



Test Monitoring Center

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MEMORANDUM: 01-004
DATE: January 9, 2001
TO: Sequence IVA Surveillance Panel
FROM: Michael T. Kasimirsky
SUBJECT: Reference Oil 1007

At the last meeting of the Sequence IVA Surveillance Panel, the panel tasked the TMC with providing the industry with a summary of all data obtained on reference oil 1007 in the Sequence IVA test to date. The panel would then use this data to make a determination regarding the reintroduction of reference oil 1007 into the LTMS, and if reintroduced, what targets to use for that oil.

Since the introduction of the Sequence IVA test, reference oil 1007 has been run in the test for three different reasons. The first group of four runs was part of the original GF3 Matrix, run in late-1998, and will be identified using the label *GF3* from this point forward. The second group of nine runs was part of the Prove-out Matrix, which was run in late-1999 and was conducted to verify that Sequence IVA test performance was back in control, and will be identified using the label *MATRIX* from this point forward. The final group of six runs, which was run in mid-2000 and was conducted at the direction of the Panel as a donated run to maintain calibration status, and will be identified using the label *DONATED* from this point forward.

Of the four GF3 runs, all were conducted in a valid manner. Of the nine MATRIX runs, one was declared operationally invalid due to a crack in the cylinder head at the oil pressure fitting and one was declared operationally invalid due to negative oil temperature Quality Index results, leaving seven valid tests to be included in the analysis. Of the six DONATED runs, one test was declared operationally invalid due to a 1.5°C calibration offset in oil cylinder head temperature, leaving five valid tests to be included in the analysis. The data from the valid runs is shown in Table 1 below. Where available, the Camshaft, Cylinder Head, and Rocker Arm Lot numbers used in that run are included in Table 1.

Table 1 – Reference Oil 1007 Test Results								
<i>Oilcode</i>	<i>Lab</i>	<i>Date</i>	<i>Time</i>	<i>ACW</i>	<i>Cam Lot</i>	<i>Head Lot</i>	<i>Rocker Arm Lot</i>	<i>Label</i>
32325	A	19980908	04:10	95.90	971103	N/A	971001	GF3
32313	A	19980908	15:08	118.42	971103	N/A	971001	GF3
32305	A	19981026	20:05	84.24	971103	971001	971001	GF3
32312	A	19981102	20:14	110.50	971103	971001	971001	GF3
35433	A	19991014	04:24	97.29	981013	960907	981020	MATRIX
35175	B	19991015	13:00	67.36	N/A	N/A	N/A	MATRIX
35481	F	19991018	21:15	69.82	N/A	N/A	N/A	MATRIX
35614	E	19991019	18:05	84.81	98928	N/A	981020	MATRIX
35434	B	19991027	01:40	72.27	N/A	N/A	N/A	MATRIX

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35437	A	19991107	22:55	104.04	981013	971001	981020	MATRIX
35438	A	19991109	00:12	113.67	980929	971001	981020	MATRIX
35482	F	20000702	01:10	89.09	971114	971001	N/A	DONATED
35704	B	20000716	07:35	108.00	N/A	N/A	N/A	DONATED
35439	A	20000716	21:43	96.58	971103	971001	971001	DONATED
35615	E1	20000722	15:16	28.96	990727	N/A	991029	DONATED
37010	C	20000810	12:13	110.44	971114	N/A	971001	DONATED

The data was analyzed to look for differences between the various groups of data. When examined at the 95% confidence level, no significant differences between the various groups of data were found.

Test target mean and standard deviation values for reference oil 1007 were generated from these groups of data, both calculated individually as well as all the data combined. The results of these calculations are shown in Table 2 below:

TABLE 2 – MEANS AND STANDARD DEVIATIONS			
<i>Label</i>	<i>N Size</i>	<i>Mean</i>	<i>Standard Deviation</i>
Original 1007 Targets	-	95.58	9.47
GF3	4	102.27	15.21
MATRIX	7	87.04	18.30
DONATED	5	86.61	33.37
All Data	16	90.71	22.91

You'll note that the GF3 targets do not match the original targets used for reference oil 1007 in the LTMS. These original targets were generated from the statistical analysis of all the GF3 Matrix data while the GF3 targets listed above were generated from only the four data points on reference oil 1007 from the GF3 Matrix. No severity adjustments of any kind were applied to the data before these calculations were made.

The data, as well as the various target means and standard deviations, are plotted graphically in Figure 1, which is attached. In that figure, the individual data points for all three groups of data are plotted. In addition, the five means and standard deviations shown in Table 2 are used to generate boxes showing the acceptable range of test results for Shewhart Severity using each of the five groups. These ranges are based upon the current Shewhart Severity K value of 1.80 used in the Sequence IVA LTMS.

If you have any questions on any of the above information, please feel free to contact me.

MTK/mtk/mem01-004.mtk.doc

Attachment

c: ftp://www.tmc.astm.cmri.cmu.edu/docs/gas/sequenceiv/memos/mem01-004.pdf

Figure 1

Sequence IVA Reference Oil 1007 Results

Individual Data Points and Test Target Bands

