



Socony Mobil Oil Company, Inc.
White Eagle Division

Box 357, 10th & Sunshine Road
Kansas City 17, Kansas

March 25, 1957

Members and Guests of ASTM-DCC
Kansas Regional Group

Gentlemen:

Attached are the unconfirmed minutes of the 40th meeting of the
ASTM-DCC Kansas Regional Group held in the Broadview Hotel,
Wichita, Kansas, January 16, 1957.

Very truly yours,

James V. Mark, Chairman
ASTM-DCC Kansas Regional Group

R. K. Long,
Secretary

RKL:nw

March 25, 1957

UNCONFIRMED MINUTES OF ASTM-DCC
KANSAS REGIONAL GROUP MEETING

January 16, 1957

Broadview Hotel

Wichita, Kansas

The meeting was called to order at 9:30 A.M. by Mr. J. V. Mark, Chairman. The Chairman welcomed the members and guests and requested each to introduce himself and state his company affiliation and location.

I Attendance

<u>Name</u>	<u>Company</u>	<u>Address</u>
Brown, C. J.	Standard Oil Co., (Ind.)	Neodesha, Kansas
Brown, D. W.	N.C.R.A.	McPherson, Kansas
Carey, Howe	duPont Company	Tulsa, Oklahoma
Carter, B. Clayton	Debry Refining Company	Wichita, Kansas
Child, R. F.	Kansas Highway Commission	Manhattan, Kansas
Eash, Clinton	Kaneb Pipe Line Company	Arkansas City, Kansas
Grabner, Francis J.	Vickers Petroleum Company	Potwin, Kansas
Green, C. R.	N.C.R.A.	McPherson, Kansas
Hodgens, Kenneth E.	El Dorado Refining Company	El Dorado, Kansas
Hower, P. O.	Skelly Oil Company	El Dorado, Kansas
Jones, J. T.	Ethly Corporation	Kansas City, Missouri
Kingdon, R. G.	Derby Refining Company	Wichita, Kansas
Kirk, Nels J.	Kaneb Pipe Line Company	El Dorado, Kansas
Long, R. K.	Socony Mobil Oil Company	Kansas City, Kansas
Magers, A. W.	Great Lakes Pipe Line Company	Kansas City, Kansas
Mark, James V.	Socony Mobil Oil Company	Kansas City, Kansas
Marshall, W. H.	Vickers Petroleum Company	Augusta, Kansas
Miller, C. B.	duPont Company	Potwin, Kansas
Morine, Allen C.	Kansas Highway Commission	Tulsa, Oklahoma
Nolen, Cecil A.	Anderson-Prichard Oil Company	Manhattan, Kansas
Oakes, A. F.	Kaneb Pipe Line Company	Arkansas City, Kansas
Samp, William J.	Great Lakes Pipe Line Company	El Dorado, Kansas
Smith, R. L.	Ethyl Corporation	El Dorado, Kansas
Whiteside, James G.	Vickers Petroleum Company	Wichita, Kansas
Wright, D. L.	Anderson-Prichard Oil Company	Potwin, Kansas
		Arkansas City, Kansas

II Adoption of Minutes of Previous Meeting

The minutes were adopted after the following corrections were made:

Page 10, Operation & Maintenance, Item 1. - First sentence, change meter to motor.

Page 10, Operation & Maintenance, Item 4. - Third sentence, change drain valve to sight glass.

III Sample Exchange Program Discussion

The results on the previous three months exchange samples are as follows:

November	#K-179 and #K-180
Std. Dev.	0.31 0.21
December	#K-181 and #K-182
Std. Dev.	0.58 0.20
January	#K-183 and #K-184
Std. Dev.	0.25 0.34

There was some discussion with regard to the large standard deviation on sample K-181. It was finally agreed that the sample was not thoroughly mixed before shipment.

It was also agreed by the group to discontinue showing on the final report "Distillation Reported as % Recovered" and "All Samples Rated with Phillips Meter".

IV Correspondence

Letter to Mr. Howe Carey - Refer to Appendix I

Letter concerning Split Head Cylinders - Refer to Appendix II

V Discussion of Highlights of ASTM-DCC Meeting - Los Angeles

No action was taken, since no one from the group had attended this meeting.

VI Excerpts from Minutes of Other Regional Groups

There was a discussion concerning the excerpts of minutes of other groups being shown in the Kansas Group's minutes and then being sent out to other groups.

The Kansas Group agreed to include only those excerpts that were discussed at our regular meeting in the main body of the minutes with the excerpts as a whole being shown as an appendix.

The items discussed were as follows.

Sabine Area Section of the Texas Regional Group - August 17, 1956

Item 2 - Carbon Blasting

The Kansas Group agreed that carbon blasting was very effective particularly when checking samples in the range above 100. It was also pointed out that the equipment used in carbon blasting generates static electricity and should be grounded as a safety factor.

Southern California Group - August 23, 1956

Item 2 - Leakage of Pickup Gaskets

(Complaint was made of frequent leakage of gaskets on detonation meter pickup. Group opinion was that present pickup gaskets are inadequate, being too loose. There should be closer tolerances, so that gaskets were self-centered on seating surface. Frequent gasket leakage will thus be minimized.)

Southern California Group - August 23, 1956 (contd.)

In the Kansas Group's discussion it was suggested that Permatex be used on the gasket. It was also thought that to use any type gasket that would eliminate this problem should be permissible.

Northwest Regional Group - October 11, 1956

Item 3, Page 5

A member solved the problem of moisture in his #48 crankcase by leaving the crankcase oil heater on low continuously. This also helps to speed up the "warm up" time. Some members of the Kansas Group also use this practice.

New York-Philadelphia Regional Group - October 5, 1956

Page 6

(Bulletin No. 83 is a Field Guide to assist in maintenance of Detonation Meters, Models 501-A and 501-AP. On the latter, this bulletin was prepared from a writeup which we were able to obtain from the Phillips Petroleum Company which covers six pages including a wiring diagram. This bulletin is the request of Regional Groups for detonation meter trouble shooting. We believe from the information supplied in this bulletin, and with a very simple wiring circuit outlined, that this should alleviate a lot of questions which come up from time to time regarding your detonation meters.)

In the Kansas Group's discussion it was agreed that this particular bulletin was very helpful to operators in the field. By using it the trouble can usually be pinpointed in a relatively short period of time and repairs made in any moderately equipped instrument shop.

Mr. Stewig's Comments Relative to Action Taken by RD-1 on Waukesha Parts at Los Angeles - September, 1956

Item 3

Waukesha is making up samples of redesigned intake air pipes for the T-D (Time Density) Method. These will deal with cooling the air intake and will eliminate the air surge tank.

VII Action on Proposals Submitted by Other Regional Groups

There were no proposals submitted by other groups.

The Kansas Group has no proposals for action at this time.

VIII Discussion of Kansas Group Operation and Maintenance Problems

There was some discussion on the power supply for the Malrasion Units. When installing a new Malrasion Unit be sure and check to see if it requires A.C. or D.C. voltage supply.

The group is of the opinion that standardization fuel X lacks stability and as the fuel ages, the octane number becomes higher. It was mentioned that great care should be taken in dispensing this type of fuel.

A discussion was held with regard to the average length of time between engine overhaul. Even though most of the engines in the Kansas Group are used almost exclusively for rating commercial motor fuels or their base stocks, there seemed to be quite a wide variation in the time between overhauls.

LUNCHEON

IX Talk by Mr. Larry McMurtrey of Boeing Airplane Company

A very interesting talk was given by Mr. Larry McMurtrey concerning the past, present, and future problems of the aviation industry. His talk was illustrated by slides showing cuts of airplane engines and the problems dealing with the development of jet fuels necessary for their operation.

Mr. Dalton Eash assisted Mr. McMurtrey by operating the slide projector.

X New or Unfinished Business

Future correspondence concerning the Kansas Group should be sent to Mr. W. E. Gibson, Kansas State Highway Commission, Kansas State College, Manhattan, Kansas, instead of Mr. Allen Morine of the same address.

XI Date, Time and Location of Next Meeting

The group voted to have the next meeting in Arkansas City, Kansas, April 17, 1957. The place to be announced later.

XII Adjournment

The Chairman expressed the appreciation of the group to Mr. B. Clayton Carter for making the necessary arrangements for the meeting. Also to Mr. McMurtrey and his assistant for their portion of the program.

The meeting adjourned at 3:00 P.M.

APPENDIX I

November 23, 1956

Mr. H. M. Carey
E.I. duPont deNemours & Co.
1811 S. Baltimore
Tulsa, Oklahoma

Dear Howe:

On behalf of the Kansas Group I would like to take this opportunity of thanking you and your Company for the showing of the two films at our last Kansas Meeting.

The film, "When the Customer Says 'Knock'," was very interesting and informative and I'm sure that all those present enjoyed seeing it. Of special interest was the film "It's Everybody's Business" which I'm sure gave each of those present a better insight into the American Way of Life.

Again, thank you for your contribution to our program and I will be looking forward to seeing you at our January Meeting in Wichita.

Very truly yours,

James V. Mark, Chairman
ASTM-DCC Kansas Regional Group

JVM:cd

cc: Mr. C. B. Miller

HUMBLE OIL & REFINING COMPANY
Refining Department
Technical and Research Division
Service Laboratories
Baytown, Texas

Report by:

J. R. Venable

November 12, 1956

HL.2920Q.56

8-1-5

Split-Head High Octane Program,
Supplemental Report

Addition data on the Split-head High Octane Program fuels, received since the issuance of our report of August 31, 1956, File HL.2279Q.56, is shown in Table I. An Analysis of Variance, recalculated after receipt of the Sun Oil Company's data, is shown in Table II. The British Petroleum Company's data, which arrived after the re-evaluation, are included for comparative purposes.

Analysis of Data

The addition of one set of data changed the statistical significance of deviations in several instances.

According to the latest analysis:

1. There is no significant difference between split-head and standard cylinder data.
2. There is no significant difference in Mean values on six of the seven samples (No. 3 is significantly different - lower on split-head).
3. The precision of the split-head data is significantly better than the standard cylinder data on five of the seven samples (no significant difference on No. 1 and 2 - in the 100 octane range).

In both analyses the split-head mean values were slightly lower generally than were the standard cylinder means. It should be stressed that this difference does not necessarily mean that the split-head data are wrong. On the contrary, it appears logical that the smoother operations encountered with the split-head cylinder would produce results closer to the true octane quality of the fuels than the more erratic operations of the standard cylinders. The intermittent knock of the samples in standard cylinders would give low knock meter readings, resulting in high octane ratings.

APPENDIX III

Excerpts from Minutes of Other Groups

Sabine Area Section of the Texas Regional Group - August 17, 1956

1. A member questioned the group in regard to using a cylinder on the Research method which showed excessive wear (.007 to .009) at a point approximately $\frac{1}{32}$ inch below the spark plug hole. The consensus of the group was that this cylinder should be discarded. A question was asked as to whether the use of the chromium plated compression ring as the "top" ring on the piston might help to avoid the apparent excessive wear on the cylinder at a point to which the top of the piston travel comes in running high octane samples. The group's consensus was that using this ring should help reduce if not eliminate this wear.

Other discussion concerned the importance of cleaning the cooling chamber of the cylinder. It was brought out that "hot" spots due to dirty or rust scale could materially affect octane results.

2. ATTACHMENT "A" - RESEARCH METHOD TESTING ABOVE 100 OCTANE NUMBER. (UNOFFICIAL) Condition of test equipment and test procedure and technique become increasingly important at higher compression ratios. We suggest that cylinder overhaul and maintenance be conducted with special care and that the following items be adopted if they are not already part of your maintenance procedure:
 - (1) At 50 hour intervals, or less if necessary.
 - (a) Clean combustion chamber (carbon-blast) - run 8 hrs. - change oil.
 - (b) Change or clean spark plugs - (adjust to .015" = .018").
 - (c) Clean and readjust breaker points.
 - (2) Keep carburetor assembly clean and check for leakage at vertical jet.
 - (3) Keep valve-train assembly tight. Adjust so that yoke is reasonably close to horizontal position. (Can do this only if operating over relatively narrow range).
 - (4) Check and adjust valve clearances as prescribed.
 - (5) Check running conditions, RPM, temperatures, spark advance, etc., and hold as close to prescribed levels as possible.
 - (6) Check inlet air and exhaust systems. Keep ice tower, exhaust lines and surge-tank clear of sludge and rust.
 - (7) Use unleaded, low gum content, fuel for warm-up and non-testing periods.

In connection with test procedure and technique, the following points should be adopted for operation above 100 O.N. If already adopted, they should be carried out with extreme care.

- (1) Reset detonation meter on guide curve at 100 O.N. See directions, Item (a) in footnote.
- (2) Follow guide curve above 100 O.N. if possible, but only if hard, steady knock is obtained. See explanation, Item (b).
- (3) Adjust fuel-air ratio carefully and slowly, allowing plenty of time for fuel response. For some fuels, this response will be very slow and/or will cause slow response for iso-octane + T.E.L. Reference Fuels.
- (4) Prepare reference fuel blends (iso-octane plus various concentrations of T.E.L.) with extreme care and in as large a quantity as is practical. See explanation, Item (c).

Item (a)

To reset detonation meter on guide curve at 100 O.N., run iso-octane in engine, adjust fuel-air to maximum knock, set compression ratio (micrometer) at 100 O.N. on guide curve and adjust meter for satisfactory spread, holding meter reading on iso-octane at mid-scale.

Item (b)

Most cylinders, after adjusting to (a) above, will track the guide curve satisfactorily above 100 O.N. when operated on iso-octane plus T.E.L. Some fuels, however, especially those containing a high percentage of aromatics, will produce knock indication by the Phillips Detonation meter when very light or no audible knock is noted. Because of this fact, it is necessary to have some permissible tolerance from the guide curve so that steady knock might be obtained on the test sample. In such cases the detonation meter will have to be readjusted on the test sample and reference fuel brackets established. Unless engine trouble is encountered, the tolerance of + .025 below the guide curve should be easily maintained.

Data obtained by an ASTM study group established that light or unsteady knock did affect ratings but that, beyond the point where hard, steady knock is obtained, further reasonable increase in compression ratio did not affect test results significantly. When the recommendation for the guide curve extension above 100 O.N. was made, therefore, it was also recommended that tolerances of plus 0.1010 and minus 0.050 from the curve be established. (It might also be noted here that the tendency of most operators is to use too light a knock when operating in the very high octane number range. When in doubt use a harder knock).

Item (c)

When blending reference fuels above 100 O.N., the first 0.10 cc. T.E.L. blended with iso-octane is equal to 3.96 Performance Numbers or slightly over one octane number. It is evident, therefore, that even small blending errors in this range can affect ratings considerably. We suggest that T.E.L. blending equipment be checked and replaced with more accurate apparatus if necessary. Blending errors can often be minimized by the preparation of larger blends. We suggest that procedure where practical, realizing that factors such as frequency of use, storage facilities and possibility of contamination have to be considered.

Southern California Regional Group - August 23, 1956

1. Engine Block Mounting

Source of purchase of Isomode Rubber Pads was raised. These pads may be purchased at Pacific Scientific Co., 143 Grand Vista Ave., Los Angeles. They are catalogued as ISOMODE ISOLATER PADS, 45 durometer hardness, 5/16" thick. Any size available.

2. Leakage of Pickup Gaskets

Complaint was made of frequent leakage of gaskets on detonation meter pickup. Group opinion was that present pickup gaskets are inadequate, being too loose. There should be closer tolerances, so that gaskets are self-centered on the seating surface. Frequent gasket leakage will thus be minimized.

Sabine Area Section of the Texas Regional Group - October 19, 1956

1. The members discussed at length some of the difficulties encountered in running samples for octanes in the above 100 range. It was pointed out that the operator should adhere as much as possible to the requirement of proper knock intensity with the Phillips meter needle showing more or less in the central portion of the meter range, and at the same time observe the proper compression ratio. It was again emphasized that samples of high aromatic stock content would probably give the operator some trouble due to their slowness in reaching maximum knock intensity.

It was also emphasized that close attention should be paid to the use of proper jets, maintenance of proper carburetor sight glass height of fuel as well as proper compression ratio for the sample being tested.

Texas City-Houston Area Engine Operation and Maintenance Group -
September 28, 1956

1. A member who had previously reported excessive wear on locally purchased top chrome compression rings gave a report on similar equipment purchased from Waukesha. On a 400 hour Research method run

the Waukesha chrome ring gap increased from 0.013" to 0.054". However, there was no gap-growth on other compression rings nor any measurable cylinder wear. While this is excellent equipment service, it was decided that the rings' chrome plating was not up to the usual hardness standards.

2. A perplexing long-time problem with the Solatron ECS-1 meter was cited. The trouble was manifest in the form of intermittent and erratic full scale meter needle deflections. It was finally discovered that the injection pressure spring was moving around in its seating housing and at times was dragging against the pick-up tip. This introduced extra signals into the meter injection indication system.

The trouble was quick-fixed by placing a cylindrical centering spacer in the housing around the spring. However, as a permanent correction, it is recommended that Waukesha supply a large inside and outside diameter spring of the same tension to prevent side movements of the spring and to give more clearance between the spring and the pick-up tip.

Chicago Regional Group - September 7, 1956

1. A member reported that he had used dry ice, formed by passing CO₂ from a cylinder through a chamois skin, in a carburetor cooler. Despite these measures, he was still unable to rate 25 lb. RVP material. Others stated that they had rated samples of this vapor pressure without difficulty when using a carburetor cooling device. It was suggested that moisture in the sample might be freezing-out in the lines and blocking the flow of fuel.
2. A member stated that he had experienced some difficulties with two cylinders on a Research engine that was not equipped with an exhaust surge tank. Both cylinders rated about 0.5 octane number high. When the exhaust pipe (which was straight) was removed, one of the cylinders rated O.K., but the other one still rated 0.5 octane number high. The group was of the opinion that the difficulties were caused by resonance.

Northwest Regional Group - October 11, 1956

1. A member reported having trouble with his research engine cutting out at the high octane level. He finally found his trouble to be the heater strips in the switch box on the engine. The amperage of one of the strips was too low. No one else in the group had ever experienced this trouble.
2. One member purchased a drum of 80 octane reference fuel from Phillips which turned out to be 78.0 octane. This caused considerable trouble and time loss.

3. A member solved the problem of moisture in his #48 crankcase by leaving the crankcase heater on low 24 hours a day. This also helps to speed the "Warm-up" time.
4. Another member found that polishing the flat side of the half balls gave him quieter and better valve operation.

New York-Philadelphia Regional Group Meeting - October 5, 1956

Address by Mr. J. A. Stewig, Fuel Research, Sales and Service Engineer, Waukesha Motor Co., Waukesha, Wisconsin.

Highlights of the address by Mr. Stewig to the Joint Meeting of the New York and Philadelphia Regional Groups on October 5, 1956 follows:

PARTS PRICE LIST

During the month of June we mailed to engine owners a revised copy of parts price list form 1314-C.

Underdate of September 1 we mailed price supplement to parts price list.

It is our plan to keep parts price list up-to-date with supplements, when enough price changes warrant mailing same.

PRICE INCREASE

Underdate of September 6 you were informed that we were reviewing our costs to determine the effect that the recent increases in steel prices as well as other increases that we have been receiving from our purveyors would have on our costs.

All phases of our cost structure are being carefully studied and you will be advised later as to the percentage of increase and the date the increase in repair parts prices will take effect.

The increase will apply on all open orders on file on the date the increase becomes effective so that all shipments made on and after that date will be billed at the new prices.

Underdate of September 20 we mailed service bulletin numbers 76 through 84 of which should have been received by you as of this date. These bulletins covered the following items:

Bulletin No. 76 covers Ignition Power Supply with appropriate wiring diagrams both for the vertical and console panel assemblies.

Bulletin No. 77 covers the Improved Compression Pressure Gauge.

Bulletin No. 78 covers a change in the fuel transfer pump now being supplied on the supercharged unit.

Bulletin No. 79 covers Procedure for Checking Valve Seat Inserts for Leakage.

Bulletin No. 80 covers ASTM Thermometer Specifications.

Bulletin No. 81 covers the revised Brackets for the Dial Micrometer.

Bulletin No. 82 covers the revision to the belt guard when D. C. generator is removed.

Bulletin No. 84 covers the Compression Pressure Gauge for the Cetane Unit.

Bulletin No. 83 is a Field Guide to Assist in Maintenance of Detonation Meters, Models 501-A and 501-AP. On the latter, this bulletin was prepared from a writeup which we were able to obtain from the Phillips Petroleum Company which covers six pages which includes a wiring diagram. This bulletin is the request of Regional Groups for detonation meter trouble shooting. We believe from the information supplied in this bulletin and with a very simple wiring circuit outlined that this should alleviate a lot of the questions which come up from time to time regarding your detonation meters.

At the recent ASTM Meetings in Los Angeles, advisory committee of RDI approved the deletion of the tabulated list of equipment changes as shown in the 1953 supplement to the ASTM Manual of Engine Test Methods for Rating Fuels. The list of equipment changes is of little use inasmuch as part numbers from previous supplements are obsolete nearly as fast as they are printed.

It was agreed that from time to time as fast as equipment changes are approved by ASTM, service bulletins will be mailed from our home office.

These service bulletins are mailed to engine owners in accordance with our engine owners mailing list.

Additional copies of service bulletins can be secured from Waukesha Motor Company, Fuel Research Division, upon written request.

Additional Notes on Address of Mr. J. A. Stewig, are:

1. When ordering detonation meter parts from Waukesha, continue to use Phillips Detonation Meter part's numbers.
2. Waukesha repairs Solatron Meters.
3. Console Panel Boards are now shipped less the bouncing pin equipment.