protocol (TI thoughts)

Part #, VIN, Date Code, Region ON BOX
 PARTIAL SEAM, DAMAGE, FLUID (WET/DRY/EGRESS)
 CRIMPING RESISTANCE

□ TEL-4400

□ WHO DOES WHAT

□ 12-15 UNITS EXHAUSTIVE ANALYSIS
 □ 100 Cherry Creek

Service Parts Delivery - still looking

Recall Parts delivered for delivery date.
 185-190K to date

should be DONE by Friday @ 225K parts.

3713 8425

6/23/99

Recall PARTS

Inside ^{Ford} Exam of Hi Mileage Parts

Ground Path Resistance

Ground Path Resistance
others tests, before destroying
Compare side by side with New Part.

Hi Mileage Population } with PARTS outside
200 (12) on test } of population
 } from ~~same~~ ^{suspect} Region

Lo. M. kage ($\leq 20,000$) to serve as virgin parts built in the population area.

BIN by mileage (by who?)

Teardown Pre-Test

VIDEO Tape at MPG of Splash test.

Regression analysis (Greg Duddy)

~~Service~~ Parts DATE CODED AFTER BUILD DATE
ARE SERVICE PARTS

3713 8426

Vehicle Town Car MY 1992

Vehicle Location RVT - EESE - CHASSIS EJE

Observer F. PORTER

VIN 1LNLM81W3NY [REDACTED]

Description of Switch Location

RR PROP VALVE @ 45° ~ 6-8" BELOW BRAKE MASTER CYLINDER

Wire Seal Material

Sponge

Silicon

Connector Seal Material

Sponge

Silicon

Picture of Overall Layout

☒

2 - 3 Near Pictures

☒

from MPG

Observations:

Contamination around Switch

RELATIVELY CLEAN. VEHICLE HAD BEEN USED
FOR BRAKE PRESSURE STUDY

Contamination from Switch

NONE OBSERVED

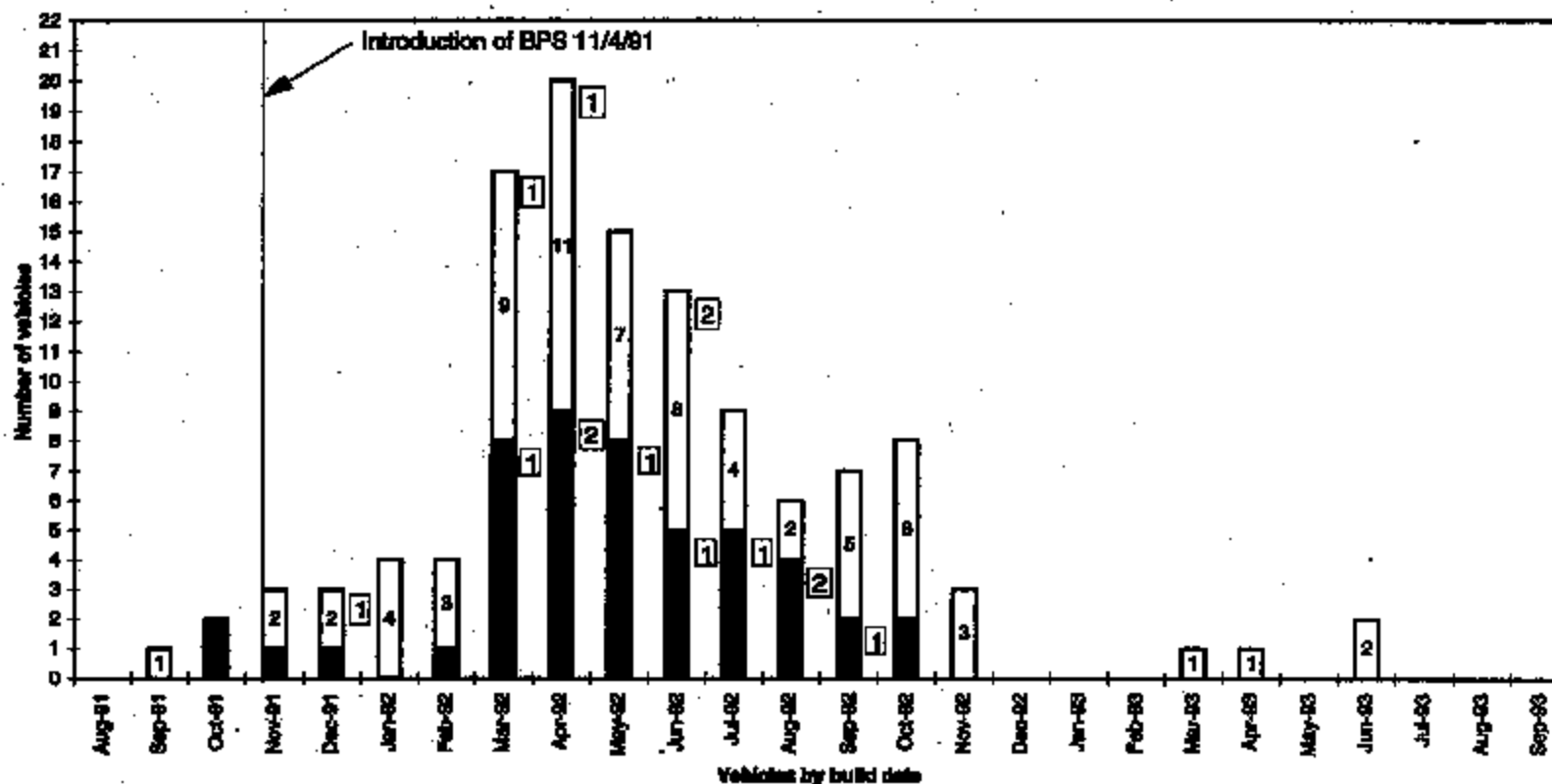
Proximity to other plastic and rubber

MANY HOSES, TUBES AND WIRES IN THE
AREA

Miscellaneous

Brake Fluid reservoir was
leaking on several occasions
during testing at MPG.

Parato of 92/93 Town Car Underhood Fire Allegations With Engine On/Off/Unknown



Notes:

- The shaded region represents vehicles with engine off/unknown.
- The unshaded region represents vehicles with engine on.
- 1 Represents BPS symptoms

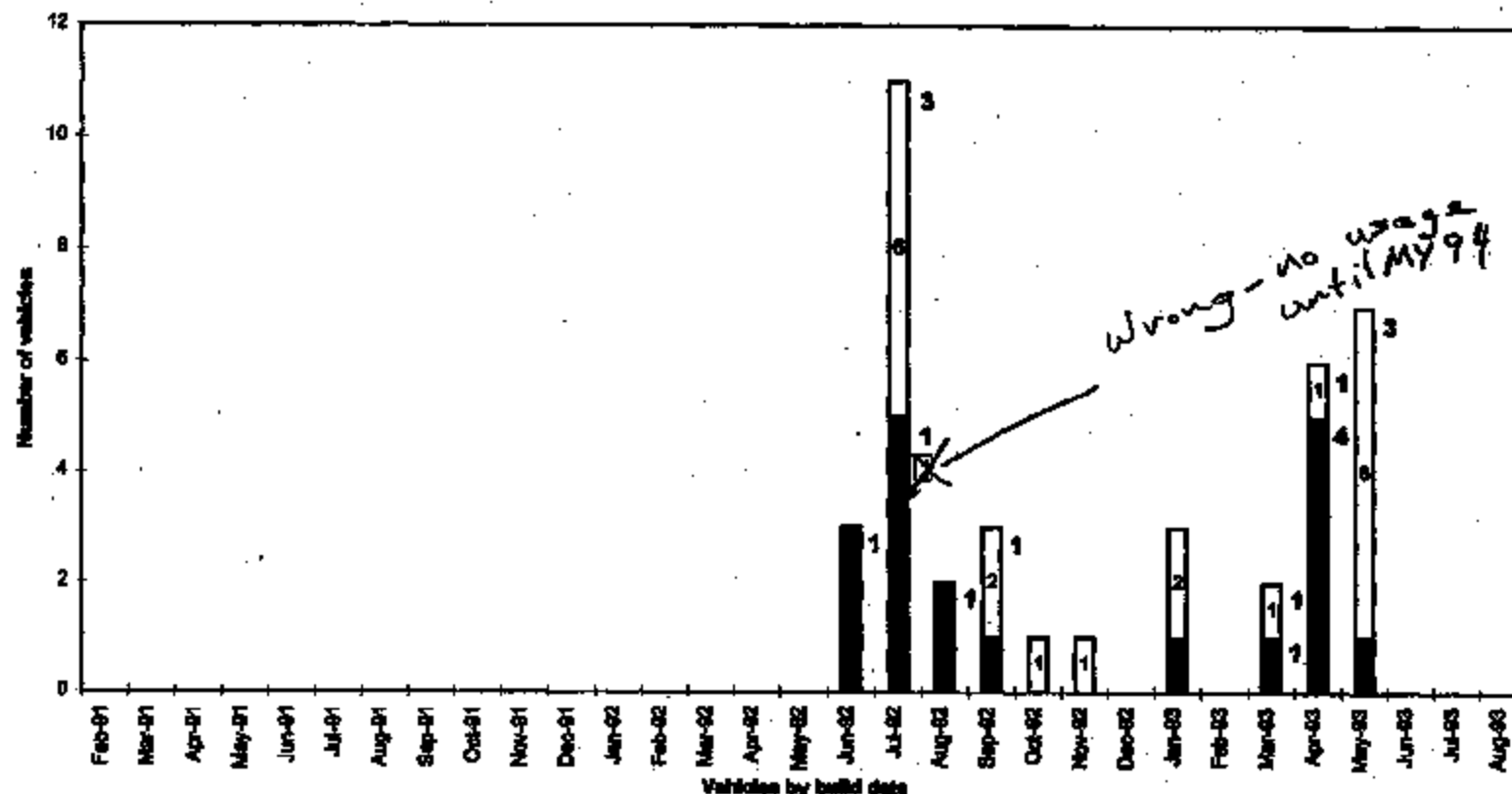
There were 11 vehicles in the unknown category.
8 engine off/unknown, 1 relates to a BPS symptom.

8 engine on.

Originator: JKabat
File: Bulldoht.xls
Date issued: 4/19/99
Date revised: 4/16/99

3713 8428

Parato of 93 Capri Underhood Fires With Engine On/Off/Unknown



- The shaded region represents vehicles with engine off/unknown.
- The unshaded region represents vehicles with engine on.
- 1 Brake pressure switch symptoms

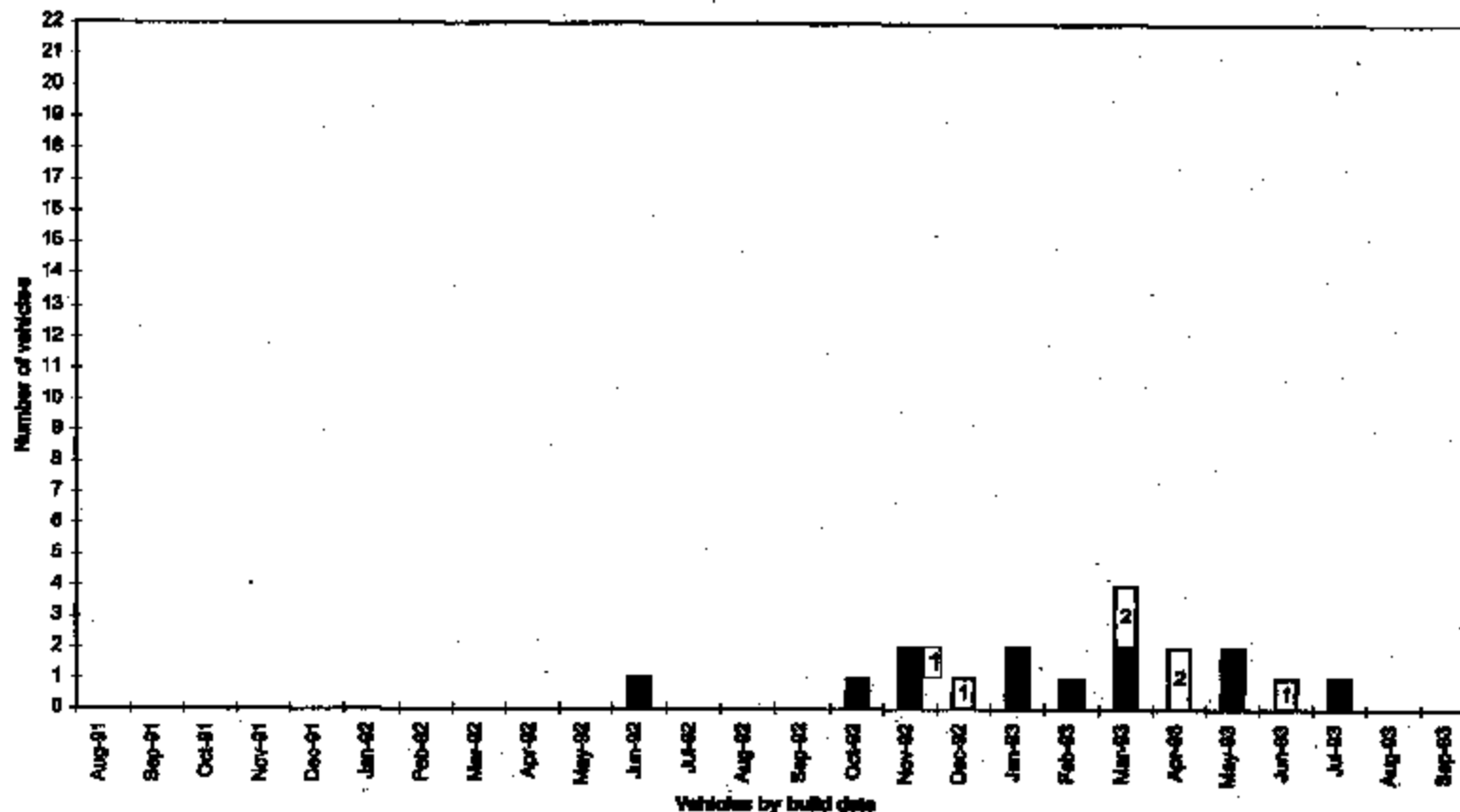
Bolded # represents vehicles with transmission leak issues.

Note:

- There were no vehicles reported with the engine off.
- 17 vehicle fires were reported to have been caused by transmission lines leaking. During this time frame, there was a recall on trans lines hoses being too stiff (83574).
- Brake pressure switch symptoms are as follow: Difficulty shifting out of park, speed control inop, excessive brake pedal travel, fuse 12 blown, dead battery, brake warning lamp on, smoke or fire on left side of engine compartment.

Originator: J. Kallid
 File: SH-001-06
 Date issued: 6/11/98
 Date revised: 6/11/98

Parato of 93 Taurus SHO Underhood Fires With Engine On/off/Unknown



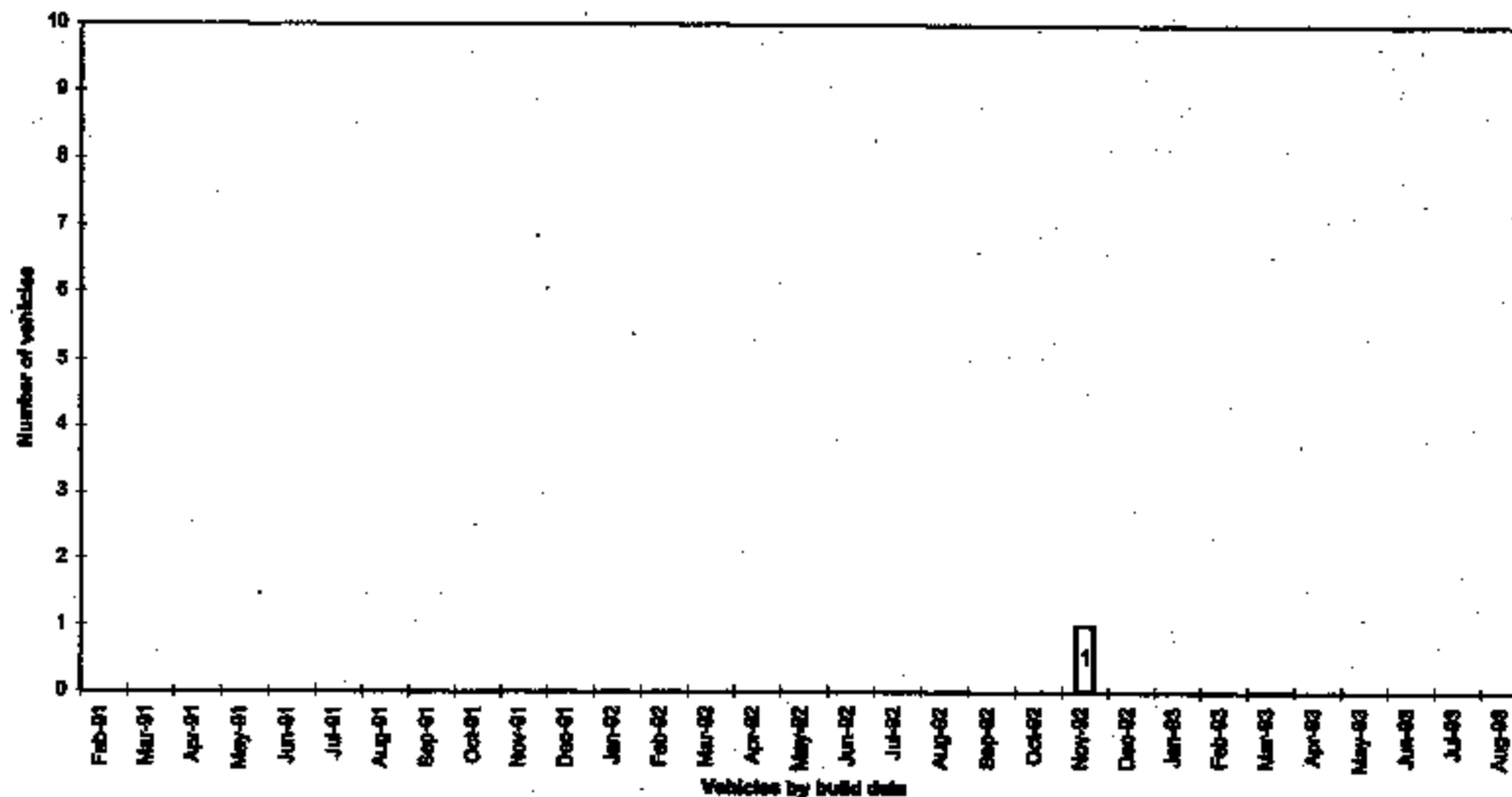
- The shaded region represents vehicles with engines off/unknown.
- The unshaded region represents vehicles with engine on.
- Represents BPS symptoms

Note: There were no vehicles in the Engine off category.

Brake pressure switch symptoms are as follow: Difficulty shifting out of park, speed control inop, excessive brake pedal travel, fuse 12 blown, dead battery, brake warning lamp on, smoke or fire on left side of engine compartment.

Originator: JKafat
 Date revised: 8/2/98
 Date issued: 8/5/98
 File: SHO.cht

Parato of 93 Mark VII Underhood Fires With Engine On/Off/Unknown



□ The unshaded region represents vehicles with engine on.

Note:

- There was only 1 vehicles reported with the engine on with an unknown root cause. No brake pressure switch symptom.
- There were no vehicles reported with the engine off or engine unknown.
- Brake pressure switch symptoms are as follow: Difficulty shifting out of park, speed control inop, excessive brake pedal travel, fuse 12 blown, dead battery, brake warning lamp on, smoke or fire on left side of engine compartment.

Originator: Jkalefi

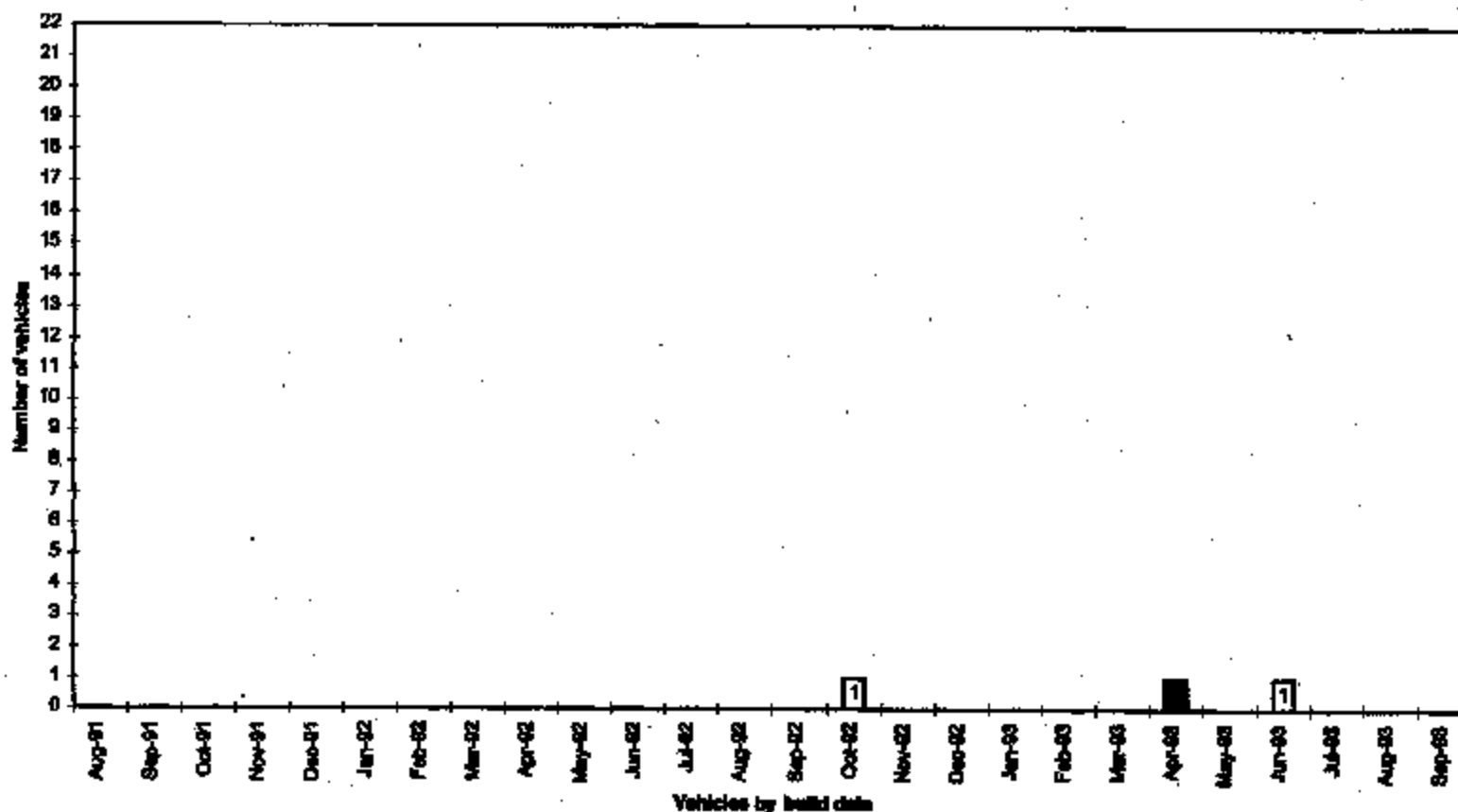
File: SH0cht.xls

Date issued: 8/3/98

Date revised: 8/2/98

3713 8431

Parato of 93 Bronco Underhood Fires With Engine On/off/Unknown



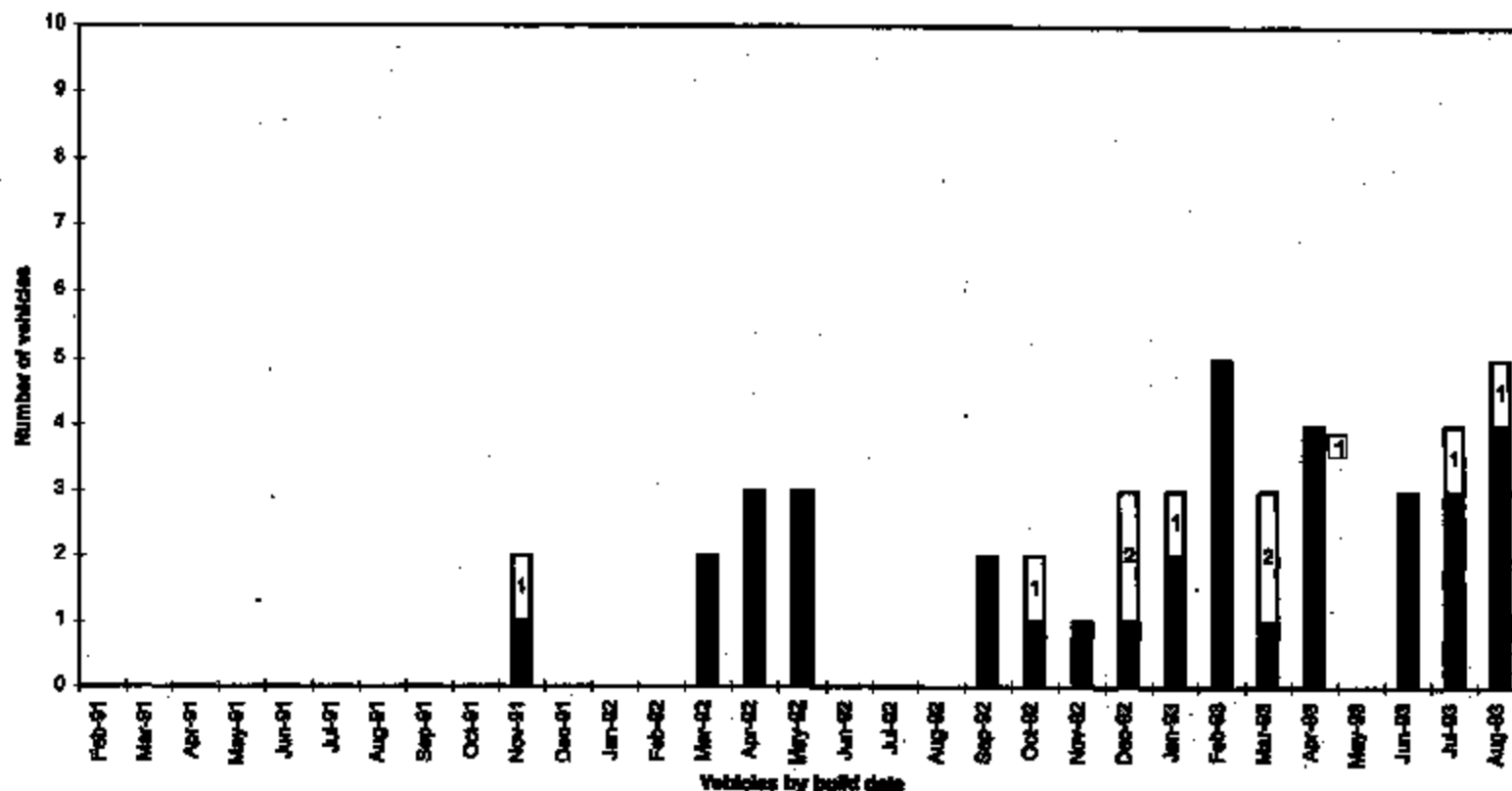
- The shaded region represents vehicles with engine off/unknown.
- The unshaded region represents vehicles with the engine on.

Note:

There were no vehicles with the engine off. No vehicles with brake pressure switch symptoms. Brake pressure switch symptoms are as follow: Difficulty shifting out of park, speed control flap, excessive brake pedal travel, fuse 12 blown, dead battery, brake warning lamp on, smoke or fire on left side of engine compartment.

Originator: JKahall
Date revised: 6/9/99
Date issued: 6/10/99
File: bronco.oh

Parato of 92/93 Econoline Underhood Fires With Engine On/Off/Unknown



- The shaded region represents vehicles with engine off/unknown.
- The unshaded region represents vehicles with engine on.
- 1 Represents BPS symptoms

Note:

- There were 4 vehicles in the engine unknown category without vin numbers with no brake pressure switch symptoms. These vehicles are excluded from the chart.
- Brake pressure switch symptoms are as follow: Difficulty shifting out of park, speed control inop, excessive brake pedal travel, fuse 12 blown, dead battery, brake warning lamp on, smoke or fire on left side of engine compartment.

Originator: Jkafed

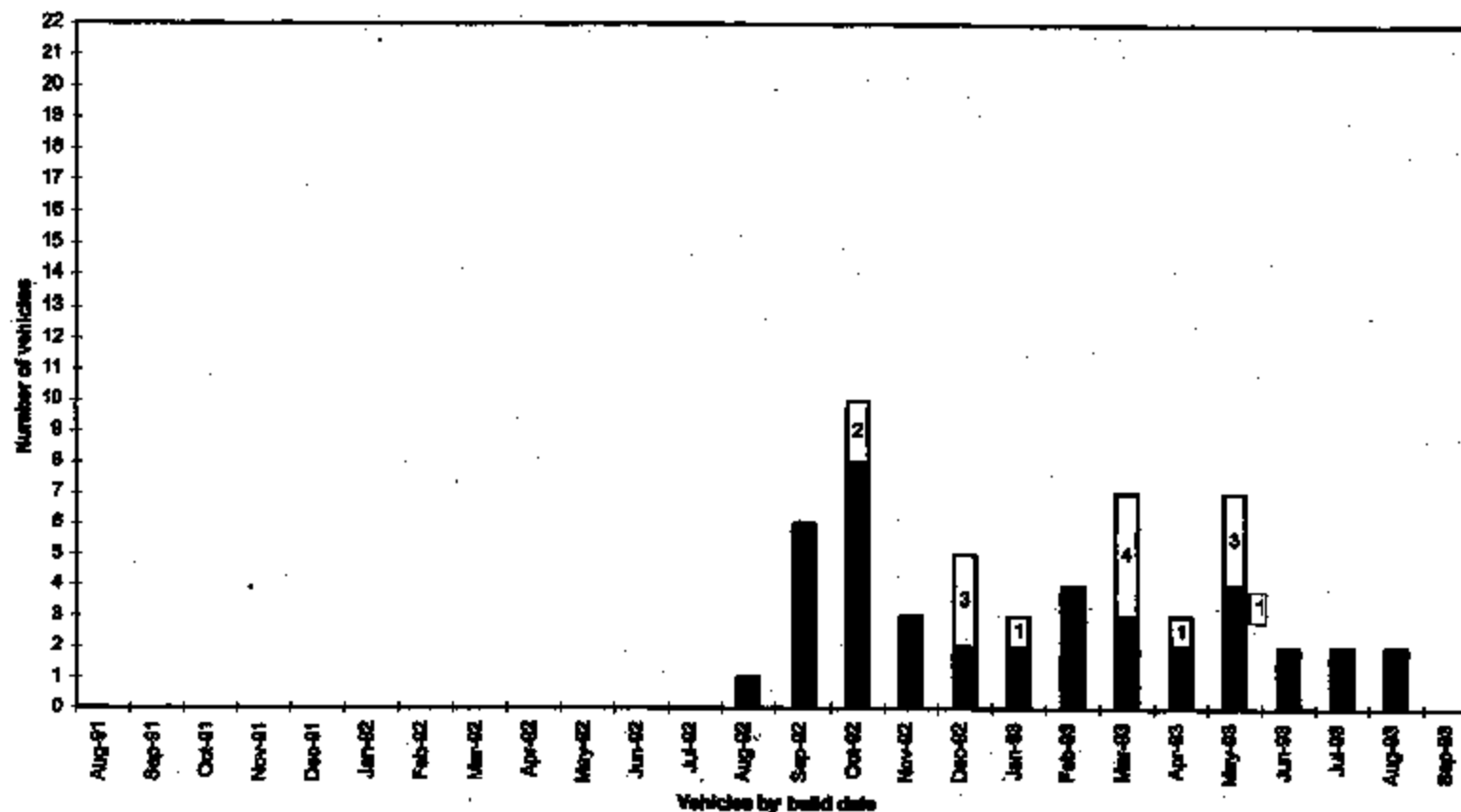
File: econo.xls

Date issued: 6/10/99

Date revised: 6/9/99

3713 8433

Parato of 93 F-Series Underhood Fires With Engine On/off/Unknown



- The shaded region represents vehicles with engine off/unknown.
- The unshaded region represents vehicles with engine on.
- 1 Represents BPS symptoms

Note:

Brake pressure switch symptoms are as follow: Difficulty shifting out of park, speed control inop, excessive brake pedal travel, fuse 12 blown, dead battery, brake warning lamp on, smoke or fire on left side of engine compartment.

Originator: J.Ketell
 Date revised: 6/7/98
 Date issued: 6/8/98
 File: econo.chi

Note: for the 77PBL3-3 could not show all shipping locations -- maximum for locations no longer on the data base

Customer	SHIP TO LOC.	Part Number	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DANA CORP.														
	167K	138K 77PBL3-1/F2AC SF824 AA	31.80	47.11	63.36	0	0	0	0	0	0	0	0	0
		77PBL3-1/F2AC SF824 AA	0	0	0	0	22.84	0	74.73	36.96	0	0	0	0
		77PBL3-2 / F3BA SF824 AA	0	0	0	0	0	0	0	0	0	0	0	0
ITT CORP														
	1K	77PBL3-1/F2AC SF824 AA	0.95	0	0	0	0	0	0	0	0	0	0	0
		77PBL3-2 / F3DZ SF824 AA	0	0	0	0	0	0	0	0	4.28	6.69	1.04	
		77PBL3-2 / F3DZ SF824 AA	1.42	3.09	3.33	1.06	2.38	0.71	0	0	0.47	0.714	0	0.652
		77PBL3-2 / F3DZ SF824 AA	1.42	0.714	1.9	1.42	1.42	0	0.71	0.71	0.714	0.478	0.478	1.19
		77PBL3-2 / F3DZ SF824 AA	0.238	0.652	0.652	1.19	0	0	0	0	0	0	0	0
ITT INDUST														
	370K	77PBL3-1/F2AC SF824 AA	40.88	43.31	0.47	31.80	32.36	3.33	35.22	53.78	21.42	43.78	44.74	15.56
		77PBL3-2 / F3DZ SF824 AA	0	0	0	0	0	0	0	2.76	0	0	0	0
		77PBL3-1/F2AC SF824 AA	18.47	15.26	23.58	22.81	14.51	22.81	20.7	30.48	23.58	16.68	24.75	20.7
		77PBL3-1/F2AC SF824 AA	0	0	0	0	0	0	0	0	0.05	0	0	3.33
		77PBL3-1 / F2AC SF824 AB	23.08	12.85	19.75	25.7	23.58	8.28	8.88	3.8	1.19	8.09	0	0
		77PBL3-1 / F2AC SF824 AA	0	0	0	0	6.71	18.32	65.25	27.8	33.78	34.03	18.8	19.81
		77PBL3-3 / F3TA SF824 CA	0	0	0	0	0	0	0	0	0	0	0	0.5
		77PBL3-1 / F2AC SF824 AA	27.84	30.89	28.32	25.04	15.7	11.18	10.47	7.14	14.04	9.04	2.85	5.95
		77PBL3-3 / F3TA SF824 CA	0.478	0	0	0	0	2.14	2.85	0.714	0.714	1.19	0.714	4.04
		77PBL3-1 / F2AC SF824 AB	0	0	0.238	0.714	0.478	0	0	0	0	0	0	0
		77PBL3-1 / F2AC SF824 AA	11.68	4.78	6.9	6.9	0	0	0	0	0	0	0	0
		77PBL3-3 / F3TA SF824 CA	0	0	0	1.42	0	0	0	0	0	0	0	0
		77PBL3-1 / F2AC SF824 AB												
FORD MOTOR														
	Service (Brownstownship)	77PBL3-1 / F2AC SF824 AA	0	0	0	0	0	0	0	0	0.47	0	0	0
	Laredo, Texas	77PBL3-3 / F3TA SF824 CA	18.51	15.7	31.41	19.5	23.08	15.7	15.5	19.88	18.18	8.32	17.73	15.23
	Brownstownship/Laredo	77PBL3-3 / F3TA SF824 CA	0	0	0	0	0	2.44	3.33	63.3	67.11	71.87	80.32	44.28
	Brownstownship	77PBL3-2 / F3DZ SF824 AA	0	0	0	0	0	0	0	0	0	0	0.47	0
	Service (Brownstownship)	77PBL3-1 / F2AC SF824 AA	0	0	0	0	0	0	0	0	0	0.238	0	0
	Laredo, Texas	77PBL3-3 / F3TA SF824 CA	1.87	0	0	0	0	0	0	0	0	0	0	0
	Odessa/Brownstownship	77PBL3-2 / F3DZ SF824 AA	0	0	0	0	0	0	0	0	0.71	0.387	0.478	0.714
	Brownstownship/Laredo	77PBL3-3 / F3TA SF824 CA	35.28	41.65	53.75	44.58	58.31	42.84	23.58	32.45	0.47	0.714	0.833	0.652
	Brownstownship	77PBL3-2 / F3DZ SF824 AA	0	0.71	0	0	0	0	0	0	0	0	0	0
	Service (Brownstownship)	77PBL3-1 / F2AC SF824 AA	0.238	0	0	0	0	0	0	0.71	0	0	0	0
	Laredo, Texas	77PBL3-3 / F3TA SF824 CA	0	0	0	0	0	0	0	0	0	0	0	0
	Odessa/Brownstownship	77PBL3-2 / F3DZ SF824 AA	1.42	8.33	11.42	17.81	25.94	18.66	10.94	26.4	24.27	30.7	20.64	10.94

3713 8465

	Browtownship/Land/Forsyth Browtownship	77PBL3-3 / FSTA BF824 CA 77PBL5-2 / F3JZ 9F824 AA	3.8	0.811	1.19	1.19	1.9	1.42	0.71	0.04	0.236	0	0	0
1895	Oakville	77PBL3-2 / F58A BF824 AA	18.00	18.51	18.89	21.18	29.52	22.37	14.75	20.7	22.37	25.46	11.18	9.75
1896	Oakville/Deerborn/Browtownship p Service (Browtownship) Browtownship/Land/Forsyth	77PBL3-2 / F58A BF824 AA 77PBL2-1 / F2VC BF824 AB 77PBL3-3 / FSTA BF824 CA	14.04 0 0	18.99 0 0	21.85 0 0	28.41 0 0	21.85 0.238 0	19.51 0 0	14.52 0 0	27.37 0 0	18.08 0 0	19.04 0.478 1.2	14.51 0 0	15.47 0 0
1897	Oakville/Deerborn/Browtownship p Service (Browtownship) Browtownship/Land/Forsyth	77PBL3-2 / F58A BF824 AA 77PBL2-1 / F2VC BF824 AB 77PBL3-3 / FSTA BF824 CA	21.15 0 0	21.42 0 0	27.8 0 0	24.03 0 0.48	22.84 0.714 0	27.37 0 0	4.76 0 0.48	26.41 0 1.2	25.94 0 0	24.27 0 0.48	24.75 0.714 0.98	17.37 0 0.259
1898	Oakville/Deerborn/Browtownship p Service (Browtownship) Browtownship/Land/Forsyth Riverview-Ford, Australia	77PBL3-2 / F58A BF824 AA 77PBL2-1 / F2VC BF824 AB 77PBL3-3 / FSTA BF824 CA 77PBL4-1 / BADA BF824 AA	14.75 0 2.4 0	26.75 0.862 0.48 0	25.45 0 0.72 11.9	22.84 0 1.9 0.238	25.56 0 0.72 14.28	21.89 0 1.82 0	1.19 0 0.95 0	11.9 0.478 1.92 2.85	10.47 0 2.18 9.75	22.84 0.55 2.88 0	38.17 0 2.88 3.33	18.18 0 1.2 0.259

KILPATRICK
1993

77PBL2-1 / F2VC BF824 AB	4.08	4.04	5.23	2.6	2.6	3.57	0.95	0	0	0	0	0	0
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ALLIED SIGNAL
1993

77PBL3-3 / FSTA BF824 CA	0	0	0.236	0	0	0.238	0	0	0	0	0.238		
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1984	77PBL3-3 / FSTA BF824 CA 77PBL3-1 / F2AC BF824 AA	0.826 0	0.238 0	0 0	0.478 0.08	8.9 0.08	0 0	0.952 0	0.95 0.05	0 0	2.61 0	20.38 0	33.38 4.5
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1993	77PBL3-1 / F2AC BF824 AA 77PBL3-3 / FSTA BF824 CA	2.8 56.44	0 76.12	0 23.75	0 73.68	0.952 88.18	15.7 80.48	15.47 18.8	0 43.96	8.56 45.12	15.47 60.48	17.13 43.69	19.99 40.32
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1994	77PBL3-1 / F2AC BF824 AA 77PBL3-3 / FSTA BF824 CA	19.89 57.12	22.34 57.12	21.42 53.78	17.13 35.95	19.89 47.04	18.55 53.78	12.85 30.24	8.88 38.8	17.13 60.48	14.28 87.2	1.42 8.72	
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TORONTO

1993	77PBL3-3 / FSTA BF824 CA	0	0	0	1.8	0	2	30	29	80	80	50	49.19
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1994	77PBL3-3 / FSTA BF824 CA	20.18	25.5	72.88	72.72	70.08	35.04	85.44	70	45.12	10.08	15.12	49.92
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1995	77PBL3-3 / FSTA BF824 CA	74.88	85.04	30	54	49.88	54.48	52.56	78.2	86.84	61.2	46.32	47.52
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1996	77PBL3-3 / FSTA BF824 CA 77PBL3-2 / F58A BF824 AA	55.88 72	56.44 87.84	52.16 105.6	71.78 73.2	81.72 124.58	38.4 131.57	88.4 87.12	107.77 107.04	81.6 80	66.4 48	54.8 62.26	54.08 83.84
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1997	77PBL3-3 / FSTA BF824 CA 77PBL3-2 / F58A BF824 AA	72	87.84	105.6	73.2	124.58	131.57	87.12	107.04	80	48	62.26	83.84
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1998	77PBL3-3 / FSTA BF824 CA	58.18	111.84	133.82	79.82	95.02	85.9	101.78	88.56	72.96	65.04	69.12	44.4
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HAYES DATA

1984

SPECIFIC CRIME

1985

1987

1988

WHITE INDUSTRIES

1986

1987

1988

BOUCH BRAKING

1986

1987

1988

77PBL3-2 / F58A 8F824 AA

77PBL3-1 / F58A 8F824 AA

77PBL3-1 / F58A 8F824 AA

77PBL3-1 / F2AC 8F824 AA

77PBL3-2 / F58A 8F824 AA

77PBL3-2 / F58A 8F824 AA

77PBL3-2 / F58A 8F824 AA

77PBL3-1 / F2AC 8F824 AA

77PBL3-2 / F2AC 8F824 CA

77PBL3-2 / F2AC 8F824 CA

77PBL3-1 / F2AC 8F824 AA

77PBL3-1 / F2AC 8F824 AB

77PBL3-2 / F2AC 8F824 CA

77PBL3-1 / F2AC 8F824 AA

77PBL3-1 / F2AC 8F824 AB

77PBL3-1 / F2AC 8F824 AA

77PBL3-2 / F2AC 8F824 CA

77PBL3-1 / F2AC 8F824 AA

77PBL3-2 / F2AC 8F824 CA

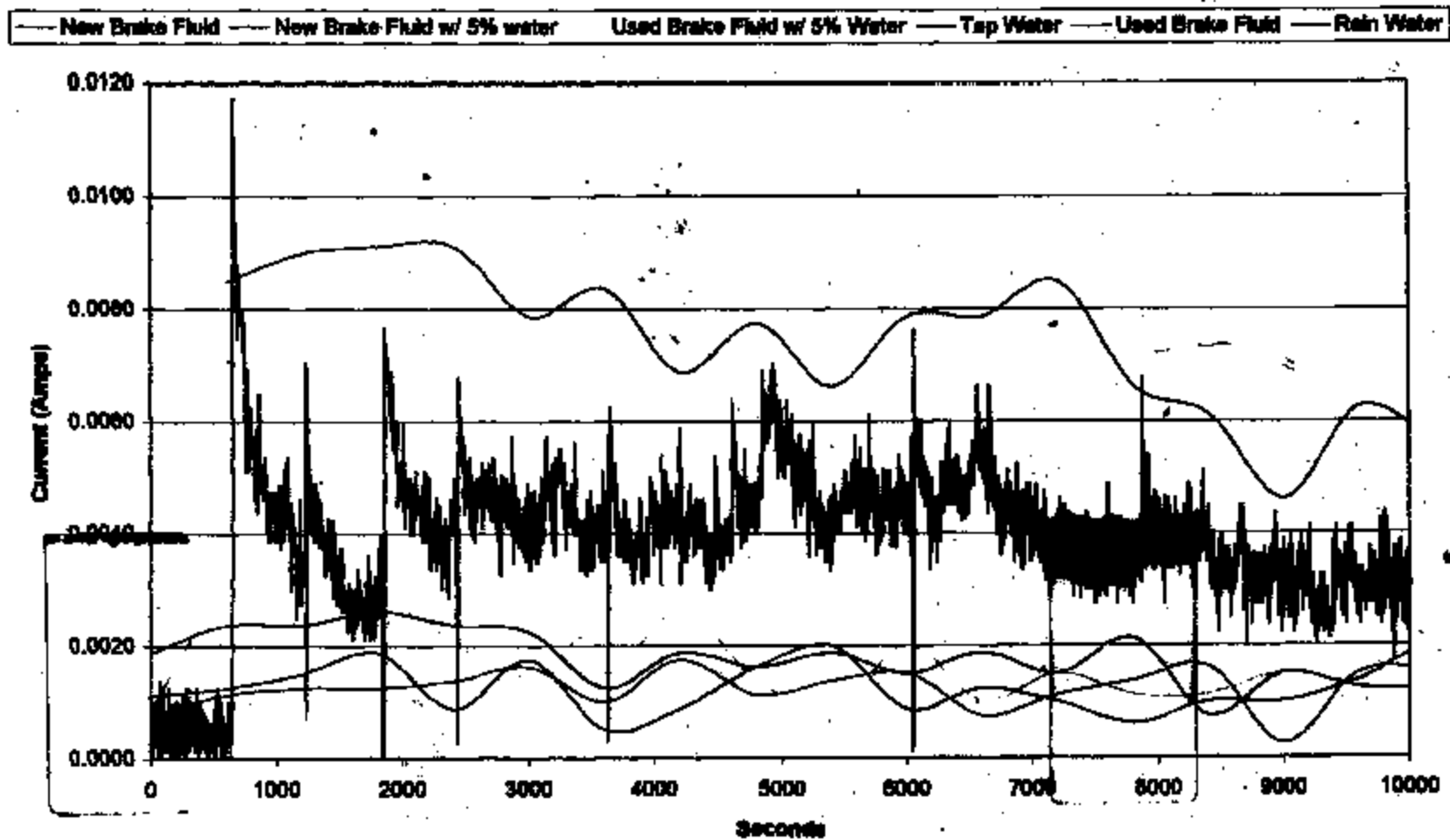
77PBL3-1 / F2AC 8F824 AA

77PBL3-2 / F2AC 8F824 CA

0	0	0	0	0	0	0	0	0	0	29.88		
0	0	0	0	0	0	0	0	5.9	15.25	4.89	14.98	9.9
8.8	9.9	9.9	9.9	4.9	4.9	0	0	0	0	0	0	0
0	0	0	0	0	0.238	0	0	0.714	0	0	0	0
0	0	0.238	0	0	0	0.238	0	0.238	0	0.475	0.238	
0	0	0	0	0	0	0	0	0.238	0.238	0	0	0
0	0	0	8.08	14.5	8.08	14.2	12.61	4.23	18.32	2.8	8.4	
			3.3	3.3	1.42	2.3	2.3			2.85		
3.09	0	2.1	2.8	0	0	3.9	3.3	0	1.18	0	0	0
0	9.52	9.52	16.8	5.7	5.7	8.58	14.75	7.37	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	1.19	
0	1.19	2.14	0.238	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0.238		
0	0	0	0	0	0	0	0	0	0	0	11.42	22.84
0	0	0	0	0	0	0	0	0	0	0	43.68	57.1
16.7	18.9	18.6	18.58	18.7	21.4	5.58	4.28	4.28	0	0	0	0
50.4	43.8	57.12	53.76	50.4	43.68	23.52	38.9	50.4	57.1	53.76	50.4	
60.4	50.4	57.12	63.6	47	57.8	47	50.4	53.84	60.04	53.7	70.5	

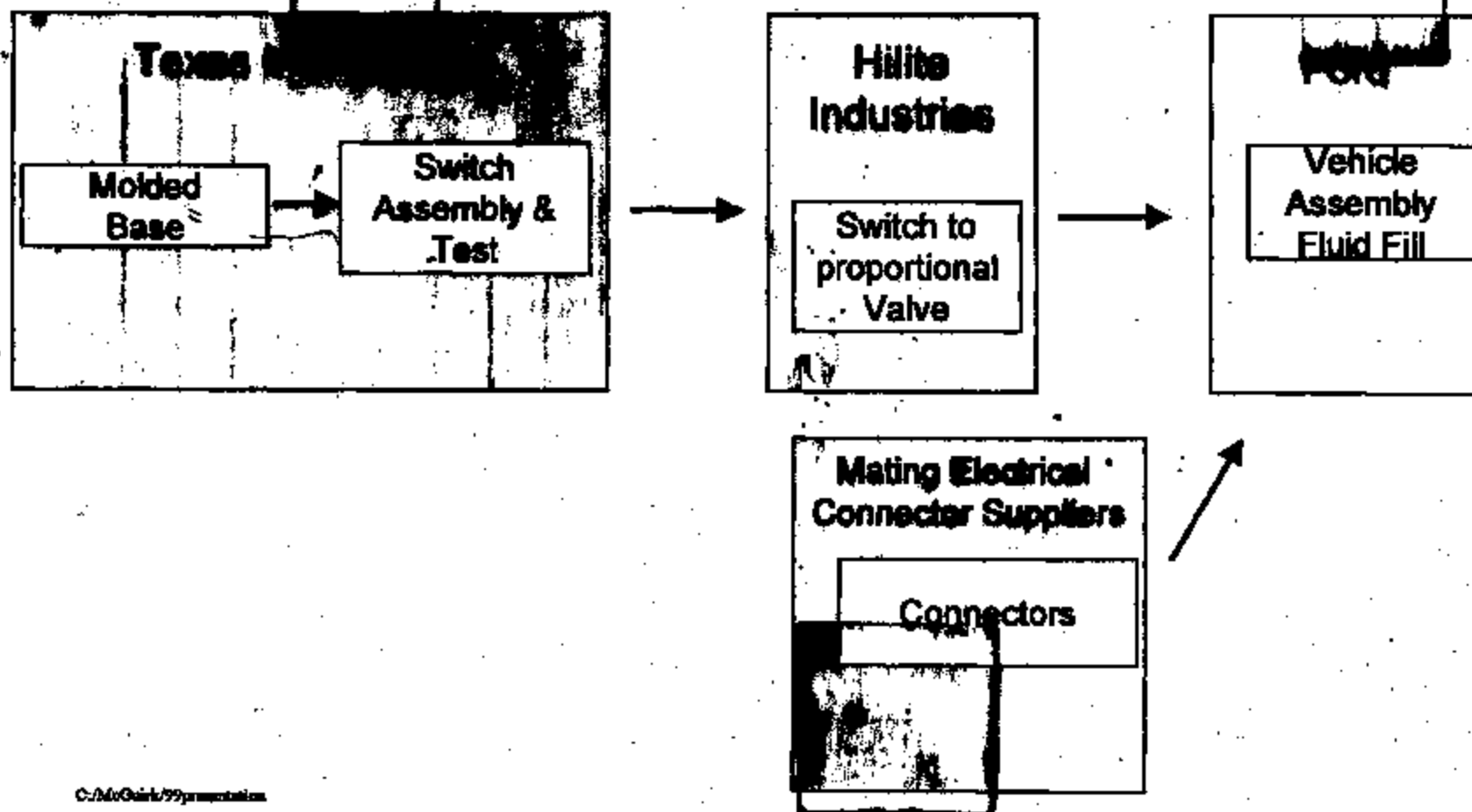
Hexport Current vs. Time Rainforest Experiment

3713 8458

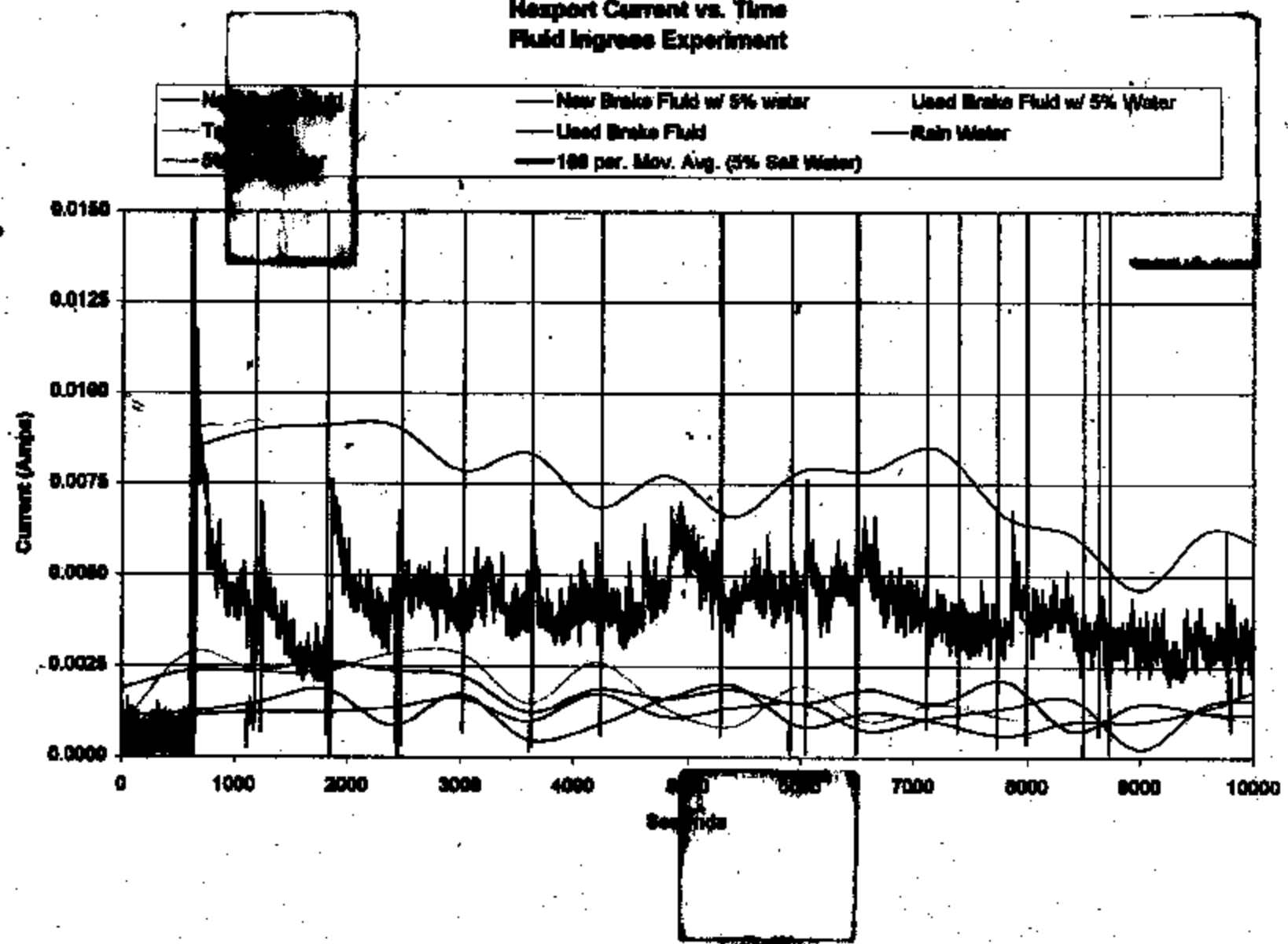




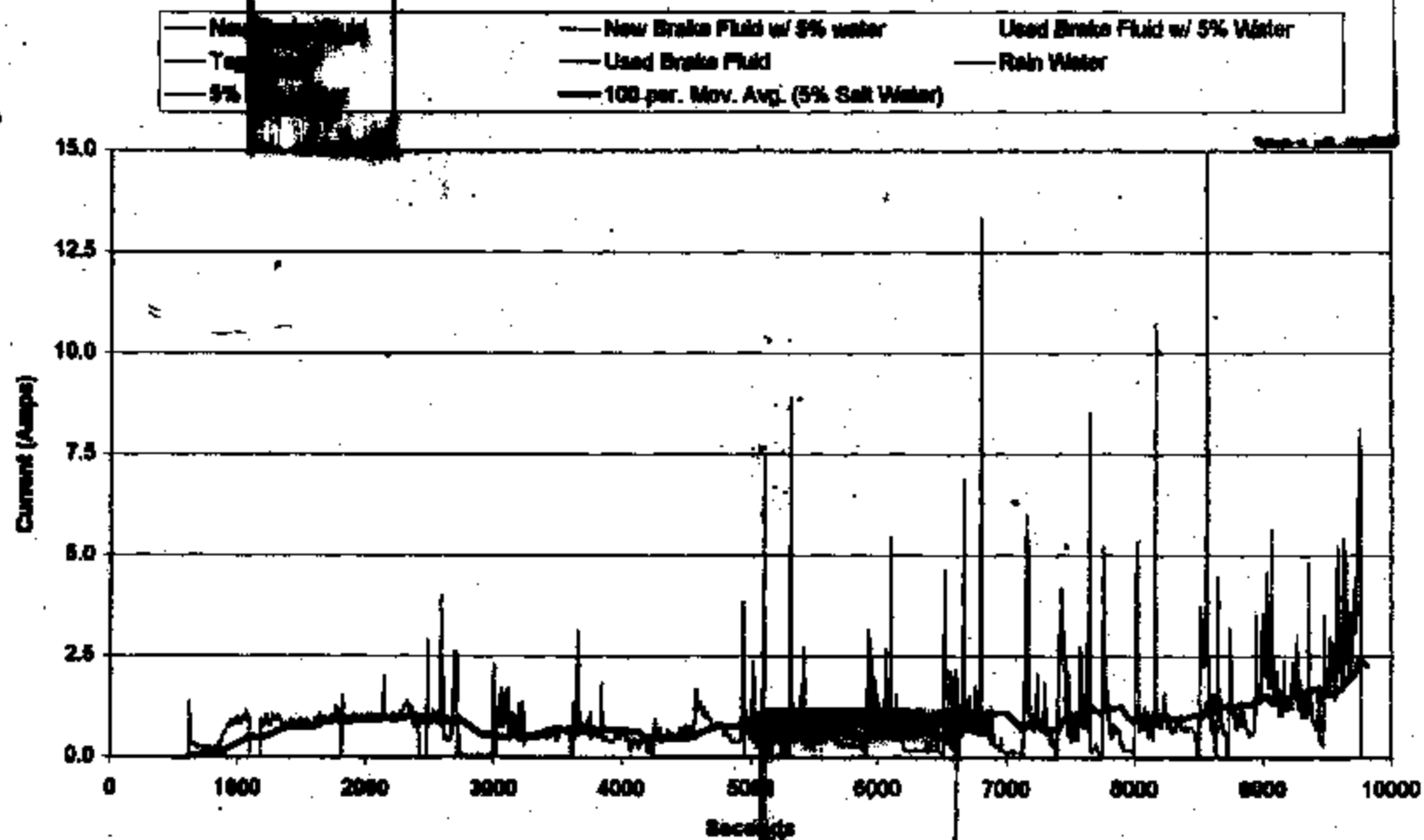
PRESSURE SWITCH "FLOW DIAGRAM" ('92, '93, TOWN CAR)

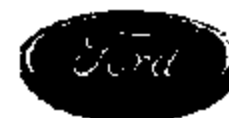


Hexport Current vs. Time
Fluid Ingress Experiment



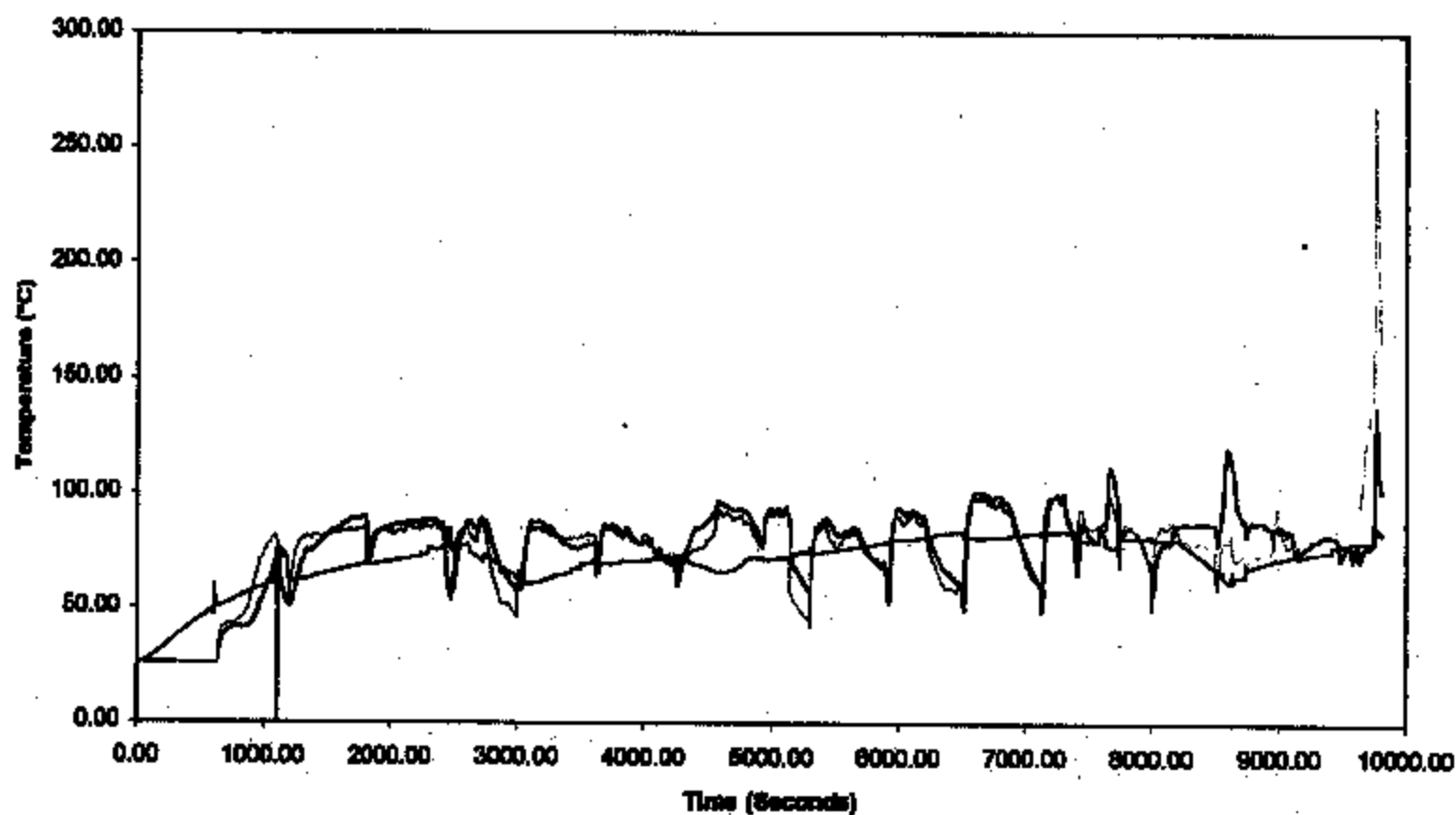
Hexport Current vs. Time Fluid Ingress Experiment





5% Salt Water Ingress Experiment Temperature vs. Time

Top Temp Clutch Temp Bottom Temp



C:\McGold\99\presentation

77PS-Molded Base 46515 UPDATE
(FOR REFERENCE ONLY)

Entry No.	Rev No.	DATE OF ECN	Eng Sys	VALUE IMPROVEMENT	Design Engr	PCRD P.N.	TI-P.N.	P.N. 46515-x	Material
1	A	First Issue 9-Nov-90	Asgls	Replaced EX 3423-49 dated 06/28/90 Cellanex 4300	Steve Olfar	F2VC-8F824-AB F8LC-8F824-AA	77P8L2-1 77P8L2-3	-2(brown,#2) -1(black,#1)	Cellanex 4300 Cellanex 4300
2	B	9-Jan-91	Asgls	Cellanex 4300 CN 18897 Correctly clarify print views	Steve Olfar	F2VC-8F824-AB F8LC-8F824-AA	77P8L2-1 77P8L2-3	-2(brown,#2) -1(black,#1)	Cellanex 4300 Cellanex 4300
3	C	4-May-92	Asgls	Added (-3) Noryl GTX 830 CRM 09898	Steve Olfar	F2AC-8F824-AA D4DA-8F824-AA F3OC-8F824-AA	77P8L3-1 77P8L4-1 77P8L5-2	-3(natural,#2) -3(natural,#2) -3(natural,#2)	GE Noryl GTX 83 GE Noryl GTX 83 GE Noryl GTX 83
4	D	21-May-92	Asgls	Added (-4 through -9) CRM 08125 (-4, -7) Noryl GTX 830 (-5, -8, -9) Cellanex 4300	Steve Olfar	F2AC-8F824-AA F2VC-8F824-AB F3DC-8F824-AA F8TA-8F824-CA F87A-3N824-AA F87A-3N824-AA B8BP-3N824-AA	77P8L3-1 77P8L3-1 77P8L5-2 77P8L3-3 87P8L2-2 87P8L2-3 87P8L11-2	-3(natural,#2) -2(brown,#2) -3(natural,#2) -7(grey,#1) -8(grey,#1) -8(grey,#1) -8(green,#1)	GE Noryl GTX 83 Cellanex 4300 GE Noryl GTX 83 GE Noryl GTX 83 Cellanex 4300 Cellanex 4300 GE Noryl GTX 83
5	E	9-Jul-92	Asgls	Added -10 (GE Noryl GTX 830) CRM 09881	Steve Olfar	F8BA-8F824-AA	77P8L3-2	-10(dk grey,#1)	GE Noryl GTX 83
6	F	29-Oct-93	Asgls	Clarified dimensions CRM 13619	Aziz Rahman				
7	G	1-May-96	Cadras	Dim added CCC slots CRM 28787	Chris Wagner				
8	H	20-May-96	Cadras	Note 4 Revised was 50% CRM 28887	Chris Wagner				
9	J	13-Jan-97	CAD	Adjust 3 notch dim Added note CAD drop CRM 32804	DI Ha				
10	K	18-Dec-97	CAD	Change dim places Remove 45-55 degree chamber, CRM 39285	DI Ha				
11	L	23-Feb-98	CAD	Change .030/.045 diameter to .030/.020 CRM 39187	DI Ha				
12	M	1-Apr-98	CAD	Added -11 Material GE Noryl GTX 830 CRM 39885	DI Ha	X0W43-3N824-AA	87P8L2-5	-11(brown,#1)	GE Noryl GTX 83
13	N	9-May-98	CAD	Added -12 Material Cellanex 4300 ECN M40838	DI Ha	A88820	87P8L2-6	-12(white,#1)	Cellanex 4300

**77P8-SREA-ALERT UPDATE
(FOR REFERENCE ONLY)**

Entry No.	SREA/ALERT No.	DATE SUBMITTED	VALUE IMPROVEMENT	FORD P.N.	T/P. N.
1	409988	27-Feb-95	Use of alternate pressure tester for capacity improvement. Scribe mark indicating 'test pass' to be on crimp ring rather than on the plastic connector base.	F2AC-9F824-AA F2VC-9F824-AB F3DC-9F824-AA F3BA-9F824-AA F3TA-9F824-CA	77P8L3-1 77P8L2-1 77P8L5-2 77P8L3-2 77P8L3-3
2	409988	27-Feb-95	Use of 10L07 steel from cold headed supplier in lieu of 10L10 steel due to temporary material supply interruption. 10L07 steel made with same process.	F2AC-9F824-AA F2VC-9F824-AB F3DC-9F824-AA F3BA-9F824-AA F3TA-9F824-CA	77P8L3-1 77P8L2-1 77P8L5-2 77P8L3-2 77P8L3-3
3	409937	8-Sep-94	Change p.n. from p.n. 84DA-9F824AA to p.n. 84DA-9F824AB	84DA-9F824AB	77P8L4-1
4	408911	17-Mar-94	Use of color pigments in plastic base containing alternate materials in lieu of heavy metal per governmental regulations	F3TA-9F824-CA	77P8L3-3
5	282443	22-Jan-93	Use of part substitution of prior level "BA". Converting from snap to quiet disc switch. Change is to internal disc only.	F3TA-9F824-CA	77P8L3-3
6	147693	2-Dec-92	Reduce internal cap dimension by .004" from .091" to .087" nominal. Address potential open circuit condition under vacuum, traced to disc envelope under stack-up conditions	F2VC-9F824-AB F2AC-9F824-AA F3DC-9F824-AA	77P8L2-1 77P8L3-1 77P8L5-2
7	147673	21-Nov-91	Change thread gaging specification from 2A go to 3A go ring gage. Use of ANSI B1.1 Industry Standard for plated thread allowance.	F3TA-9F824-CA	77P8L3-3
8	147671	2-Nov-91	Use blue colored environmental seal in lieu of reddish color with black stripe to help differentiate seal; to reduce potential assembly errors.	F2VC-9F824-AB	77P8L3-1
9	148698	3-Apr-91	Change terminal position dimension from 0.50+/-0.25mm to 0.50+/-0.25mm	F2TA-9C888-AA	57P8L5-2
10	147695	3-Apr-91	Change terminal position dimension from 0.50+/-0.25mm to 0.50+/-0.25mm	F3TA-9F824-CA	77P8L3-3
11	Alert No. A10186182	11-Oct-91	Use of manually loaded spring crimp machine vs auto in-line loaded crimper. Manual crimp passes E3 tests.	F2VC-9F824-AB	77P8L3-1

PF1

" Ford ES-F2VC-9F924-AA "

77PSL2-1 F2VC-9F924-AB

PPAP Submitted 2/5/99
9/26/91 APP.

Alert # A10/66193

10/2/91 ~ MANUAL SENSOR TRIMMER IS - Auto in Line
= 90 Days to RESOLVE

AI

TO Ford

12/4/91 ISW RESUBMITTED AGAINST Alert

12/22/91 ISW

7-15

* # SREA 11-5-91 Change to enviro seal (red to blue)
147671

App'd 11-6-91

ISW for SREA 1-9-92

AI-1

TO H

77PSL2-1 F2VC-9F924-AB

11-20-91

(3/16/92 letter & App'd
Ford warrant.)

K-H ECN #25136

8-20-91

= print 1-1123 2 from 57ASL5-3 to 77PSL

- reflects these change all inclusive

- P/N "F2VC-9F924-BA" to F2VC-9F924-AA

K-H Supplier Info. Change Request 12-18-91

= update & change ECN #25136

- AB in part

- AA in ES spec.

AI-2

77PSL2-1

F2VC-9F924-AB

© 8-27-92

TO

Pitts Ind.

"Medhat HABASHI"

Pf 2
 600K
 1/16
 2
 =
 Ford

TE P/N	Cost P/N	Submitted	APPROV'd
77PSL2-3	F3TA-9F924-AA	9-19-91	
(light truck)	RESUB PSW -	11-25-91	
	PER ALERT		

* SREA # 147673 11-21-91
 2A VS 3A 90 9A9C ANSI Spec 12/9

A1-3
 ITT
 TEVES

TE P/N	Cost P/N	Submitted	APPROV'd
77PSL2-1	F2IC-9F924-AA	1-9-92	

ISW # 360069 ^{documentary} Changes to internal (cup)
 11-25-92 Component dimension change for
 F3DC-9F924-AA (77L5-2)

* min. changes made to correct switches
 exhibiting an open circuit condition
 after applied vacuum.

A2-1
 Hilite

TE P/N	Cost P/N	Submitted	APPROV'd
77PSL2-3	F6LC-9F924-AA	12/16/94	Q1

A3
 Ford

TE P/N	Cost P/N	Submitted	APPROV'd
77PSL3-1	F2AC-9F924-AA	4-13-92	Q1

** Partial ISW to expedite "Quiet Switch"
 to be complete 6-25-92

1-1
 Dana
 Ind. & Canada

TE P/N	Cost P/N	Submitted	APPROV'd
77PSL3-1	F2AC-9F924-AA	8-19-92	
	ISW # 360068		

PG.3	TI P/N	CUST P/N	Submitted	Approved
23-2	77PSL3-1	F2AC-9F924-AA	11-11-94	12-5-94
Lead Signal			RECEIVED	4-1-96

also Cover letter to Tokyo PPAP copied ^{by} similar
 BY Ford 77PSL3-3 F3TA-9F924-BA 6-19-92

ISW# 112397

* comments: fluid resistance test (section M of
 ES-F2AC-9F924-AA) to be submitted
 for information purposes to John Pelkey
 by end of August 1992.

N/A

ISW# 245856

12/8/92

F3TA-9F924-CA

* comments: this submission (Warrant only?)
 comprehends the changes to the
 Quiet Switch for light truck Platforms
 (disc change only)

** SREA# 282442

1-22-93

- request for change from snap to quiet a

** SREA# 393198

3-14-94

all Ford Hydr. (57, 87, 77)

- Change plastic base material from
 dyes containing heavy metals
 to dyes containing alternate acceptable

** ISW w/ SREA# 409911 3-17-94

* Approval pending GE's concurrence on change effect on test
 * Copy of Government Regulation + Compliance

3713 8467

PR.4 TE P/W Cust P/W Submitted App'd

A5 77PSL5-2 F3DC 9F924-AA

EVS ES tests to be forwarded

Sho Jan. 92 ISW # 360066 3/10/92 01 8-14-
ISW # 360069 11/25/92
- internal cup dim change

* * 3REA # 147693 12-2-92 12-2-9

(cours 77L2-1
77L3-1
77L5-2)

to eliminate loose disc connections
resulting in open circuit after
vacuum application

n6 77PSL6-1 94SA-9F924-AB 1-16-92

Dist
Quar
Cap

ISW # 112387

ES tests to Jan 92

ISW # 360070 w/Tests 2/19/93 3/6

A7 77PSL3-2 F58A-9F924-AB 12/14/92

70rd
Wic 88

PR.5	TI P/N	Cust P/N	Submitted	App'd
7-1	77PSL3-2	F58A-9F924-AA	7-12-93	7-7-93
Ford	? "no snubbers"			pre-app.
J. Habbouche	ISCN # 360079			

PR *** 77PSL 3-3 F3TA-9F924-CA 5-3-93
 TDKico
 ISCN # 360071
 * SREA # 147673 (copy)
 24 to 3A go page

AR-1
 Allied Signal
 77PSL3-3 F3TA-9F924-CA 1-13-94 2-28
 * SREA # 409911 dye for base color change

AR (2 Books)
 Ford
 Australia
 77PSL4-1 94DA-9F924-AA 6-3-93
 SREA # 409937
 9-894 change P/N suffix from AA to 7
 per. letter changed back to -AA 3/12/94

PJ TI P/N Cust. P/N Submitted Oppus'd

- 77L3-1 F200-9F924AP 4/92
 ~ partial
 (ENS3 platform)



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

*Analysis For
Ford Fuel
All*

AGENDA

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

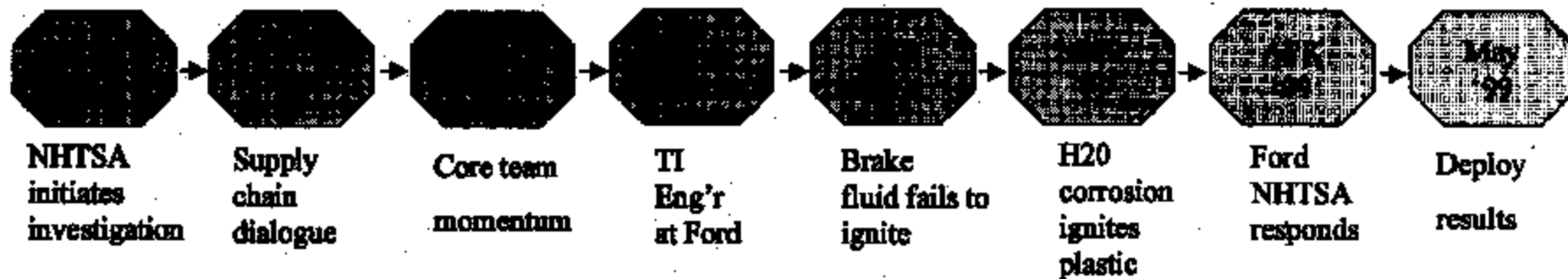
C:\McQuick\99\presentation



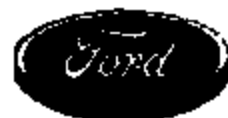
1. Connector Seal to P/S
2. Power continuously available
 - A. Operator notifications
3. Switch orientation/location
4. Current limit / fuse
5. Hexport isolation
6. Plastic ignition robustness
 - A. Nearby fuels
7. Kapton seal of P/S
8. Environmental seal of P/S



OVERVIEW OF CONCERN TIME LINE



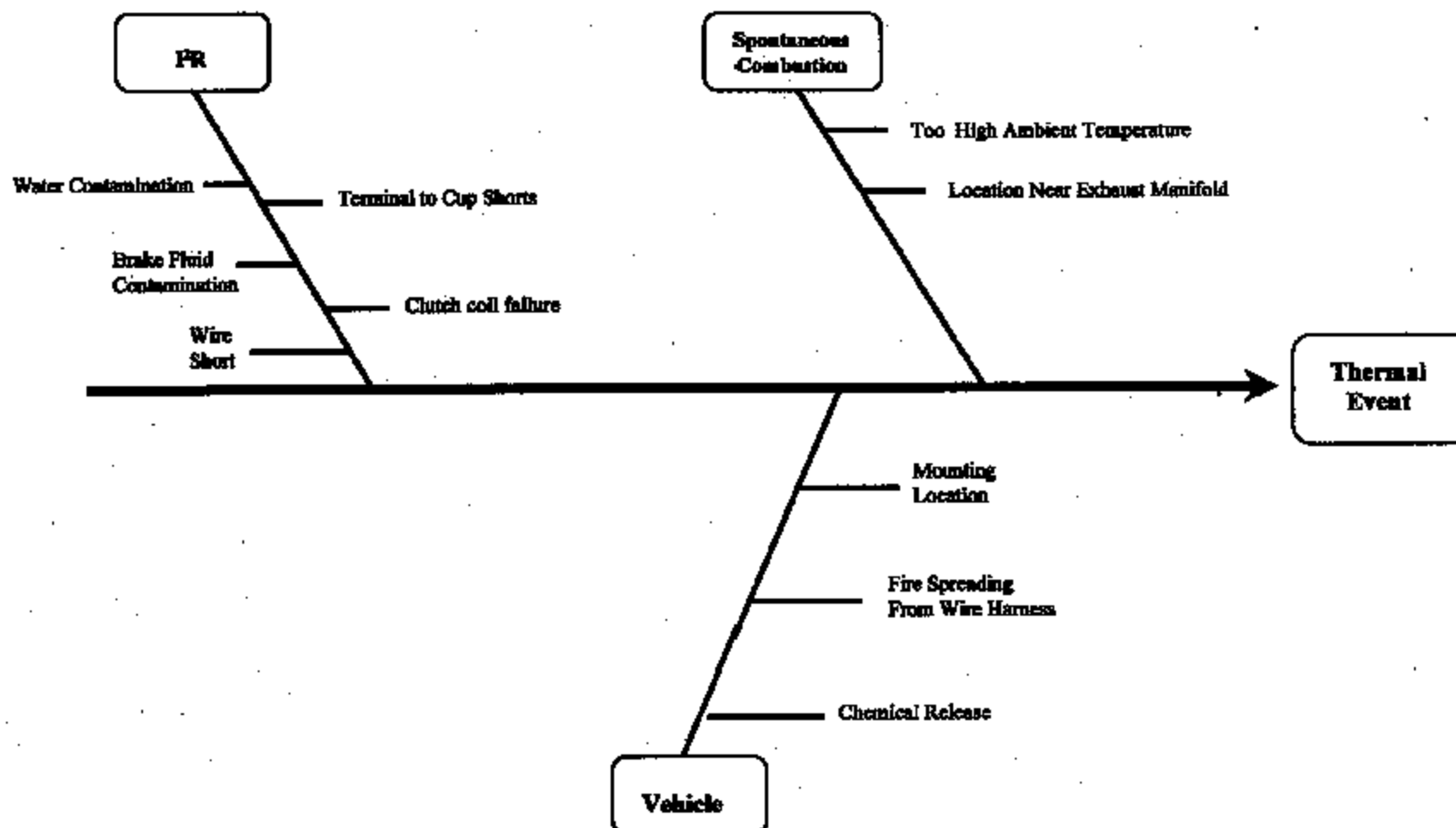
Attachment

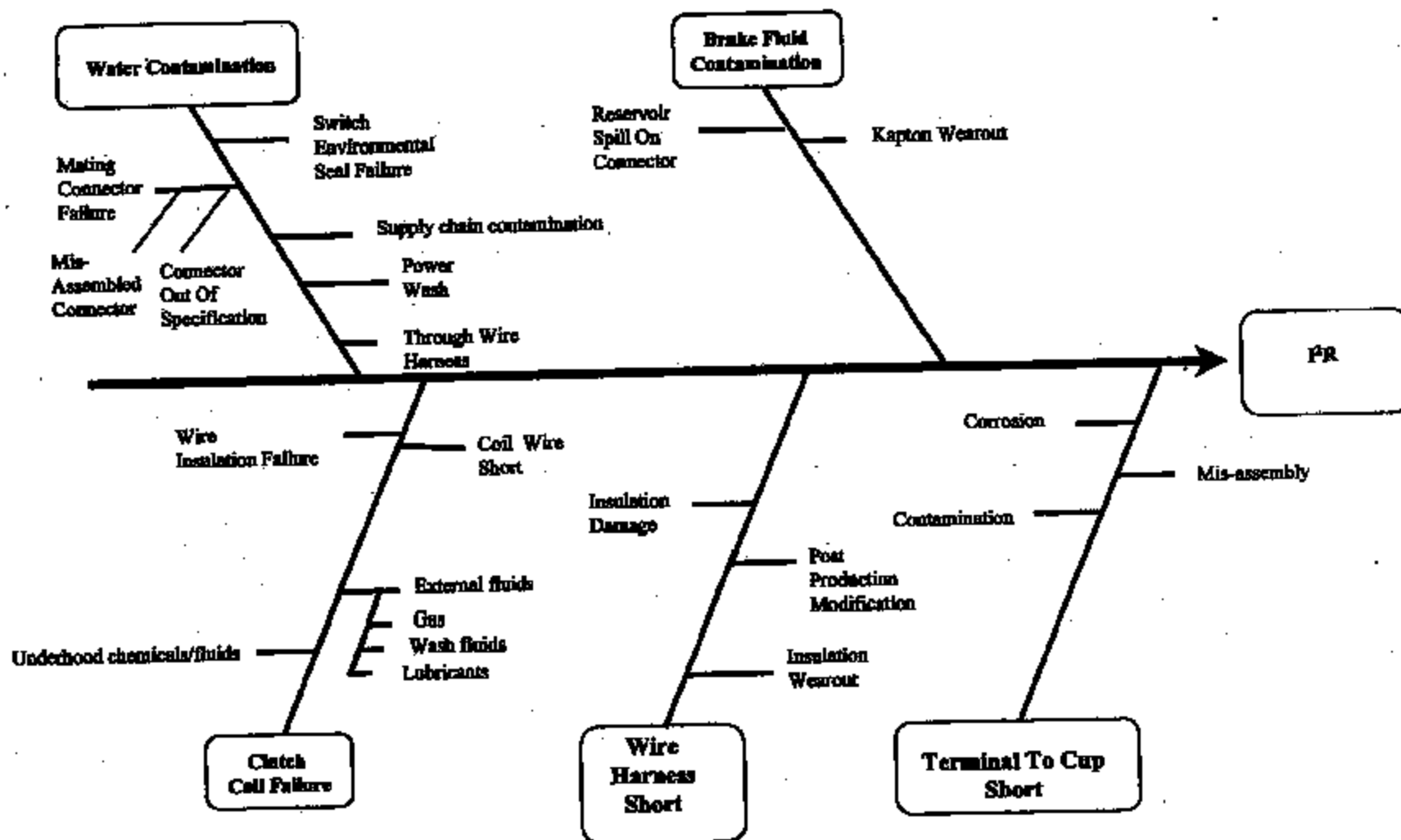


Brake Switch Overview

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

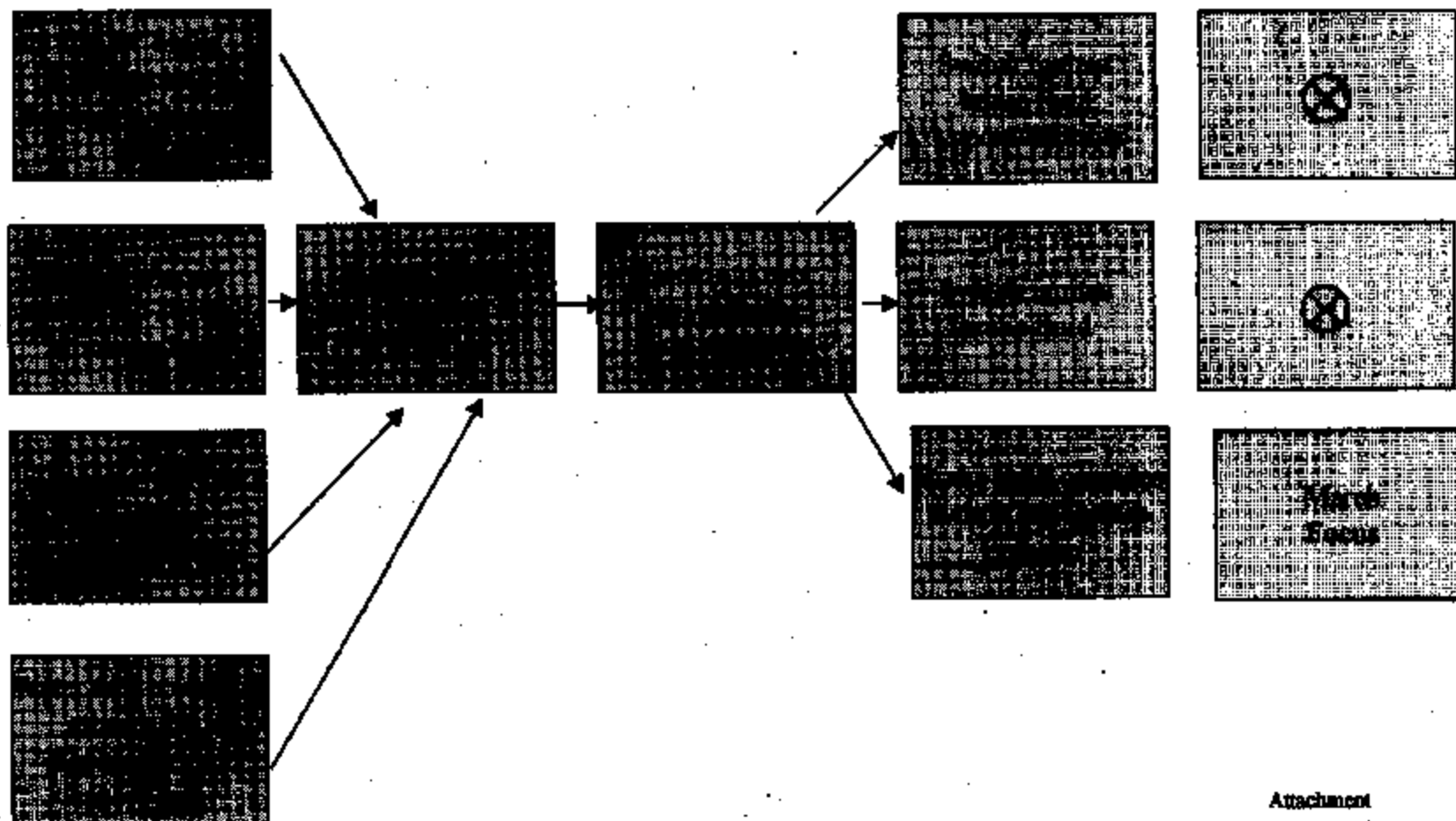
Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99







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



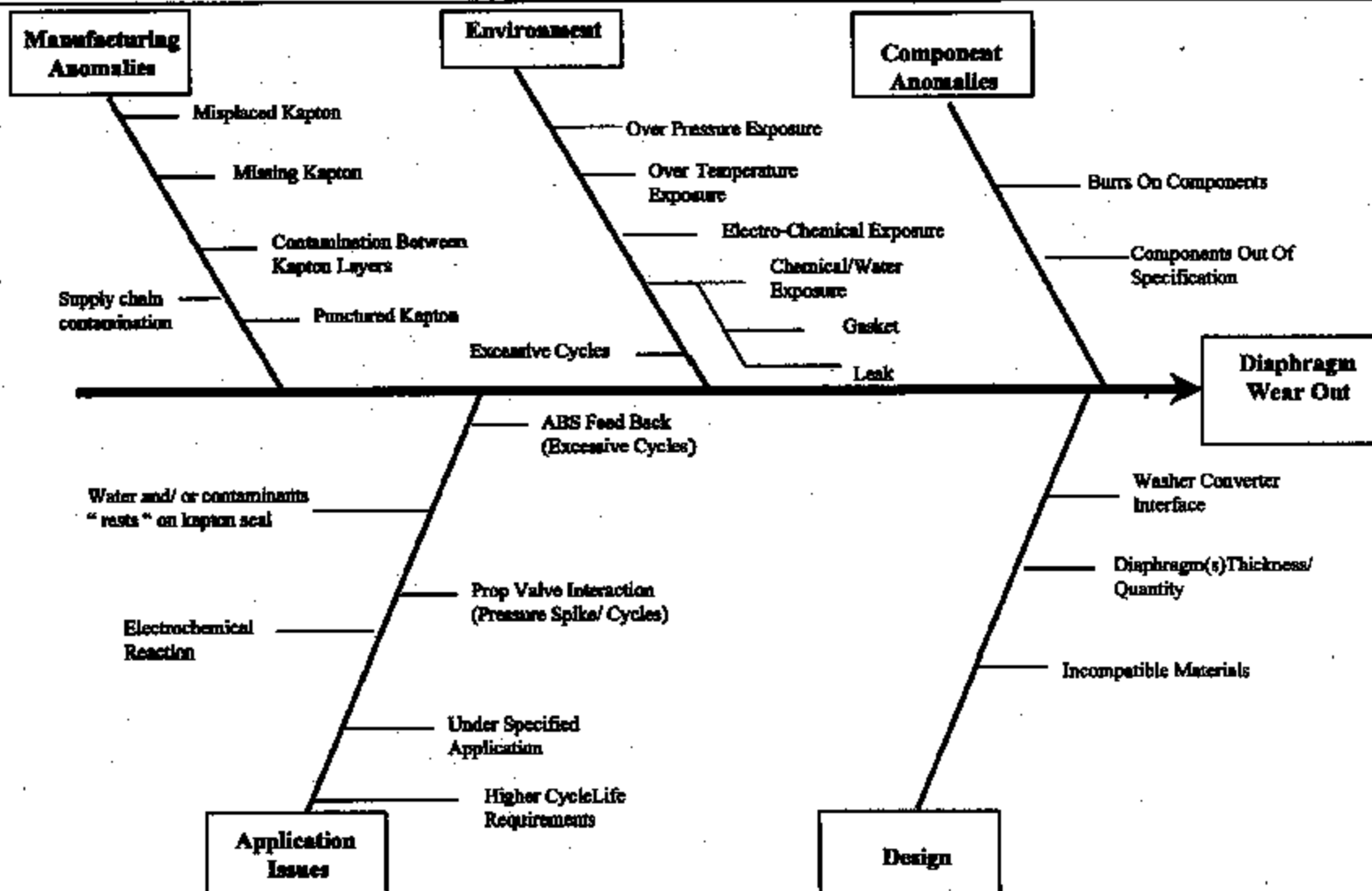
3713 8477

Excel



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

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



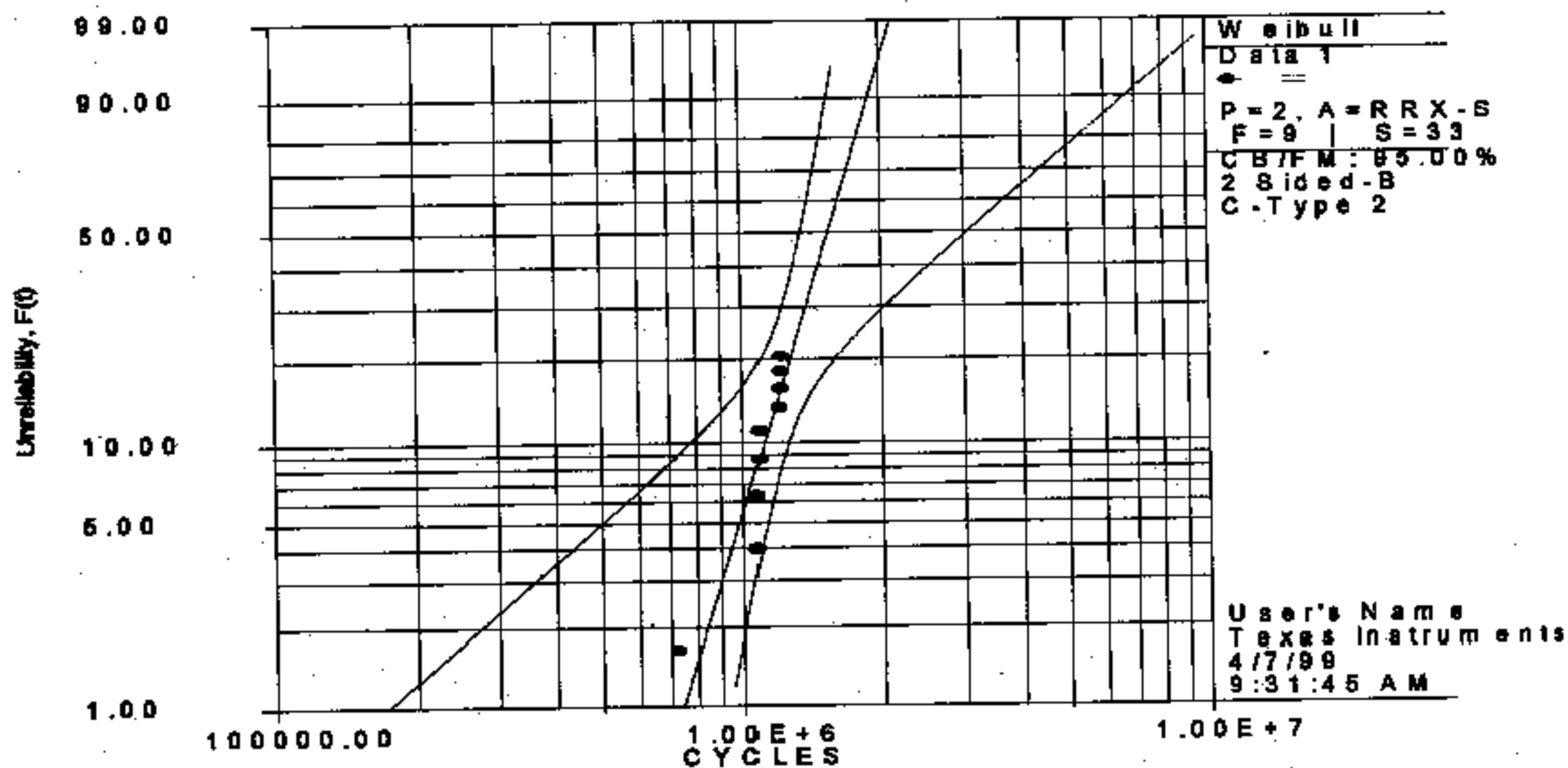


Brake Pressure Switch Potential Thermal Event Theory Profile 4/21/99



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

77PSL2-1 COMBINED DATA



$\beta = 3.83, \eta = 1.64E+6, p = 0.91$

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