TECHNICAL GUIDANCE COMMITTEE MEETING MINUTES

April 11, 1996

Courtyard Marriott - Coraopolis, Pennsylvania

The Technical Guidance Committee meeting was called to order by Chairman Farnsworth at 9:00 A.M. on April 11, 1996, at the Courtyard Marriott Hotel in Coraopolis, Pennsylvania. A copy of the meeting agenda is Attachment 1. There were nine voting members (Mr. Dan Domonkos represented Mr. Gordon Ballard) and 12 invited guests in attendance. The Attendance Roster is Attachment 2.

MEMBERSHIP

The following changes were made to the membership list: 1) Mr. Ron Romano was added as a voting member replacing Mr. Kurt Schriewer and 2) Mr. Mark Hull was added as a voting member replacing Mr. Dan Heath as Chairman of the Sequence VIA Surveillance Panel.

APPROVAL OF THE MINUTES

Mr. Bergin made a motion to approve the minutes of the August 24, 1994 TGC meeting as recorded. The motion was seconded by Mr. Romano and was approved unanimously.

RATER CALIBRATION TASK FORCE

Mr. Buscher reported that at the December Test Monitoring Board meeting a rater calibration program was discussed, and it was decided that there was a need for such a program. The task of forming a committee was given to the TGC, and Chairman Farnsworth asked Mr. Buscher to be Chairman of this task force. Mr. Buscher stated that the task force planned to hold a meeting on May 2, 1996 in San Antonio, hosted by EG&G Automotive Research.

The purpose of the Rater Calibration Task Force, Mr. Busher stated, was to develop a rater calibration system for rating deposits such as sludge, varnish and carbon buildup as the result of petroleum products. He add that he was mainly looking at subjective ratings and that the task force would be establishing a statistically based standard for the raters. Companies will be asked to identify their expert raters who attend CRC rating workshops. He added that CRC will work with the task force to provide data from their workshops to help get the program started, and they have also asked to be on the task force as well. Mr. Buscher stated that Mr. Grundza of the Test Monitoring Center has been compiling a data base which will be used. He added that the task force would be developing a system of calibration, decide what parts would be rated, the type of deposits, range of deposits to rate, limits by which the raters would be judged and the frequency of the system.

Mr. Buscher stated that he would give an update report of the work of the task force at the June ASTM Meeting and have a final report by the December ASTM meeting.

GF-2 REFERENCE OILS

Chairman Farnsworth presented a summary of data from eight GF-2 reference oil candidates (Attachment 3). He asked the group if there was a need for GF-2 reference oil. After much discussion of the pros and cons, the group reached a concensus that a GF-2 reference oil should be selected. Mr. Guinther made a motion that the TGC direct the TMC to proceed with getting supplies of oil #3 on the list. The motion was seconded by Mr. Koehler, and it passed unanimously. The TMC was directed to obtain a five-year supply of this oil based on 30% usage in all GF-2 tests. The TMC was also directed to solicit any and all additional data on this oil, including field data, from the supplier.

TMC REFERENCE DATA

Mr. Farber reported on the TMC data resources on the Internet and the TMC developed analysis package used to analyze tests when they are received at the TMC. (A copy of his report is Attachment 4.) He stated that there are now 20 test areas on the internet, and tests reported are placed on the Internet after they are received at the TMC. Internet data resources are ASCII data files and Industry LTMS plot files. Mr. Farber stated that he would like to delete the column delimited file from the internet and use only the comma delimited file. Mr. Farber stated that lab coding has been a problem. Chairman Farnsworth stated that he would recommend to the TMB that there be no random lab coding and that the codes be fixed within a test type. He also asked if the TMC engineers would act as liaison to the surveillance panels and make sure that the information available on the Internet was sufficient. Mr. Farber added that minutes of some committee meetings, the LTMS document and data dictionaries are on the internet; however information letters and memos are not on the internet at this time.

Mr. Farber described the TMC developed SAS analysis application used to generate control charts and analyze reference data. He stated that there have been requests for getting access to this software. Dr. Zalar stated that although it is a great tool internally for the TMC, he was concerned about the resources needed to maintain and support the system for outside users. There were also concerns raised about different interpretations that would be brought up at meetings and security of the system. No decision was made on this subject.

DATA ACQUISITION AND INSTRUMENTATION

Copies of the Data Acquisition Task Force report (dated 12-9-85), the Test Monitoring Center Guidelines for Data Acquisition Systems (dated 5-13-87) and the ASTM Research Report D-2-1218 of the Instrumentation Task Force (dated 12-31-87) were distributed. Chairman Farnsworth stated that these documents were still applicable and that he had asked Mr. Koehler and Mr. Shoffner to review them for the TGC to see if there was a need to update them.

Mr. Koehler stated that he had reviewed the Data Acquisition and Instrumentation Task Force reports which were written approximately 10 years ago. The Instrumentation Task Force Report, he stated, was accurate, however, many changes and improvements in instrumentation have been made since the report was written. He suggested that the report could be rewritten avoiding the problems of aliasing, having additional and newer methods of digital filtering, updating technical limitations of resolution for temperature, pressure, speed, and torque

measurement values, more detail and recommendations for system calibrations. The Data Acquisition Task Force Report, Mr. Koehler stated, was developed before the Instrumentation Task Force report, and it had tried to develop a way for laboratories to add data gathering systems to procedures already released to the Industry. With new tests being developed, he added, computer data acquisition would be required. He recommended that new test procedures include data acquisition which list requirements and characteristics to be achieved. Mr. Koehler suggested that it would be helpful to have both reports rewritten as a guide for new test development, if people power was available and it was a cost/benefit to the Industry. (A copy of Mr. Koehler's report is Attachment 5.)

Mr. Shoffner stated that the purpose of the Instrumentation Task Force report was to develop instrumentation guidelines that would provide uniformity in process measurements throughout the testing industry. (A copy of Mr. Shoffner's report is Attachment 6.) The report is still applicable; however, improvements have been made in instrumentation accuracy and tighter specification ranges. He added that accuracy was a very important part of this report; however there were technical limitations. Mr. Shoffner's recommendation was that an instrumentation task force be convened and that the scope and objectives of the group be limited to calibration and accuracy. He also suggested that the group include a cross section of technical backgrounds such as test engineers, instrumentation engineers and people with knowledge of ASTM to guide the task force.

After the group discussed the need for new reports, Chairman Farnsworth stated that he would urge the surveillance panel chairmen to work with the O&H groups to coordinate any work that is done.

DATA COMMUNICATION COMMITTEE

Mr. Blinn presented the Scope and Objectives of the DCC and reported that the Electronic Test Reporting between the TMC, Test Sponsors and several laboratories is in place and working very well for nine TMC monitored test types to date. He described the DCC parts of the information letters including data dictionaries and other supporting documents as well as the beta testing process that each report package must undergo before release. He stated that because of electronic transmission and the need and ability to look at large quantities of data, there is a growing importance for data standardization, and he stated that Mrs. Haskell would address some of these issues later on in the presentation. He added that problems have arisen with receiving referee rating data in the 1N and 1K electronically. Mr. Franklin suggested referee ratings be eliminated, and that a letter be written to the 1K and 1N Surveillance Panels telling them that. Mr. Guinther made a motion that this letter be written. The motion was seconded by Mr. Koehler. After discussing the matter, Chairman Farnsworth stated that the general concensus of the group was that referee ratings be eliminated. Chairman Farnsworth will write a letter to the Chairman of the TMB informing him of the TGC's position on refereee ratings, particularly in light of the effort to develop a rater calibration system. Mr. Blinn also made reference to the Electronic Test Report Transmission Model document which is a users' guide describing how to use and participate in the system. (A copy of his report is Attachment 7.)

Mrs. Haskell gave a presentation on the need to standardize data on test report forms. She sighted many inconsistencies in data reporting. She recommended that each surveillance panel chairman know their representative on the DCC and let them know their data requirements. She added that it would be best to have a person with testing background on the DCC who is familiar with the requirements of the test and changes that are taking place. She requested that the DCC be added to the distribution list of new test procedures so that they can become involved and be able to make recommendations. Chairman Farnsworth suggested that the TMC engineer for each test area be a liaison to the DCC and have them work with the surveillance panels to make recommendations to correct inconsistencies and have the test report reflect what is electronically transmitted.

BASE OIL INTERCHANGE GUIDELINES

Chairman Farnsworth stated that for the committee's information, he was including in the minutes copies of two letters from Mr. Kurt Metzger of Lubrizol in which he asked for help with matrices and data collection for establishing base oil interchange guidelines.

OLD BUSINESS

None reported.

NEW BUSINESS

Chairman Farnsworth asked if bench test surveillance panel chairmen should be added to the TGC membership list. It was suggested that Mr. Dennis Florkowski be included on the list for receiving minutes. He also stated that he would work with the TMC to update the list before the next meeting.

ADJOURNMENT

The meeting was adjourned at 3:45 P.M.

Respectfully submitted,

Grace E. Berriker

Grace E. Berriker, Acting Secretary
Technical Guidance Committee

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Attachments

ATTACHMENT 1

ASTM Technical Guidance Committee
Pittsburgh, PA.
April 11, 1996

1. Membership changes

2. Approval of August 24, 1994 meeting minutes

3. Rater calibration system

4. GF-2 reference oil

   - Determine need
   - Select a candidate if appropriate

5. TMC reference data

   - What should be made available (data, programs, etc.)
   - How should service be provided (Internet, diskettes, on line programs, ?)

6. How can engine test proveout matrices be designed to better aid data collection for establishing base oil interchange guidelines

7. Data dictionary issues (D. Blinn, Kathy Haskell)

8. Data communications panel liaison with Surveillance panels

9. Review 'Instrumentation Task Force' and 'Test Monitoring Center Guidelines for Data Acquisition Systems' documents to determine if there is a need to update them.

10. Old business

11. New business

12. Adjourn

GRF
pjr

ASTM-LTR

TECHNICAL GUIDANCE COMMITTEE MEETING

April 11, 1996
Courtyard Marriott, Pittsburgh, PA

Attendance Roster

Members:	Company and Address	Phone & FAX Nos.	Present
Edward S. Akucewich Chm. L-37 S.P.	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(216) 943-1200 Ext. 2415 FAX (216) 943-9011	
Gordon Ballard Chm. Seq. IID S.P.	Lubrizol Corporation Suite 1404 - 3000 Town Center Southfield, MI 48075-1201	(810) 357-0954 FAX (810) 353-3988	P. D. Dorman for
John W. Beck Chm. L-42 S.P.	Ethyl Corporation 500 Spring St. - P.O. Box 2158 Richmond, VA 23217	(804) 788-5219 FAX (804) 788-6358	
Stephen P. Bergin Dev./Test Sponsor	General Motors Research Fuels & Lubricants Dept. 12 Mile and Mound Roads Warren, MI 48090-9057	(810) 986-1923 FAX (810) 986-2094	S P Bergin
Thomas C. Boschert Chm. AGC	Ethyl Corporation 500 Spring St. P.O. Box 2158 Richmond, VA ~~23217-2158~~ 23218	(804) 788-5202 FAX (804) 788-6358	
G. E. Callis Chm. ASTM Section B.6	Chevron Res. & Tech. Co. 100 Chevron Way Richmond, CA 94802-0627	(510) 242-4625 FAX (510) 242-3724	
Gordon R. Farnsworth Chairman TGC Chm. Seq. VE S.P.	Exxon Chemical Company P.O. Box 536 Linden, NJ 07036	(908) 474-3351 FAX (908) 474-3597	GRF
Tom Franklin Chm. ASTM Section B.1	Royal Additives City View, 10999 IH-10 West, Suite 305 San Antonio, TX 78230-1349	(210) 561-9074 FAX (210) 561-9366	
John Graham Chm. NTC-400 S.P.	Cummins Engine Company Box 3005, Mail Code 50160 1900 McKinley Avenue Columbus, IN 47202-3005	(812) 377-6569 FAX (812) 377-7074	
Greg H. Guinther Chm. Seq. IIIE S.P.	Ethyl Corporation 500 Spring St. Richmond, VA ~~23217-2158~~ 23218	(804) 788-5368 FAX (804) 788-6207	GHG

Member:	Company and Address	Phone No.	Present
Allen C. Hahn Dev./Test Sponsor	Caterpillar, Inc. TC-L Engr. G.O., Test & Eval. 100 N.E. Adams St. Peoria, IL 61629	(309) 578-3617 FAX (309) 578-4232	
Mark Hull Chm. Seq. VI S.P.	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(216) 943-1200 Ext. 2309 FAX (216) 943-9011	MRH
Michelle Reed Chm. L-60 S.P.	Southwest Research Insitute P.O. Box 28510 San Antonio, TX 78228	(210) 522-2378 FAX (210) 680-1777	
Johnny Kitchens Chm. ASTM Section B.5	Southwest Research Institute P.O. Box 28510 San Antonio, TX 78228	(210) 684-5111 FAX (210) 684-7523	
Brian Koehler Chm. L-38 S.P.	Southwest Research Institute P.O. Box 28510 San Antonio, TX 78228	(210) 522-3588 FAX (210) 684-7523	
Danny E. Larkin Dev./Test Sponsor	Detroit Diesel Allison 13400 W. Outer Drive K-15 Detroit, MI 48239-4001	(313) 592-5730 FAX (313) 592-5952	
Beth Morgan Chm. Two Cycle S.P.	Exxon Chemical Company P.O. Box 536 Linden, NJ 07036	(908) 474-2838 Remove	
Robert M. Olree Chm. 6.2L S.P.	GM Powertrain Mail Code 324-01 30003 Van Dyke Ave. Warren, MI 28090-9060	(810) 492-6445	
Michael J. Quinn Chm. ASTM Section B.2	Caterpillar, Inc. Engine Division A-2 P.O. Box 610 Mossville, IL 61552-0610	(309) 578-6142 FAX (309) 578-6457	
Ron Romano Dev./Test Sponsor	Ford Motor Company EEE Bldg., D-145 (Box 44) 21500 Oakwood Blvd. Dearborn, MI 48121-2053	(313) 322-6522 FAX (313) 845-3169	
John Sawa Chm. Mack Cyclic Transmission Test	AutoResearch Laboratories, Inc. 6735 S. Old Harlem Avenue Chicago, IL 60638	(708) 563-0900	

Members:	Company and Address	Phone No.	Present
Greg Shank Dev./Test Sponsor	Mack Trucks, Inc. 13301 Pennsylvania Avenue Hagerstown, MD 21795	(301) 790-5817 FAX (301) 790-5815	_____
Lee F. Schiemann Chm. ASTM Section B.3	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092-2298	(216) 943-4200 Ext. 2477	_____
~~Kurt Schriewer~~	~~Ford Motor Company~~ ~~21500 Oakwood Blvd.~~ ~~POEE Bldg., D-145, Mail Drop 44~~ ~~Dearborn, MI 48121-2053~~	~~FAX (313) 845-3169~~	_____
John Stimson, Jr. Dev./Test Sponsor	Labeco 156 E. Harrison St. Mooresville, IN 46158	(317) 831-2990 FAX (317) 831-2978	_____
Robert Stockwell Chm. 6.2L S.P.	Southwest Research Insitute 6220 Culebra Road San Antonio, TX 78228	(210) 522-5913 FAX	_____
William T. Sullivan Chm. L-33 S.P.	Mobil Chemical Company P.O. Box 250 Edison, NJ 08818	(908) 321-3354 FAX (908) 321-6064	_____
Mark Sutherland Chm. 1K S.P.	Ethyl Corporation 9001 1H 10W, Suite 800 San Antonio, TX 78230	(210) 558-2818 FAX (210) 696-4029	C4G FOR MRS
Barb Waldron Chm. D-471 S.P.	AutoResearch Laboratories, Inc. 6947 West 59th St. Chicago, IL 60638	(708) 563-0900	_____
John L. Zalar TMC Administrator	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206-4489	(412) 365-1005 FAX (412) 365-1047	JLZ

Invited Guests	Company and Address	Phone No.	Present
Grace E. Berriker	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206-4489	(412) 365-1006 FAX (412) 365-1047	geb
Zack Bishop	Chevron Research Company Oronite Additive Division 4502 Centerview Drive, Suite 210 San Antonio, TX 78228	(210) 731-5605 FAX (210) 731-5699	ZRB

Invited Guests	Company and Address	Phone No.	Present
Douglas H. Blinn	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206-4489	(412) 365-1020 FAX (412) 365-1047	DHB
Dwight H. Bowden	OH Technologies, Inc. P.O. Box ~~217~~ 5039 ~~Auatinburg~~, OH ~~44010-0217~~ MENTOR 44061-5039	354-7007 (216) ~~289-3058~~ FAX (216) ~~289-0982~~ 354-7080	DHB
William A. Buscher	Texaco, Inc. P.O. Box 509 Beacon, NJ 12508	(914) 838-7618 FAX (914) 838-7123	WAB
Mark Cooper	Chevron Chemical Co. 4502 Centerview Dr., Suite 210 San Antonio, TX 78228	(210) 731-5606 FAX (210) 731-5699	
Frank M. Farber	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206-4489	(412) 365-1030 FAX (412) 365-1047	FMF
Jody Frommer	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(216) 943-1200 FAX (216) 943-7215	✓
John W. Glaser	EG&G Automotive Research, Inc. 5404 Bandera Road San Antonio, TX 78238-1993	(210) 647-9459 FAX (210) 523-4607	
Irwin Goldblatt	Castrol, Inc. 240 Centennial Ave. Piscataway, NJ 08854-3947	(908) 980-3606 FAX (908) 980-9519	
Walter P. Groff	Southwest Research Institute 6220 Culebra Road San Antonio, TX 78284	(210) 684-5111 FAX (210) 684-7523	✓
Kathy Haskell	Paramin/Exxon Chemical ~~1900 Linden Avenue~~ P.O. BOX 536 Linden, NJ 07036	908-968-7034	KMH
Rick L. Johnson	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 449092	(216) 943-4200 x 2731 FAX (216) 943-9018	
John W. Knight	Test Engineering, Inc. 12657 Cimarron Path - Suite 102 San Antonio, TX 78249	(210) 690-1958 FAX (210) 690-1959	
Jerry Schaus	AutoResearch Labs, Inc. 6735 S. Old Harlem Avenue Chicago, IL 60638	(708) 563-4257 FAX (708) 563-0087	JES

Guests:

Name	Company and Address	Phone No.
BRENT SHOFFNER	EG&G AUTOMOTIVE RESEARCH 5404 BANDERA RD SAN ANTONIO, TEXAS 78238	(210) 647 9457
~~Kathy Haskell~~	~~Exxon Chemical Co~~ ~~P.O. Box 536~~ ~~Linden, NJ 07036~~	~~(908) 474 6646~~

GF-2 Reference oil candidates

Oil →	1	2	3	4	5	6	7	8
Grade	5w30	5w30	5w30	5w30	5w30	5w30	10w30	5w30
IID	8.7	8.7	8.7	8.6	8.5	8.5		8.8
IIIE								
Hrs. to 375	79.4	82.5	67.7	78.2	57.3	73.2		72.0
AES	9.7	9.6	9.5	9.7	9.4	9.6		9.5
PSV	9.3	9.2	8.9	9.1	9.3	9.0		8.9
ORLD	5.6	4.1	6.1	5.0	5.9	5.5		4.3
Avg. W	6.1	10.5	7.2	9.4	2.8	12.9		10.6
Max. W	9.0	46.0	14.0	12.0	11.8	49.0	#6	64.0
VE							oil	
AES	8.73	9.24	8.93	8.89	7.85	9.36	from	8.52
RCS	8.39	8.96	8.59	8.58	7.56	8.64		8.60
AEV	5.97	6.69	5.36	5.82	5.30	5.86	Read	5.49
PSV	7.14	7.14	7.00	7.10	7.02	6.82		7.04
Avg. W	4.66	4.51	2.12	2.47	5.74	1.03		2.67
Max. W	7.49	13.60	4.31	4.28	8.8	0.8		4.48
L-38	24.9	26.9	36.0	26.0	12.6	17.2		27.0
VIA	1.06	0.95	1.10	1.11	1.18	1.03	0.67	1.40
TEOST	19.5	19.0	21.5	21.1	50.9	31.1		35.5

Note: Where multiple runs, data averaged using appropriate transform

	GF-2/SJ Category Reference Oil				
OIL CODE =	2001				
Test Number		1	2	3	4
Viscosity Grade					
Sequence IID					
Completion date					
Avg. rust	8.5 min.	8.70			
Stuck lifters	None	None			
Sequence IIIE					
Completion date		5/6/95			
Hours to 375%	64 min.	79.40			
AES	9.2 min.	9.71			
APSV	8.9 min.	9.30			
ORLD	3.5 min.	5.55			
Wear, Avg. microns	30 max.	6.1			
Wear, Max. microns	64 max.	9			
Sequence VE					
Completion date		6/7/95	9/7/95	9/20/95	
AES	9.0 min.	6.39	9.50	7.97	
RCS	7.0 min.	4.97	9.39	8.02	
AEV	5.0 min.	5.70	6.21	5.99	
PSV	6.5 min.	7.19	7.02	7.22	
Wear, Avg. mils	5 max.	7.24	1.15	7.36	
Wear,max. mils	15 max.	13.70	1.00	12.30	
Hot stuck rings	None	None	None	None	
L-38					
Completion date		5/4/95			
BWL, mg.	40 max.	24.90			
Sequence VIA					
Completion date		9/28/95	9/24/95		
FEI%		1.07	1.04		
10W-30	0.5 min.				
5W-30	1.1 min.				

		GF-2/SJ Category Reference Oil			
OIL CODE =	**2001**				
Test Number		1	2	3	4
TEOST					
Completion date		10/20/95			
Total Wt., mg	60 max.	19.50			
Gelation					
Completion date		11/2/95			
Gelation Index (D5133)	8.5 max	7.7@-28			
Foam					
Completion date		9/27/95			
Foam, ml(D892)	max.				
Sequence I	10/0	0/0			
Sequence II	50/0	0/0			
Sequence III	10/0	0/0			
Sequence IV	200/50	50/0			
Water Tolerance					
GM filterability, % reduction					
0.6% H2O w/dry ice	+50 max.	-2.64/5.27			
0.6% H2O	+50 max.	-4.85/-2.85			
1.0% H2O	+50 max.	-7.34/-7.45			
2.0% H2O	+50 max.	-1.58/-9.39			
3.0% H2O	+50 max.	-11.35/-11.22			
Phosphorus *					
% Mass	0.10 max.	0.096			
* Phosphorus value determined analytically.					

	GF-2/SJ Category Reference Oil				
OIL CODE =	**2002**				
Test Number		1	2	3	4
Viscosity Grade		5W-30			
Sequence IID					
Completion date		2/5/95			
Avg. rust	8.5 min.	8.7			
Stuck lifters	None	None			
Sequence IIIE					
Completion date		2/7/95			
Hours to 375%	64 min.	82.5			
AES	9.2 min.	9.58			
APSV	8.9 min.	9.21			
ORLD	3.5 min.	4.12			
Wear, Avg. microns	30 max.	10.5			
Wear, Max. microns	64 max.	46			
Sequence VE					
Completion date		2/17/95			
AES	9.0 min.	9.24			
RCS	7.0 min.	8.96			
AEV	5.0 min.	6.69			
PSV	6.5 min.	7.14			
Wear, Avg. mils	5 max.	4.51			
Wear,max. mils	15 max.	13.6			
Hot stuck rings	None	None			
L-38					
Completion date		2/19/95			
BWL, mg.	40 max.	26.9			
Sequence VIA					
Completion date		8/30/95	9/29/95		
FEI%		0.85	1.04		
10W-30	0.5 min.				
5W-30	1.1 min.				

	GF-2/SJ Category Reference Oil				
OIL CODE =	2002				
Test Number		1	2	3	4
TEOST					
Completion date		3/6/95			
Total Wt., mg	60 max.	19.0			
Gelation					
Completion date					
Gelation Index (D5133)	8.5 max	4.6@-27			
Foam					
Completion date		9/1/95			
Foam, ml(D892)	max.				
Sequence I	10/0	0/0			
Sequence II	50/0	35/0			
Sequence III	10/0	0/0			
Sequence IV	200/50	35/0			
Water Tolerance					
GM filterability, % reduction					
0.6% H2O w/dry ice	+50 max.	-2.53/5.16			
0.6% H2O	+50 max.	-4.94/-2.94			
1.0% H2O	+50 max.	-7.23/-7.55			
2.0% H2O	+50 max.	-1.69/-9.32			
3.0% H2O	+50 max.	-11.31/-11.11			
Phosphorus *					
% Mass	0.10 max.	0.095			
* Phosphorus value determined analytically.					

	GF-2/SJ Category Reference Oil				
OIL CODE =	**2003**				
Test Number		1	2	3	4
Viscosity Grade		5W-30	5W-30		
Sequence IID					
Completion date		11/12/95			
Avg. rust	8.5 min.	8.66			
Stuck lifters	None	None			
Sequence IIIE					
Completion date		11/4/95			
Hours to 375%	64 min.	67.7			
AES	9.2 min.	9.53			
APSV	8.9 min.	8.91			
ORLD	3.5 min.	6.12			
Wear, Avg. microns	30 max.	7.2			
Wear, Max. microns	64 max.	14			
Sequence VE					
Completion date		9/29/95	11/19/95		
AES	9.0 min.	8.29	9.27		
RCS	7.0 min.	7.82	9.04		
AEV	5.0 min.	5.16	5.56		
PSV	6.5 min.	7.06	6.94		
Wear, Avg. mils	5 max.	5.21	0.4		
Wear,max. mils	15 max.	11.4	0.6		
Hot stuck rings	None	None	None		
L-38					
Completion date		11/13/95			
BWL, mg.	40 max.	36			
Sequence VIA					
Completion date		12/10/95			
FEI%		1.10			
10W-30	0.5 min.				
5W-30	1.1 min.				

	GF-2/SJ Category Reference Oil				
OIL CODE =	2003				
Test Number		1	2	3	4
TEOST					
Completion date		12/14/95			
Total Wt., mg	60 max.	21.5			
Gelation					
Completion date		3/5/96			
Gelation Index (D5133)	8.5 max	4.3@-28C			
Foam					
Completion date		1/2/96			
Foam, ml(D892)	max.				
Sequence I	10/0	0/0			
Sequence II	50/0	0/0			
Sequence III	10/0	0/0			
Sequence IV	200/50	90/0			
Water Tolerance *					
GM filterability, % reduction					
0.6% H2O w/dry ice	+50 max.	-0.80			
0.6% H2O	+50 max.	-23.95			
1.0% H2O	+50 max.	-8.22			
2.0% H2O	+50 max.	-12.41			
3.0% H2O	+50 max.	1.75			
Phosphorus **					
% Mass	0.10 max.	0.10			

* Water Tolerance = reported value is the average of two determinations.

** Phosphorus value determined analytically.

	GF-2/SJ Category Reference Oil				
OIL CODE =	2004				
Test Number		1.0	2.0	3	4
Viscosity Grade		5W-30	5W-30		
Sequence IID					
Completion date		11/8/95			
Avg. rust	8.5 min.	8.60			
Stuck lifters	None	None			
Sequence IIIE					
Completion date		11/19/95	11/20/95		
Hours to 375%	64 min.	80.0	76.4		
AES	9.2 min.	9.66	9.73		
APSV	8.9 min.	9.26	8.86		
ORLD	3.5 min.	4.88	5.14		
Wear, Avg. microns	30 max.	10	8.8		
Wear, Max. microns	64 max.	12	12		
Sequence VE					
Completion date		12/1/95	12/16/95		
AES	9.0 min.	8.01	9.30		
RCS	7.0 min.	7.41	9.14		
AEV	5.0 min.	5.76	5.88		
PSV	6.5 min.	7.12	7.08		
Wear, Avg. mils	5 max.	6.74	0.3		
Wear,max. mils	15 max.	11.3	0.6		
Hot stuck rings	None	None	None		
L-38					
Completion date		11/10/95			
BWL, mg.	40 max.	26.0			
Sequence VIA					
Completion date		11/8/95			
FEI%		1.11			
10W-30	0.5 min.				
5W-30	1.1 min.				

	GF-2/SJ Category Reference Oil				
OIL CODE =	2004				
Test Number		1.0	2.0	3	4
TEOST					
Completion date		12/12/95			
Total Wt., mg	60 max.	21.1			
Gelation					
Completion date		3/5/96			
Gelation Index (D5133)	8.5 max	4.4 @-30			
Foam					
Completion date		1/2/96			
Foam, ml(D892)	max.				
Sequence I	10/0	0/0			
Sequence II	50/0	0/0			
Sequence III	10/0	0/0			
Sequence IV	200/50	40/0			
Water Tolerance *					
GM filterability, % reduction					
0.6% H2O w/dry ice	+50 max.	-17.6			
0.6% H2O	+50 max.	-24.55			
1.0% H2O	+50 max.	-11.64			
2.0% H2O	+50 max.	-8.82			
3.0% H2O	+50 max.	-7.74			
Phosphorus **					
% Mass	0.10 max.	0.10			

* Water Tolerance = reported value is the average of two determinations.

** Phosphorus value determined analytically.

	GF-2/SJ Category Reference Oil				
OIL CODE =	2005				
Test Number		1	2	3	4
Viscosity Grade	5W-30				
Sequence IID					
Completion date		3/96			
Avg. rust	8.5 min.	8.5			
Stuck lifters	None	None			
Sequence IIIE					
Completion date		3/96	3/96		
Hours to 375%	64 min.	56.1	58.5		
AES	9.2 min.	9.4	9.48		
APSV	8.9 min.	9.3	9.27		
ORLD	3.5 min.	6.2	5.58		
Wear, Avg. microns	30 max.	0.9	8.5		
Wear, Max. microns	64 max.	5	28		
Sequence VE					
Completion date		3/96			
AES	9.0 min.	7.85			
RCS	7.0 min.	7.56			
AEV	5.0 min.	5.30			
PSV	6.5 min.	7.02			
Wear, Avg. mils	5 max.	5.74			
Wear,max. mils	15 max.	8.8			
Hot stuck rings	None	None			
L-38					
Completion date		3/96			
BWL, mg.	40 max.	12.6			
Sequence VIA					
Completion date		4/96			
FEI%		1.18			
10W-30	0.5 min.				
5W-30	1.1 min.				

	GF-2/SJ Category Reference Oil				
OIL CODE =	2005				
Test Number		1	2	3	4
TEOST					
Completion date		2/96	2/96		
Total Wt., mg	60 max.	51.9	49.9		
Gelation					
Completion date		2/96	2/96		
Gelation Index (D5133)	8.5 max	5.5	5.1		
Foam					
Completion date		3/96	3/96		
Foam, ml(D892)	max.				
Sequence I	10/0	0/0	0/0		
Sequence II	50/0	0/0	0/0		
Sequence III	10/0	0/0	0/0		
Sequence IV	200/50	20/0	20/0		
Water Tolerance					
GM filterability, % reduction		2/96	3/96		
0.6% H2O w/dry ice	+50 max.	8	6		
0.6% H2O	+50 max.	11	8		
1.0% H2O	+50 max.	14	8		
2.0% H2O	+50 max.	14	8		
3.0% H2O	+50 max.	12	10		
Phosphorus *					
% Mass	0.10 max.	0.097			
* Phosphorus value determined analytically.					

Technical Guidance Committee Meeting April 11, 1996

- TMC's Data Resources on the Internet
- TMC Developed Analysis Application

tmf/tgc411

TMC Test Areas

- B01 Tests
  - Sequence IID, IIIE, VE, VI, VIA and L-38
- B02 Tests
  - 1M-PC, 1K, 1N, T8, 6V92TA, RFWT
- B03 Tests
  - L-33, L60, L60-1,L-42, L-37, HTCT
- Bench Tests
  - OSCT, CBT, TEOST

tmf/tgc411

Internet Data Resources

- ASCII data files
- Industry LTMS plot files

tmf/tgc411

ASCII Data Files

- Test area specific files
  - Column delimited
  - Comma delimited
  - Readme
- All test type industry statistics file

tmf/tgc411

Column Delimited File

21344	A	2	402-1	19950101	36.50	8.95	13.50	.....
21555	B	3	1002	19960101	123.30	9.00	16.70	.....
18994	B	3	425-1	19960201	7.00	7.86	24.00	.....
17567	D	4	424-1	19960202	10.00	8.00	25.00	.....
11534	D	1	425	19960301	7.00	5.36	35.00	.....
26534	E	5	1002	19960404	8.00	5.67	29.10	.....

tmf/tgc411

Comma Delimited File

21344, A, 2, 402-1, 19950101, 36.50, 8.95, 13.50, ...
21555, B, 3, 1002, 19960101, 123.30, 9.00, 16.70, ...
18994, B, 3, 425-1, 19960201, 7.00, 7.86, 24.00, ...
17567, D, 4, 424-1, 19960202, 10.00, 8.00, 25.00, ...
11534, D, 1, 425, 19960301, 7.00, 5.36, 35.00, ...
26534, E, 5, 1002, 19960404, 8.00, 5.67, 29.10, ...

tmf/tgc411

Readme File

This file describes: ltms.data and ltms.comma
The format for the ltms.data data file is COLUMN delimited.
The format for the ltms.comma data file is COMMA delimited.
The variables appear in the following order:

CMIR		CMIR
LABCODE		TMC ASSIGNED RANDOM LAB CODE
STANCODE		TMC ASSIGNED RANDOM STAND CODE
IND		TMC OIL CODE
LTMSDATE	CCYYMMDD	LTMS DATE
LTMSTIME	HH:MM	LTMS TIME
DTERPT	CCYYMMDD	DATE REPORTED
HRS	HOURS	HOURS TO 375% VISCOSITY INCREASE
ACLW	MICRONS	AVERAGE CAM + LIFTER WEAR
APV	MERITS	AVERAGE PISTON SKIRT VARNISH

tmf/tgc411

Test Area Specific Files

- Contain results that meet LTMS guidelines
- Includes data fields necessary for control charting and trend analysis
- Lab & apparatus coded
- Updated on test by test basis

tmf/tgc411

All Test Type Statistics File

- Contains average delta/s and pooled s values for six-month period
- Updated on a test by test basis

tmf/tgc411

Industry Statistics File

Test Area	Parameter	Date To	Date From	N-size	Average Yi	Degrees of Freedom	Pooled s
[illegible]	HRS	3/5/96	7/1/95	64	0.0384	59	5.2766
[illegible]	ACLW	3/5/96	7/1/95	64	0.0896	59	0.4329
[illegible]	MCLW	3/5/96	7/1/95	64	0.1686	59	0.5866
[illegible]	AES	3/5/96	7/1/95	64	0.0219	59	0.1778
[illegible]	APV	3/5/96	7/1/95	64	0.2689	59	0.2323
[illegible]	ORLO	3/5/96	7/1/95	64	0.7231	59	0.7647
Impe	WTD	4/1/96	7/1/95	55	-0.069	54	49.8627
Impe	TGF	4/1/96	7/1/95	56	0.4764	54	17.8018
vis	RFEI	4/1/96	8/1/95	146	0.4958	139	0.1825
[illegible]	TRWL	3/11/96	7/1/95	40	0.2469	36	11.4614
sd	LFBD	3/4/96	7/1/95	16	0.6485	13	0.1312
sd	PLUN	3/4/96	7/1/95	16	0.161	13	0.1418
sd	BALL	3/4/96	7/1/95	16	0.0766	13	0.4027
sd	RVPL	3/4/96	7/1/95	16	-0.1109	13	0.4695
sd	PUSH	3/4/96	7/1/95	16	0.8029	13	0.065

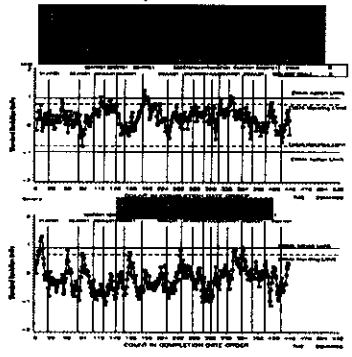
tmf/tgc411

LTMS Plot Files

- Present Industry LTMS EWMA charts
- Files can be viewed with popular Internet browsers (gif format)
- Updated at least twice a month

tmf/tgc411

Industry LTMS Plot



tmf/tgc411

TMC Developed Analysis Application

- Provides LTMS statistics report for test review
- Produces LTMS and CUSUM plots for industry, lab and apparatus levels
- Enables user access to SAS statistical tools

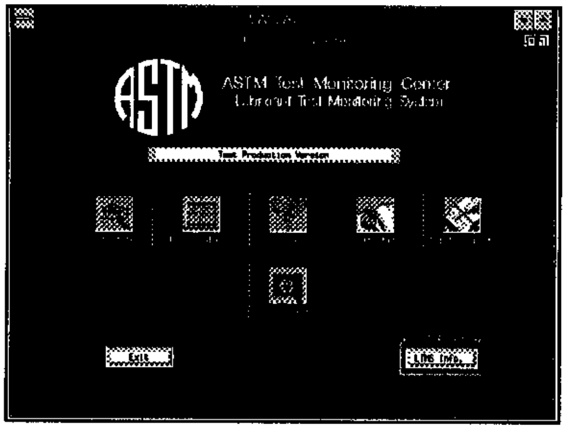
Analysis Application

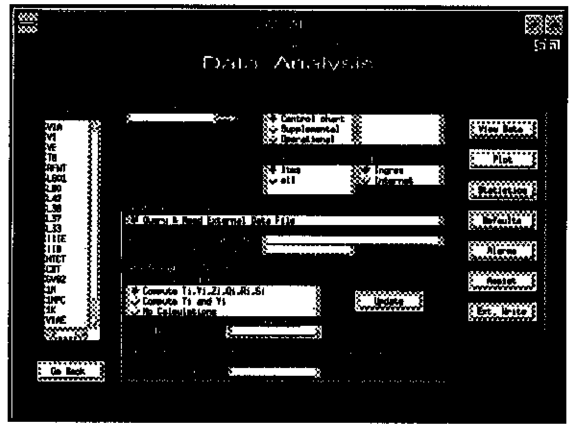
- Developed using SAS AF software
- Interactive menu driven GUI application
- Supports multiple users
- Provides point and click access to data

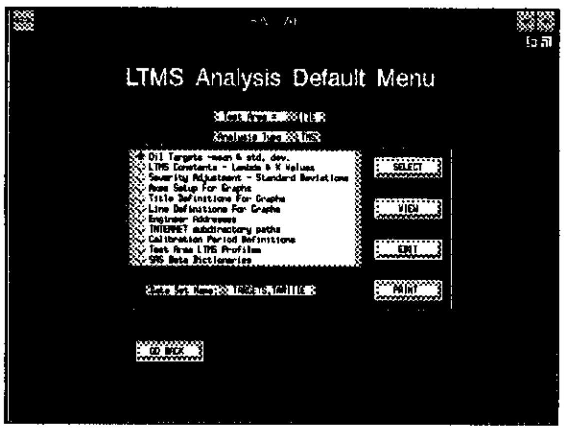
SAS Demonstration

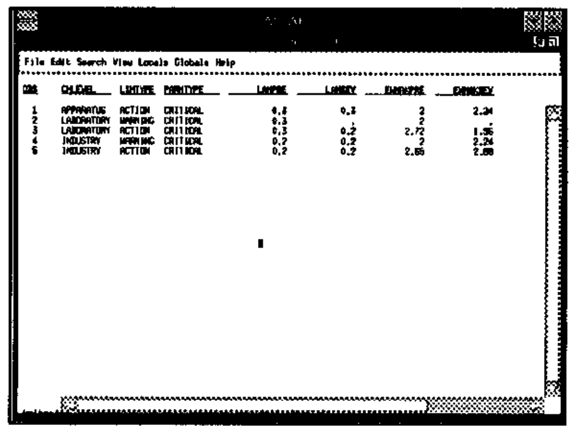
Discussion Items

- Are the current TMC data resources sufficient ?
- Is there a need to provide access to the TMC's analysis application ?


ASTM Test Monitoring Center
Exit
LTMS Info.


Data Analysis
Plot
Update
Go Back


LTMS Analysis Default Menu
SELECT
VIEW
EDIT
PRINT
GO BACK


File Edit Search View Locals Globals Help

Presentation to Technical Guidance Committee
By: Brian Koehler
Southwest Research Institute
April 11, 1996

Topic: SwRI Review of Data Acquisition and Instrumentation Task Force Reports

SwRI was asked by the TGC Chairman to review the following two reports. Our comments are to be used by the TGC to decide if these Task Forces need to be reactivated.

ASTM Instrumentation Task Force report. ASTM File # RR:D-2-1218. Filed: December 31, 1987. Report dated: April 22, 1987 (9 years old)

ASTM Data Acquisition Task Force report. ASTM File # RR:D02-1210. Filed: February 5, 1987. Report Dated: Dec. 9, 1985 (10.5 years old)

Instrumentation Task Force

* The Instrumentation Task Force concentrated on the fundamental laws of physics to define such performance criteria as accuracy, frequency response, and time constant of a measurement process. Those laws of physics haven't changed.

* Basic thinking 10 years ago was to define digital systems in terms comparable with existing manual gauges and readouts. How should digital systems be configured to yield the same type of performance as manually observed test stands (e.g. reading a damped pressure gage or mercury manometer).

* What's changed in nine years....

  - Mercury is "out".

  - Newer devices for measuring engine test parameters, such as MicroMotion mass fuel flow, etc.

  - Improvements in digital resolution (32 bit) and calibration accuracy.

  - Emphasis on quality of measurements (ISO standards) and calibration traceability.

  - Now have need to tie instrumentation specifications together with Data Gathering Systems since all new procedures will likely REQUIRE automated data logging.

- We are now more worried about control capability due to validity ties. What is good enough? Where does this topic fit in?

* What could be re-addressed by a revised Instrumentation Task Force Report....

  - Avoiding the problems of aliasing (sampling-induced low frequency noise).

  - Reviewing additional and newer methods of digital filtering. Section A.2 could be rewritten so that it addresses the concern of "over filtering". Filtering is related to: 1. How quickly can a process change? 2. What are you trying to see? 3. What changes affect the test? Note: Appendix C & D contain pertinent data but are not explained in the report's body.

  - Updating the technical limitations of resolution for temperature, pressure, speed, and torque measurement values.

  - More detail and recommendations for system calibrations (e.g. accuracy of the calibration source; 3-point calibration along the "operating range" (What is "operating range"?); etc.).

  - A fresh viewpoint (not trying to match manual, mechanical analog observations). Rewritten to be used as a guide for new test development.

Data Acquisition Task Force

* The Data Acquisition Task Force primarily recommended "...a format for establishing concert between existing procedures and new data acquisition techniques." The key word here is "existing". The main purpose was to develop a way for laboratories to add data gathering systems to procedures already released to the industry.

* The Data Acquisition Task Force developed their recommendations before the Instrumentation Task Force issued their guidelines (the cart before the horse).

* Again, the prevailing philosophy ten years ago was to emulate manually observed instruments.

* The data acquisition task force information was never used in a serious manner. There never was a requirement by any test

procedure to meet a certain classification (such as enhanced or automated). There was no incentive or requirement for a laboratory to pursue a computerized data acquisition and control system that strictly met the guidelines, other than the lab's internal desire to be "modern". This led to computer systems that met the lab's internal needs and the test procedure, but which do not necessarily comply with the ASTM guidelines.

* I personally never agreed with the definition of a "reading" as listed in the report. The definition made it appear that you were allowed to compare statistical summaries of data points to snap shot data in manually logged stands.

* What changed in 10.5 years....

  - We are now developing all new test procedures. Our new procedures will REQUIRE computer data acquisition.

  - Large advancements have taken place in data logging allowing more data to be gathered and stored for a single test.

* What could be re-addressed by a revised Computer Data Acquisition Task Force Report....

  - We could now drop the definitions of manual and enhanced systems. The report could be rewritten to be a guide for designing a computer data acquisition system for a new test procedure only.

  - Need to look at revising the techniques the report recommends to summarize "data points". Now that we have data logged at rates as high as once per second (and faster), we need efficient methods for its reduction and review relative to validity criteria and cause/effect analysis. Once per second on a IIIF gives over 3 million data points. How do you quickly find out what they are telling you?

  - Need to either address system filtering directly or relate this report back to a revised Instrumentation Task Force Report that addresses filtering in detail. Main focus must be to define and avoid excessive system filtering while understanding that some filtering is beneficial. Total system time constants appear to be a tool that works best.

* SwRI feels strongly that each new sequence test procedure must include sections that require computer data acquisition and list minimum requirements and characteristics to be achieved. Each test is different: long, short, steady state, cyclic.

Also, the goals of each test procedure and therefore "what makes a difference in a test" is different for each procedure. No single Task Force Report could be drafted that could be referenced by a test procedure so as to address all of the test procedure's needs.

Overall Conclusions....

* Both Task Force Reports reviewed were found at least not "incorrect" by today's standards.

* Both could be revised if people power is available. The benefit of revisions would have to be weighed against the cost of the industry effort.

* For the Computer Data Acquisition Task Force, revisions are already being performed and defined in each new sequence test's procedure (IIIF and VG for example).

Review of Instrumentation and Data Acquisition Task Force Reports

A Presentation by Southwest Research Institute

To: ASTM Technical Guidance Committee

By: Brian Koehler

Requested by TGC Chairman

Date/ Location: April 11, 1996/ Pittsburgh

Task Force Reports

Instrumentation Report

ASTM File#: RR:D-2-1218

April 22, 1987

9 years old

Data Acquisition Task Force Report

ASTM File#: RR:D02-1210

December 9, 1985

10.5 years old

Instrumentation Task Force Report Comments

Fundamental Laws of Physics Used

Purpose was to match manual/mechanical systems

What's Changed (Instruments)?

- No Mercury
- Newer Sensor Designs
- Better Digital Resolution
- Industry Quality Emphasis
- Have Over Filtering Concerns Now
- Mandatory Automated Data Gathering
- Worried More About Control Capability

Items That Could be Re-addressed (Instruments)

- How to Avoid Aliasing Problems
  - Give Filter Kind/Amount Recommendations
- Update Sensor Limitations
- More Calibration Guidelines
- Rewritten to a New View Point
  - Guide for New Test Development

Data Acquisition Task Force Comments

- Purpose Was to Allow Automation of EXISTING Test Procedures
- Work Done Before Instrumentation Task Force Met
- Emulate Manually Observed Instruments
- Report Was Used by Only a Few
  - Most, designed unofficial inhouse systems

What Changed (Data Acquisition)?

New Procedures REQUIRE C. D. A.

Large Advancements in Equipment Capability

- Faster Log Rates
- More Data Storage

Items That Could be Re-addressed (C.D.A.)

- Rewrite as Guide for New Test Development
  - Drop lower System Definitions
  - SwRI Feels New Procedures Must Address C.D.A Directly
- Need New Ways of Summarizing Data Points
- Address Filtering or Relate to I. T. F.

Overall Conclusions

Both Reports are at least Not "Incorrect"

Both Could be Revised if People Power Exists

Cost/ Benefit Decision

C.D.A. Task Force Less Critical for Revision Since New Procedures are Addressing This Directly

Report to the Technical Guidance Committee for Updating the Instrumentation Task Force Report: RR:D-2-1218

April 11, 1996

Brent Shoffner
Jim Moritz

EG&G Automotive Research, Inc.

Report to the Technical Guidance Committee for Updating the Instrumentation Task Force Report: RR:D-2-1218

Background

The Technical Guidance Committee formed the Instrumentation Task Force "***to develop instrumentation guidelines that will provide uniformity in process measurements throughout this testing industry***".[1] The Task Force was formed ten years ago and submitted its report nine years ago. Many of the report's recommendations are still applicable in spite of its age. Since that time however, improvements in instrumentation accuracy and tighter specification ranges of operating parameters indicate the need to update the guidelines. As an example, the Accuracy definition and the Accuracy sub-section of the Performance Specifications (section III.A.1) are reprinted here:

ACCURACY: ***The degree of agreement of an individual measurement with an accepted reference level of the property in the material measured.***

1. ACCURACY

The desired accuracy of the measurement is important, but only as important as that parameter is to the test procedure. Based on current instrumentation technology and test procedures, the Task Force recommends the accuracy to be 20% of the test specification deviation, e.g., for 100°F ± 5°F, the accuracy is 20% of ± 5°F which is ± 1°F. This limits the worst case actual deviation from test specification to 20% of the allowable deviation above the high or below the low limits. However, there are technical limitations for these values, e.g.:

---

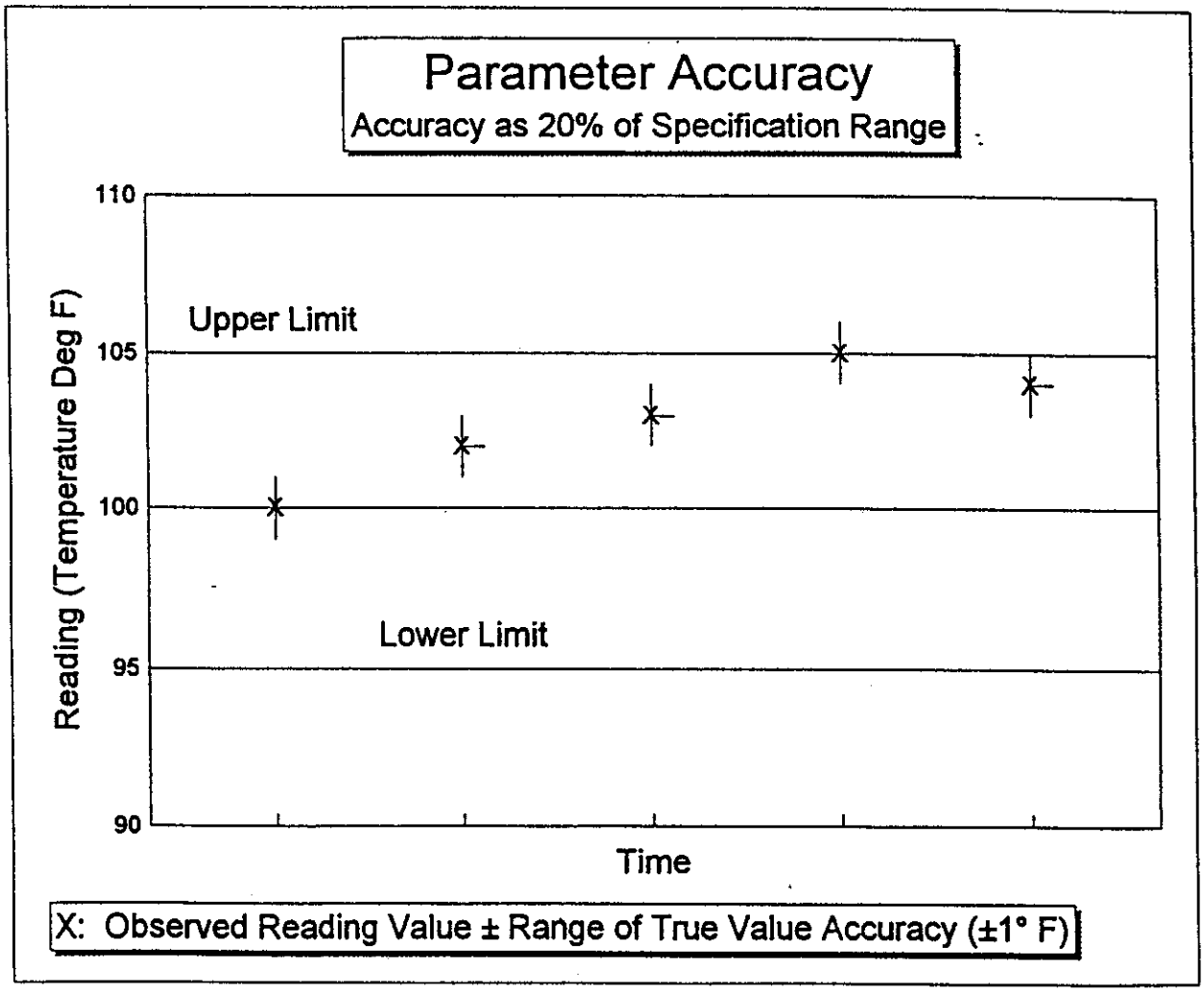
[1]ASTM Research Report RR:D02-1218, "Instrumentation Task Force Report to the ASTM Technical Guidance Committee".

Temperature: ***±0.5°F***

Pressure, low: ***±0.05" H_2O***
high: ***±0.1" Hg.***

Speed: ***±1 count per gating period***

Shown Graphically:



Problem

Some of the more recent test procedures have sufficiently tighter specification ranges such that instrumentation accuracy of 20% of the range can not be achieved. Although one of the Task Force's other recommendations states (Section III.D.2): "***In general, it is desirable that allowable parameter deviations be established such that they not exceed the accuracies of measuring devices. However, for a critical measurement which requires an accuracy better than the measuring device, procedures shall be provided detailing the specific techniques to be used to achieve the desired accuracies.***"

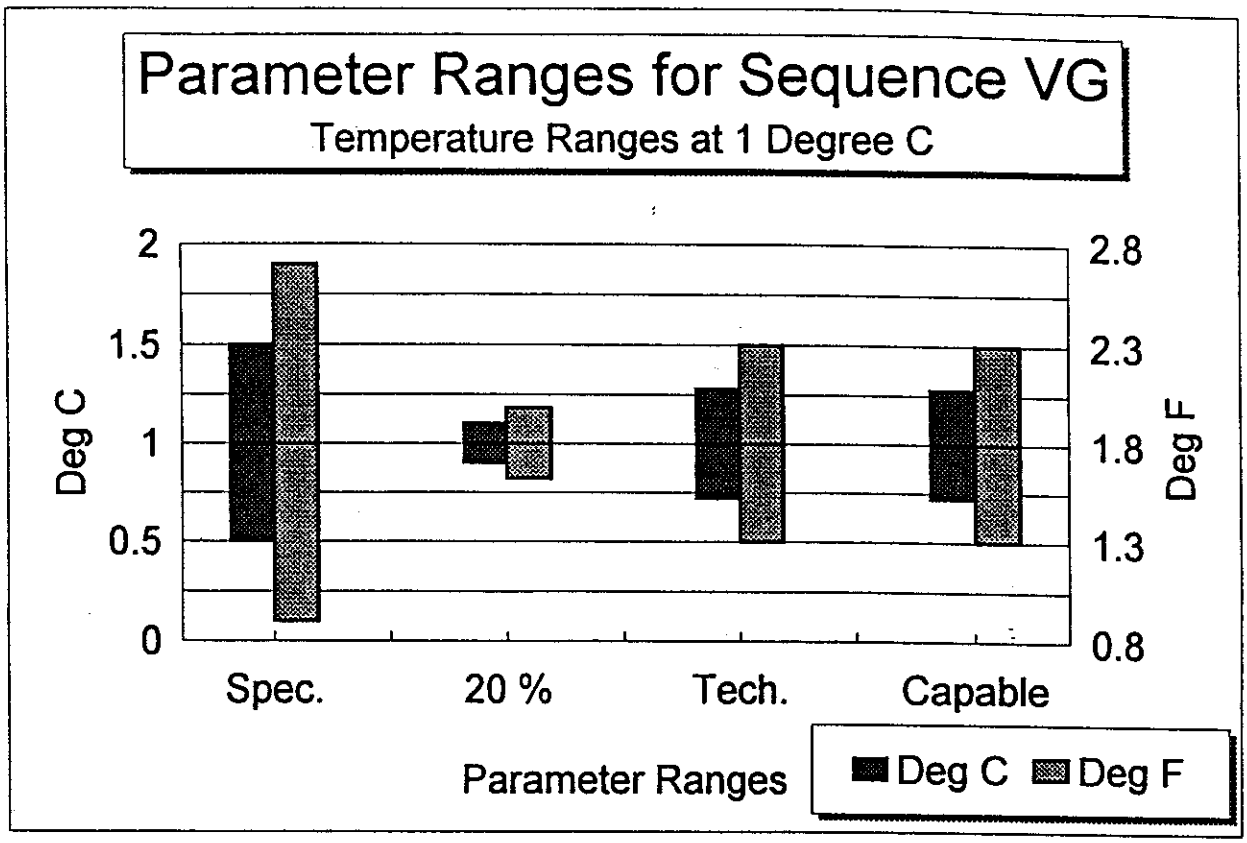
However, Section III.A.1 does appear to address the ultimate accuracy of three types of measurement. The last sentence of the section provides for "***technical limitations for these values***". This seems to be an overriding limit of accuracy if 20% of a range is too small to be technically possible, i.e., if 20% of a range is less than the values shown.

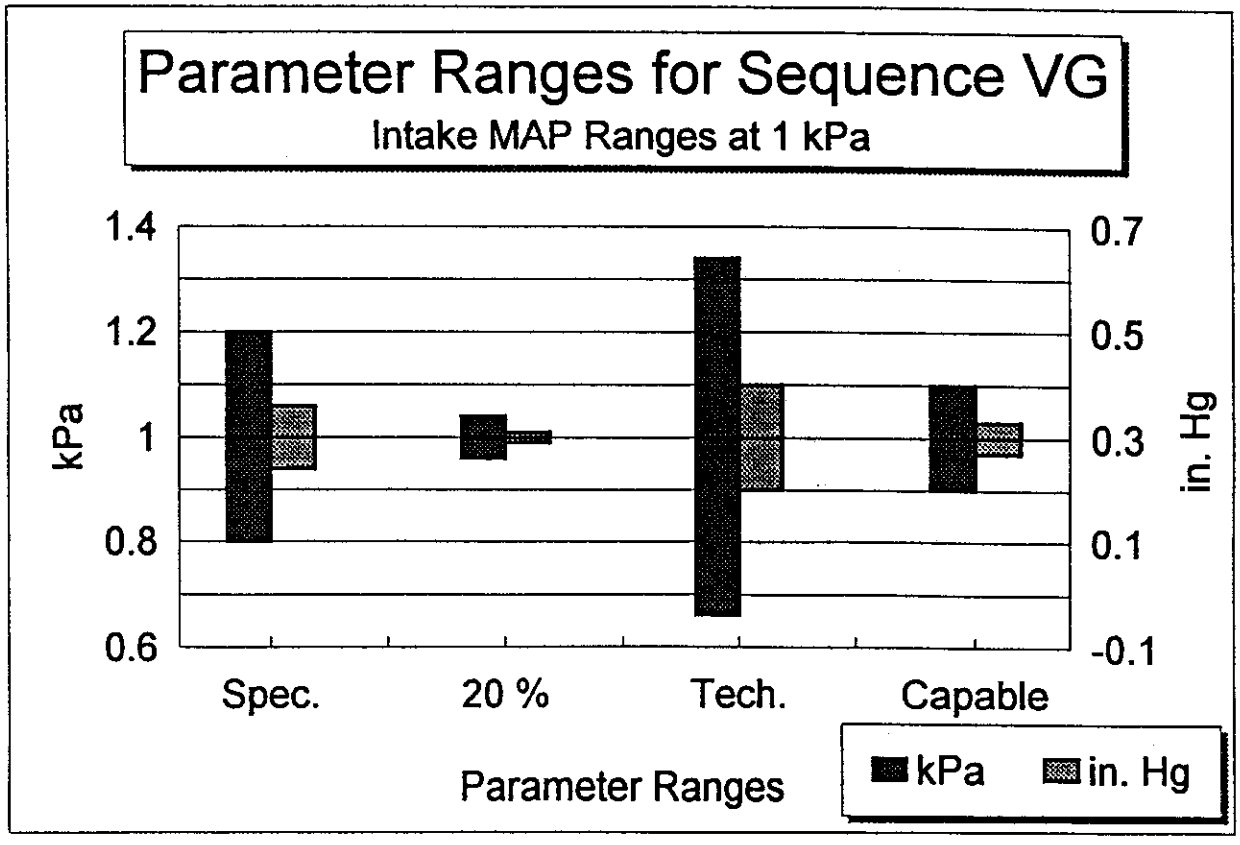
Examples

Sequence VG

Parameter	Spec. Range	20% of Range	Technical Limit (from D-2-1218)
Temperature	± 0.5° C (± 0.9° F)	± 0.1° C (± 0.18° F)	± 0.28° C (± 0.5° F)
Intake MAP	± 0.2 kPa (± 0.06 in.Hg)	± 0.04 kPa (± 0.01 in.Hg)	± 0.34 kPa (± 0.1 in.Hg)

Thermocouples are still capable of ± 0.28° C (± 0.5° F), but newer pressure transducers are capable of ± 0.1 kPa (± 0.03 in. Hg) in the range of MAP (0-100 kPa). This is illustrated on the next page.


Parameter Ranges for Sequence VG
Temperature Ranges at 1 Degree C
Deg C
2
1.5
1
0.5
0
Deg F
2.8
2.3
1.8
1.3
0.8
Spec.
20 %
Tech.
Capable
Parameter Ranges
Deg C
Deg F


Parameter Ranges for Sequence VG
Intake MAP Ranges at 1 kPa
kPa
1.4
1.2
1
0.8
0.6
in. Hg
0.7
0.5
0.3
0.1
-0.1
Spec.
20 %
Tech.
Capable
Parameter Ranges
kPa
in. Hg

Proposal

Many test procedures refer to this report and EG&G Automotive Research strives to follow the guidelines contained in the report. In addition to updating the Accuracy section of the report, more information on other subjects could be included. For example, the desired accuracy of calibration equipment and a minimum insertion depth for temperature measurement devices should be specified.

EG&G Automotive Research recommends to the Technical Guidance Committee that an Instrumentation Task Force be re-established. The Task Force membership should include a cross section of technical background, e.g., test engineers, instrumentation engineers, etc. A Scope and Objectives should be derived and presented to the Technical Guidance Committee as a first step. These steps should result in guidelines to serve the industry through the development of the many new test types on the horizon.

Data Communications Committee

Overview of Activities

- Scope of the Data Communications Committee

  To address industry wide computer related issues and provide a forum for discussion and subsequent technical solutions to aid in standardization of computer related activities and communications systems. To oversee, enhance and maintain the Electronic Test Report Transmission Model.

- Test Report Form layouts

  Creation standards

- Data Dictionary purpose and format

  Creation standards

  Creation rules

- Electronic Transfer of the Test Report data with the use of the Flat File Format.

  Maintain rules document for usage

Overview of Activities (Continued)

- Beta Testing by the DCC
- Information letter items

  Report Forms with Version

  Data Dictionary with Version

  Repeating Fields Document

  Summary of Changes Document

  Effective Dates for Dictionary Changes

- X.400 Mail standard used to transport the data from computer to computer.

- Anonymous FTP directories service at the TMC for retrieval of Report Forms and Data Dictionaries

Electronic transmission status

- Test Types that are currently being transmitted to TMC and to test sponsors

  Sequence IIIE
  T8
  Sequence VE
  L-38
  L-60
  L601
  1MPC
  6.2L/RFWT
  Sequence VIA

- Several other test types are near implementation with all other TMC monitored test types to follow

Referee Data Transmission

- Fax process

  Lab sends call in data to TMC and at some point the final report hard copy. This data is manually entered into the TMC Reference Database

  Referee lab faxes referee data to TMC. This data is manually entered into the TMC Reference Database

- Electronic Transfer process

  Lab transmits as much of the data that is available at the end of the tests and this data is electronically entered into the TMC Reference Database

  Scenario 1:

  Referee lab sends just the referee data electronically using the standard report format, to the TMC, which blanks out all other data and enters the referee data (data is lost)

  Scenario 2:

  Referee lab sends the data back to the requesting lab who enters the data and sends all of the data plus the new referee data electronically. (all data is preserved but requires manual entry at requesting lab)

Referee Data Transmission (Continued)

Scenario 3:

A separate data dictionary could be built that contains only the referee data. This dictionary could be used by both the requesting lab or the referee lab to transmit the data. (all data is preserved without manual entry but requires the report package to be designed differently with respect to the data dictionary)

Scenario 4:

Referee lab faxes the data to TMC and the data is hand entered. (all data is preserved but requires manual entry at TMC)

Other Ideas?

Report Package/Data Dictionary Construction Summary

	Test Type	Report Layout Status	Data Dictionary Status	Report Package Status	Industry Effective Date	Information Letter/ Memo	Current Dictionary Version	DCC approval for use with electronic Transmission
1	IHE	Approved by SP	Complete	Approved	19940114	94-1	19940413	19940201
					19940414	94-89	19940413	19940413
					19951129	95-1	19950725	19950725
					?	?	19960124	19960124
2	T8	Approved by SP	Complete	Approved	19940727	94-1	19940616	19940301
					19950603	95-1	19950321	19950321
					?	?	19960122	19960122
3	VE	Approved by SP	Complete	Approved	19941101	94-3	19940713	
					19950501	95-2	19950208	19950501
					19950901	95-5	19950530	19950530
4	L38	Approved by SP	Complete	Approved	19951201	21	19950816	19950803
					19960201	22	19961002	19961002
5	IID	Approved by SP	Complete	Approved	?	?	19960206	19960213
6	L60	Approved by SP	Complete	Approved	19941120	IL-5	19941012	19950216
					?	IL-6	19950710	19950710
7	L42	Approved by SP	Complete	Approved	19940903	IL-4	19940707	
					19950823	IL-5	19950721	
					?	?	19951026	19960111
8	L33	Approved by SP	Complete	Approved	19941020	IL-3	19940909	
					19950819	IL-4	19950509	
					19960506	96-2	19960329	19960212
9	L37	Approved by SP	Complete	Approved	19940829	IL-5	19940707	
					19950819	IL- 6	19950424	
10	1MPC	Complete	Complete	Approved	19950926	95-1	19950607	19950607
11	6V92	Approved by SP	Complete	Approved	19940119	94-1	19940119	
12	6_2L/RFWT	Approved by SP	Complete	Approved	19940901	94-1	19940503	
					19950903	95-1	19950606	19960606
13	VIA	Complete	Complete	Approved	19951101	95-1	19950818	19950818
					19960315	96-1	19960112	19960112
14	CBT	Complete	Complete	Approved	?	?	19960408	19960214
15	L601	Approved by SP	Complete	Approved			19950201	19950216
							19950705	19950705
					19951115	95-1	19950912	19950912
16	1K	Completed	Completed	Pending				
17	1N	Completed	Completed	Pending				

Report Package/Data Dictionary Construction Summary

	Test Type	Report Layout Status	Data Dictionary Status	Report Package Status	Industry Effective Date	Information Letter/ Memo	Current Dictionary Version	DCC approval for use with electronic Transmission
18	TC1	Complete	Complete					
19	TC2	Complete	Complete					
20	TC3	Complete	Complete					
21	OSCT	Complete	Complete	No Surv.	19960215	96-1	19940216 19951207	
22	HTCT	Complete	Complete	No Surv.	Ready for beta Testing		19940809	
23	VI							
24	M11							
25	1P							
26	T9							
27	EVLO	Complete	Complete	Pending SP Approval				
28	GI	Complete	Complete	Pending SP Approval				
29	TEOST	Complete	Complete	Pending SP Approval				
30	VGC	Complete	Complete	Pending SP Approval				
31	FOAM	In Development	In Development					
32	VG							
	HDR	Header Data Dictionary used for Flat File Transmission					19931221	

SP = Surveillance Panel
TF = Task Force (Test Type is under development and not considered an approved procedure)

Version: 19960409

Committee D-2 on PETROLEUM PRODUCTS AND LUBRICANTS

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Data Communications Committee
Test Report Transmission Model

Section 1
Development of data dictionaries

1.1 The hard copy test report must be developed to describe the data content and layout of the form.

1.2 Each data value listed in the test report shall have a unique field name assigned. If a field appears more than once in a test report only the first occurrence shall be listed in the data dictionary.

1.3 The sequence of the fields is the order from left to right, top to bottom as the items appear on the Test Report Forms.

1.4 An up to eight character Test Type Designation must be assigned to the data dictionary. This designation is constructed based on industry wide consensus

1.5 Field Names consist of eight characters, must start with a letter (A-Z) and shall only contain letters, numbers and the underscore character.

1.6 Field names that contain Hxxx or Rxxx in the last four positions of the name are designated repeating fields. (see repeating fields)

1.7 Standard naming conventions shall be used for the following types of data:

Final Results	_____FNL
Final Results repeating	F___Rxxx
Corrected Measurements	_____COR
Correction Factors	_____CF
Adjusted Results	_____ADJ
Severity Adjustment	_____SA
New Oil Viscosity	V(t)NEW where t = temperature in the units specified

Only use the maximum of one underscore in the field name

1.8 The Total Field Length shall be specified. For character data, this is the number of characters including imbedded spaces that the field can contain. The length of all numeric fields includes a space for a sign (+/-) and a space for a decimal point. For example, xxxx.xx is stated as 7.2 and the number may look like -357.25. Always specify a minimum of 2 to the left of the decimal point for N and Z fields (+0.) giving the smallest field specification for N and Z floating point to be 4.1 (+0.0) and 2.0 for integers (+0).

1.9 The data type must be specified using the following 1 letter designation:
A = Alpha/Numeric Data with numeric field Length and decimal size specified. All allowable alpha characters must be specified in the description enclosed with square brackets.
C = Character Data
N = Numeric Data which may contain a NULL value
Z = Numeric Data which may not contain a NULL but should contain a numeric value which is greater than, less than or equal to zero.

1.10 The units of measure shall be specified using the unit abbreviations found in the test procedure.

1.11 A textual description of the data item based on its title used in the test report shall be included.

1.12 The following is the Core Field Names that shall be included in all Data Dictionaries:

Field Name	F L	D S	D T	Unit Of Measure	Description
VERSION	8	0	C	CCYYMMDD	Version of the Dictionary
TSTSPON1	40	0	C		Test Sponsor 1
TSTSPON2	40	0	C		Test Sponsor 2
ALTCODE1	10	0	C		Alternate Oil Code 1
ALTCODE2	10	0	C		Alternate Oil Code 2
ALTCODE3	10	0	C		Alternate Oil Code 3
SAEVISC	7	0	C		SAE Viscosity Grade
LABOCODE	12	0	C		Laboratory Internal Oil Code
DTSTRT	8	0	C	CCYYMMDD	Starting Date
DTCOMP	8	0	C	CCYYMMDD	Completed Date
EOTTIME	5	0	C	HH:MM	End of Test Time
TESTLEN	3	0	Z	HHH	Test Length
SUBLAB	40	0	C		Submitted By: Testing Lab
SUBSIGIM	70	0	C		Submitted By: Signature Image
SUBNAME	40	0	C		Submitted By: Name
SUBTITLE	40	0	C		Submitted By: Title

If the previous Reference Test information is required to be transmitted with the Non-Reference Test, fields must be created to send both sets of information. (ie) DTSTRT for Non-Reference Starting Date and RDTSTRT for Reference Starting Date.

Section 2
Flat File Transmission Format

2.1 The format, referred to as the DCC Flat File Format, is to be used to send and receive the data dictionary described test report data.

2.2 All field names with their corresponding data found in the data dictionary for the particular test being transmitted shall be included in the flat file if they either contain data or are blank. This requirement enables the receiver of the data to verify that the entire report was received without any transmission errors. The only exception is for an aborted test where only the information needed to identify the test must be included.

2.3 Field Names shall start in column 1.

2.4 Data fields shall start in column 10 and end in column 80.

2.5 Data items do not have to be justified within their fields but shall reside within the size boundary specified by the data dictionary.

2.6 The entire line shall end with a line termination character ie. line feed or carriage return.

Example:

```
00000000011111111112222222222333333333344444444445
12345678901234567890123456789012345678901234567890
TSTSPON1 Test Monitoring Center<cr>
```

2.7 The field names do not have to be listed in any particular order within the flat file with the exception of the header.

2.8 The header (hdr data dictionary) is a special data dictionary that contains mandatory fields and must be included as the first group of fields before the test data. If multiple tests are transmitted in a flat file, each test must have its own header. The order of the header fields must be maintained. Fields found in the header and also in the body of the test report must contain the same values.

Special Rules for header population:

2.8.1 The value of TESTSPON in the header dictionary shall be populated with a value specified by the Receiver of the test.

2.8.2 TESTTYPE shall be taken from the Testtype field in the specific dictionary being used in the body of the report.

2.8.3 PURPCODE shall contain 00 for initial transmission 04 for corrected transmissions and 20 for subsequent unchanged transmissions with additional data.

2.8.4 VERSION shall contain the current version of the data dictionary being used in the body of the report.

2.9 If a field name does not contain a corresponding data item, this implies that the value is NULL. If the field name data item contains a 0 (zero), this value is 0 (zero).

2.10 Repeating Fields:

2.10.1 Field names that contain Hxxx or Rxxx in the last four positions of the name are designated repeating fields. The Hxxx is used to represent hourly data fields associated with test hours and the Rxxx represents the generic form of the repeating fields (non -

hourly data)

2.10.2 The fields must be expanded in the flat file for the required number of hours specified by the test procedure. This information is also specified in the Repeating Fields Specification document that is included with the dictionary in all information letters.

2.10.3 At least one set of each repeating field must be include in the flat file for fields that do not have a required number of hours specified even if the fields do not contain data.

2.10.4 Repeating fields that do not have requirements specified shall be expanded as needed by using a sequential number. For example, DOWNHxxx would be expanded to DOWNH001, DOWNH002 and DOWNH003 for three down times.

2.11 Special Control Fields:

2.11.1 There is a provision for the use of additional fields or control fields to be included in the flat file that may not be specified in the data dictionary. Trading partners should agree on the field names, data type and functionality for these fields. These fields allow a company to customize the flat file to fulfill particular internal requirements. If agreed upon, these fields can be ignored if sent to a trading partner that does not require the fields.

Section 3
Flat File Transmission Protocol

3.0 All Flat Files shall be transmitted to the receivers via X.400 protocol. This service can be procured through several X.400 Mail vendors. The sender shall contact all of his/her possible receivers to insure interconnection between mail carriers.

3.1 The Flat File shall be sent in the body of the X.400 Mail Message. Attachments are currently not supported unless otherwise discussed between sender and receiver.

Section 4
Beta Test Procedures

4.0 Every data dictionary that is developed with the intent to use with electronic transmission must first go through a Beta Test process. This process is to insure that the dictionary represents the data as closely as possible before it is used for transmitting data.

4.1 The following are the steps to follow during the Beta Test process:

4.1.1 The Beta Test Team is formed and shall include at a minimum a "Producer/Sender" of data and a "Consumer/Receiver" of data and any other interested parties.

4.1.2 A Test Team Leader shall be chosen and shall convene all meeting, keep minutes of all meetings and report to the DCC the status of the testing as well as a time line upon completion.

4.1.3 Each member shall review the beta version of the dictionary and submit their comments to the Team Leader. The leader will compile and disseminate the comments to the team and convene a conference call to discuss.

4.1.4 The results of the conference call are forwarded to the Test Monitoring Center and subsequent modifications are made to the beta dictionary. A new beta version of the dictionary is released.

4.1.5 A flat file is to be build by a sender based on the newly created beta version of the dictionary and sent to the receiver for review. If the flat file is found to be complete and representative of the data then the beta process is complete. If discrepancies are noted, the team may choose to continue review and discussion until all members sign off on the beta version.

4.1.6 The Test Monitoring Center will be notified that the Beta Test is complete and an information letter will be written to release a production version of the test dictionary. The production version of the dictionary will be the same version of the tested beta without the word "BETA".

4.2 Any change in precision or implied meaning of a data dictionary field must be reviewed by the Test Monitoring Center engineer and possibility by the surveillance panel responsible for the particular test type being tested. Changes with respect to field names and obvious typographical errors can be made without consultation. The surveillance panel must approve the final version of the dictionary before it is released in an information letter.

Version: 19960409

Data Issues

Technical Guidance Committee Meeting

04/11/96

Kathy Haskell

Exxon Chemical Company

Electronic Data Transfer (EDT) has highlighted the need to address standardization across test types for:

- Batch Identifiers
- Units of Measure
- Reporting CF and SA Values
- Data Format
- Data Conversion
- Report Formats

Standardization allows for accurate analysis of data for:

- Data Recipients (including TMC)
- Data Users (including surveillance panels)

Batch Identifiers

Examples of Part Batch differences:

IIIE Test

Piston Batch Number:	BC-5	BC5
Piston Ring Batch Number:	BC-78	B78

1N Test

Liner Part Number:	1Y-3555G	1Y3555G
Liner Date Code (for above #)	09B4	8077
Insp. Code (for above #)	7543	35C4
Ring Set Number	1Y-0728	1Y0728

Recommend statement of Batch ID format in procedures

Units of Measure

Examples of current differences:

	IIIE	VE	T8
Cam Lobe Wear	Microns	Mil	
Oil Consumption	Liters	Fluid Oz.	G/KW-H
Oz. Low	ML	Fluid Oz.	

Please consider standardization when creating/updating report packages!

Reporting CF and SA Values

Data trackers see value of reporting of actual correction factor value and/or severity adjustment value:

Rating	9.5
Lab Severity Factor	-0.1
Final Rating	9.4

Reporting CF and SA Values

Field Name	6V92TA	1K/1N	L60/1	L33	IIIE	VE	IID	L38	T8	CBT	1MPC	VIA
Adjustment Factor	Yes	Yes	-	-	-	-	-	-	-	-	-	-
Correction Factor	-	-	Yes	-	No	No*	No	No	-	Yes	-	-
Industry Corr. Factor	-	-	-	-	-	-	-	-	-	-	Yes	-
Severity Adjustment	-	-	-	-	Yes	-	Yes	Yes	Yes	-	-	-
Lab Sev. Adj.	-	-	-	-	-	Yes**	-	-	-	-	Yes	-
Applied Severity Adj.	-	-	-	-	-	-	-	-	-	-	-	Yes
Severity Factor	-	-	-	Yes	-	-	-	-	-	-	-	-

Note: Yes means actual value given, No means actual value not given
* Field says Correction Factor - notes say Industry Correction Factor
** Field says Severity Adjustment - notes say Lab Severity Adjustment

Please consider providing factor/adjustment values!

Data Format

Examples of current difference in data format where units are the same:

Mnemonic	Result	IIIE		T8		VE	
		Field	Dec	Field	Dec	Field	Dec
ACOLIN	Avg. Coolant In (°C)	6	1	5	0	-	-
ACOLOUT	Avg. Coolant Out (°C)	6	1	5	0	-	-
COTCALF	Cool Out Temp Log Freq	10	0	10	0	14	0
ICCASEP	Min Crankase Press (KPA)	6	3	5	2	-	-
ICOLIN	Min Coolant In (°C)	6	1	5	0	-	-
PSVTH1	PSV Varnish Thrust (Merits)	5	2	-	-	4	1

Please consider standardization when creating/updating report packages!

Numeric Conversion Results have advantage of:

- Entry Range Checks vs. Membership Checks for Validation
- Statistical analysis can be performed - especially critical for Pass/Fail values

Conversions must be defined in test procedure

Data Conversion

Numerical conversions already being used:

IIIE	- TVTM	reported as 9999.9
T8/M11	- Elemental values of < 1	reported as 0
L60/L60-1	- CRC Rust/Varnish Intensity	reported as 10.0 to 1.0
	- Light Carbon	reported as 0.9
	- Medium Carbon	reported as 0.8 to 0.1
	- Heavy Carbon	reported as 0.0

"Dual Mnemonics" means reporting alphanumerical (text) and numerical data for results. This is effective as it allows text information for reports and numerical information for statistics.

L37 - Level of Distress

Alphanumerical	Numerical
None	10
Trace	9
Trace-Light	8
Light	7
Light-Medium	6
Medium	5
Medium-Heavy	4
Heavy	3
Heavy to Catastrophic (1)	2
Heavy to Catastrophic (2)	1
Catastrophic	0

(1) Up to 50% of the Gear Tooth Ratable Surface
(2) Greater than 50% of the Gear Tooth Ratable Surface

Values to Consider for Conversion:

Alphanumeric	Numeric
Yes or Stuck	1
No or Free	0

Currently exist in IID, 1K, 1N, 1MPC

Copper Strip: 1A, 1B, 1C, 2A, 2B, etc.

Alphanumeric	Numeric
1A	1
1B	2
etc.	

or

Alphanumeric	Numeric*
1A	1.1
1B	1.2

Currently found in CBT

*#.# of letter of alphabet

Please consider use of Dual Mnemonics - especially for Pass/Fail Criteria

Question of Ownership of Data File - Test Engineer or Data Receiver?

Believe answer is Test Engineer:

- Engineer is responsible for all test results and sign off (data file contains slot for future digitized signature)

This means:

- Test results cannot be in data file that do not appear in report
- Conversions not defined in test procedure - not allowed!

Would like TGC ruling on this issue

Recommend avoiding check boxes (multiple mnemonics for values choices) e.g.,

Value	Mnemonic	
Acceptable	Result1	*(Multiple values for 1 field)*
or		
Unacceptable	Result1	

not

Value	Mnemonic	*(Multiple fields each with one value)*
X	Result1 (Acceptable)	
	Result2 (Unacceptable)	

Recommend standardization on Form Numbers at top of each report page - following is current status of tests:

(top) Form #	(top) Sheet #	(bottom) Page #	No #
IID	1K	VIA	L38
IIIE	1N		M11
T8			VE
CBT			
1MPC			
L33			
L60/L60-1			
L37			
L33			
L42			
6V92TA			

Committee D-2 ON PETROLEUM PRODUCTS AND LUBRICANTS

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Staff Manager: EARL R. SULLIVAN (215-299-5514)

January 25, 1995

API BASE OIL INTERCHANGEABILITY GUIDELINES

To: Technical Guidance Committee and Invited Guests

Attached is a letter I received from the API Work Group on Development Testing Guidelines. The letter expresses a desire to"discuss with ASTM the idea of running oils where the base oil effect can be determined, and doing this as part of the development of the test method".

I am not planning a meeting of the TGC in the near future unless I hear an urgent request from the membership. Please review the attached letter and give me your ideas on how you think we might help API. I would like this input by March 10. I will talk with Kurt Metzger and see if he would like to make a presentation to the TGC at our next meeting.

Very truly yours,

Gordon R. Farnsworth

GORDON R. FARNSWORTH, Chairman
ASTM Technical Guidance Committee

pjr

Attachment

c: ASTM Technical Guidance Committee

LUBRIZOL

THE LUBRIZOL CORPORATION
29400 LAKELAND BOULEVARD
WICKLIFFE, OHIO 44092-2298
TELEPHONE: 216/943-4200

January 5, 1995

Dear Dr. Farnsworth:

The API Base Oil Interchangeability Task Force has been exploring ways to improve the timeliness of establishing guidelines for base oil interchangeability when new tests are introduced to the industry. A subgroup on this issue has discussed a number of ideas, which have not proved feasible because both the ideas and their implementation are limited to a small group of API members. We now want to explore an idea that involves the industry, and that is the purpose of this letter to ASTM.

A gap is created in base oil interchangeability guidelines when a new test is introduced as part of API 1509 Engine Oil Licensing and Certification System. Six to nine months are usually required in the current system to develop test data to support guidelines. Additional time is then needed to obtain approval of proposed guidelines by the appropriate Task Force and API Lubricants Committee. During this period of time, product approval programs are being conducted for oil marketers, but there are no guidelines on testing for base oil interchangeability. Thus, higher costs can be incurred for the program sponsors that are diligent, or they run the risk of delays in completing the overall program.

I would like to discuss with ASTM the idea of running oils where the base oil effect can be determined, and doing this as part of the development of the test method. The situation for viscosity grade read across guidelines is similar to that of base oil interchangeability guidelines. Therefore, it would be worthwhile to discuss evaluating viscosity grade effects too. Hence, I am copying the Chairman of the API Task Force on Viscosity Grade Read Across. Along with this proposed approach, the CMA Product Approval Protocol Task Group (PAPTG) is thinking on the same lines. An update of the CMA Code of Practice will include Appendix K on a template for engine tests. Part of Appendix K will include the defining of a plan via ASTM, API, and other interested copies which establishes data to assist in the development of base oil and viscosity grade read across guidelines.

Once you have thought about this matter, I suggest we talk by telephone so that I may provide any additional information you need or answer questions. Then we can decide on an appropriate meeting where we can discuss the possible options for the data generation described above. My telephone number at Lubrizol is 216-943-1200, extension 2064.

Thanks in advance for your attention to this matter, I look forward to your response.

K.J. Metzger

Kirk Metzger
Chairman, API Work Group
On Development Testing Guidelines

KM/bjsc

LUBRIZOL

THE LUBRIZOL CORPORATION
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WICKLIFFE, OHIO 44092-2298
TELEPHONE: 216/943-4200

January 5, 1994

To: Dr. Gordon Farnsworth
Chairman - ASTM Technical Guidance Committee

From: API Work Group On Development Testing Guidelines For Base Oil Interchangeability

Subject: Industry Partnership On Establishing Guidelines For Base Oil Interchangeability

cc: Francis Duffy - Chairman, ASTM Subcommittee DO2.B

Norm Jacobson - Chairman, API Base Oil Interchangeability Task Force

Augie Birke - Chairman, API Viscosity Grade Read Across Task Force

Jim Williams - Secretary, API Base Oil Interchangeability Task Force

API Work Group:

George Barth - Ethyl Corporation
Barry Deane - Exxon Research & Engineering
Stefan Korcek - Ford Motor Company
Bill McKnight - Shell Development Co.
Emil Meny - Exxon Chemical Co./Paramins
Jim Newsom - Pennzoil Products Company
Greg Shank - Mack Trucks
Steve Stults - Chevron Chemical Co./Oronite
Virginia Wiszniewski - Mobil Research & Development Corp.
Bill Wilson - Chevron Research & Technology Co.

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Irwin Goldblatt	Castrol, Inc.	(908)980-3606
Walter P. Groff	Southwest Res. Institute	(210)684-5111
Rick L. Johnson	The Lubrizol Corporation	(216)943-9018
John W. Knight	Test Engineering, Inc.	(210)690-1959
Tony Lonardo	PARAMINS/Exxon Chem.	(908)474-3363
Rick Oliver	Texaco, Inc.	(210)493-2112*
Jerry Schaus	AutoRes. Laboratories Inc.	(708)563-0087
Philip R. Scinto	Lubrizol Corp.	(216)943-4200*
Virginia Wszniewski	Mobil Res. & Dev. Corp.	(609)224-2907*

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To: Gordon Farnsworth

From: Kirk Metzger Date: April 19, 1995

Subject: Industry Partnership On Establishing Guidelines For Base Oil Interchangeability and Viscosity Grade Read Across

cc w/o att: Norm Jacobsen - Chairman, API BOI Task Force
Augie Birke - Chairman, API VGRA Task Force
Jim Williams - Secretary, API Task Forces
Don Marn - Chairman, HDEOCP Work Group

Gordon: I'm sorry for taking so long to get back to you on this subject following my letter of 1/5/95 and your letter to the TMC of 1/25/95. However, things have not been stagnant and the interest in an industry test matrix to generate data for interchange/read-across guidelines has increased.

In March, the concept of a joint ASTM - API testing matrix was reviewed within both the API Task Forces and API Lubricant Committee. A copy of these are attached for your information. In brief, there are some concerns about designing an effective matrix and about who will cover the costs. These are pending issues that still need work to resolve.

A new factor to consider is the action taken by the ASTM Heavy Duty Engine Oil Classification Panel regarding base oil effects in PC -7 tests. A task group was formed to design an appropriate matrix defining oils, tests, and costs for the establishment of base stock read-across guidelines by the API. The objectives and approach of this new task group are very close to those of the API Work Group. It seems more appropriate now for me to interface with that group on a joint effort. I plan to do so. Please let me know if you have any comments on this.

I would be interested in any comments you received from TGC members in response to your 1/25/95 letter.

Sincerely,

Kirk Metzger

Kirk Metzger

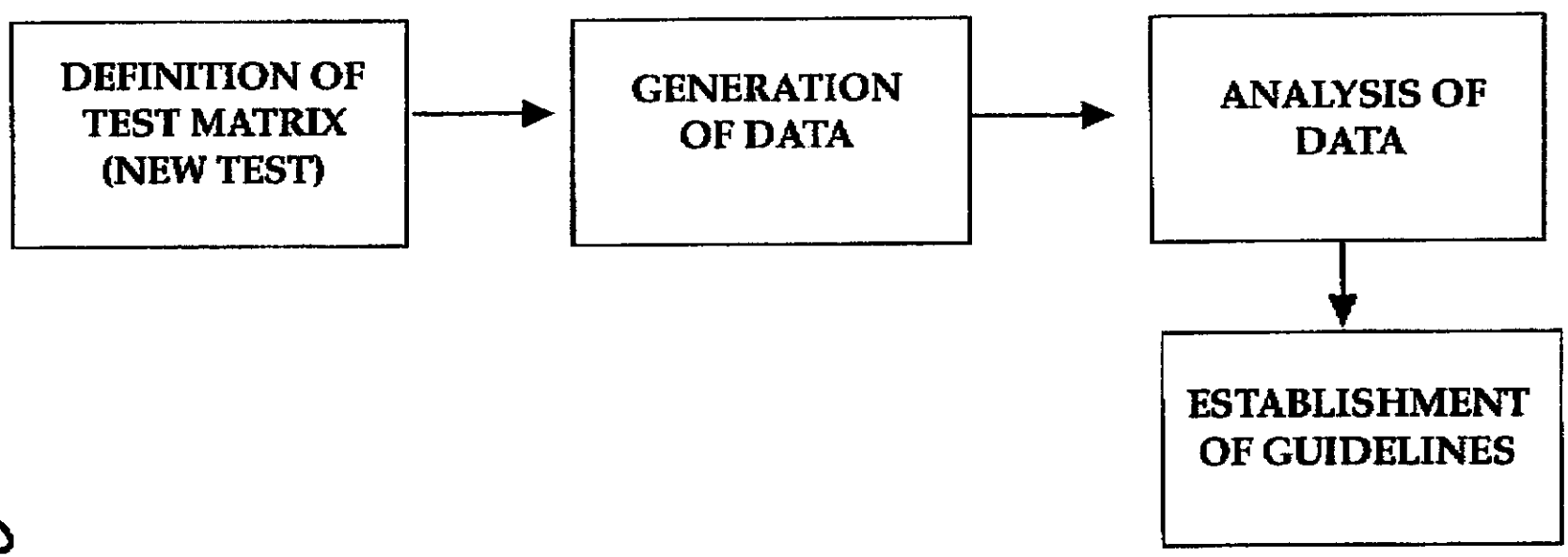
KM/bjsc

NEW TEST GUIDELINE DEVELOPMENT

BASE OIL INTERCHANGE
VISCOSITY GRADE READ ACROSS

OBJECTIVE: **TIMELY GENERATION OF NEW ENGINE TEST DATA UPON WHICH GUIDELINES FOR BASE OIL INTERCHANGE AND VISCOSITY GRADE READ ACROSS CAN BE READILY ESTABLISHED**

KEY ELEMENTS OF THE PROCESS



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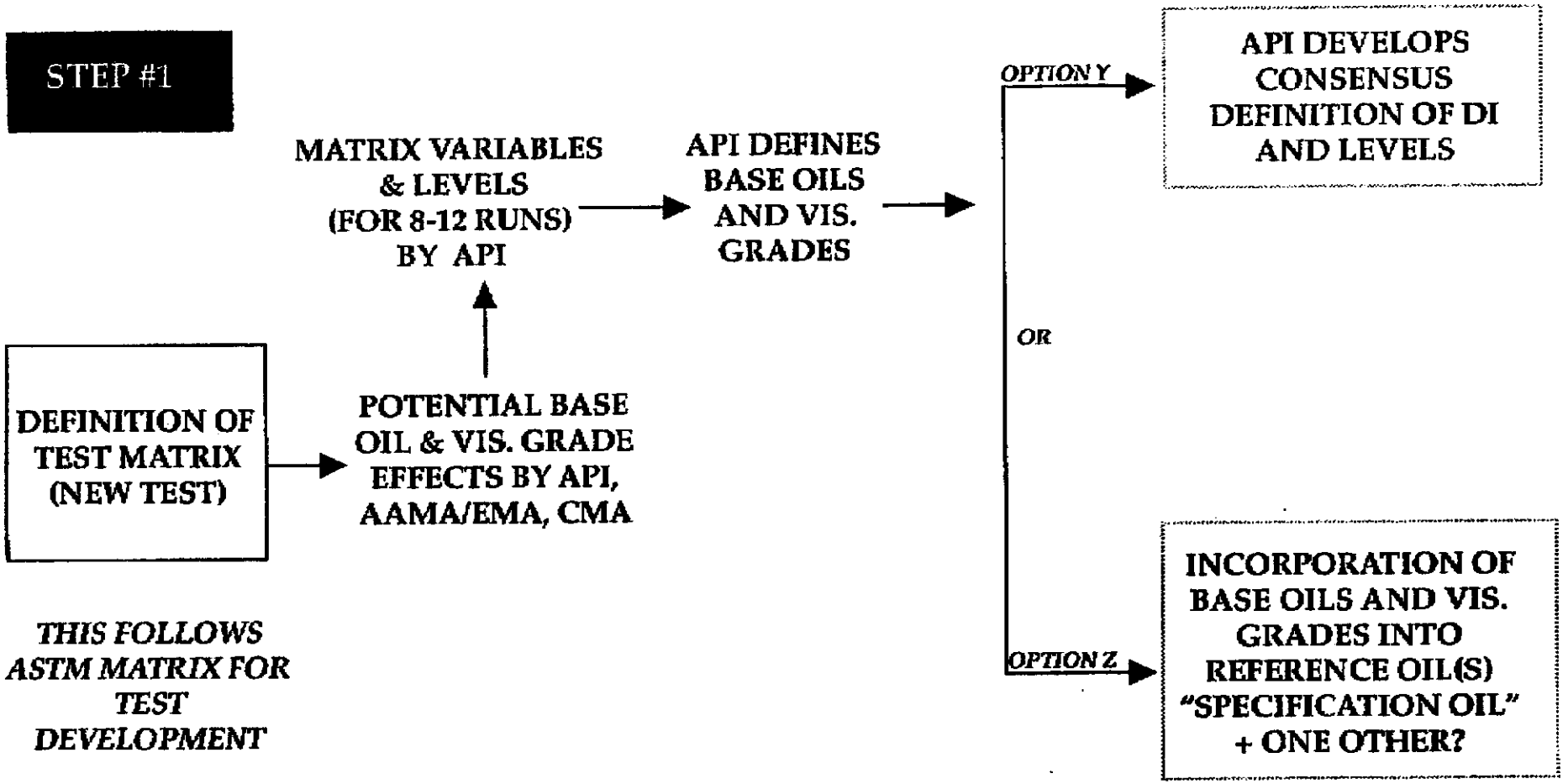
3/9/95

PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES



THIS FOLLOWS ASTM MATRIX FOR TEST DEVELOPMENT

NOTES:

A. API REFERS TO BOI AND VGRA TASK FORCES
B. MATRIX DESIGN SHOULD ENABLE INTERPOLATION
C. FUNDAMENTAL KNOWLEDGE MUST PLAY A PART
D. SOME EXAMPLES OF MATRICES ARE SHOWN AT THE END

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PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES

STEP #2

GENERATION OF DATA

OPTION Y

- **BASED ON LOTTERY, ADDITIVE SUPPLIERS BLEND FINISHED OILS USING BASE STOCKS, DI/VM, AND VIS GRADES THAT FIT API TEMPLATE AND MATRIX. SEND TO TMC FOR CODING ALONG WITH BASE OIL ANALYTICALS**
- **ASTM DEFINES WINDOW FOR TESTING AND ALLOTS SPACE**
- **CODED DATA GOES TO API**
- **COSTS ARE SHARED BY API MEMBERS**

2.6.4

PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES

STEP #3

ANALYSIS OF DATA

OPTION Y

- **API STAFF COMPILES DATA WHILE MAINTAINING CODED IDENTIFICATIONS**
- **ASTM/TMC EVALUATE OPERATIONAL/TEST RESULT VALIDITY**
- **API ANALYSES DATA AS A COMMUNITY**
- **API DECIDES IF DATA IS ADEQUATE OR ADDITIONAL TESTING IS NEEDED**

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9.5

PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES

STEP #4

ESTABLISHMENT OF GUIDELINES

OPTION Y

- **API ESTABLISHES GUIDELINES**
- **EASIER CONSENSUS DUE TO UP FRONT AGREEMENT ON MATRIX**

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OPTION Y

ADVANTAGES

1. ALL DATA IS AVAILABLE TO ALL PARTIES.
2. FOSTERS COOPERATIVE EFFORT BY ALL STAKEHOLDERS.
3. ALLOWS CONSIDERATION OF CHEMISTRY FOR ANYONE WILLING TO PARTICIPATE.
4. MATRIX CAN BE BUILT UPON.
5. TIMELY DATA FOR BOI/VGRA.

DISADVANTAGES

1. KEEPING MATRIX TO PRACTICAL NUMBER OF RUNS RISKS MISSING A BASE STOCK THAT PERFORMS DIFFERENTLY.
2. GIVEN THE DIFFERENT CHEMISTRIES, THE DATA WOULD BE MORE DIFFICULT TO ANALYZE.
3. A LOT OF PROCESS DETAILS AND LOGISTICS TO DEFINE AND OBTAIN AGREEMENT.
4. POTENTIAL FOR CODE BREAKING.
5. CAP ON TEST WINDOW OR RISK SUBSTANTIALLY REDUCING TEST CAPACITY FOR INDIVIDUAL COMPANIES.

PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES

STEP #2

GENERATION OF DATA

OPTION Z

- **API PROVIDES CODED BASE STOCKS TO TMC**
- **TMC BLENDS BASE STOCKS INTO REFERENCE OILS FOR PERTINENT TEST AND SHIPS TO TEST SITE**
- **ASTM DEFINES WINDOW FOR TESTING AND ALLOTS SPACE**
- **COSTS ARE SHARED BY API MEMBERS**

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PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES

STEP #3

ANALYSIS OF DATA

OPTION Z

- **API AND ASTM JOINTLY ANALYZE CODED DATA**
- **API SUMMARIZES FOR USE IF DATA ADEQUATE OR RECOMMENDS ADDITIONAL TESTING**

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PROCESS - DEVELOPING DATA IN NEW TESTS FOR BOI AND VGRA GUIDELINES

STEP #4

ESTABLISHMENT OF GUIDELINES

OPTION Z

- **API ESTABLISHES GUIDELINES**
- **EASIER CONSENSUS DUE TO UP FRONT AGREEMENT ON MATRIX**

ADVANTAGES

1. REDUCED CHANCE OF CONFOUNDING CHEMISTRIES. SIMPLER TO ANALYZE.
2. ALL DATA IS AVAILABLE TO ALL PARTIES.
3. TESTING WILL POTENTIALLY OCCUR AT EARLIEST POINT IN THE LIFE OF THE TEST. TIMELY DATA FOR BOI.
4. BUILDS UPON PROCESS ALREADY IN PLACE - LESS DETAILS TO DEFINE.

DISADVANTAGES

1. A "SPECIFICATION REFERENCE OIL" MAY NOT BE AVAILABLE.
2. LIMITED VARIATION IN DI/VM AS PART OF MATRIX.
3. KEEPING MATRIX TO PRACTICAL NUMBER OF RUNS RISKS MISSING A BASE STOCK THAT PERFORMS DIFFERENTLY.
4. CAP ON TEST WINDOW OR RISK SUBSTANTIALLY REDUCING TEST CAPACITY FOR INDIVIDUAL COMPANIES.