



# Test Monitoring Center

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MEMORANDUM: 04-050  
DATE: May 28, 2004  
TO: Sequence III Surveillance Panel  
FROM: Michael T. Kasimirsky *Michael T. Kasimirsky*  
SUBJECT: Sequence IIIG/IIIGA Reference Oil 435 Test Target Update

On May 26, 2004, the Sequence III Surveillance Panel approved a motion to revise the test targets on 435 based upon all the data available to date in the LTMS. As part of the motion, the panel also approved a plan to update the targets when 30 and 35 data points on this oil become available. These revised targets, based upon the 26 data points available at this time, are shown in the following table:

Parameter	Mean	Standard Deviation
PVIS	5.2333	0.2924
WPD	3.59	0.51
ACLW	3.5044	0.2256
MRV	N/A *	N/A *

\*MRV results for 435 use the calculated  $Y_i$  value for PVIS in the MRV control charts

Any applicable severity adjustments were applied to the data prior to target generation. The data used to generate these targets is shown in Tables 1 & 2. Table 1 shows unadjusted data. Table 2 shows severity adjusted data, with the adjusted parameters shown in red. The above test targets; as well as the severity-adjusted data used to generate them; the raw test targets, the initial test targets, and the preliminary targets from the matrix (which were never used in the IIIG LTMS) for reference oil 435 are shown in the following figures. Figure 1 shows the PVIS data in transformed units. Figure 2 shows the PVIS data in original units. Figure 3 shows the WPD data in original units. Figures 4 and 5 show the ACLW data in transformed and original units, respectively.

These targets are effective for all tests completed on or after June 1, 2004.

MTK/mtk

Attachments

c: John L. Zalar, TMC  
<ftp://www.astmtmc.cmu.edu/docs/gas/sequenceiii/memos/mem04-050.pdf>

Distribution: Electronic Mail

Table 1 – Unadjusted Data

Testkey	LTMS Lab	LTMS	App	Ind	Val	LTMS Date	LTMS Time	PVIS	PVISTI	ACLW	ACLWTI	WPD	MRV	MRVTI	OilCon
47945	E	1	435	OC	10/25/2003	0:22	247.1	5.509793	31.2	3.4404	4.4	71927	11.1834	3.72	3.72
47905	G	3	435	AO	8/12/2003	0:11	163.4	5.096201	30.9	3.4308	2.9	84800	11.3481	3.86	3.86
47906	G	5	435	AO	8/12/2003	0:19	279	5.631212	26.8	3.2884	3.3	210700	12.2582	4.3	4.3
47907	G	5	435	AO	8/12/2003	0:30	230.2	5.438948	34.6	3.5439	2.97	294000	12.5913	4.21	4.21
47908	G	2	435	AO	8/12/2003	0:27	304.8	5.719656	48.7	3.8857	4.12	400000	12.8992	4.31	4.31
47909	G	4	435	AC	8/12/2003	0:55	313.6	5.748118	34.8	3.5496	2.89	400000	12.8992	4.38	4.38
48579	G	5	435	AC	8/31/2003	2:33	135.8	4.911183	30.9	3.4308	3.2	68600	11.136	3.28	3.28
48580	G	3	435	AC	1/11/2004	23:32	185.1	5.220896	36.3	3.5918	3.4	145400	11.8872	3.51	3.51
49512	G	1	435	AC	2/18/2004	4:45	129.8	4.865995	23.9	3.1739	3.76	44300	10.6987	3.38	3.38
51017	G	4	435	OC	3/23/2004	7:18	272.5	5.607639	19.2	2.9549	3.57	278800	12.5382	4.74	4.74
51018	G	4	435	AC	3/31/2004	6:48	131	4.875197	20.6	3.0253	3.23	45600	10.7277	3.45	3.45
47938	D	1	435	AC	11/23/2003	21:43	178.7	5.185708	33.1	3.4995	3.13	29341	10.2867	3.73	3.73
49067	D	2	435	AC	2/23/2004	21:45	189.7	5.245444	38.6	3.6533	2.88	199362	12.2029	3.39	3.39
47918	B	2	435	AC	8/12/2003	0:51	143.3	4.96494	45.3	3.8133	3.56	71200	11.1732	3.28	3.28
47919	B	1	435	AC	8/12/2003	0:54	286.8	5.658785	38.2	3.6428	3.59	999999	13.8155	3.93	3.93
47920	B	3	435	OC	1/17/2004	3:46	116.3	4.756173	32.6	3.4843	4.29	42500	10.6573	3.18	3.18
49074	B	2	435	AC	4/9/2004	18:14	165.9	5.111385	31.7	3.4563	4.7	58800	10.9819	3.58	3.58
47927	F	1	435	AC	8/12/2003	0:53	154.7	5.041488	31.3	3.4436	3.79	88790	11.394	3.71	3.71
47888	A	3	435	AO	8/12/2003	0:12	172.2	5.148657	45.8	3.8243	3.26	84500	11.3445	3.74	3.74
47889	A	1	435	AO	8/12/2003	0:20	222.2	5.403578	31.6	3.4532	3.31	300200	12.6122	4.22	4.22
47890	A	2	435	AO	8/12/2003	0:39	167.7	5.122177	46.8	3.8459	3.28	110100	11.6091	3.79	3.79
47891	A	3	435	AO	8/12/2003	0:25	176.4	5.172754	33	3.4965	3.92	91900	11.4285	4.25	4.25
47892	A	4	435	AC	8/12/2003	0:48	214.1	5.366443	25.7	3.2465	4.23	158700	11.9748	4.41	4.41
48587	A	2	435	AC	11/26/2003	16:02	225.6	5.418764	46.3	3.8351	3.57	247800	12.4204	3.62	3.62
49076	A	6	435	AC	3/24/2004	13:32	141	4.94876	35.5	3.5695	3.89	52700	10.8724	3.25	3.25
50457	A	7	435	AC	4/4/2004	17:37	133.9	4.897093	31.6	3.4532	4.14	48700	10.7934	3.31	3.31

Table 2 – Severity Adjusted Data

Testkey	LTM5 Lab	LTM5 App	Ind	Val	LTM5 Date	LTM5 Time	PVIS	PVISTI	ACLW	ACLWTI	WPD	MRV	MRVTI	OilCon
47945	E	1	435	OC	10/25/2003	0:22	247.1	5.509793	31.2	3.4404	4.4	71927	11.1834	3.72
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Figure 1

# Sequence IIIG Reference Oil 435 Test Target Data Set and Shewhart Bands

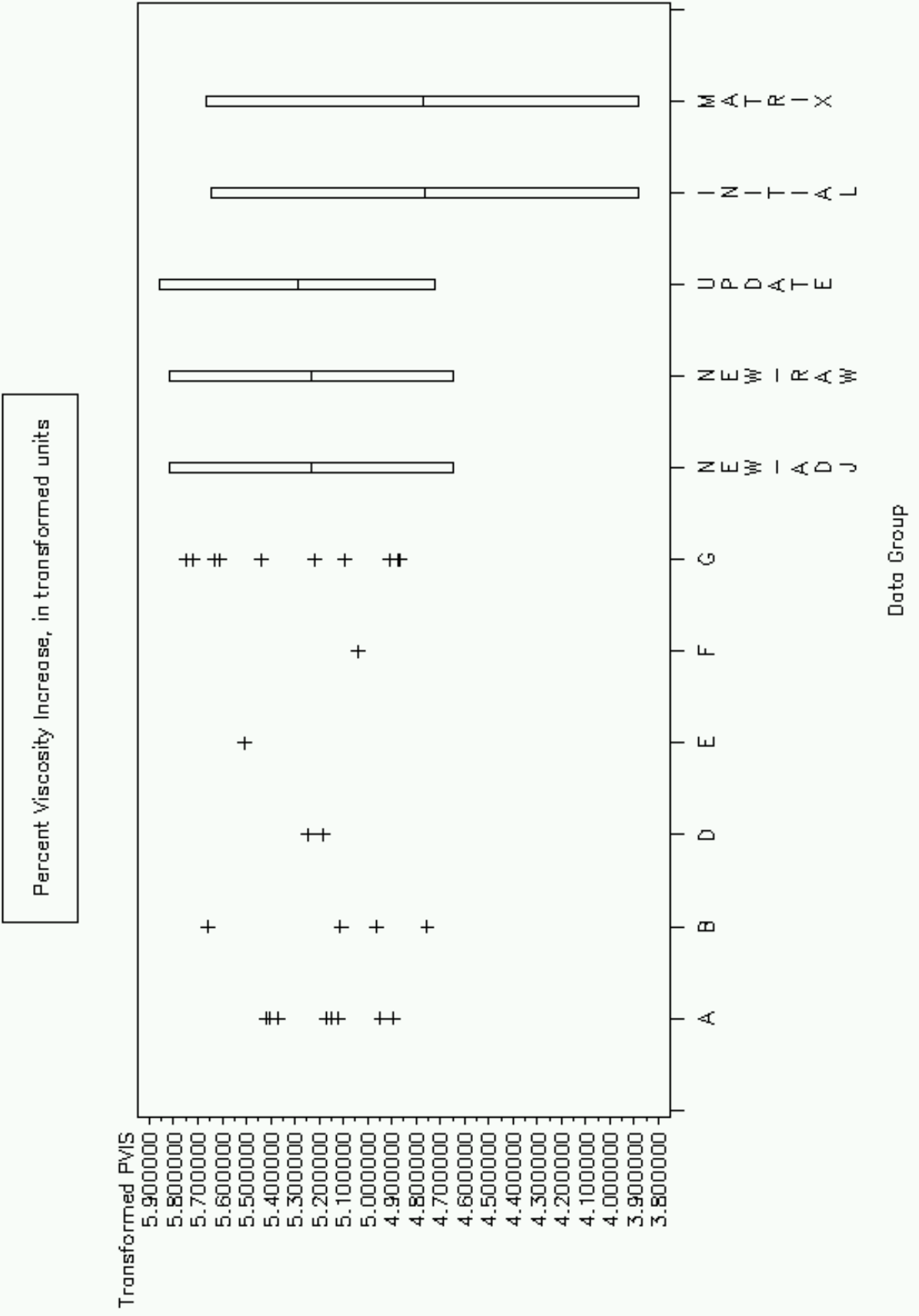


Figure 2  
Figure 2

# Sequence III G Reference Oil 435 Test Target Data Set and Shewhart Bands

Percent Viscosity Increase, in original units

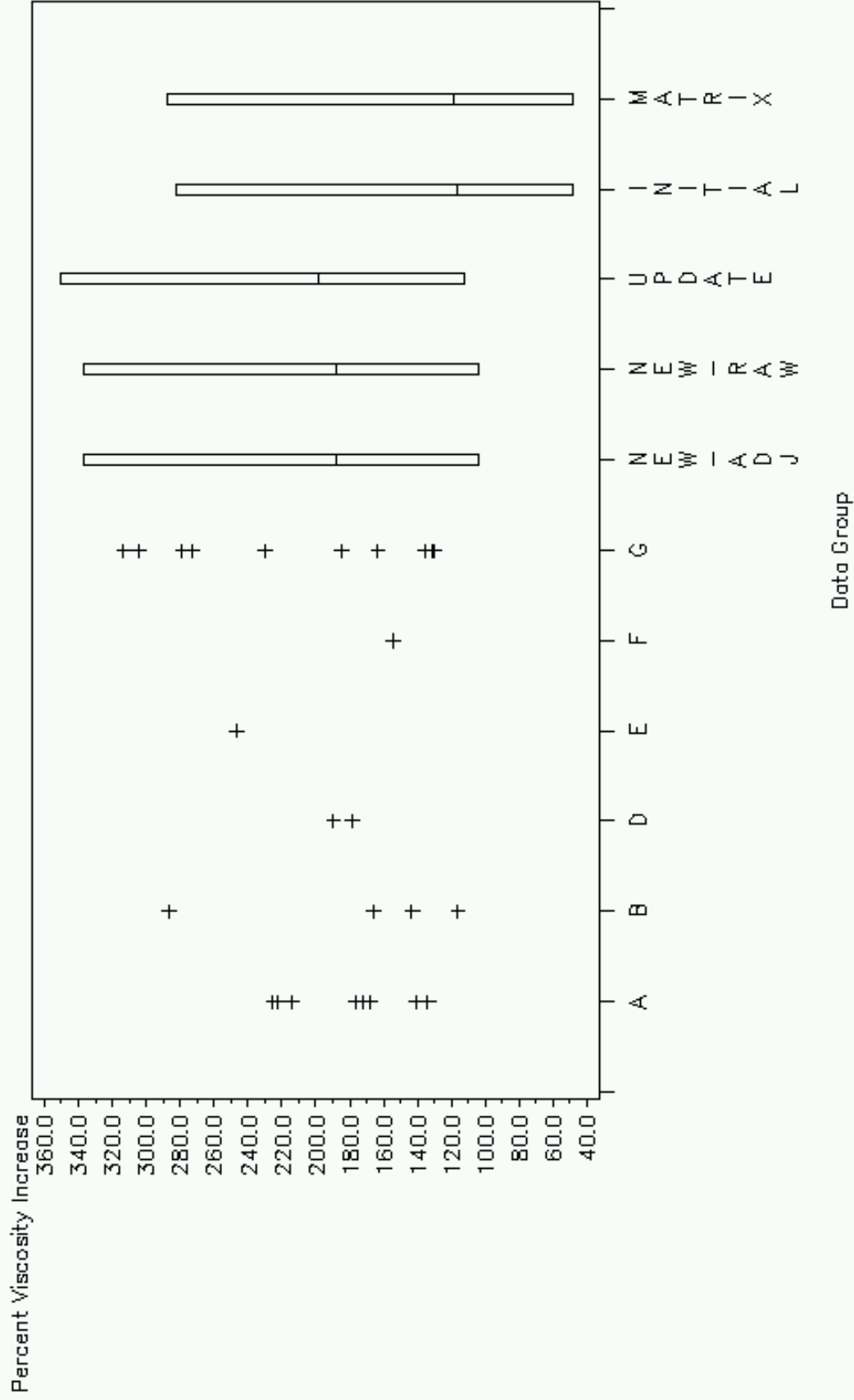


Figure 3

# Sequence III G Reference Oil 435 Test Target Data Set and Shewhart Bands

Weighted Piston Deposits, in original units

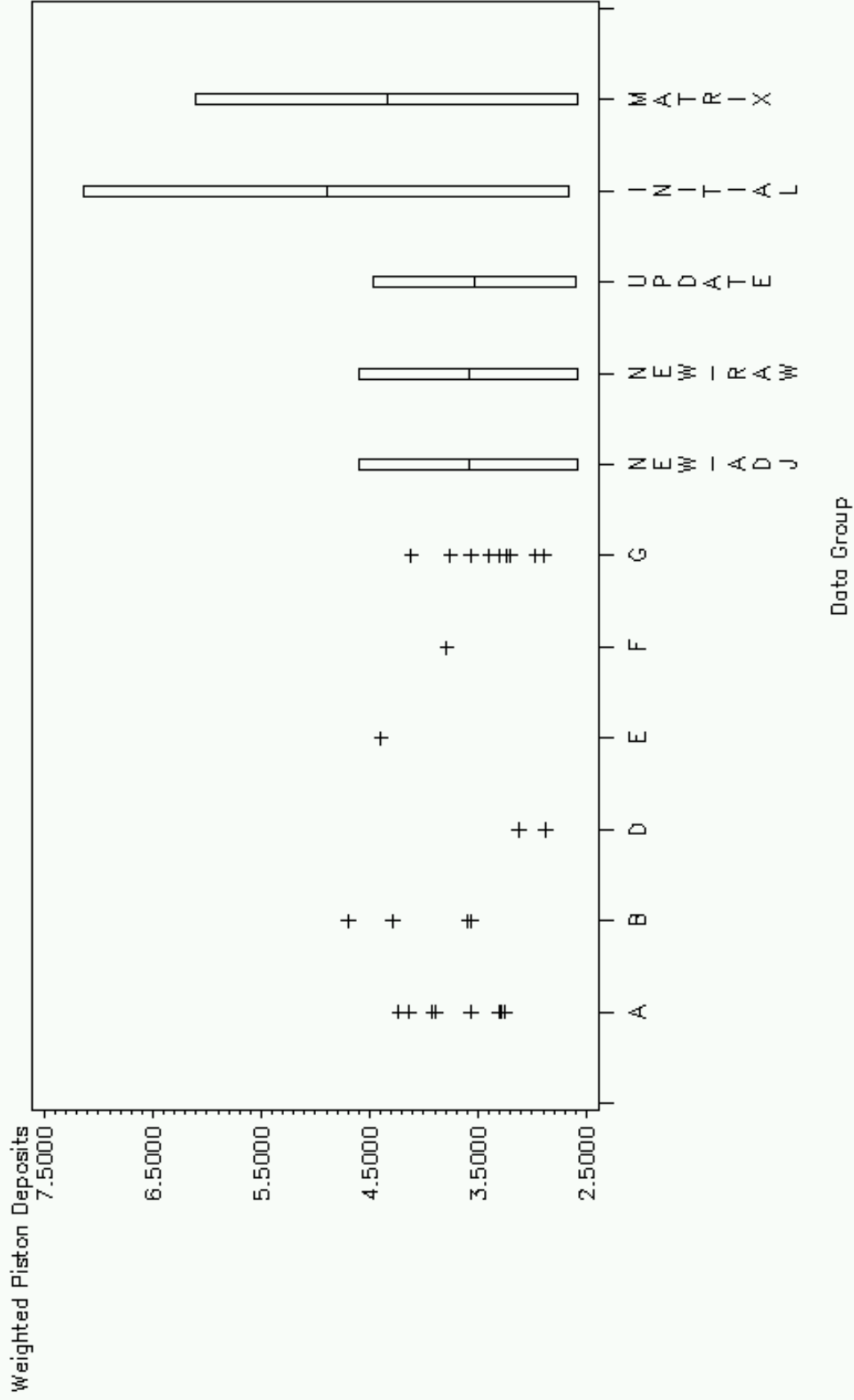


Figure 4

# Sequence III G Reference Oil 435 Test Target Data Set and Shewhart Bands

Average Camshaft & Lifter Wear, in transformed units

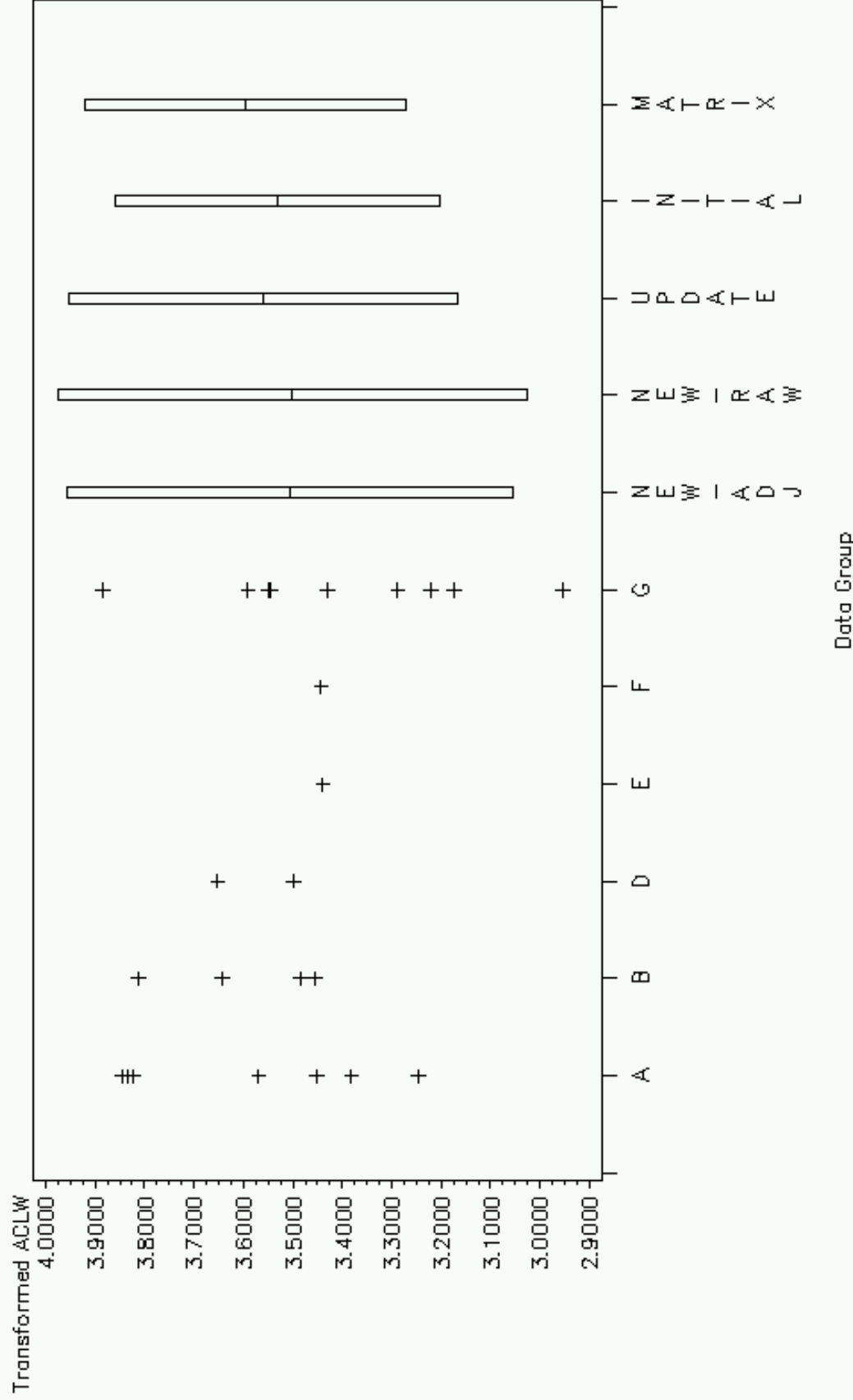


Figure 5

# Sequence III G Reference Oil 435 Test Target Data Set and Shewhart Bands

Average Camshaft & Lifter Wear, in original units

Figure 5

