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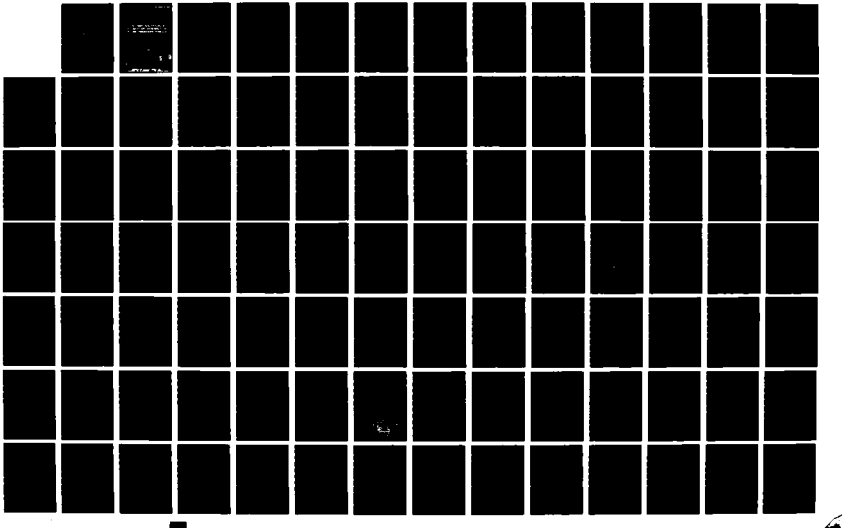

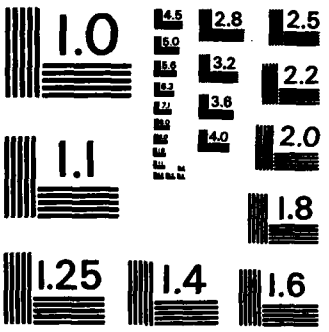

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CRC Report No. 543

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CUSTOMER PERCEPTION OF HOT-WEATHER DRIVEABILITY IN 1977-1981 PASSENGER VEHICLES

July 1985

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CUSTOMER PERCEPTION OF HOT-WEATHER DRIVEABILITY IN 1977-1981 PASSENGER VEHICLES (CRC PROJECT No. CM-118-81)

Prepared by the

1981 Analysis Panel

of the

CRC Volatility Group

DAAK70-81-C-0128

July 1985

Light-Duty Vehicle Fuel, Lubricant, and Equipment Research Committee

of the

Coordinating Research Council, Inc.

ABSTRACT

The Coordinating Research Council, Inc. conducted a program in Phoenix, Arizona, ~~from June 12 to August 8, 1981~~ to investigate customer perception of hot-weather driveability problems in routine daily service as influenced by changes in gasoline volatility. Using established CRC driving cycles, trained raters also evaluated the hot-weather driveability and vapor lock tolerance of each customer's car. Data were then available to provide relationships between customer and trained rater evaluations. Daily maximum temperatures in Phoenix were consistently above 90°F, and fequently above 100°F. Fifty-five customers were selected for participation in the program, allowing for a wide variety of traffic and driving conditions generally associated with hot-weather driveability problems. The customer-owned vehicles included in the program were 1977-1981 models, most equipped with automatic transmissions. Some light-duty trucks were included, as well as passenger cars. Vehicles were selected to be representative of the current car population, and were given a mechanical check to insure that they were in good running order. Five fuels of varying volatilities were used in the test program.

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I. INTRODUCTION

The Coordinating Research Council, Inc. (CRC) conducted a program in Phoenix, Arizona, from June 12 to August 8, 1981, to investigate customer perception of hot-weather driveability problems in routine daily service as influenced by changes in gasoline volatility. CRC has sponsored various programs since 1960 to develop test procedures to evaluate vapor lock characteristics and rate hot-start and driveaway performance in cars using trained raters. None of these programs was designed, however, to determine to what extent the customer could sense differences in his car's performance with changes in gasoline volatility. CRC decided, therefore, to conduct such a program. Using established CRC driving cycles, trained raters also evaluated the hot-weather driveability and vapor lock tolerance of each customer's car. Data were then available to provide relationships between customer and trained rater evaluations. CRC participants involved in program planning, on-site participation, and data analysis are listed in Appendix A.

II. SUMMARY OF RESULTS

1. Vapor lock-limited tolerance determined by trained raters of forty-seven 1977-1981 model customer vehicles was similar to that of 1975 model cars tested in a previous program, less critical than 1971 models, and more critical than 1982 models.* At 100°F ambient, fuel of 133°F $T_{V/L=20}$ (ASTM D 439 Class B minimum) would satisfy 50 percent of the vehicles in this program, 54 percent of the 1975 models, 28 percent of the 1971 models, and 88 percent of the 1982 models.

2. Twenty-seven of twenty-nine cars were more critical in trained-rater vapor lock tests with the engine idling during the hot soak period, and two were more critical with the engine off.

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* CRC Report No. 455, "Evaluation of a High-Temperature Driveability Test Procedure - 1971 CRC Yuma Program," June 1973.
CRC Report No. 490, "Driveability Performance of 1975 Passenger Cars at High Ambient Temperatures," November 1976.
CRC Report No. 538, "Two-Temperature Vapor Lock and High-Temperature Driveability Performance of 1982 Passenger Vehicles," December 1984.

3. In hot driveability tests by trained raters, the total weighted demerits (TWD), adjusted for differences in rater severity and expressed as a logarithmic function, showed wide differences among cars tested, and smaller differences among fuels.

4. Fuel volatility, adjusted degree for degree for deviations in air temperature from 100°F, accounted for about 10 percent of the variation in trained-rater hot driveability results.

5. Fuel volatility, adjusted to 100°F ambient air temperature, together with statistically recognized car differences, accounted for about 84 percent of the variation in trained-rater hot driveability results.

6. Some customers were significantly more critical of their car's performance during the first week of the program than in later weeks; a few others were significantly less critical.

7. The lowest fuel volatility, expressed as $T_{V/L=20}$ adjusted to 100°F ambient air temperature, for which customers reported performance to be not acceptable on one or more days, exhibited an approximately normal distribution. This assumes that fourteen customers who reported no days as unacceptable were all more tolerant of volatility than the others. The median $T_{V/L=20}$ from the correlation was 125°F, less than half of the customers finding performance unacceptable at higher values and more than half at lower values.

8. In comparing performance for a whole week with one fuel to performance the previous week with a presumably different fuel, customers made significant, though far from exact, association of better hot weather performance with reduced volatility, and their ability to recognize a difference was generally better for greater differences in volatility.

9. Demerits assigned to customer ratings of various problems were about seven times as high on not-acceptable days as on acceptable. Stalls while driving, stalls at start-up, and excessive cranking to start contributed over half of the total demerits on not-acceptable days.

10. There is some indication that the demerits assigned by CRC to stalls while driving and to backfire attribute relatively more importance than customers do to these problems.

11. Excessive cranking and stalls at start-up were identified by customers most often as the most severe problem encountered on either acceptable or not-acceptable days. Lack of power and stalls while driving were next and equally frequent on not-acceptable days. These four problems accounted for 87 percent of the reports in which the most severe problem on not-acceptable days was identified.

12. Start-up or steady-speed driving, with no up- or down-hill grade were reported most often as the "traffic" condition accompanying the most severe problem on not-acceptable days. Acceleration from a stop or standing at a stop were next most frequent. Climbing an up-hill grade and heavy stop-and-go traffic were identified only infrequently.

13. The severity assigned by customers to stalling problems correlated significantly with the number of stalls (except for driving stalls in the least and most severe categories, in which there were few reports), the number of stalls increasing progressively with the severity rating. There was a considerable range, however, in the number of stalls reported at each severity.

14. For the group of customer cars tested, acceptable customer performance was obtained with fuels of 3-6°F lower $T_{V/L=20}$ than the vapor lock-limiting distribution obtained by CRC raters.

15. No significant correlation was found between total weighted demerits (TWD) from trained rater tests and demerits assigned to customer ratings of problems with Fuel 3, which was mid-range in volatility and the only fuel tested in all cars by both procedures. It was inferred that car-to-car differences were outweighed by other differences such as customer versus trained rater driving patterns, conditions and expectations, or differences in temperature, fuel weathering, and prior car conditioning at the time of testing.

16. A correlation between trained rater TWD and percentage of customers satisfied at equal $T_{V/L=20}$ was developed by combining the separate correlations of each characteristic with $T_{V/L=20}$. Fifty percent of customers were satisfied with fuels giving sixty-five TWD or less in trained rater tests of an "average" car; 90 percent were satisfied at thirty TWD and 23 percent at one hundred TWD.

17. A correlation between customer demerits and trained rater TWD with fuels of equal $T_{V/L=20}$ in the average car was developed by similarly combining separate regressions against $T_{V/L=20}$. The trained rater TWD values are about fifteen to thirty times as high as the customer demerits.

18. When the volatility of fuel samples taken from car tanks in the course of vapor lock or hot driveability tests is estimated from (1) API gravity measured on the sample, and (2) correlations of RVP or $T_{V/L=20}$ with API gravity based upon data from fresh fuel blends, the volatility so estimated is erroneously low. Weathering of fuel during a test procedure is therefore overestimated. The problem was compensated for by using a computational model of evaporation to develop correlations of weathered RVP and $T_{V/L=20}$ with API gravity.

III. TEST DESIGN

The program as approved by the CRC Volatility Group is presented in Appendix B. The program was designed for approximately seventy customers who owned 1977-1981 model cars equipped with automatic transmissions. Each customer received free fuel for the duration of the program, along with a one-year AAA Auto Club membership for road service. In return, each customer was requested to complete a questionnaire each day recording his car's performance in normal daily service. It was also necessary during the course of the program for the customers' cars to be available during working hours for vapor lock and hot-start and driveaway evaluations by trained raters. Rental cars were furnished by CRC to those customers who required transportation during the day or whose cars were not available at the end of the day.

All customers in this program were employed at Garrett Engine Turbine Company. A service station facility adjacent to Garrett was leased by CRC to serve as program headquarters and to facilitate the following duties: drain fuel tanks and supply customers with test fuel; perform general administrative duties in support of the program; make mechanical checks on customers' cars; store vehicles during the day and overnight.

Trained rater evaluations were made on each customer's car on an isolated public road located adjacent to Dynamic Science Laboratories, approximately twenty-five miles north of Garrett. Both vapor lock and hot driveability tests were performed on each car.

IV. SELECTION OF TEST SITE AND VEHICLES

Phoenix, Arizona, was selected as the test site for a variety of reasons. During the summer months, the daily maximum temperatures are consistently above 90°F, and frequently above 100°F. During this same period, the climate is very dry, which allows for trained rater tests to be conducted nearly every day. As a large metropolitan area, Phoenix allowed selection of customers experiencing a wide variety of traffic and driving conditions generally associated with hot-weather driveability problems. Some customers were selected because they experienced heavy stop-and-go city traffic; others were selected because they lived in nearby mountain areas which required driving up long steep grades; others experienced expressway traffic followed by short stop-and-go traffic. By selecting employees of Garrett Engine Turbine Company, this goal of a wide range of driving conditions was met.

Potential participants were furnished an application form and a program description as shown in Appendix C. Based upon screening of application forms and telephone interviews, fifty-five applicants were selected who owned 1977-1981 model vehicles, most with automatic transmissions, and who expressed willingness to cooperate in the program. Attempts were made to obtain newer model cars and, so far as possible, vehicles which would be representative of the current car population. Several pick-up trucks were accepted in place of passenger cars, however, and the number of vehicles fell short of the goal of seventy; both these alterations were made primarily because much more time was needed to select participants than had been anticipated. Both cars and pick-ups are referred to in later sections simply as cars; no distinction was made between them in the data analysis.

Each vehicle was given a mechanical check to insure that it was in good running order, and three minor pieces of equipment were added: a fuel line connection for draining the fuel tank; a vacuum line connection for use with a vacuum gauge in hot driveability tests; and stickers on front and rear windows for identification. Four rental cars were obtained to provide customer transportation when needed, and for hot driveability tests by trained raters, to be used in developing rater relative severity factors.

Descriptions of the participant and rental vehicles are given in Table I. Vehicles were assigned numbers from 1 through 70; however, during the organizational phase of the program, some customers decided against participation. Numbers which had been assigned to these customers were not reassigned. Some gaps thus appear in the numbering system. Data from eight of the fifty-five vehicles remaining in the program were incomplete for mechanical or other reasons on one or more of the three test procedures to be compared (vapor lock, hot driveability, and customer driving), and were subsequently omitted from data analysis. These vehicles are identified by a footnote in Table I. The breakdown of the remaining forty-seven vehicles by manufacturer and model year is shown below:

	----Number of Vehicles by Model Year----					
Vehicle Type	1977	1978	1979	1980	1981	Total
GM Cars		1	8	9	1	19
GM Pickups		1			2	3
Ford Cars		1	5	3		9
Ford Pickups	1	1	2	1	1	6
Chrysler Cars			1		1	2
AMC Cars			1			1
Imported Cars			1	4	1	6
Imported Pickups				1		1
Total Cars		2	16	16	3	37
Total Pickups	1	2	2	2	3	10
Grand Total	1	4	18	18	6	47

V. FUELS

Five fuels of varying volatility were made available to customers. They were supplied from a service station blending pump as blends of a low-volatility and a high-volatility base fuel in 25 percent steps, and identified as Fuels 1 (low), 2, 3, 4, and 5 (high). The same base fuels were also available in drums which were stored in a refrigerated trailer at the site for trained-rater testing of vapor lock and hot driveability. They were dispensed from cold storage as blends to the test vehicles.

Specifications for the two base fuels are included in Appendix B. The average properties of the five blends as determined by tests in cooperating laboratories are shown in Table II; individual laboratory results are given in Appendix D.

Periodically during the program, samples of Fuels 1, 3, and 5 were obtained from the service station pumps and tested for Reid vapor pressure (RVP) at a cooperating laboratory in Arizona. The data, shown in Figure 1, indicate that over a period of fifty-two days Fuels 1, 3 and, 5 decreased 0.3, 1.0, and 1.5 psi, respectively, in RVP.

As part of the vapor lock and hot driveability tests, fuel samples were taken from the vehicle tanks for determination of fuel volatility. Because facilities were not available at the test site for measuring RVP or temperature versus vapor/liquid ratio (V/L) curve data, the API gravity at 60°F was determined for use in estimating volatility from correlations to be established later. From the data in Table II, second-order least squares regressions gave the relation of $T_{V/L=20}$ to API gravity and of RVP to $T_{V/L=20}$ as:

$$T_{V/L=20} = 1776.33 - 48.8879 \times API + 0.352018 \times API^2$$

$$RVP = 45.5355 - 0.356411 \times T_{V/L=20} + .000690895 \times (T_{V/L=20})^2$$

These equations were used to estimate $T_{V/L=20}$ figures used in the analysis of vapor lock tests and, after adjustment of the vapor lock-limiting $T_{V/L=20}$ to 100°F ambient, to estimate the corresponding vapor lock-limiting RVP.

Fuel 5 was a blend of Fuel 1 and butane; from the physical properties in Table II, it was determined that the butane component was isobutane, more volatile than the normal butane more commonly used for RVP trim in motor gasoline (72.2 versus 51.6 psi RVP). When fresh fuel weathers in the course of refueling a car and running vapor lock or hot driveability tests, the loss in volatility is a result of all volatile components evaporating, in amounts governed by their concentrations and individual volatilities, not just isobutane. Since the other components are less volatile relative to their API gravities, the $T_{V/L=20}$ or RVP computed from the API gravity of test fuel samples

most often on acceptable days also. The importance of driving stalls is brought out by the high ratio of its frequency on not-acceptable to acceptable days, almost twice as high as for any other problem. Interestingly, backfire was never noted as a most severe problem, again suggesting that the CRC ratings assign it more importance than customers do.

Start-up is also listed as the most frequent "traffic" condition for "most severe" problems on both not-acceptable and acceptable days. It is followed, on not-acceptable days, by steady driving below 45 mph, and above 45 mph. It is followed in turn on acceptable days by accelerating from a stop or standing at a stop. "No grade" is reported far more often than either up- or downhill in both groups. These customer reports differ sharply from the conventional wisdom as to the importance of hill-climbing and heavy stop-and-go traffic for hot-weather problems, at least in Phoenix.

The frequency with which different numbers of stalls were reported at each severity level is shown for both start-up and driving stalls in Table XIV. The average number of start-up stalls per day increases progressively from 1.2 at the least severe to 4.7 at the "very troublesome" level, and the differences between each level are significant at above 99.5 percent confidence. There were relatively few reports of driving stalls at either the least or most severe level; the increase from 1.32 stalls at the "slightly bothersome" to 1.93 at the "annoying" level is significant at 98 percent confidence, but the further increase to eleven average stalls at the "very troublesome" level is not significant even at 75 percent confidence. While the latter increase may be intuitively real, it is not supported statistically because of the few reports and the large scatter.

D. Relation of Customer to CRC Evaluations

The distributions of vapor lock tolerance and customer performance acceptability with $T_{V/L=20}$ level are shown in Figure 11, from data presented in Sections IX-A and IX-C. It is seen that freedom from vapor lock, by CRC definition, requires lower fuel volatility than acceptable performance for customers. The differences are about 9°F $T_{V/L=20}$ at the 20 percent satisfaction level, 8°F at 50 percent, and 5°F at 90-95 percent. If the vapor lock tolerance line is too high by 3-6°F at the lower end, as discussed in previous sections, it would still be higher, requiring less volatile fuel, throughout.

Figure 12 (a) and (b) illustrates an attempt to seek a direct relation between trained rater TWD and average customer demerits on Fuel 3, the only fuel tested by both procedures in all cars. The lack of correlation is obvious from the scatter of data points, whether plotted as demerits in Figure 12 (a) or as log

The responses were also combined into three groups in which the current fuel was less volatile, the same, or more volatile than the previous. In the first group, 65 percent reported better performance on the less volatile fuel and 7 percent worse; these reports were significantly above 33.3 percent and below, respectively. In the second group comparing two weeks performance on the same fuel, 51 percent said performance was the same, a significant increase over 33.3 percent. In the same group, 20 percent said performance was worse; while this is significantly less than 33.3 percent, it is not significantly different from the 29 percent who said performance was better. In the last group comparing a more volatile current fuel with a less, significantly less than one-third said performance was better and significantly more than one-third said it was the same, while close to one-third said it was worse. (It should be noted that in this last group, 76 percent of the comparisons were between fuels differing only one step in volatility, whereas 79 percent of the first group differed by two or more steps.) It appears then that customers make a significant, though far from exact, association of better hot-weather performance with reduced volatility, and that their ability to recognize a performance difference is generally better for greater differences in volatility.

The average demerits assigned to individual questions from customer responses are shown in Table XII for all days, and for acceptable and not-acceptable days separately. The average total demerits on not-acceptable days was 25.0, 6.9 times as high as on acceptable days. Stalls while driving, stalls when starting up, and excessive cranking to start contributed the most, in that order, to total demerits on not-acceptable days. The ratio of demerits on not-acceptable days to those on acceptable days was similar for most problems, at about 5 to 7, to the ratio for total demerits. The ratios for driving stalls and backfire, however, are about twice as high, perhaps suggesting that the demerit rating system attached more importance to these problems than the customers did. Question 2 on overall performance was not used in the demerit assignment system, but the average responses are listed in Table XII for comparison, with demerits assigned at the same level as for hesitation. The average demerit levels attached to Question 2 on this basis are close to those for driving stalls.

Customer reports singling out the one most severe problem and associated driving conditions, in answer to Questions 12 and 13, are summarized in Table XIII. The identification of each problem and driving condition is shown as the percent of car-days with that answer, broken down by acceptable and not-acceptable days. Excess cranking and stalls at start-up are cited most often as most severe problems on both acceptable and not-acceptable days. Lack of power and stalls while driving were next and equally frequent on not-acceptable days; these four problems accounted for 62 percent of the 71 percent of such days on which a "most severe" problem was identified. Lack of power was noted third

Different customers reported widely varying frequency of days with unacceptable performance: fourteen reported no days, and ten only one day; the other twenty-three reported from two up to twenty-two days, the latter being 54 percent of the days driven. To represent the maximum volatility (minimum $T_{V/L=20}$) for acceptable car performance, the highest $T_{V/L=20}$ for not-acceptable days and also the average of highest $T_{V/L=20}$'s for part or all not-acceptable days were considered and plotted in normal probability graphs. The average of the highest 1, 2, or 3 $T_{V/L=20}$'s was selected as most representative.* The distribution of $T_{V/L=20}$ for unacceptable days, thus defined, is plotted in Figure 10 for the forty-seven cars. The line shown is the least squares regression line of $T_{V/L=20}$ versus normal distribution sigma (standard deviation) for the ranked percentages of the cars with an established $T_{V/L=20}$ value, assuming cars with no unacceptable days reported would have a lower unacceptable $T_{V/L=20}$ than the others. It is seen that the median acceptable $T_{V/L=20}$ is 125°F; less than 50 percent of customers found performance unacceptable above that value, and more than 50 percent found it so at lower values. The regression equation is:

$$T_{V/L=20} = 125.01 - 15.2265 \times \text{Sigma}$$

$$\text{Coefficient of determination } (r^2) = 0.973$$

Customers provided two hundred weekly comparisons of performance on the current fuel with performance on the previous fuel; these are summarized in Table XI. With five fuels, there are twenty-five possible pairs of current and previous fuel assignments; the number of responses received for each pair of possible assignments is shown, along with the fraction of responses that said current performance was better, the same, or worse than the previous week. If the choice of answers were purely random, then the expected distribution would be one-third better, one-third same, and one-third worse. The actual answers for two pairs in which the current fuel was two or more steps less volatile than the previous (Fuel 1 versus Fuel 3 or 4) showed significantly more than one-third "better" and significantly less than one-third "worse" (95 percent confidence). With four pairs in which current and previous fuel were the same or within one step of the same, the "same" responses were significantly greater than one-third. Over half of the comparisons of Fuel 4 or Fuel 5 this week with Fuel 1 last week said performance was worse, but the excess was not significant for the ten or eleven responses and the significance level tested.

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* For cars with many unacceptable days, the average of all was deemed too low, and the single highest value too erratic.

The most striking feature of the average demerit figures in Table X is the consistently and sharply higher level of demerits on not-acceptable days than on acceptable days, typically five to fifteen times as high. This is true for demerits averaged either arithmetically or "geometrically."* The only apparent trends in average demerits with $T_{V/L=20}$ are in the lower half of the $T_{V/L=20}$ range, where the demerits for all days tend to decrease with increasing $T_{V/L=20}$ when averaged arithmetically, and the demerits for acceptable days tend to increase whether averaged arithmetically or geometrically. These trends apparently reflect the decrease in percent of not-acceptable days, with their much higher demerit level. The absence of more prominent trends is probably due in large part to the pattern of fuel assignments discussed in Section VII, by which the most critical cars were selectively assigned less volatile fuels.

Customers' appraisal of overall performance problems, also shown in Table X, in answer to Question 2 tends to show some decrease with increasing $T_{V/L=20}$ in problems judged "annoying," but little or no trend in other responses. This behavior too may be largely due to the pattern of fuel assignments.

The correlation of customer demerits, expressed as log(demerits +1), with $T_{V/L=20}$ and individual car effects was determined the same way as for trained rater TWD, by multiple linear regression with dummy variables for the forty-seven cars. Results are shown in Table IX, along with those for the trained rater data. The coefficient of determination shows that the correlation accounts for about 35 percent of the test variability, much less than the 84 percent for the trained rater data. The standard error of the $T_{V/L=20}$ coefficient, however, is 0.3546, for a t value of -6.95, showing a highly significant dependence on volatility.

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* Strict geometric averaging was not feasible, because customer demerits of zero for any day would result in a geometric average of zero for any set of test days including that day. "Geometric" averages were, therefore, calculated by averaging a logarithmic function, log(demerits + 1), similar to the logarithmic function used for trained rater TWD data. Because customer demerits were smaller in magnitude than TWD, a scaling constant of 1 was used instead of 5. Variance was homogeneous in this form, as shown by plots of standard deviation versus average demerits from repeated test days in six cars tested on four or five fuels each; standard deviation did not change with demerit level when using the scaling factor 1, whereas it showed a strong positive slope with larger scaling factors or with demerits not converted to the log function.

With a t value of -7.37, the coefficient of the $T_{V/L=20}$ term is highly significant. The two lines in Figure 9 agree well, the greatest difference amounting to 2.3 TWD. Differences between the lines are attributable not only to the form of expressing $T_{V/L=20}$, but to including data for Fuel 4 in the latter regression.

C. Customer Evaluations

The customer daily questionnaire responses are tabulated in Appendix F for 1896 car-days in forty-seven cars, with the answers to Questions 3-10 expressed as demerits by the rating system detailed in Section VII. Early in the data analysis, it was noticed that some customers appeared to have been much more critical during the first week of the program, on Fuel 3, than during later weeks. Some differences during the first week, owing to customer attitude toward a new situation, would not be surprising, and the possibility of discarding all first week data was considered; however, this would have wasted a large amount of data (435 car-days), much of it valid. Moreover, for twenty-five cars all test days would have been lost on Fuel 3, the only fuel tested for both customer service and hot driveability in all cars. Instead, it was elected to apply a statistical t test to first-week versus subsequent-week results on Fuel 3 for all cars using it more than one week, and reject first-week data for those cars in which total demerits were significantly different at 90 percent confidence. On this basis, first-week data were rejected for seven cars on thirty-six days, identified in Appendix F; five customers were significantly more severe during Week 1, and two less severe. All subsequent analyses are based upon the remaining 1860 test days in forty-seven cars.

Since no fuel samples from customers' car tanks were tested during the program, it is not possible to know how much or how rapidly the volatility declined with weathering during the week on each fuel. That weathering did occur is certain, both from results in the trained rater tests and from visual observation of fuel vapors escaping while customer cars were being refueled. In the absence of any better option, the volatility of tank samples from hot driveability tests on each car, as estimated from API gravity measurements, was selected as a representative estimate of volatility during customer tests with the same fuel and car.

Table X shows how some characteristics extracted from the data vary with fuel $T_{V/L=20}$ classified in 5°F steps from less than 115°F to 160°F and above. Average total demerits are shown separately for days with acceptable performance, not acceptable performance, and both. The percent of car-days in which performance was judged not acceptable decreases with volatility in fairly steady progression from 23 percent for less than 115°F $T_{V/L=20}$ to 0 percent for the 155-159.9°F $T_{V/L=20}$ class. While there is a jump to 17 percent for the 160°F+ class, this corresponds to only four car-days in which dissatisfaction may have resulted from atypical problems with low-volatile fuel under relatively cool conditions.

Log(TWD + 5) is plotted against adjusted fuel $T_{V/L=20}$ in Figure 9 for all hot driveability tests with Fuels 1, 3, and 5. Actual TWD corresponding to the log function is shown on the right-hand scale. Data for Fuel 4 were omitted in order to give the vehicles equal weighting. The least squares regression line is:

$$\text{Log(TWD + 5)} = 3.7757 - 0.015447 \times T_{V/L=20}$$

Correlation coefficient, $r = 0.3132$;
Coefficient of determination, $r^2 = 0.0981$

The coefficient of determination indicates that only about 10 percent of the variation is accounted for by fuel volatility and its adjustment for ambient temperature. Despite the obvious scatter of data points, the slope of the regression line is significant at 99.9 percent confidence, with a t value of -3.89.

Another method of analysis which accounts for car-to-car as well as fuel and ambient variations, by assigning severity coefficients to each car, was applied to all the data in Table VIII, including Fuel 4. The r^2 value was increased to 0.844, showing that the new regression accounts for 84 percent of the test variability. In this method the regression equation contains $T_{V/L=20}$ as a log function and contains a dummy variable for each car, the dummy variable being 1 for the car providing any particular data point, and 0 for all others.* The effect is to separate the influence of car severity from that of volatility on driveability ratings. The basic regression equation is:

$$\text{Log(TWD + 5)} = a + b \times \log(T/131) + ca \times CA + cb \times CB$$

$$+ \ldots + cz \times CZ + \ldots + cau \times CAU, \text{ where}$$

a, b, ca, cb ... cau are regression coefficients,
T is the adjusted $T_{V/L=20}$, and
CA, CB ... CAU are the car dummy variables, 0 or 1.

The constant "a" plus the regression coefficient for any car gives the predicted log(TWD + 5) for that car when operated with unweathered Fuel 3 ($T_{V/L=20} = 131$).

Results of this regression analysis are shown in the second column of Table IX. The correlation for the average car (using the average of coefficients ca to cau) is shown as a dashed line in Figure 9, corresponding to the equation:

$$\text{Log(TWD + 5)} = 1.7367 - 4.6094 \times \log(T/131)$$

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* The regression technique is further described in API Publication No. 4289, "Fuel Economy Trends in Passenger Car Fleets, 1967-1974," and in SAE Paper 790929, "Fuel Economy Trends in Passenger Car Fleets--Effects of Emissions Controls" by D. S. Gray, J. H. Freeman, J. L. Keller, and W. J. Koehl, October 1979.

similar to the 1975 model cars; they are generally more tolerant of volatility than the 1971 models, and less tolerant than the 1982 models. This observation still holds if it is assumed that the limiting $T_{V/L=20}$ line for the customer cars is too high at the lower end by as much as 3-6°F, owing to the method of estimating volatility, as discussed in Section VI.

B. Hot Driveability Tests

Table VII shows estimates of fuel $T_{V/L=20}$, before adjustment to 100°F ambient air, for hot driveability tests with each car/fuel combination used in either hot driveability or customer testing. A list of fuels tested in either procedure is included. In all but a few cases, the $T_{V/L=20}$ for Fuels 1, 3, and 5 were estimated from API gravity measured at the end of hot driveability tests. In a few, the gravity was not recorded for Fuel 1 or Fuel 3, and the $T_{V/L=20}$ shown, as a best estimate for the missing value, is the average for all other cars with that fuel. Few gravities were measured in hot driveability tests on Fuel 4, and none on Fuel 2 (hot driveability was not run on Fuel 2). When these fuels were used in either customer or hot driveability testing, estimates for the missing values were made from a linear regression of unadjusted $T_{V/L=20}$ for other fuels in the same car against blend composition.

For each car/fuel combination, Table VIII shows the TWD, adjusted for driver severity, and the fuel $T_{V/L=20}$, adjusted to 100°F ambient. When repeat tests were made, the figures are averages for the number of tests shown. The adjusted TWD data were converted to a logarithmic function, i.e., log (TWD + scaling constant), for further analyses in order to normalize the data distribution. With TWD available from all forty-seven cars on Fuel 3, distribution plots of the log function made with scaling constants of 1, 3, 5, 7, and 10 showed the most normal straight-line distribution with the constant 5; curves with higher constants were somewhat concave upward, and those with lower constants concave downward. While it is evident from the graph that TWD increases with fuel volatility from Fuel 1 to 3 to 5, it is also evident that there is far more variation among tests with a single fuel than there is between fuels. Sources of variation not accounted for in Figure 8 include, besides testing error, at least differences in car sensitivity, differences in fuel weathering among vehicles and tests, and differences in ambient temperature at the time of testing. The log function was used in Figure 8 and for further analysis, because it exhibits a much more normal distribution than TWD itself; the distribution curves were less skewed with the constant 5 in the function than with 10.

The average air temperature so established for customer tests was 103.5°F. The average ambient for vapor lock tests was 99.4°F, and for hot driveability tests was 100.4°F. Test fuel volatility in all tests was normalized to 100°F ambient by adjusting the $T_{V/L=20}$ 1°F for each degree that the recorded air temperature departed from 100°F:

$$T_{V/L=20\ adj.} = T_{V/L=20,\ actual} + 100 - \text{Air temperature}$$

In subsequent sections, $T_{V/L=20}$ will mean, unless otherwise noted, the value as adjusted to 100°F ambient.

IX. DISCUSSION OF RESULTS

A. Vapor Lock Tolerance Evaluation by Trained Raters

The vapor lock-limiting $T_{V/L=20}$ for the forty-seven customer cars evaluated by trained raters at 100°F ambient and the corresponding RVP's are shown in Table VI, along with the critical soak condition and acceleration speed range. For twenty-nine of the cars, a specific limiting volatility corresponding to 25 percent increase in acceleration time was determined, but for the other eighteen, only values "less than" the $T_{V/L=20}$ of the most volatile fuel tested (seventeen cars) or "more than" the $T_{V/L=20}$ of the least volatile (one car) were established. Of the twenty-nine with a definite limit, twenty-seven were more limited in tests with the engine idling during the hot soak period, and two with the engine off. The distribution of limiting $T_{V/L=20}$ for all forty-seven cars is shown graphically in Figure 6; the line is calculated for normal distribution of the twenty-nine defined values, with the assumption that the eighteen other values all are beyond the range of the defined ones. A substantially identical regression line (within 0.3°F) was obtained when it was arbitrarily assumed that the limiting $T_{V/L=20}$ was 6°F lower than the "less than" or 6°F higher than the "greater than" values in Table VI and Figure 6.

In Figure 7, the distribution of vapor lock tolerance of the customer cars is compared with that of smaller groups of 1971, 1975, and 1982 model cars tested in other CRC programs. (In those programs, the tests were originally adjusted to 95°F ambient; the 1971 and 1975 data have been shifted up 5°F, and the 1982 data 3.5°F, based upon the 1982 analysis, for comparability at 100°F.)* It is seen that the 1977-1981 customer cars are most

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* CRC Report No. 455, "Evaluation of a High-Temperature Driveability Test Procedure - 1971 CRC Yuma Program," June 1973.
CRC Report No. 490, "Driveability Performance of 1975 Passenger Cars at High Ambient Temperatures," November 1976.
CRC Report No. 538, "Two-Temperature Vapor Lock and High-Temperature Driveability Performance of 1982 Passenger Vehicles," December 1984.

were they studied. No questionnaires were received for some days that customers were known to have driven, and some questionnaires were lacking items such as date or car identity. These deficiencies were symptomatic of a limitation in the program regarding follow-up to see that questionnaires were properly and adequately filled out. In consequence, a number of individual questionnaires (including all from one customer) had to be rejected as inadequate. Customers were sometimes observed filling out questionnaires for several days at one time. Follow-up to improve the quality of customer responses was made difficult by the limited CRC manpower available for this task, and by a Garrett prohibition against contacting customers in person or by telephone during working hours.

VIII. WEATHER DATA

Ambient air temperatures for vapor lock and hot driveability tests at the Dynamic Science location were determined from measurements recorded periodically at the site. For the customer tests, which involved driving over a wider area and at less certain times, weather data obtained from the National Oceanic and Atmospheric Administration (NOAA) for the Sky Harbor International Airport at Phoenix were used. These data are presented in Appendix G. Because the NOAA temperatures are reported at three-hour intervals which happen not to be centered on the three-hour intervals specified in the questionnaire for customer driving, an algorithm was devised to assign a weighted average NOAA temperature to each customer driving interval:

$$\text{CRC interval temp.} = 0.75 \times A + 0.15 \times B + 0.10 \times C,$$

where A = NOAA temperature during customer interval,
B = NOAA temperature before customer interval, and
C = NOAA temperature following customer interval.

For this purpose, customer driving before 9:00 AM was assumed to be between 6:00 and 9:00 AM, and driving after 6:00 PM was assumed to be between 6:00 and 9:00 PM. (An adjustment to the algorithm was made for the 3:00-6:00 PM temperatures on sixteen days to account for the daily maximum temperatures on those days being higher than the NOAA temperatures for either 2:00 or 5:00 PM. Assuming that the maximum occurred between 2:00 and 5:00 PM, one-half the difference between the daily maximum and the higher of the 2:00 or 5:00 PM temperatures was arbitrarily added to the temperature calculated by the algorithm.) The ambient temperatures so calculated for the daily time intervals during the program are shown in Table V. The air temperatures shown for customer driving each day in Appendix F are the highest temperature for any interval during which the customer reported driving. In a few cases when a questionnaire indicated driving but failed to show any time interval, it was assumed that the vehicle was used before 9:00 AM and between 3:00 and 6:00 PM, representative of trips to and from work.

Provision was made in case of "C" response to Fuel 1 for checking the car's mechanical condition and providing a "fix" if so indicated. The fuel assignment guidelines, though deemed necessary from a safety standpoint, imposed an important technical limitation on the program design and data analysis. As indicated in Figure 5, all customers began the test program with Fuel 3. A customer who gave Fuel 3 a "C" response in the first week would, if the Figure 5 decision chart were followed strictly, be assigned only Fuels 1 or 2 for the rest of the program. In part because of indications that some customers were particularly critical during the first week of test, an exception to Figure 5 was adopted on-site. If a customer reported "A" or "B" performance on Fuel 1 or 2, he was then allowed to evaluate Fuel 3 again and, if he indicated an "A" or "B" response on his second evaluation of Fuel 3, he then progressed to fuels of higher volatility. If a "C" performance was again confirmed with Fuel 3, however, he evaluated only Fuels 1 and 2 for the duration of the program. It is recognized that the fuel assignment guidelines created a built-in bias to the effect that the more critical cars/customers were assigned predominantly less volatile fuels, whereas the less critical were assigned more volatile fuels.

Customer responses to Questions 3-10 regarding specific performance problems were assigned demerits, based upon the problem and the severity indicated, according to the following system:

Question Number and Problem		-----Demerits by Severity Level------			
		None	Slightly Bothersome	Annoying	Very Troublesome
3.	Excessive Cranking	0	4	8	16
4.	Starting Stalls	0	4	8	16
5.	Driving Stalls	0	16	32	64
6.	Idle Roughness	0	2	4	8
7.	Hesitation, etc.	0	6	12	24
8.	Lack of Power	0	6	12	24
9.	Surge	0	4	8	16
10.	Backfire	0	6	12	24

This system is similar to that developed for trained raters in hot driveability tests, both in the relative importance assigned to different problems and in the exponential increase in demerits with severity. The total customer demerits per test, however, will tend to be lower than trained rater TWD, simply because customers evaluate each question only once per day (1 day = 1 test), whereas a trained rater evaluates various malfunctions repeatedly in one hot driveability test.

Customer questionnaire responses are summarized in Appendix F, with the answers to Questions 3-10 expressed in demerits assigned as above. Referring to Figure B-1 in Appendix B, so few customers answered the unnumbered question about "first time" start-up or the time of day for Questions 3-10 that the responses are not included in Appendix F nor

VII. CUSTOMER PARTICIPATION

Each customer was given free fuel for the entire program while driving his car in routine daily service. In return, each customer was requested to complete a questionnaire each day recording his car's performance in normal daily service. The questionnaire is illustrated in the program description in Appendix B, Figure B-1. Questions were phrased in lay terms. Question 2 asked the customer's opinion of overall performance for the day. Questions 3-10 asked the customer about specific driveability problems. Question 11 asked whether the car's performance was acceptable, and Question 12 asked which driveability problem was the most severe during the day. Question 13 related to traffic and driving conditions. Question 14, to be answered only on the fuel-change day, asked whether performance during the week in question was better, the same, or worse than the previous week.

All customers were assigned a specific day of the week for fuel tank drain and change to another fuel as indicated by the schedule in Appendix B. During the first week of testing, all customers were supplied with Fuel 3, a medium volatility fuel. Each week thereafter, each customer was supplied with another prescheduled fuel. The initial program proposed a fuel schedule in which each customer would test all five fuels for one week each, which would have been a balanced design. There was some concern, however, that some vehicles/customers could not tolerate high vapor pressure fuels and could possibly experience severe driveability problems. As a result of this concern for customer safety, guidelines were established to select each customer's next test fuel. Selection of the next test fuel was based on the customer's response to his current test fuel. These guidelines allowed the customer to move only one step higher or lower in fuel volatility with each fuel change.

As an aid to CRC participants conducting the on-site program, a decision-making chart, shown in Figure 5, was provided to select the customer's next test fuel. An "A," "B," or "C" response indicated various severity levels of customer responses with his current test fuel. An "A" response indicated that the customer had encountered no problems. A "B" response indicated a few minor complaints. A "C" response indicated that severe problems were encountered. Severe driveability problems were considered to have occurred with the current fuel or to be potential problems with the next higher volatility fuel if, at least twice during the week, the customer had made the following comment concerning his current fuel:

- o stalls (Questions 4 or 5) were rated as troublesome at least twice; or
- o hesitation or lack of power (Questions 7 or 8) were rated as troublesome at least twice, along with a simultaneous unacceptable rating in performance (Question 11).

The end result of hot driveability testing is the total weighted demerits, or TWD, calculated by the CRC demerit rating procedure (included in Appendix E) for a car on each fuel tested. When replicate tests were made with the same fuel in the same car, the TWD's, adjusted for driver severity, and $T_{V/L=20}$'s adjusted to 100°F ambient, were averaged. The program originally scheduled hot driveability testing of each car on all five fuels; however, due to difficulties in scheduling customer cars for work at the remote site, the program was modified to reduce the requirement to testing Fuels 1, 3, and 5. Seventeen of the forty-seven vehicles were also tested on Fuel 4; none were tested on Fuel 2. Car 47 was not tested on Fuel 1; since all other tests were complete on this car and fortuitously its TWD had essentially the same rank among other vehicles on Fuels 3 and 5, a proxy TWD value for Fuel 1 was assigned at the same rank level.

The four rental cars were also tested for hot driveability with Fuels 3 and 5 by all five trained raters, usually in two or more tests. The resulting data were used to establish driver severity adjustment factors, so that TWD's determined on customer cars by different drivers could be adjusted to a common level of severity. (In vapor lock tests, the measurements of acceleration time are objective; thus, severity adjustment factors are not needed.) Hot driveability TWD by the several raters on the rental cars are shown in Table IV. Adjustment factors were developed from these data by linear regression to determine the constant "k" for each rater in a logarithmic function of TWD:

$$\text{Log (Adjusted TWD + 10)} = \text{Log (Raw TWD + 10)} + k$$

The logarithmic form was used because it was known from previous programs and from preliminary analyses that driver differences tend not to be constant in TWD, but to increase with TWD magnitude, and that test variance is more uniform from low to high TWD in the logarithmic form. The scaling constant, 10, was selected to approximately linearize the data distribution; without it, low TWD's would be grossly exaggerated (i.e., the range from 1 to 0 TWD would become 0 to minus infinity in log TWD.

Rater 2: Adj. TWD = 10**[log(TWD+10) - 0.09931] - 10
Rater 3: Adj. TWD = 10**[log(TWD+10) + 0.17077] - 10
Rater 4: Adj. TWD = 10**[log(TWD+10) - 0.04336] - 10
Rater 5: Adj. TWD = 10**[log(TWD+10) + 0.08713] - 10
Rater 6: Adj. TWD = 10**[log(TWD+10) - 0.11522] - 10

where ** means exponentiation.

In these equations, "**" in the term 10** (expression) mans exponentation; i.e., 10 raised to the "(expression)" power. Here and throughout this report, logarithms, signified by "log," are to the base 10. In rare instances, the adjusted TWD can be slightly negative, as for raw TWD of zero from a relatively severe rater with a negative correction factor; in such cases, the adjusted TWD was arbitrarily set at zero.

This last correlation, illustrated by a curve in Figure 3, is not rigorous for weathered fuel, but is believed to be a reasonable approximation since both RVP and $T_{V/L=20}$, unlike API gravity, are direct measures of front-end volatility.

Figure 4 shows curves of $T_{V/L=20}$ versus API gravity derived in this way for weathered fuel from each of the five blends, as well as for the fresh blends.

Table III shows the average API gravity for weathered samples of Fuels 1, 3, and 5 from three test procedures (vapor lock with key-off soak, vapor lock with idle soak, and hot driveability) and the average $T_{V/L=20}$ as calculated from the correlations with API for fresh fuels and for weathered fuels. Although the data are averages from different groups of vehicles and are therefore not strictly comparable, it seems evident that weathering is more severe for hot driveability than for vapor lock tests, and that weathering increases, as expected, with fresh-fuel volatility. Weathering also appears to be more severe for vapor lock tests with the idle soak period than with the key-off soak period; the difference is apparently due in part from the fact that idle soak tests were often run following a key-off soak test. $T_{V/L=20}$'s determined by the evaporation model correlation are consistently lower (more volatile) than those from the fresh-fuel correlation for Fuels 3 and 5, and show less increase with weathering. The lesser increase in $T_{V/L=20}$ is most pronounced with Fuel 5 and with the hot driveability procedure.

VI. CRC RATER EVALUATIONS

Each customer's car was evaluated by a trained rater for its vapor lock tolerance and its hot driveability. These tests use previously established CRC procedures detailed in Appendix E. The end result of vapor lock testing is the vapor lock-limiting fuel volatility for each car as judged from plots of percent increase in acceleration time versus $T_{V/L=20}$. All $T_{V/L=20}$ data for either vapor lock or hot driveability tests were adjusted for deviations in ambient temperature from 100°F at the time of testing, by 1°F $T_{V/L=20}$ for each 1°F ambient. Vapor lock tests were run in each car with enough different fuels (2 to 8, average 3.4) to estimate the limiting $T_{V/L=20}$, when possible, for 25 percent increase in acceleration time. For some cars, a limiting $T_{V/L=20}$ of only "less than" or "greater than" a certain value could be assigned, because the car either did not exhibit 25 percent increase with the most volatile fuel tested, or it gave more than 25 percent with the least volatile.

by the above correlations overestimates the loss in volatility due to weathering. For vapor lock tests, the discrepancy, based upon estimates described below, probably ranges from negligible with Fuel 1 to about 3-6°F $T_{V/L=20}$ with Fuel 5. Fortunately, evaluation of the most critical cars for vapor lock depends upon the least volatile fuels, with which the error is least.

The problem of estimating fuel volatility from the API gravity of samples was of more concern with the hot driveability tests, in part because weathering was appreciably more severe. Improved estimates of the change in RVP and $T_{V/L=20}$ with API gravity were made by means of an evaporation model of the type used in refinery simulation studies, and in a CRC study of gasoline evaporation losses from passenger cars.* For each of the Fuels 1-5, changes in composition accompanying evaporation in several small steps were computed, then RVP's and API gravities were calculated for the residual fuel compositions. The hydrocarbon composition of a commercial gasoline similar to Fuel 1 was approximated by interpolating the front-end composition (<160°F) for 7.3 psi RVP from 5.4 and 10.6 psi RVP fuels in CRC Report No. 400* and estimating heavier fractions to match the distillation and K factor of Fuel 1. Compositions of Fuels 2-5 were then determined by appropriate additions of isobutane. Weathering of each fuel in small increments corresponding to 2-5 percent of the n-pentane content was simulated by computation for a temperature of 120°F, representative of a hot fuel-tank temperature. Least squares quadratic equations were then fitted to the RVP and API gravity data for each fuel; the equations are shown below and plotted in Figure 2, along with the correlation curve for the fresh fuel blends as supplied.

Fuel 1: $RVP = 7.5524 - 0.620501 \times API + 0.0111902 \times API^2$

Fuel 2: $RVP = 23.0009 - 1.31615 \times API + 0.0189781 \times API^2$

Fuel 3: $RVP = -39.8617 + 0.881985 \times API$

Fuel 4: $RVP = -5.2182 - 0.408891 \times API + 0.0121651 \times API^2$

Fuel 5: $RVP = -10.9143 - 0.225859 \times API + 0.0108478 \times API^2$

Fuels 1-5, as supplied:

$$RVP = -113.1119 + 2.83872 \times API - 0.0118218 \times API^2$$

For every calculated value of weathered fuel RVP, $T_{V/L=20}$ was then estimated by the correlation for fresh fuel blends:

$$T_{V/L=20} = 205.741 - 8.23223 \times RVP + 0.116978 \times RVP^2$$

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* CRC Report No. 400, "1966 CRC Motor Vehicle Evaporation Loss Technique Evaluation," August 1966, revised September 1966.

functions of demerits in Figure 12 (b); the coefficient of determination is less than 0.01 for both treatments. Although some reasonable degree of correlation might have been expected, the car effect must be outweighed by many other contributing differences such as customer versus trained rater driving patterns, driving conditions, and performance expectations; temperature at the time(s) of testing; fuel weathering; and car history just prior to testing (overnight cool-down).

A valid correlation is shown in Figure 13 between trained rater TWD and percent customer satisfaction with fuels of equal $T_{V/L=20}$. Figure 13 was derived by, in effect, cross-plotting log(TWD + 5) from Figure 9 against percent of cars satisfied from Figure 10, both of which have significant correlations with $T_{V/L=20}$ (the former at least when car differences were accounted for). As in Figure 9, actual TWD corresponding to the log function is shown on the right-hand scale. The same data relation is plotted in Figure 14, but with TWD and percent of cars scaled directly, rather than as log and probability functions. It can be seen that 50 percent of customer cars are satisfied with volatility that gives about 65 TWD in the average car; satisfaction increases to 90 percent at 30 TWD and decreases to about 23 percent at 100 TWD.

A correlation between customer demerits and trained rater TWD at equal $T_{V/L=20}$ in the average car was obtained by combining the separate regressions against $T_{V/L=20}$ listed in Table IX. This correlation is shown graphically in Figure 15. The trained rater TWD ranges from about 15 to 30 times as high as customer demerits; the difference arises in large part, as mentioned before, from the many ratings made in the course of a single CRC hot driveability test by a trained rater.

X. SUGGESTIONS FOR FUTURE PROGRAMS

- If at all possible, measure front-end volatility of fuel samples from car tests directly, as by RVP or $T_{V/L=20}$, rather than indirectly by correlation with API gravity or other properties which are less responsive to volatility change.
- Develop correlations between fuel properties of interest for car performance with tank fuel (as opposed to supplied fuel) from measurements on experimentally weathered fuel, rather than on unweathered blends.
- Investigate how well RVP and $T_{V/L=20}$ correlations for fresh blends correspond with correlations for weathered fuel.

- In any car tests that extend over several days or longer, test tank samples more than once, at least in hot-weather programs; for example, immediately after filling and at two and seven days.

- In any program to evaluate customer response over a period of weeks, allow for an initial break-in week, upon which the program does not depend for crucial data.

- In any customer questionnaire, present all questions to be answered regularly in a single numbered list.

- In any customer survey similar to the 1981 program, provide for CRC personnel to scan returned questionnaires upon receipt, review unclear or inadequate responses promptly with the customer, and do not continue the program with customers who fail to cooperate.

- For fuel blends designed as a volatility series, specify that differences in composition are reasonably representative of normal commercial fuels, unless the objectives of the program call for special blending.

TABLES

AND

FIGURES

TABLE I

CUSTOMER AND RENTAL TEST VEHICLES

Car #	Trans.	Model Year	Make and Model	Engine, CID
1	A	1980	Buick Skylark	173
2	A	1979	Ford Fairmont	302
3	A	1979	Chevrolet Malibu	305
4	A	1979	Mercury Capri	171
5	A	1979	Pontiac LeMans	305
6	A	1980	Buick Skylark	173
7	A	1980	Chevrolet Chevette	98
8	A	1980	Ford Pinto	140
9	A	1981	Chevrolet Citation	173
10	A	1979	Buick LeSabre	301
12	A	1976	Chevrolet Monte Carlo	350
13	A	1981	Plymouth Reliant	157
14	A	1979	Chevrolet Malibu	305
15	A	1979	Ford Fairmont	200
16	A	1979	Chevrolet Monza	154
17	A	1979	Ford Fairmont	302
18	A	1980	Ford Fairmont	200
19	A	1979	AMC, Spirit	
20	A	1980	Toyota Corolla	
21	A	1979	Ford Granada	250
22	A	1978	Chevrolet Pickup	350
23	A	1980	Pontiac Bonneville	350
24	A	1980	Mazda 626	122
25	A	1979	Mercury Bobcat	140
26		1981	Chevrolet Pickup	
30	M	1980	Pontiac Sunbird	151
31	A	1980	Toyota Corona	122
32	A	1978	Ford Pinto	140
33	A	1979	Mercury Gran Marquis	351
34	A	1977	Ford F-150 Pickup	351
35	5M	1980	Datsun B-210	98
36	M	1979	Oldsmobile Starfire	231
38	5M	1980	Datsun Pickup	122
44	M	1981	Datsun 210-D	91
45	A	1980	Pontiac Sunbird	151
46	A	1980	Chevrolet Citation	173
47	A	1981	Chevrolet Pickup	305
48	A	1978	Chevrolet Suburban	350
49	A	1979	Pontiac Gran Prix	301
50	A	1980	Buick Regal	301
52	A	1981	Ford F-100 Pickup	256
53	A	1979	Buick LeSabre	302
58	A	1980	Ford LTD	351
59	M	1979	Plymouth Horizon	104
60	A	1980	Oldsmobile Cutlass	305
61	A	1980	Ford Courier	140
62	A	1980	Pontiac Firebird	231
63	A	1979	Ford F-100 Pickup	302
64	A	1979	Ford F-150 Pickup	

(Continued)

TABLE I
(Continued)

CUSTOMER AND RENTAL TEST VEHICLES

Car #	Trans.	Model Year	Make and Model	Engine, CID
65	M	1979	Datsun 310 GX	85
66	A	1979	Buick Regal	195
67	5M	1980	Datsun Pickup	122
68	M	1980	Subaru DL	98
69	A	1980	Datsun 200SX	
70	A	1978	Ford F-100 Pickup	351
R-1	A	1981	Dodge, Aries	135
R-2	A	1981	Ford Fairmont	201
R-3	A	1981	Pontiac, Phoenix	153
R-4	A	1981	Olds, Cutlass	231

Note: Cars 4, 12, 25, 35, 36, 60, 67, and 68 were not included in data analysis due to incomplete data on one or more of the procedures to be compared.

TABLE II

AVERAGE PROPERTIES OF FRESH TEST FUELS

D 86 Distillation, deg F @ % evap.					
% Evap.	Fuel 1	Fuel 2	Fuel 3	Fuel 4	Fuel 5
10	135	127	117	110	99
50	223	222	219	217	213
90	362	359	356	357	351
End Point	429	429	430	432	432
Gravity, deg API	55.0	56.0	57.2	58.4	59.7
RVP, psi	7.3	8.7	10.6	12.4	14.2
T, deg F @ V/L Ratio					
V/L					
5	140.8	129.2	117.6	109.6	100.2
10	145.4	134.3	122.8	114.6	104.4
15	149.2	138.5	127.2	118.9	108.2
20	152.6	142.3	131.1	122.8	112.0
25	155.6	146.1	134.8	126.6	115.8
30	158.5	149.6	138.7	130.4	119.6
35	161.4	153.1	142.2	134.0	123.5

TABLE III

TEMPERATURE AT 20 V/L RATIO ESTIMATED FROM API GRAVITY
FOR DIFFERENT TEST PROCEDURES

A: T@20V/L estimated from gravity correlation for fresh blends.
B: T@20V/L estimated from gravity correlation by evaporation model for weathered tank fuel samples.

	Fuel #1		Fuel #3		Fuel #5	
API Gravity, deg. @ 60 F						
Fresh Fuel, CRC Lab Avg.	55.0		57.2		59.7	
Weathered Fuel, Car Avgs.*						
Vapor Lock, Key-off	55.2 (6)		56.6 (19)		58.2 (35)	
Vapor Lock, Idle	55.2 (18)		56.4 (30)		57.4 (41)	
Hot Driveability	55.1 (44)		56.1 (43)		56.6 (47)	
T@20V/L, Fresh Fuel, Lab Avg	152.6		131.1		112.0	
T@20V/L, Estimates from Gravity	A	B	A	B	A	B
Fresh Fuel	152.4	152.0	131.7	131.7	112.4	112.1
Vapor Lock, Key-off	150.7	151.4	137.4	135.0	123.8	120.4
Vapor Lock, Idle	150.0	151.1	138.5	135.7	129.8	124.4
Hot Driveability	151.5	151.7	141.8	137.5	137.4	129.3
Incr. in T@20V/L, weathering						
Vapor Lock, Key-off	-1.7	-0.6	5.7	3.3	11.4	8.3
Vapor Lock, Idle	-2.4	-0.9	6.8	4.0	17.4	12.3
Hot Driveability	-0.9	-0.3	10.1	5.8	25.0	17.2
Diff. in Ests., Weathered	A-B		A-B		A-B	
Vapor Lock, Key-off	-0.7		2.4		3.4	
Vapor Lock, Idle	-1.1		2.8		5.4	
Hot Driveability	-0.2		4.3		8.1	

* Figures in parentheses are numbers of cars averaged.

TABLE IV

HOT DRIVEABILITY TESTS WITH RENTAL CARS
BY TRAINED RATERS

Car No.	Total Weighted Demerits				
	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Fuel 3					
R-1	54	299	61	209	68
R-1	--	393	209	319	125
R-1	--	190	69	--	--
R-1	--	--	77	--	--
R-2	22	72	16	19	11
R-2	18	--	19	36	--
R-2	11	--	--	--	--
R-3	26	54	3	47	34
R-3	16	63	--	39	41
R-3	--	--	--	40	--
R-3	--	--	--	40	--
R-4	12	31	7	266	90
R-4	18	--	177	--	80
Fuel 5					
R-1	156	204	242	368	77
R-1	168	393	200	186	92
R-1	--	479	272	--	--
R-2	36	149	42	41	23
R-2	46	35	13	--	--
R-2	--	76	25	--	--
R-3	42	60	7	40	64
R-3	42	65	59	46	48
R-3	48	58	--	--	--
R-4	184	61	86	120	127
R-4	96	112	46	379	66
R-4	178	86	--	--	--
R-4	--	142	--	--	--

TABLE V

PHOENIX AIR TEMPERATURES FOR TEST PERIOD

Time: / Date	<9AM	9-12	12-3	3-6	>6PM
6/15	82	89	95	95	95
6/16	88	98	104	106	102
6/17	88	99	105	107	103
6/18	85	98	106	109	104
6/19	87	100	108	109	105
6/20	89	101	109	111	106
6/21	91	101	107	110	105
6/22	92	102	108	110	105
6/23	90	100	107	109	106
6/24	91	101	107	109	106
6/25	95	104	111	113	106
6/26	95	106	111	110	105
6/27	93	101	105	106	101
6/28	90	97	100	98	92
6/29	89	98	104	107	104
6/30	91	94	96	96	92
7/01	87	95	101	100	97
7/02	88	98	104	106	101
7/03	90	96	106	109	105
7/04	92	97	104	109	107
7/05	92	100	107	110	107
7/06	92	100	105	107	105
7/07	92	99	104	105	100
7/08	90	96	102	104	97
7/09	92	99	105	107	105
7/10	92	98	103	104	99
7/11	96	93	98	96	86
7/12	84	92	98	100	92
7/13	85	91	98	101	93
7/14	89	96	101	103	95
7/15	89	97	103	105	100
7/16	83	91	97	99	94
7/17	86	96	102	104	98
7/18	89	97	103	107	104
7/19	91	97	103	106	104
7/20	91	98	103	106	104
7/21	93	101	107	110	106
7/22	90	96	100	102	102
7/23	92	101	108	110	106
7/24	93	101	107	109	105
7/25	92	94	97	99	96
7/26	89	97	102	105	102
7/27	92	100	105	107	101
7/28	89	97	104	106	104
7/29	91	97	103	105	102
7/30	81	87	93	98	96
7/31	87	93	98	98	92
8/01	86	93	100	102	98
8/02	89	97	103	106	104
8/03	91	100	106	107	104
8/04	90	99	104	105	100
8/05	87	94	101	105	102
8/06	90	96	102	106	102
8/07	91	97	103	106	103
8/08	90	98	104	106	100
8/09	91	98	104	106	104
8/10	91	98	103	102	88

Adapted from NOAA data in Appendix G. See text.

TABLE VI

VAPOR LOCK LIMITING VOLATILITY FOR CUSTOMER CARS AT 100° F AMBIENT AIR

Car #	Critical Conditions		Temp at 20 V/L, deg F	RVP, psi
	Hot Soak	Speed Range		
1	Idle	15-60	143	8.7
2	Idle	15-60	132	10.5
3	----	----	<121	>12.5
5	----	----	<124	>12.0
6	Idle	15-60	145	8.4
7	Idle	15-60	137	9.7
8	Idle	15-60	150	7.6
9	Idle	15-60	142	8.9
10	----	----	<131	>10.7
13	Idle	15-60	128	11.2
14	----	----	<112	>14.3
15	Idle	15-60	124	12.0
16	Idle	15-60	139	9.3
17	Idle	15-60	141	9.0
18	Idle	15-60	143	8.7
19	----	----	<120	>12.7
20	----	----	<125	>11.8
21	Engine Off	15-60	>159	<6.3
22	Idle	15-50	145	8.4
23	----	----	<122	>12.3
24	Idle	15-50	145	8.4
26	----	----	<127	11.4
30	Idle	15-60	155	6.9
31	----	----	<127	>11.4
32	Idle	15-60	145	8.4
33	Idle	15-60	143	8.7
34	Idle	15-60	144	8.5
38	----	----	<127	>11.4
44	----	----	<127	>11.4
45	Idle	15-60	153	7.2
46	----	----	<122	>12.3
47	Idle	15-60	130	10.9
48	Idle	15-60	135	10.0
49	----	----	<139	>9.3
50	Idle	15-60	135	10.0
52	Idle	15-60	124	12.0
53	----	----	<127	>11.4
58	Idle	15-50	134	10.2
59	----	----	<133	>10.4
61	Engine Off	15-50	131	10.7
62	Idle	15-60	144	8.5
63	Idle	15-60	139	9.3
64	----	----	<125	11.8
65	----	----	<127	>11.4
66	Idle	15-50	147	8.1
69	Idle	15-60	135	10.0
70	Idle	15-60	138	9.5

TABLE VII

$T_{V/L=20}$ FROM API GRAVITY IN HOT DRIVEABILITY TESTS

(and Estimates Used for Missing Values)

Car #	--Fuels Used for-- Customer Tests	CRC Hot Drvbility	Temperature at V/L=20, deg F Fuel #1	Fuel #2	Fuel #3	Fuel #4	Fuel #5
1	1,3,5	1,3,5	155.2		140.6		140.0
2	1,2,3	1,3,5	149.2	143.4 *	135.3		135.3
3	1,3,4	1,3,5	153.6		138.4	133.2 *	127.3
5	3,4,5	1,3,5	152.4		140.0	136.3 *	131.9
6	1,3,4,5	1,3,5	152.0		134.8	129.9 *	124.0
7	1,3,4	1,3,5	149.2		136.3	132.1 *	127.3
8	1,3,4,5	1,3,5	152.0		135.8	130.3 *	124.0
9	1,2,3	1,3,5	152.8	143.3 *	132.7		119.6
10	1,3,4,5	1,3,5	153.2		143.3	137.8 *	132.5
13	1,2,3,4	1,3,5	153.2	144.9 *	134.3	132.8 *	129.0
14	1,2,3,4,5	1,3,5	148.0	142.2 *	136.9	129.5 *	122.6
15	1,2,3,4,5	1,3,4,5	151.6	144.4 *	136.9	130.6 *	124.0
16	1,2,3,4	1,3,4,5	150.4	143.7 *	135.6	133.0 *	129.0
17	1,3,4,5	1,3,4,5	151.8 #		143.8	133.9 *	125.7
18	3,4,5	1,3,4,5	150.4		136.3	127.4 *	119.0
19	1,3,4,5	1,3,4,5	154.8		144.4	139.1 *	133.9
20	1,3,4,5	1,3,4,5	150.4		135.3	131.3 *	126.2
21	1,3,4,5	1,3,5	155.0		135.6	132.7 *	127.9
22	1,3,4,5	1,3,5	152.0		139.0	134.0 *	128.5
23	1,3,4,5	1,3,5	153.6		135.8	136.4 *	134.2
24	1,2,3,4,5	1,3,4,5	151.6	144.9 *	137.5 #	132.7 *	127.3
26	1,2,3,4	1,3,5	150.4	142.8 *	133.7	130.4 *	125.7
30	1,2,3	1,3,5	149.6	145.5 *	140.6		135.9
31	1,2,3,4,5	1,3,4,5	151.8 #	144.7 *	136.9	131.6 *	125.7
32	1,2,3,4	1,3,4,5	153.6	145.8 *	137.5 #	131.0 *	124.0
33	1,3,4,5	1,3,4,5	151.2		137.1	128.7 *	120.7
34	3,4,5	1,3,5	151.2		134.8	127.6 *	120.1
38	1,2,3	1,3,5	151.6	143.6 *	135.3		121.2
44	3,4,5	1,3,5	151.2		136.9	133.8 *	129.6
45	3,4,5	1,3,5	148.8		134.3	131.1 *	126.8
46	1,2,3,4	1,3,5	151.2	145.8 *	137.9	139.9 *	139.4
47	1,3,4	3,5	151.8 #		132.2	129.3 *	124.5
48	1,3,4,5	1,3,4,5	152.4		137.9	137.6 *	135.3
49	1,3,4,5	1,3,4,5	152.8		137.5 #	136.5 *	133.6
50	1,3,4,5	1,3,5	151.6		136.9	136.8 *	134.7
52	1,2,3,4,5	1,3,5	154.0	146.0 *	136.3	133.5 *	129.0
53	1,2,3,4	1,3,4,5	152.0	145.6 *	137.5 #	136.4 *	133.6
58	1,3,4,5	1,3,5	153.6		139.5	137.2 *	133.6
59	1,2,3,4	1,3,4,5	150.4	145.3 *	139.0	137.7	138.8
61	1,3,4,5	1,3,5	149.6		134.3	128.3 *	121.8
62	1,3,4,5	1,3,4,5	153.2		146.3	142.9 *	139.4
63	1,3,4,5	1,3,4,5	152.4		141.1	137.7	138.2
64	1,3,4,5	1,3,4,5	150.4		138.4	136.0	131.9
65	3,4,5	1,3,5	151.6		139.0	135.9 *	131.9
66	1,3,4,5	1,3,5	152.0		137.4	136.1 *	133.0
69	1,3,4,5	1,3,5	152.0		141.1	139.0 *	135.9
70	1,3,4,5	1,3,5	151.2		134.3	129.4 *	123.4
		Averages:	151.8	144.5	137.5	133.8	129.3

Not determined. Entry is average for same fuel, other cars.
* Not determined. Entry from linear regression, same car, other fuels.
Avg. R square for T20V/L vs. blend % is 0.943; range = 0.656-1.000

TABLE VIII

HOT START AND DRIVEAWAY EVALUATION OF CUSTOMER CARS
TWD ADJUSTED FOR RATER SEVERITY, $T_{V/L=20}$ ADJUSTED TO 100° F AIR TEMPERATURE

	FUEL 1				FUEL 3				FUEL 4				FUEL 5			
Car #	Runs	TWD	Air Temp	Temp @ V/L=20	Runs	TWD	Air Temp	Temp @ V/L=20	Runs	TWD	Air Temp	Temp @ V/L=20	Runs	TWD	Air Temp	Temp @ V/L=20
1	1	35.9	98	157.2	3	171.0	100	140.6					1	129.3	107	133.0
2	1	22.6	108	141.2	2	59.1	101	134.3					1	9.9	99	136.3
3	1	7.2	107	146.6	3	21.4	104	134.4					1	33.4	99	128.3
5	1	19.3	107	145.4	1	8.3	102	138.0					1	10.8	96	135.9
6	2	54.9	101	151.0	1	0.0	90	144.8					1	3.6	86	138.0
7	1	26.7	98	151.2	1	68.2	97	139.3					1	119.5	92	135.3
8	1	5.1	108	144.0	1	47.3	101	134.8					1	120.5	96	128.0
9	1	0.0	92	160.8	1	3.6	94	138.7					1	1.8	92	127.6
10	1	25.4	102	151.2	1	23.0	105	138.3					1	18.1	99	133.5
13	1	58.8	103	150.2	1	137.5	98	136.3					1	291.4	101	128.0
14	1	1.1	92	156.0	2	32.2	101	135.9					2	15.5	93	129.6
15	1	92.2	100	151.6	2	124.5	102	134.9	1	161.9	105	125.6	2	111.5	103	121.0
16	1	41.3	91	159.4	3	65.6	99	136.6	1	110.0	108	125.0	2	67.1	95	134.0
17	1	9.9	101	150.8	1	6.3	104	139.8	1	16.2	107	126.9	1	17.1	96	129.7
18	2	9.5	93	157.4	2	28.5	101	135.3	1	45.2	104	123.4	2	28.1	100	119.0
19	2	28.5	97	157.8	2	18.4	108	136.4	1	34.5	106	133.1	3	30.8	103	130.9
20	1	2.7	98	152.4	2	3.9	102	133.3	1	20.2	106	125.3	2	15.1	106	120.2
21	2	59.0	108	147.0	2	68.0	100	135.6					2	84.0	100	127.9
22	1	9.0	109	143.0	1	31.8	105	134.0					1	43.7	100	128.5
23	1	25.4	108	145.6	1	29.1	97	138.8					1	23.0	104	130.2
24	1	11.5	104	147.6	1	36.1	101	136.5	1	11.5	109	123.7	1	92.7	96	131.3
26	1	14.1	105	145.4	1	6.9	95	138.7					1	42.5	102	123.7
30	1	91.4	102	147.6	1	18.1	99	141.6					1	50.6	94	141.9
31	1	58.2	108	143.8	2	63.7	98	138.9	1	65.6	104	127.6	2	102.7	101	124.7
32	1	11.5	99	154.6	1	153.0	109	128.5	1	138.0	109	122.0	1	227.9	94	130.0
33	1	0.0	106	145.2	2	30.3	97	140.1	1	10.8	101	127.7	2	14.9	97	123.7
34	1	8.3	99	152.2	1	10.7	104	130.8					1	22.6	96	124.1
38	1	33.0	103	148.6	1	52.2	100	135.3					1	113.0	95	126.2

continued

TABLE VIII
(Continued)

HOT START AND DRIVEAWAY EVALUATION OF CUSTOMER CARS
TWD ADJUSTED FOR RATER SEVERITY, $T_{V/L=20}$ ADJUSTED TO 100° F AIR TEMPERATURE

	FUEL 1			FUEL 3			FUEL 4			FUEL 5		
Car #	Runs	TWD	Air Temp	Temp @ V/L=20	Runs	TWD	Air Temp	Temp @ V/L=20	Runs	TWD	Air Temp	Temp @ V/L=20	Runs	TWD	Air Temp	Temp @ V/L=20
44	1	12.2	96	155.2	1	28.3	101	135.9					1	67.5	97	132.6
45	1	493.5	100	148.8	2	317.0	100	134.3					1	560.8	98	128.8
46	1	90.8	104	147.2	1	178.2	102	135.9					1	81.9	96	143.4
47	0	30.7*	100	151.8	1	47.1	95	137.2					1	63.1	95	129.5
48	1	36.0	108	144.4	2	18.6	100	137.9	1	25.0	107	130.6	2	35.2	107	128.3
49	1	0.0	98	154.8	1	6.3	105	132.5	1	0.0	109	127.5	2	13.1	107	126.6
50	1	60.9	106	145.6	1	46.2	98	138.9					1	117.1	103	131.7
52	1	68.5	100	154.0	1	230.0	104	132.3					1	347.1	109	120.0
53	1	4.5	96	156.0	1	0.0	103	134.5	1	0.0	107	129.4	2	4.9	104	129.6
58	1	9.6	102	151.6	1	21.9	94	145.5					1	98.0	99	134.6
59	1	2.7	101	149.4	2	17.6	102	137.0	1	47.0	109	128.7	1	3.6	95	143.8
61	1	60.9	99	150.6	1	322.4	106	128.3					1	713.5	101	120.8
62	2	33.1	105	148.2	2	45.4	105	141.3	1	69.3	109	133.9	2	56.8	100	139.4
63	1	12.6	98	154.4	1	63.3	103	138.1	1	47.0	107	130.7	1	125.7	109	129.2
64	1	194.5	104	146.4	1	403.4	101	137.4	1	599.7	109	127.0	2	319.8	101	130.9
65	1	92.7	97	154.6	1	79.2	100	139.0					1	59.7	104	127.9
66	1	96.3	105	147.0	1	42.6	101	136.4					1	52.3	105	128.0
69	1	6.9	103	149.0	1	14.5	105	136.1					1	24.3	100	135.9
70	1	148.9	90	161.2	1	178.2	96	138.3					1	296.8	92	131.4
Arith. Avgs:		47.2	101.	150.6		71.9	100.	137.1		128.8	106.	127.5		103.9	99.2	130.1
Geom. Avgs:		24.4				38.9				37.5				53.8		

* Not determined. Proxy value to match TWD rank of same car with fuels 3 & 5.

TABLE IX

LOG FORM REGRESSION ANALYSES FOR CUSTOMER AND TRAINED RATER DEMERITS VERSUS $T_{V/L=20}$ WITH DUMMY CAR VARIABLES

Log(DM+k) = a + b x Log(T@20V/L/131) + ca x CA + ... + cau x CAU
where DM = Demerits; k=1 for customer, k=5 for trained raters;
CA...CAU = dummy car variables, 1 for car in test, 0 for others;
a, b, ca...cau = correlation coefficients.

	Customer Data	Trained Rater Data
Correlation Coeff., r	0.5886	0.9188
Coeff. of Det'n., r sq.	0.3464	0.8442
Standard Error	0.4404	0.2307
Deg. of Freedom, resid.	1812	109
a, intercept	0.2634	1.4325
b, T20V/L coefficient	-2.4630	-4.6094
ca , coeff. for Car # 01	0.3190	0.7414
cb , coeff. for Car # 02	0.5069	0.1345
cc , coeff. for Car # 03	-0.1318	0.0105
cd , coeff. for Car # 05	0.0460	-0.0673
ce , coeff. for Car # 06	0.4226	-0.0991
cf , coeff. for Car # 07	0.4710	0.5466
cg , coeff. for Car # 08	-0.1037	0.2418
ch , coeff. for Car # 09	0.7997	-0.4529
ci , coeff. for Car # 10	0.2949	0.1431
cj , coeff. for Car # 13	-0.0097	0.8135
ck , coeff. for Car # 14	0.1822	-0.0760
cl , coeff. for Car # 15	-0.1810	0.6917
cm , coeff. for Car # 16	0.4161	0.5330
cn , coeff. for Car # 17	-0.2370	-0.1260
co , coeff. for Car # 18	-0.1127	0.0749
cp , coeff. for Car # 19	0.3638	0.1997
cq , coeff. for Car # 20	0.0869	-0.2779
cr , coeff. for Car # 21	0.3811	0.5244
cs , coeff. for Car # 22	-0.0991	0.0948
ct , coeff. for Car # 23	0.0936	0.1603
cu , coeff. for Car # 24	-0.2072	0.1303
cv , coeff. for Car # 26	0.0781	-0.0184
cw , coeff. for Car # 30	0.8394	0.4501
cx , coeff. for Car # 31	-0.2633	0.4851
cy , coeff. for Car # 32	0.2843	0.5862
cz , coeff. for Car # 33	0.7694	-0.2026
caa, coeff. for Car # 34	-0.2753	-0.1155
cab, coeff. for Car # 38	-0.0398	0.4516
cac, coeff. for Car # 44	0.0049	0.2527
cad, coeff. for Car # 45	-0.1003	1.3104
cae, coeff. for Car # 46	n.a.	0.7915
caf, coeff. for Car # 47	0.7236	0.1471
cag, coeff. for Car # 48	0.1633	0.3902
cah, coeff. for Car # 49	0.9073	-0.4465
cai, coeff. for Car # 50	0.1062	0.5525
caj, coeff. for Car # 52	0.0446	0.8854
cak, coeff. for Car # 53	0.6283	-0.5003
cal, coeff. for Car # 58	-0.0712	0.2890
cam, coeff. for Car # 59	-0.1321	-0.0834
can, coeff. for Car # 61	0.2013	0.9893
cao, coeff. for Car # 62	0.5968	0.4457
cap, coeff. for Car # 63	0.8672	0.3967
caq, coeff. for Car # 64	0.0304	1.1826
car, coeff. for Car # 65	0.2870	0.6104
cas, coeff. for Car # 66	0.3154	0.4701
cat, coeff. for Car # 69	-0.0025	-0.0188
cau, coeff. for Car # 70	-0.0893	1.0543
Avg., coeffs. ca...cau:	0.19946	0.30418

n.a. = Not determined, f ratio too low.

FIGURE 9

Log(TWD+5) vs. Temperature at 20 V/L

47 Cars, Fuels 1, 3 & 5

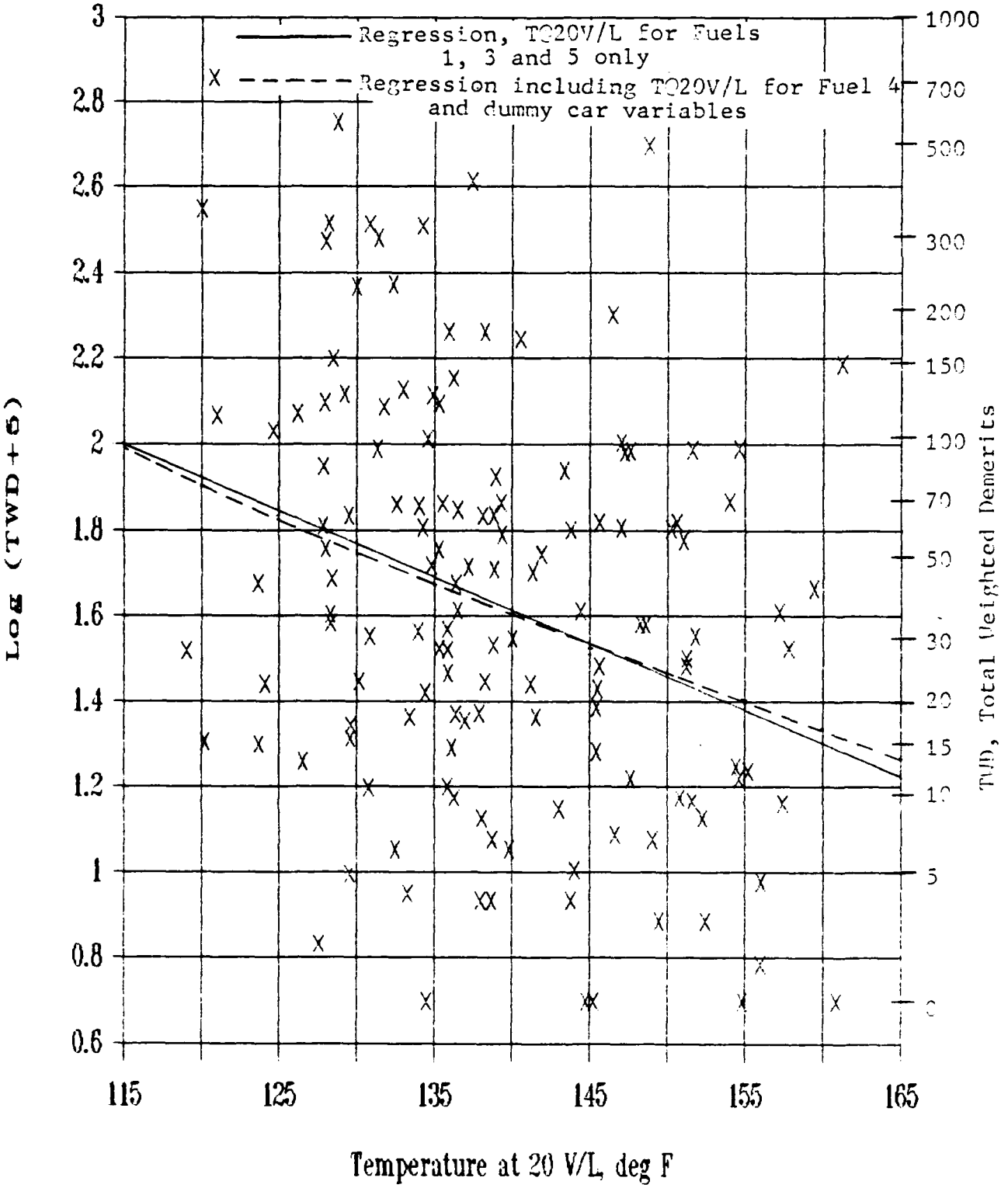


FIGURE 8

Distribution of Trained Rater TWD

47 Cars, Fuels 1, 3 & 5

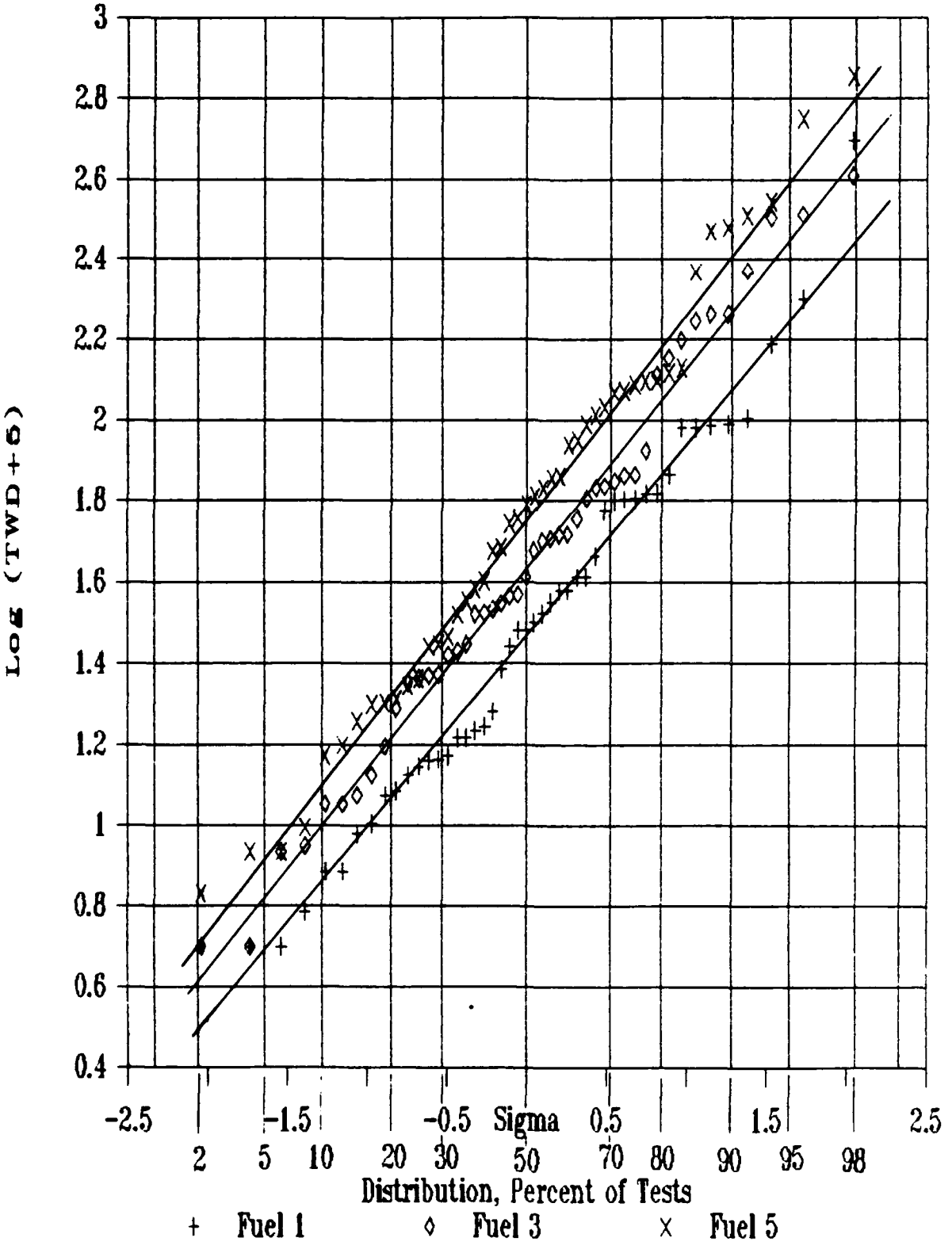


FIGURE 7

DISTRIBUTION OF VAPOR LOCK LIMITING $T_{V/L=20}$
AT 100°F AMBIENT IN FOUR CRC PROGRAMS

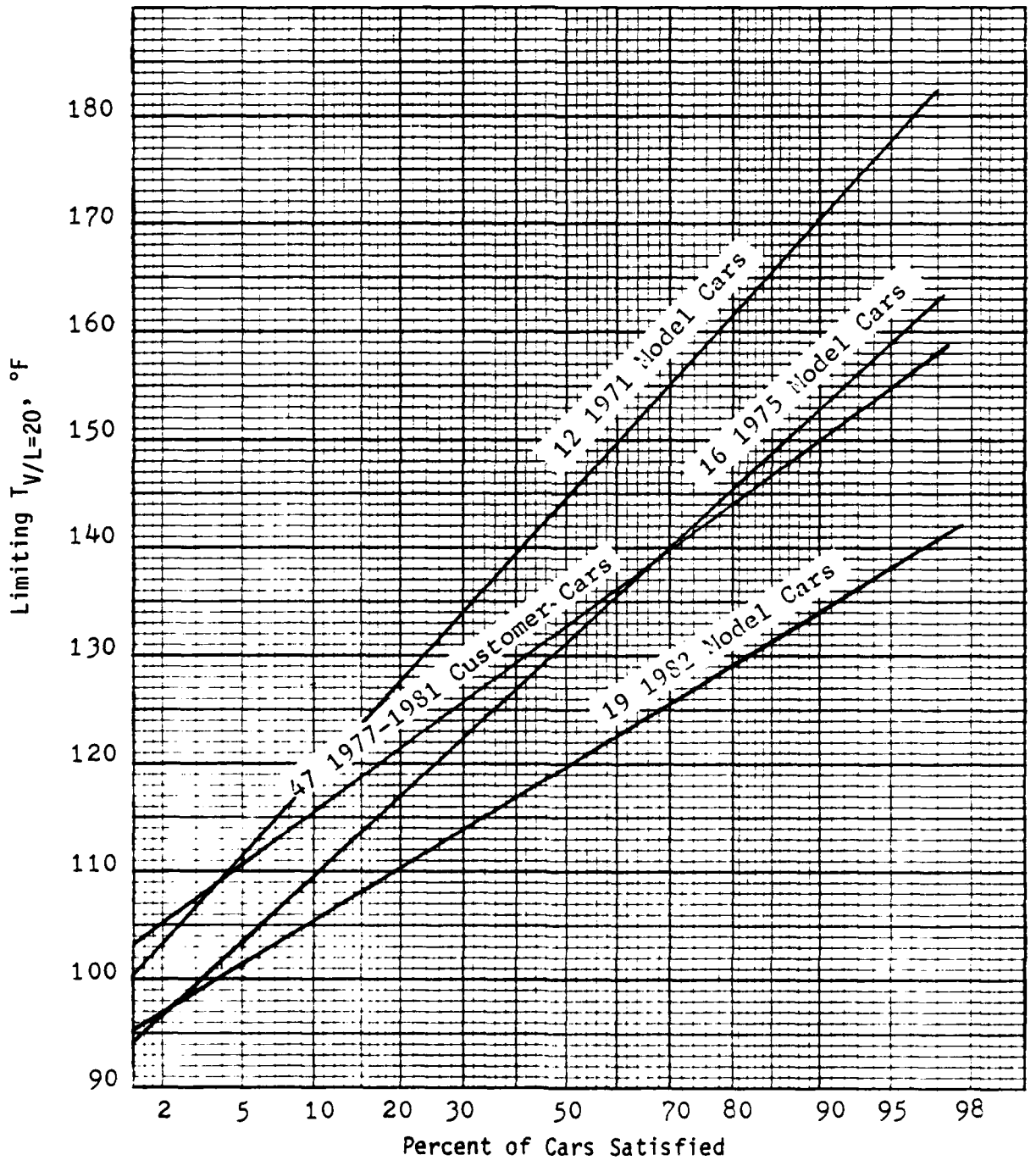


FIGURE 6

DISTRIBUTION OF VAPOR LOCK LIMITING $T_{V/L=20}$ RATIO
FOR 47 CUSTOMER CARS AT 100°F AMBIENT

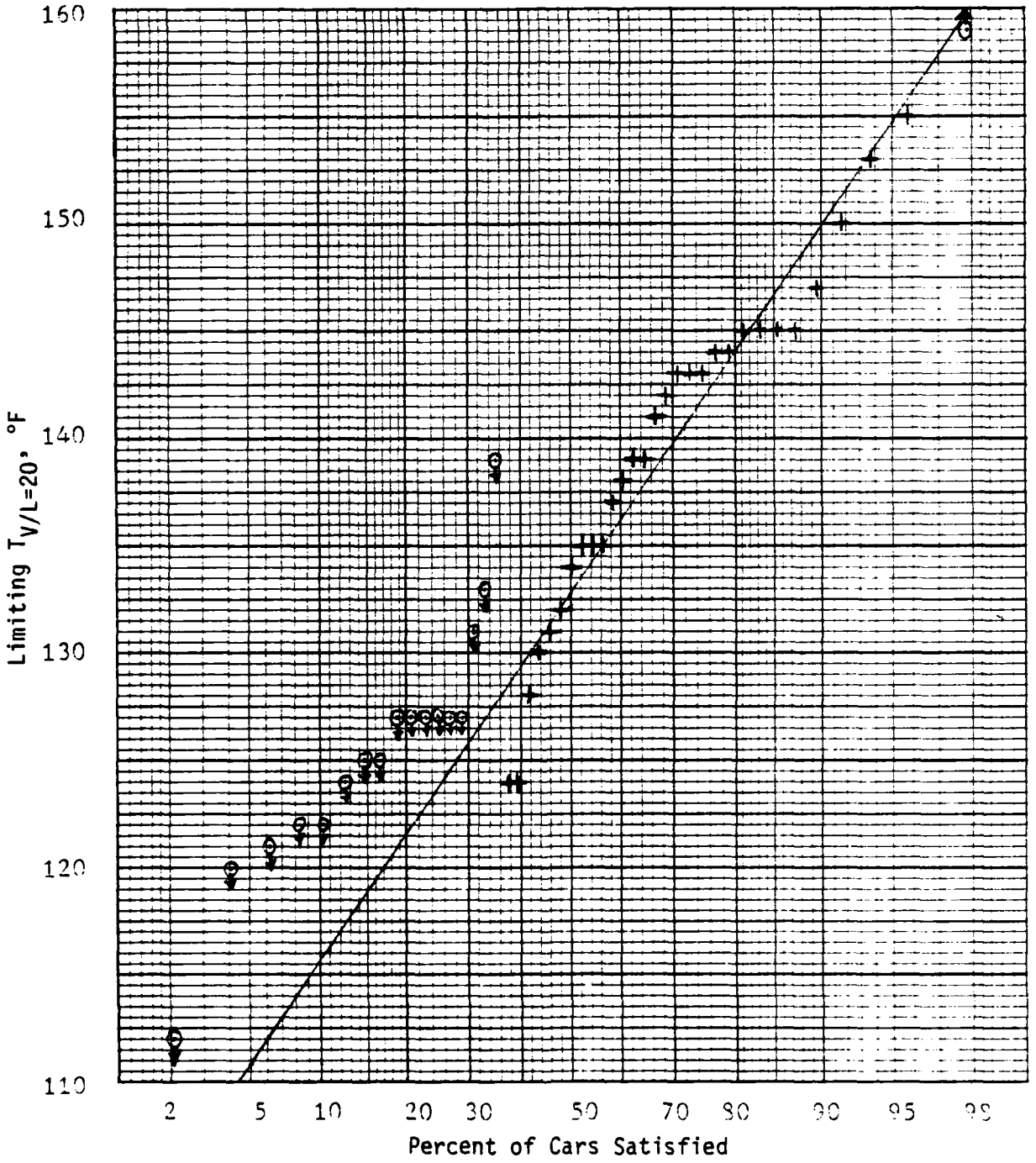


FIGURE 5: DECISION CHART FOR SELECTING CUSTOMER'S NEXT TEST FUEL

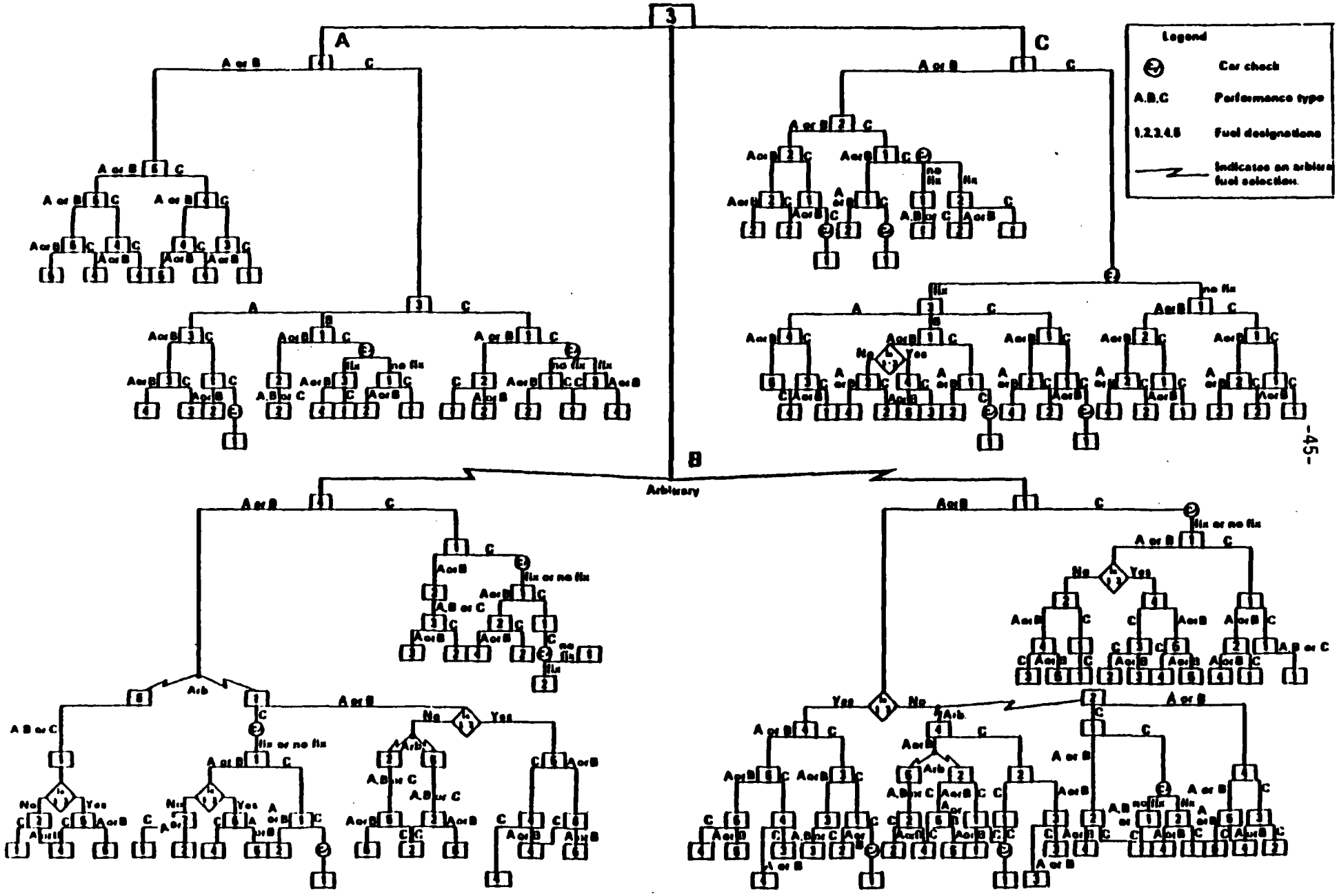


FIGURE 4

Temperature at V/L=20 vs. API Gravity

As Supplied and As Weathered

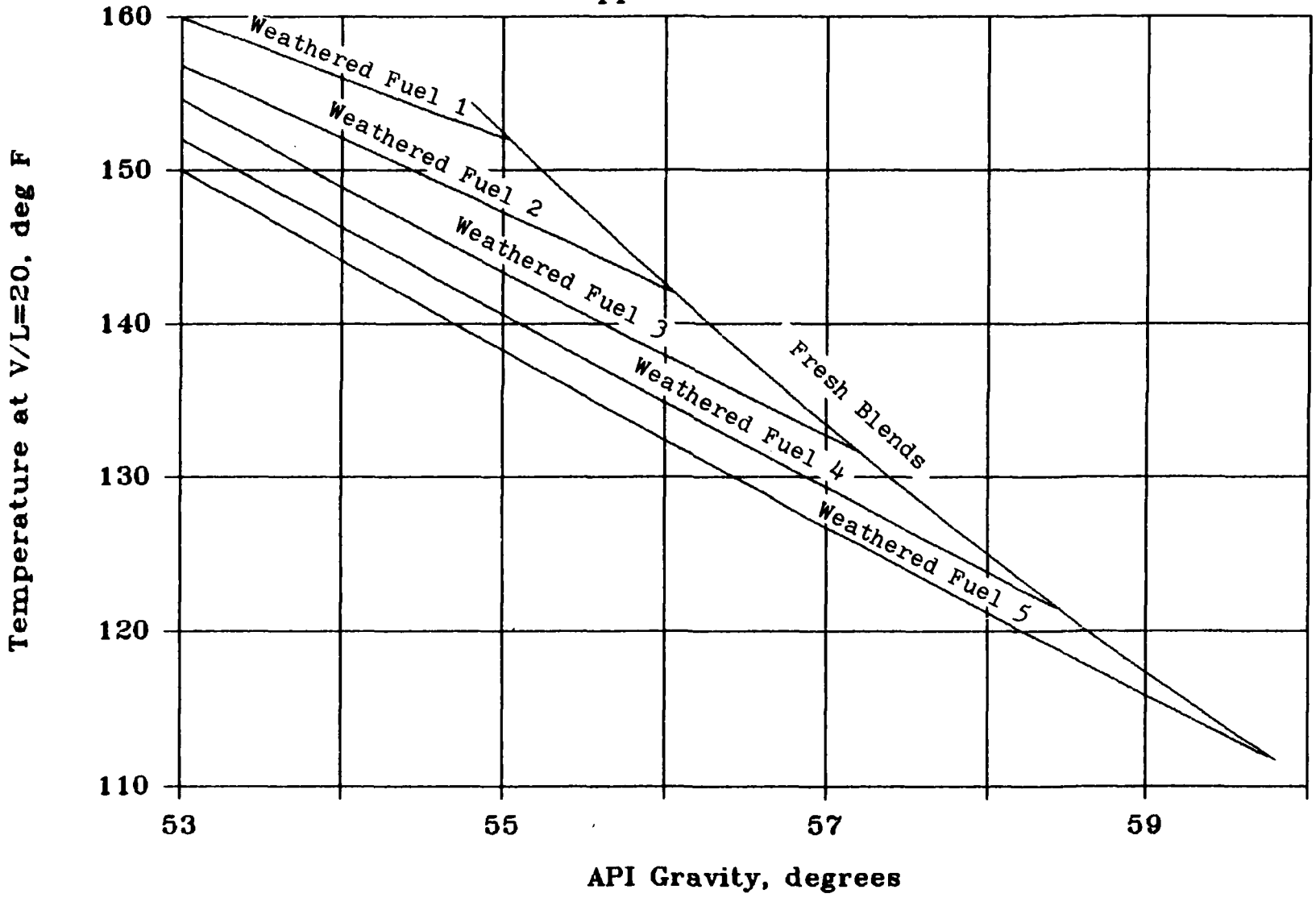
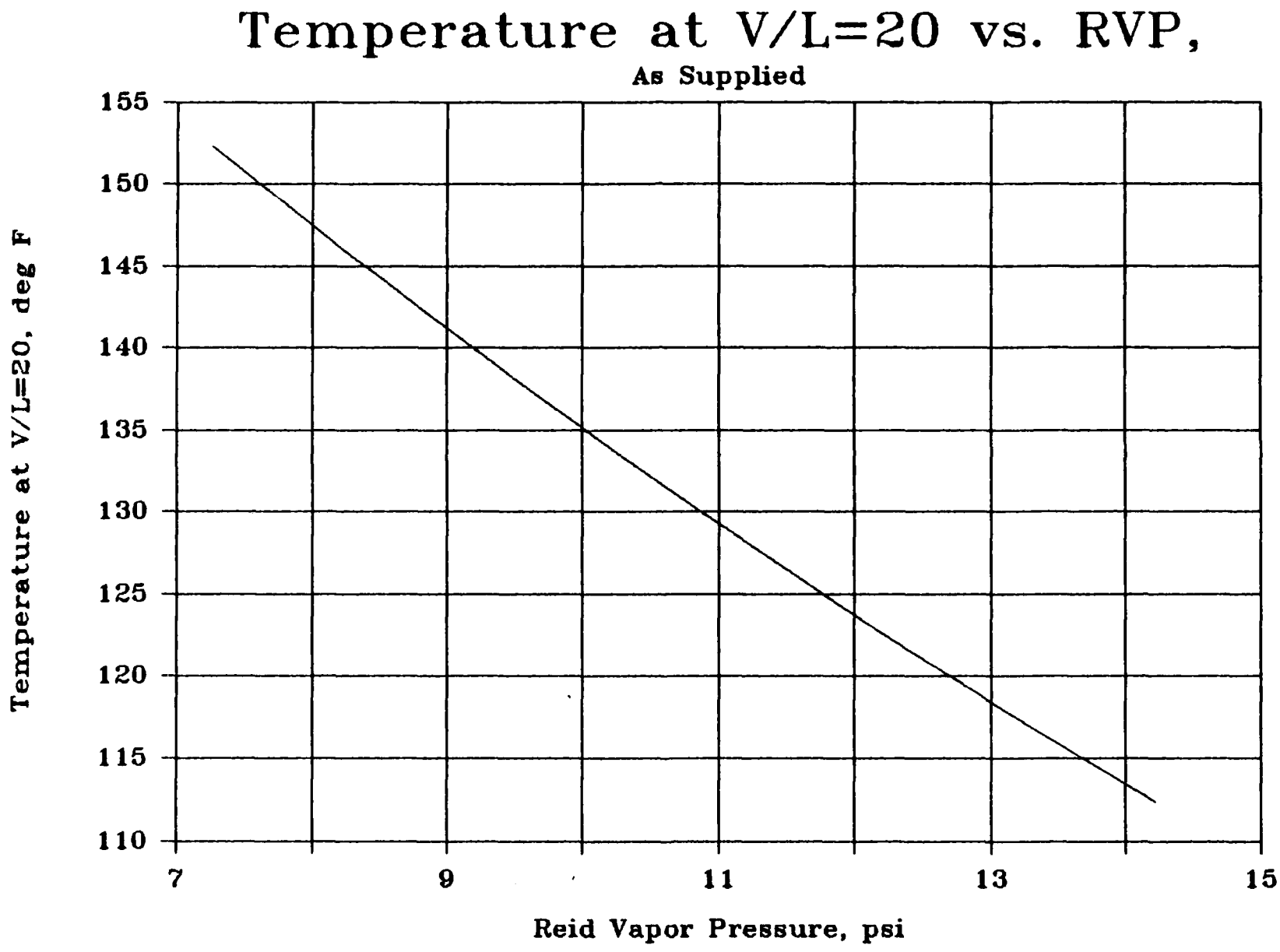


FIGURE 3


Temperature at V/L=20 vs. RVP,
As Supplied
Temperature at V/L=20, deg F
155
150
145
140
135
130
125
120
115
110
7
9
11
13
15
Reid Vapor Pressure, psi

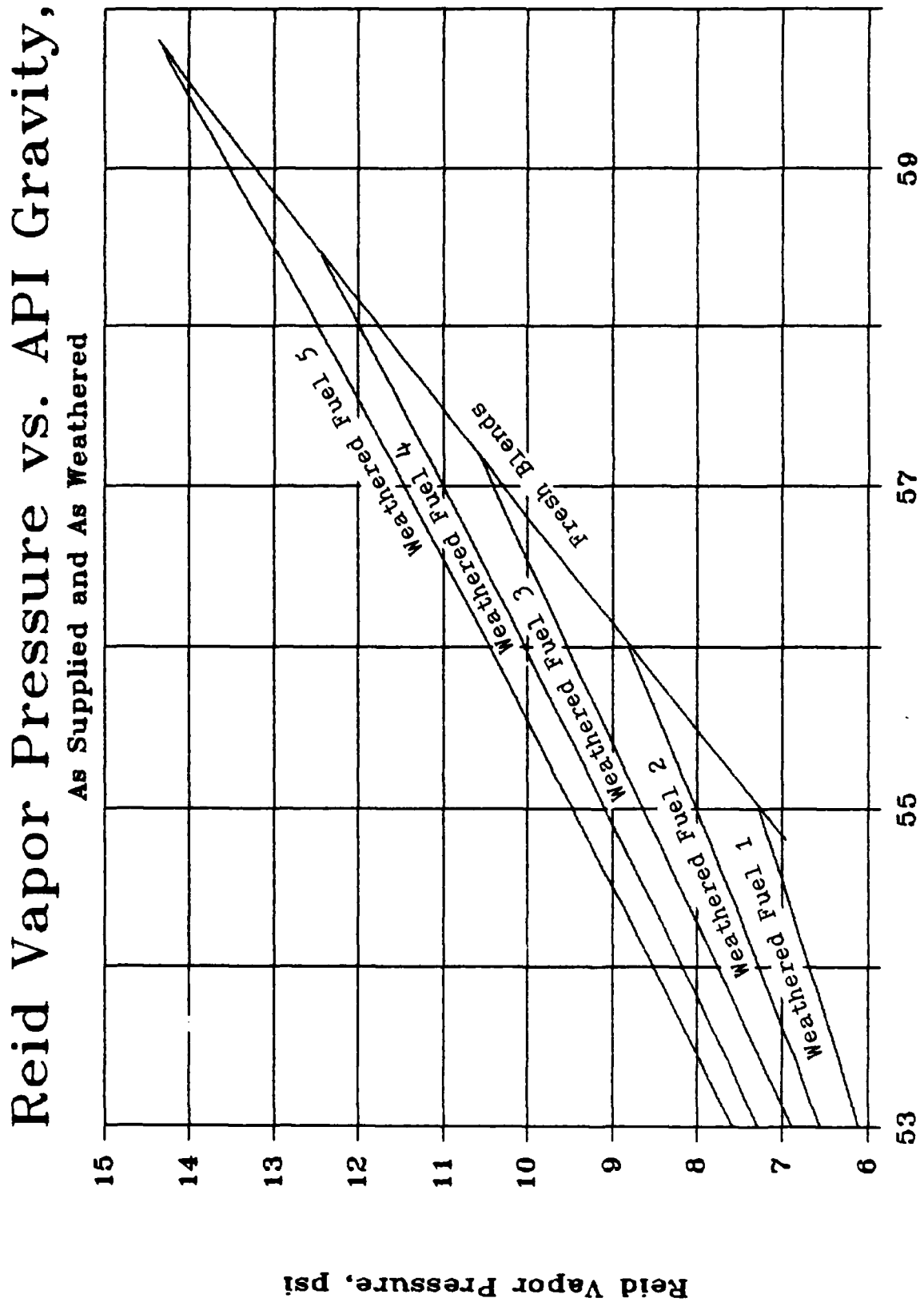

Reid Vapor Pressure vs. API Gravity,
As Supplied and As Weathered
Reid Vapor Pressure, psi
API Gravity, degrees
15
14
13
12
11
10
9
8
7
6
53
55
57
59
Weathered Fuel 1
Weathered Fuel 2
Weathered Fuel 3
Weathered Fuel 4
Weathered Fuel 5
Fresh Blends

FIGURE 2

FIGURE 1

SERVICE STATION TANK WEATHERING OF TEST FUELS

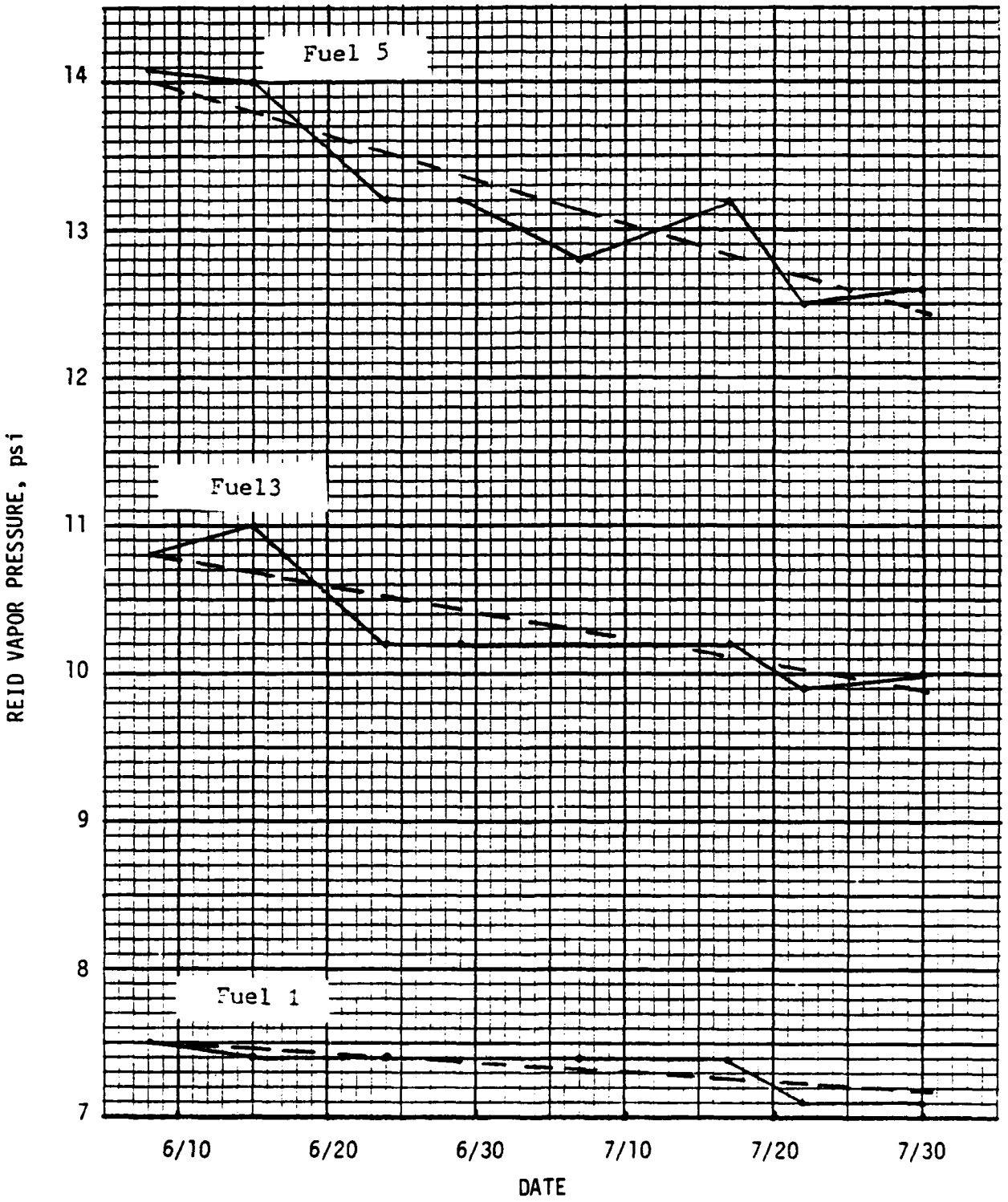


TABLE XIV

FREQUENCY OF STALLS VS. OPINION OF SEVERITY
IN CUSTOMER REPORTS

Number of Stalls	Number of Car-Days Reported at Given Severity: None or Insignificant	Slightly Bothersome	Annoying	Very Troublesome	Total
During Start-Up (Question 4)					
0	--	15	3	--	18
1	37	95	41	--	173
2	7	52	30	1	90
3	1	10	16	4	21
4	--	1	8	2	11
5	--	--	1	2	3
8	--	--	--	1	1
12	--	--	--	1	1
Total	45	173	99	11	328
Mean*	1.200	1.475	1.938	4.727	1.694
Std.Dev.*	0.457	0.645	1.014	2.901	1.112
While Driving (Question 5)					
0	--	11	4	1	16
1	4	27	15	1	47
2	2	10	4	--	16
3	1	1	5	--	7
4	--	--	1	--	1
5	--	--	2	--	2
6	--	--	--	1	1
26	--	--	--	1	1
Total	7	49	31	4	91
Mean*	1.571	1.316	1.926	11.000	1.947
Std.Dev.*	0.787	0.525	1.269	13.229	3.004

* Excluding car-days with a problem but no number of stalls reported.

TABLE XIII

MOST SEVERE CUSTOMER PROBLEMS AND DRIVING CONDITIONS

	Days Acceptable	Days Not Acceptable	All Days	Ratio, %NA/%Acc.
Total Reports, 47 Cars:	1710	150	1860	--
Question 12, Most Severe Problem, % of Days				
Q3-Excess Cranking	6.5	22.7	7.8	3.5
Q4-Stalls @ Start	5.1	18.0	6.2	3.5
Q5-Stalls, Driving	1.3	10.7	2.0	8.3
Q6-Idle Roughness	3.9	1.3	3.7	0.3
Q7-Hesitation, Bucking	3.3	5.3	3.4	1.6
Q8-Lack of Power	4.2	10.7	4.7	2.5
Q9-Surge	0.6	2.7	0.8	4.6
Q10-Backfire	0.0	0.0	0.0	n.a.
Any of Above	24.9	71.3	28.6	2.9
Question 13, Conditions for Q12, % of Days				
Traffic				
1. Steady, 0-45mph	2.3	30.7	4.6	13.4
2. Steady, above 45mph	2.6	23.3	4.2	9.1
3, Standing @ Stop	4.9	18.7	6.0	3.8
4. Heavy Stop-&-Go	2.7	7.3	3.1	2.7
5. Accelerate from Stop	7.4	21.3	8.5	2.9
6. Accelerate to Freeway	1.3	1.3	1.3	1.0
7. During Start-Up	10.8	39.3	13.1	3.7
Any of Above	32.0	142.0*	40.9	3.5
Grade				
1. Up Hill	0.5	2.7	0.6	5.7
2. Down Hill	0.2	0.0	0.2	0.0
3. No Grade	13.8	49.3	16.7	3.6
Any of Above	14.5	52.0	17.5	3.6

* Over 100% because of multiple conditions reported.

TABLE XII

CUSTOMER DEMERITS ATTRIBUTED TO INDIVIDUAL QUESTIONS
FOR ACCEPTABLE AND NOT-ACCEPTABLE DAYS

	Acceptable	Not Acceptable	All Days	Ratio, Not Acc./Acc.
Total Reports, 47 cars:	1710	150	1860	
Question #, Problem	Average Demerits			
Q2-Overall Performance*	0.56	6.64	1.05	11.9
Q3-Excessive Cranking @ Start	0.82	3.65	1.05	4.5
Q4-Engine Stalls @ Start	0.62	3.97	0.89	6.4
Q5-Engine Stalls, Driving	0.52	7.57	1.09	14.6
Q6-Idle Roughness	0.26	1.29	0.35	5.0
Q7-Hesitation, Bucking	0.44	3.12	0.66	7.1
Q8-Lack of Power	0.74	3.48	0.96	4.7
Q9-Surge	0.12	0.85	0.18	7.1
Q10-Backfire	0.08	1.08	0.16	13.5
Total Demerits, Q3-Q10:	3.61	25.03	5.34	6.9

* Based on same demerit assignment as for hesitation, lack of power or backfire, i.e. 0,6,12,24. Not included in total.

TABLE XI

CUSTOMER WEEKLY PERFORMANCE COMPARISONS
OF CURRENT FUEL WITH PREVIOUS FUEL

\# Fraction significantly higher than 0.333, 95% confidence.
* Fraction significantly lower than 0.333, 95% confidence.

200 Individual Comparisons, Current vs. Previous:

Current Week		Previous Week: Fuel #1	Fuel #2	Fuel #3	Fuel #4	Fuel #5
Fuel #1	Responses:	8	0	22	10	10
	f Better:	.250	-	.546#	.900#	.500
	f Same:	.375	-	.409	.100	.300
	f Worse:	.375	-	.045*	.000*	.200
Fuel #2	Responses:	12	2	2	0	1
	f Better:	.333	.000	.500	-	1.000
	f Same:	.667#	.500	.500	-	.000
	f Worse:	.000*	.500	.000	-	.000
Fuel #3	Responses:	1	11	4	4	2
	f Better:	.000	.182	.500	.750	.500
	f Same:	1.000	.636#	.500	.000	.500
	f Worse:	.000	.182	.000	.250	.000
Fuel #4	Responses:	10	0	27	8	6
	f Better:	.100	-	.111*	.250	.833
	f Same:	.300	-	.556#	.625	.167
	f Worse:	.600	-	.333	.125	.000
Fuel #5	Responses:	11	1	1	24	23
	f Better:	.182	1.000	1.000	.250	.304
	f Same:	.273	.000	.000	.458	.522#
	f Worse:	.545	.000	.000	.292	.174

Combined Comparisons:

57 Cases, Current Fuel Less Volatile than Previous

f Better:	.649#
f Same:	.281
f Worse:	.070*

45 Cases, Current Fuel Same as Previous

f Better:	.289
f Same:	.511#
f Worse:	.200*

98 Cases, Current Fuel More Volatile than Previous

f Better:	.204*
f Same:	.490#
f Worse:	.306

Reference: L. Sachs, "Applied Statistics", 5th ed.,
Springer-Verlag, 1978, English trans. 1982, page 338.

TABLE X

CUSTOMER RESPONSES FOR ACCEPTABILITY AND OVERALL PERFORMANCE
BY $T_{V/L=20}$ RANGE

Temp @ 20 V/L Range, deg F:	<115	115-119.9	120-124.9	125-129.9	130-134.9	135-139.9	140-144.9	145-149.9	150-154.9	155-159.9	160+
Days reported	30	109	191	405	334	243	223	188	79	34	24
% Days Not Accept.	23.3	16.5	9.4	9.9	7.2	6.2	6.7	3.2	3.8	0	16.7
Arith. Avg. Demerits											
Acceptable	1.2	2.8	3.1	3.4	3.8	4.2	4.2	3.9	3.9	2.4	2.9
Not Acceptable	26.5	21.7	27.4	23.9	26.2	17.7	28.8	43.3	18.0	--	21.5
Both	7.2	5.9	5.4	5.4	5.4	5.0	5.8	5.1	4.5	2.4	6.0
Geom. Avg. Demerits*											
Acceptable	0.3	0.8	0.9	1.1	1.5	1.6	1.3	1.4	1.2	0.3	1.1
Not Acceptable	24.3	18.6	21.6	17.1	21.7	15.0	22.9	31.4	14.8	--	20.1
Both	1.7	1.7	1.4	1.6	1.9	1.9	1.7	1.6	1.4	0.9	2.1
Overall Performance Problems, % of days											
None, or no answer	86.7	83.5	85.9	84.4	84.4	86.8	86.1	89.9	87.3	97.1	87.5
Slightly bothersome	3.3	12.8	9.4	11.6	13.8	11.5	11.2	8.5	11.4	2.9	8.3
Annoying	10.0	3.7	4.2	3.0	1.2	1.7	2.7	1.6	1.3	0.0	4.2
Very troublesome	0.0	0.0	0.5	1.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Sum, any problem	13.3	16.5	14.1	15.6	15.6	13.2	13.9	10.1	12.7	2.9	12.5

* From average of Log(Demerits + 1)

FIGURE 10

T@20V/L Distribution, Unacceptable Days

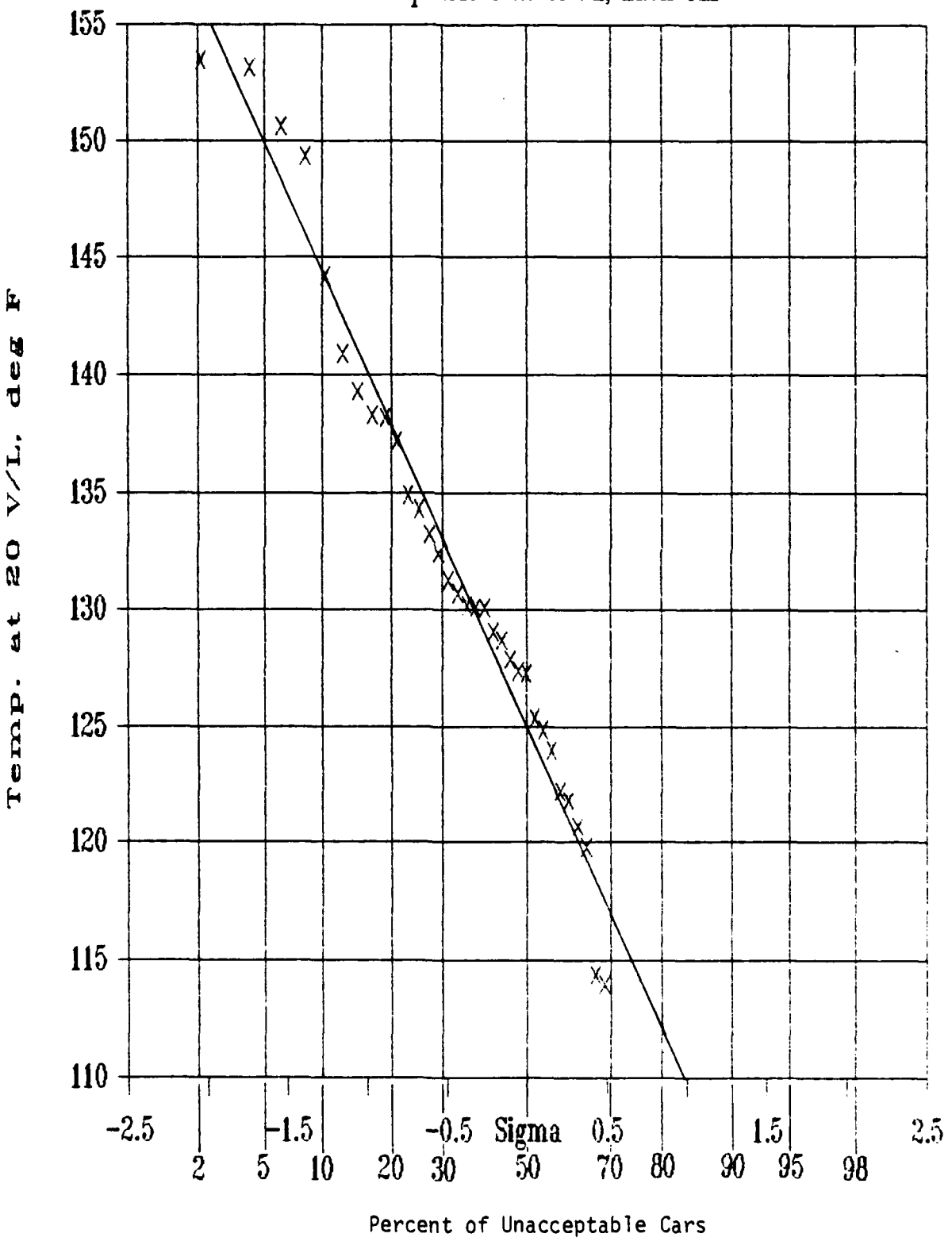


FIGURE 11

CUSTOMER SATISFACTION AND VAPOR LOCK TOLERANCE VS. FUEL, $T_{V/L=20}$

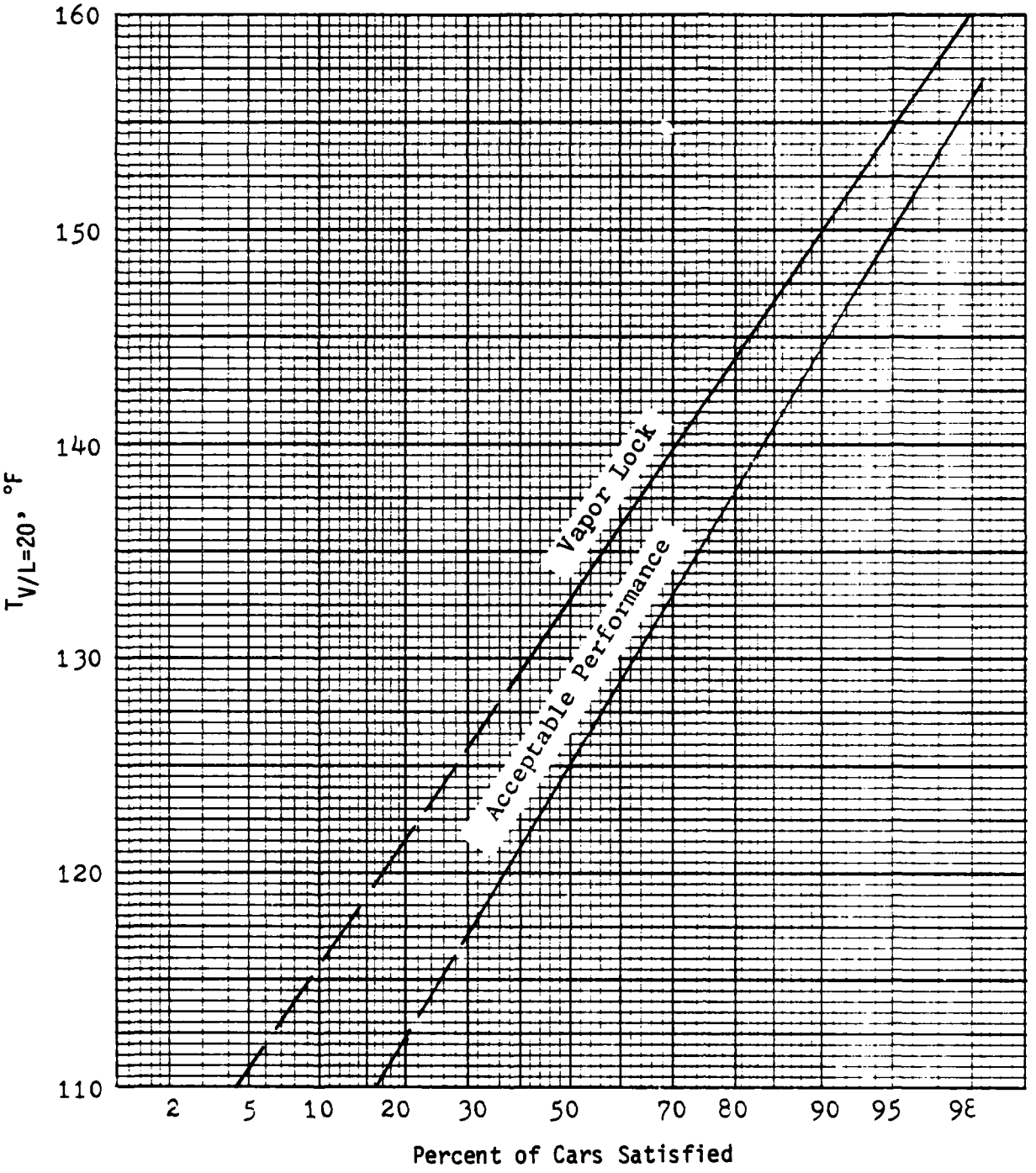


FIGURE 12 (a)

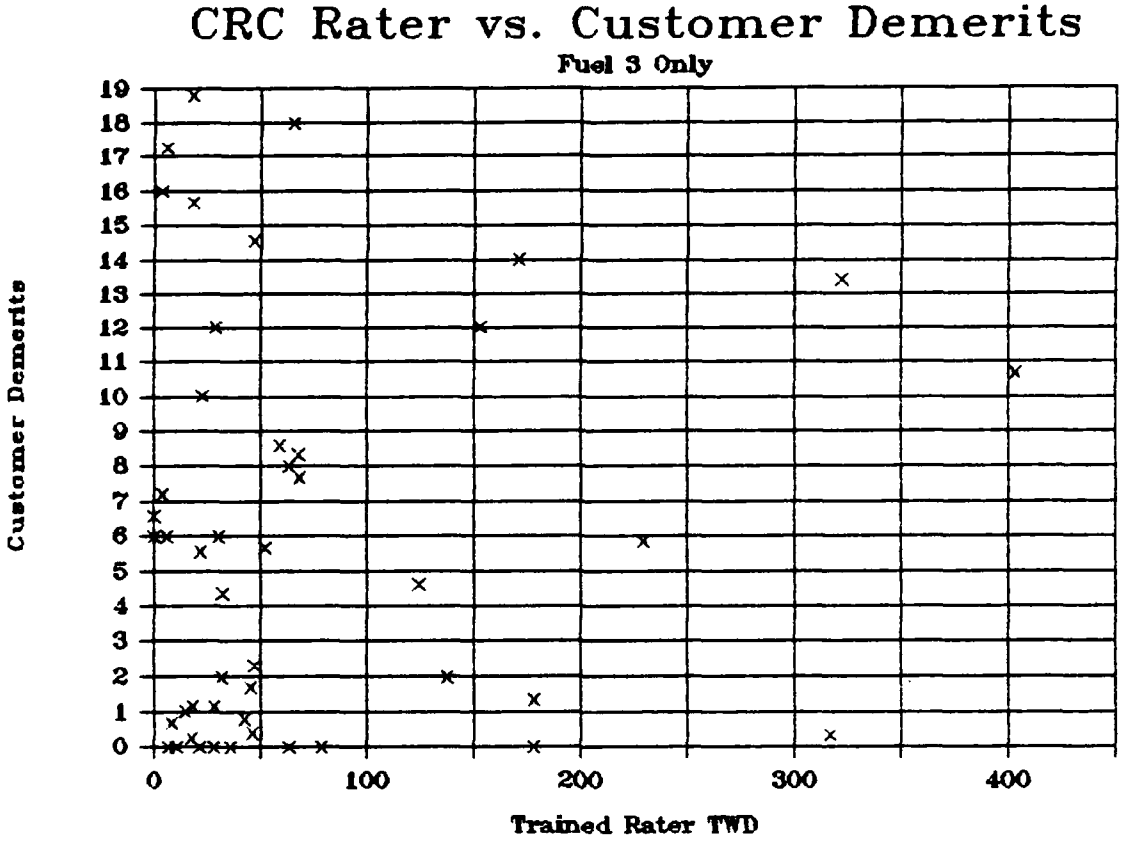


FIGURE 12 (b)

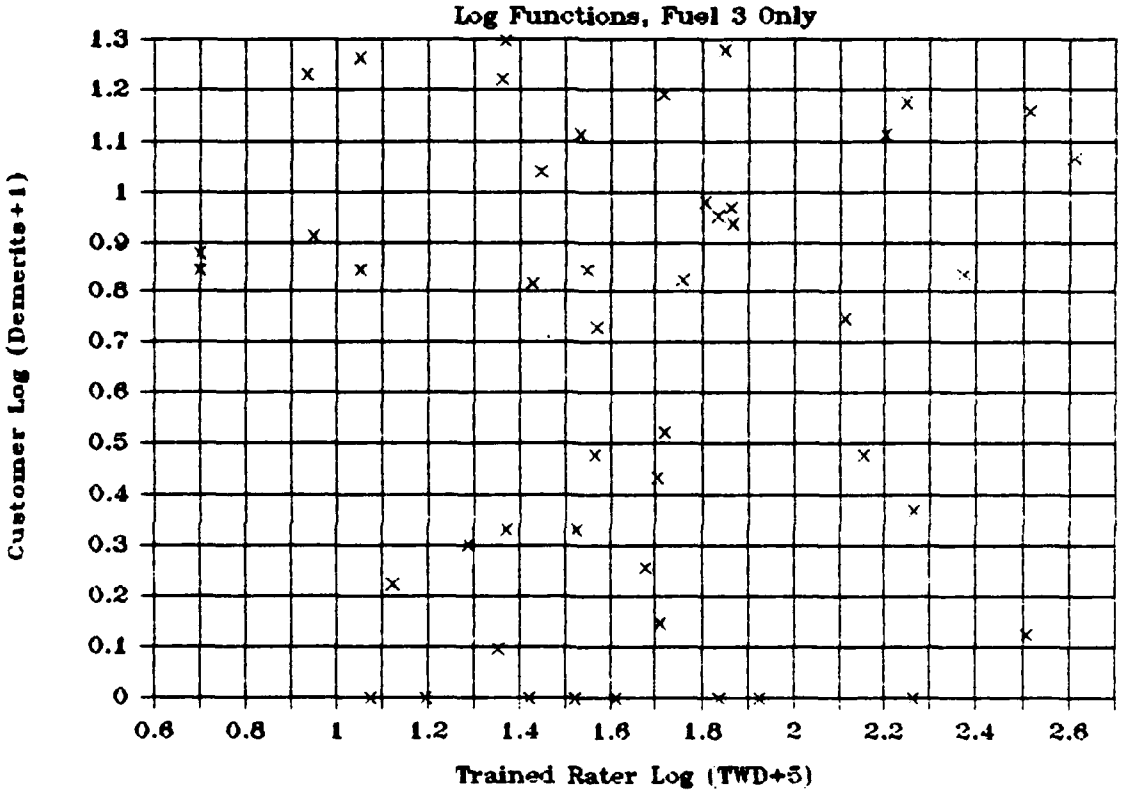


FIGURE 13

TRAINED RATER AVERAGE TWD VS. CUSTOMER SATISFACTION WITH FUELS OF EQUAL $T_{V/L=20}$

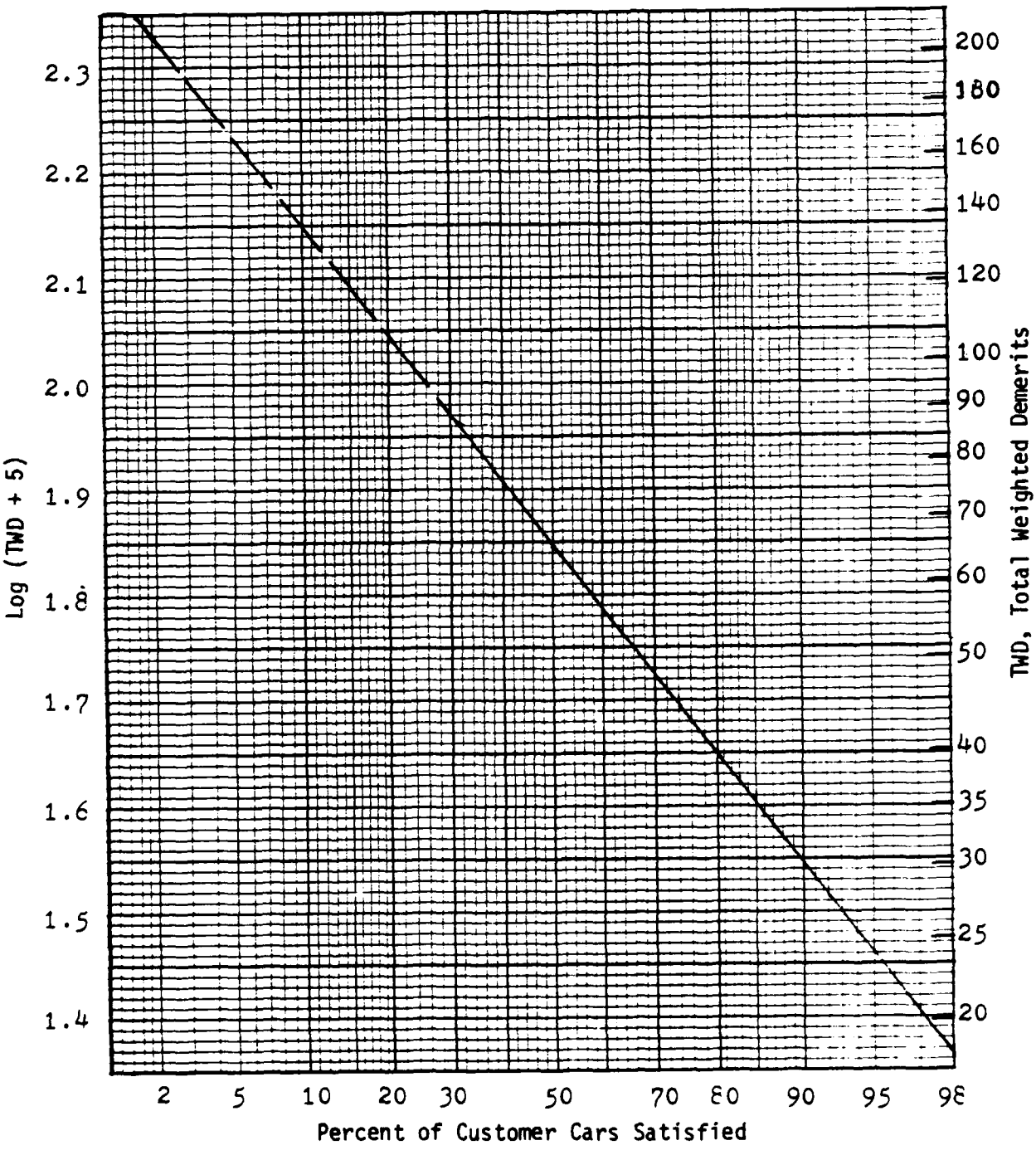


FIGURE 14

Customer Satisfaction vs. Average TWD

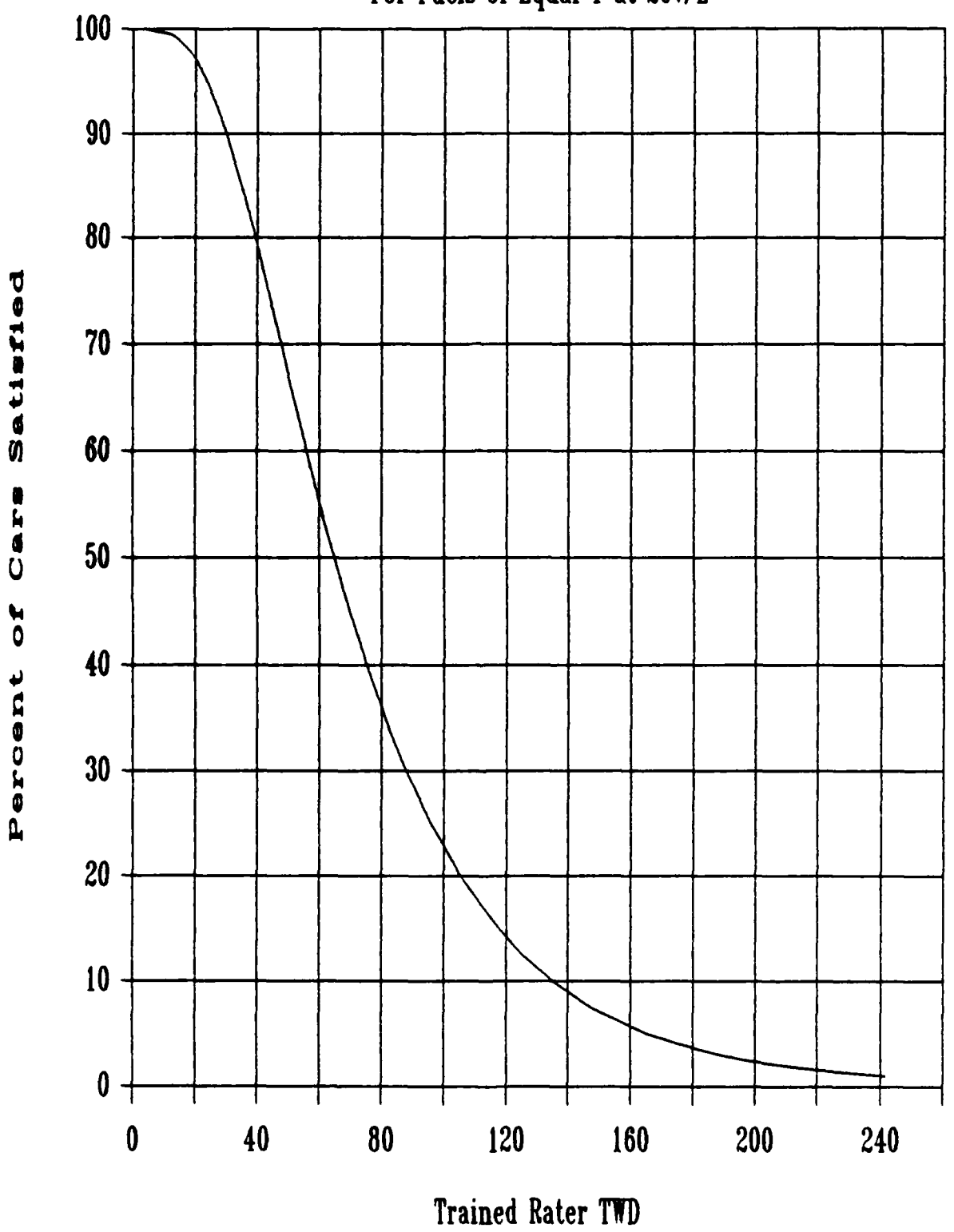
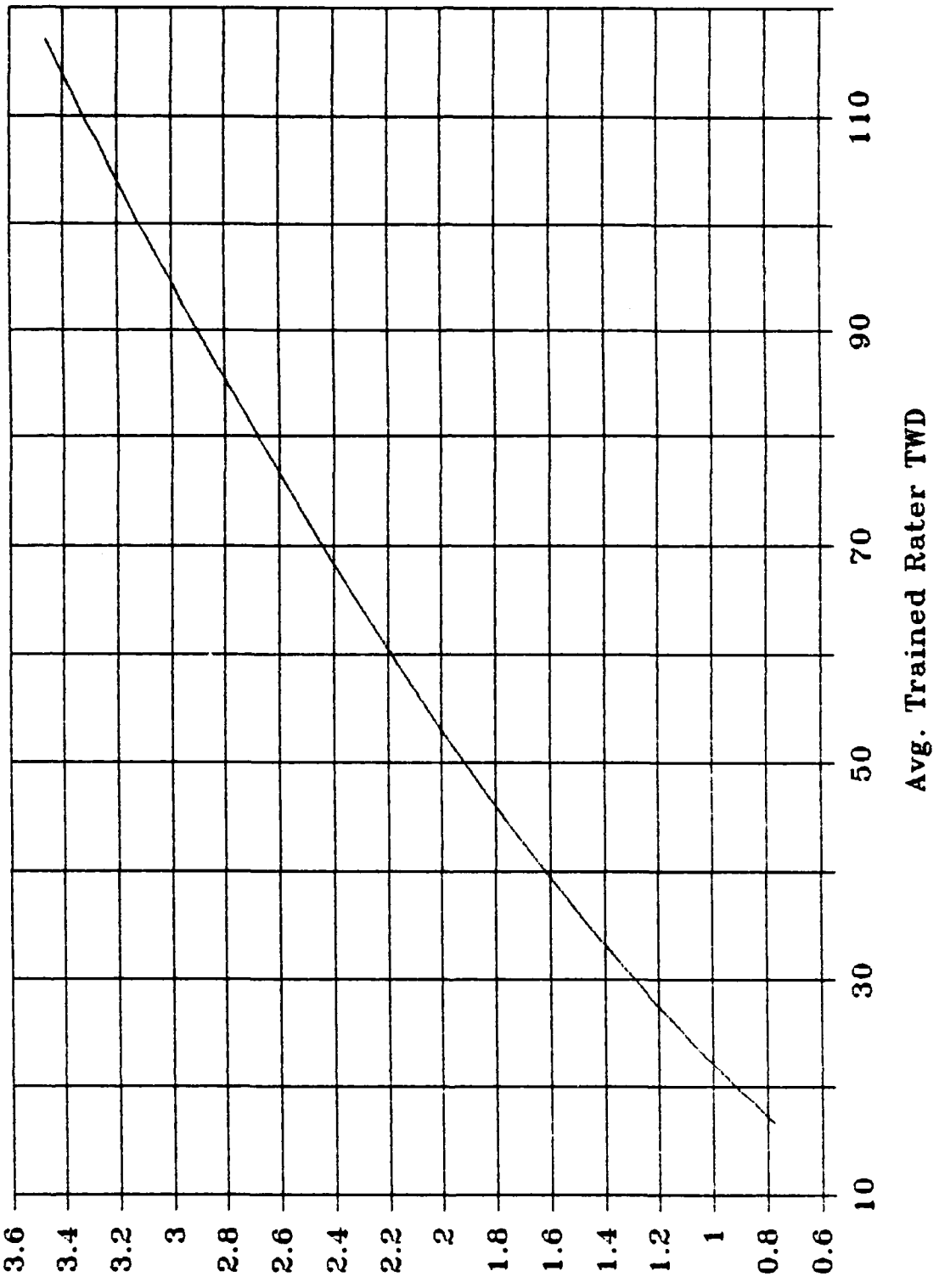


FIGURE 15

Customer vs. Trained Rater Demerits

at Equal T@20V/L



A P P E N D I X A

MEMBERSHIP: PROGRAM PLANNING PANEL AND ANALYSIS PANEL AND PROGRAM PARTICIPANTS

APPENDIX A

PROGRAM PARTICIPANTS AND PANEL MEMBERS

Participant	Affiliation	Program Planning	Weeks On-Site	Data Analysis
Martin J. Anderson	Union Oil		3.5	
Harold Archibald	SOHIO		3.5	
David A. Barker	Shell	X		
Beth Evans	CRC		1	
Robert Garvey	General Motors		2	
Douglas W. Hall	Chevron		3.5	
George S. Hyek	Gulf		3.5	
John C. Ingamells	Chevron	X		X
James L. Keller	Union Oil*/Consultant	X		X
William R. Mallett	Union Oil		1	
Edward Menzenski	Mobil		3.5	
James Merritt	Amoco		3.5	
C. Gus Mitsopoulos	General Motors		2	
Ray E. Paggi	Texaco			X
James E. Robinson	SOHIO	X	2	X
Robert L. Russell	Union Oil			X
E. H. Schanerberger	Ford	X	2	X
Robert Sebring	Phillips		3.5	
Ken Slack	Sun Tech		2	
James B. Smith	Amoco			X
Marta S. Stawnychy	Mobil	X	3.5	X
E. Delieu Steinke	Sun Tech	X	2	X
Randall K. Williams	Southwest Research		2	
Walt C. Williams	Amoco	X	2	

* Before July 1982.

A P P E N D I X B

1981 VOLATILITY PROGRAM

CUSTOMER PERCEPTION OF HOT-WEATHER DRIVEABILITY

(CRC PROJECT No. CM-118-81)

CUSTOMER PERCEPTION OF HOT-WEATHER DRIVEABILITY

OBJECTIVE

To investigate customer perception of hot-weather (>90°F) driveability in routine daily service as influenced by changes in gasoline volatility. Using established CRC driving cycles, trained raters will also evaluate the hot-weather driveability of each customer's car. From this data, relationships between customer and trained rater evaluations of performance will be developed.

INTRODUCTION

Between 1960 and 1975, CRC conducted six programs to develop test procedures, evaluate vapor lock characteristics and rate the hot-start and driveaway performance of late model cars. Because these programs all utilized trained raters to test car performance, a program is proposed for investigating customer perception of (and objection to) hot-weather driveability problems. Seventy customers will be selected to participate in the program and they will be given free gasoline in exchange for daily opinions of their car's performance. Customers will use their car in routine daily service. In addition, hot-weather driveability of each car will be evaluated by trained raters and compared with customer ratings. The trained rater tests will utilize the same driving cycles as were used in CRC's 1975 high-temperature driveability program.

If the program is approved, the work will be conducted during the summer of 1981.

TEST LOCATION

Phoenix, Arizona is suggested as the test site for many reasons. Daily maximum temperatures during the summer months are consistently above 90°F and frequently above 100°F. In June, July and August of 1975 through 1979, the daily high temperature was below 90°F a total of only 10 days. Because the climate in Phoenix is very arid, little rainfall is expected and trained rater tests can be conducted nearly every day. Phoenix is also suggested because it is anticipated that customers can be selected who experience a wide variety of the traffic and driving conditions generally associated with hot-weather driveability problems. This is explained in more detail in the section on customer selection.

The location in Phoenix must meet the following requirements:

- Large group of potential customers nearby that are willing to participate.
- Close to garage and fuel handling facilities.
- Nearby location for conducting trained rater tests.

CAR/CUSTOMER SELECTION

As mentioned above, Phoenix is suggested as the test site because the customers will experience a wide variety of traffic conditions. For example, this is a large metropolitan area and some customers will be selected for the program because they experience heavy, stop-and-go traffic. Phoenix is near a mountain range and some customers will drive up long steep grades. And still other customers will be chosen because each day they make many short trips and park their car for short periods between trips. These are just a few conditions under which hot-weather driveability problems can occur.

Based on a screening questionnaire and telephone interviews, we will select about 70 customers who own a 1977 or later model car equipped with an automatic transmission and are willing to cooperate in the program. Emphasis will be placed on selecting 1979 and later models. A few light-duty trucks and vans may also be selected, if necessary, to obtained desired fleet size.

FUELS

Five test fuels of varying volatility will be supplied to the customers throughout the program. Detailed specifications for the highest and lowest volatility test fuels are shown in Table B-1. Pertinent specifications are:

	High Volatility	Low Volatility
Distillation, °F		
10% Evap.	110 Max	130 Min
50% Evap.	210 ±10	230 ±10
90% Evap.	335 ±10	340 ±10
RVP, lbs	13.5 - 14.0	7.5 - 8.0
$T_{V/L=20}$ °F	110 - 115	140 - 145

The other three fuels will be 25/75, 50/50 and 75/25 volume percent blends of these base fuels. Specifications for the base fuels were developed from recent surveys of commercial gasoline quality. They approximate the volatility span of gasolines sold year-round throughout the nation.

Trained raters will use these same five fuels when evaluating the hot-start and driveaway performance of customer cars. However, for the vapor-lock tests by the trained raters, a total of nine fuels will be available: these also will be blends of the two base fuels (12.5 vol.% increments).

EXPERIMENTAL

Customer Tests

The customers will be given free test fuel and in return they will evaluate their car's performance by completing a questionnaire daily. An example questionnaire is shown in Figure B-1. Questions on the data sheet are phrased in laymans terms to avoid teaching the customers to be trained raters. Questions 2 thru 10 ask the customer's opinion of specific driveability problems. Question 11 asks whether performance was acceptable and Question 12 asks which driveability problem was most severe during the day. Question 13 solicits information on the type of traffic and driving conditions existing if (and when) the customer noticed driveability problems.

On a prescheduled day each week, the fuel tank of each customer's car will be drained and refilled with a different test fuel. The schedule for fuel changing is:

Day of Week	Cars Scheduled for Fuel Change
Monday	1-14
Tuesday	15-28
Wednesday	29-42
Thursday	43-56
Friday	57-70

During the first week of testing, all customers will be supplied Fuel 3 (a 50/50 blend of high and low volatility base fuels). Each week thereafter, the fuel will be changed and the new fuel supplied to each customer will be selected on an individual basis. A series of rules have been established to: 1) reduce the likelihood that customers will experience severe driveability problems, and 2) maximize the amount of useful data obtained from the customers. Severe driveability problems are impending if at least twice during a week:

1. the customer rates driving stalls as being very troublesome, or

2. the customer rates hesitation or lack of power as being very troublesome and simultaneously rates performance as unacceptable.

Two rules are also applied to maximize the useful data. They are:

1. If when using Fuel 3 the customer always rated the individual driveability problems as None or Insignificant, then the customer will not be given less volatile test fuel.

2. If problems existed when using Fuel 3 and they are equal to problems when using Fuel 1 (the least volatile test fuel) then Fuel 2 (75% low volatility, 25% high volatility blend) will not be supplied to the customer.

Methods for making these determinations will be developed by the Program Panel.

Trained Rater Tests

Using the established CRC driving cycles, trained drivers will rate the vapor-lock characteristics and hot-start and driveaway performance of all customer cars. In the vapor-lock tests, each car will only be rated on enough test fuels to determine the car's "limiting $T_{V/L=20}$".* In this way the required number of vapor-lock tests is expected to average about 4 per car. A schedule for the vapor-lock tests cannot be developed because they will not follow a rigid plan. On some days, the raters may be able to determine the limiting $T_{V/L=20}$ on only one car and on other days perhaps two or three cars.

A "threshold" value similar to limiting $T_{V/L=20}$ has not been defined by CRC for the hot-start and driveaway tests. Therefore, these tests will be conducted on each car using all five test fuels being supplied to the customers. The test design for the hot-start and driveaway tests on customer cars is shown in Table B-II. If possible, vapor-lock and hot-start and driveaway tests should not both be conducted on the same cars in a given day to avoid confusion.

To complete the anticipated number of tests will require four raters and four assistants to be on site at all times. The raters should be highly qualified individuals but the assistants can be hired locally by CRC. The trained rater tests are expected to require seven weeks and will be divided into two blocks of 3-1/2 weeks each; a different set of raters will be on site during each block. One rater on-site will conduct only vapor-lock tests, two raters will conduct only hot-start and driveaway tests and the fourth rater will conduct both types of tests.

The raters for the hot-start and driveaway tests will conduct a series of evaluations on rental cars to develop rater-severity and ambient temperature correction factors. The test design for this work is shown in Table B-III. The rental cars will be obtained from local agencies and will be kept on-site throughout the entire program to ensure that all the "correction-factor" ratings are conducted on the same cars. In the case of vapor-lock tests, the raters' measurements of acceleration times are objective and severity correction factors are not needed. (The temperature correction factors for vapor-lock used in the 1975 CRC hot-weather driveability program will be used again in this program to make decisions on fuel selections.)

* CRC defines limiting temperature for 20:1 vapor/liquid (limiting $T_{V/L=20}$) as the T_{20} of the fuel that causes a 25% increase in acceleration time when tested at 95°F ambient temperature; this is a loss in performance considered by CRC to be the threshold of discernibility to the average driver.

MANPOWER REQUIREMENTS

It is estimated that 8 weeks are required to complete the test work. The on-site activities each week will be:

Test Week	Activities
1	Prepare customer cars and test site
2	Complete car preparation; begin trained rater tests
3-7	Customers evaluate fuels; conduct trained rater tests
8	Take cars off-test; complete trained rater tests

About 52 man-weeks of effort are necessary to complete the program as designed. Six people, in addition to the four assistants hired by CRC, are required on-site during most of the testing. The manpower breakdown is:

	Man-weeks
4 Raters for 7 Weeks Each	28
1 Refueling Person for 8 Weeks	8
1 Coordinator for 8 Weeks	8
1 Office Assistant — First 2 Weeks Only	2
2 Mechanics for 2 Weeks of Car Preparation	4
2 Mechanics for 1 Week to Take Cars Off Test	2
TOTAL	52

The minimum time on-site for trained raters is 3-1/2 continuous weeks. For continuity all other participants should be on-site for at least 2 consecutive weeks. If participation is inadequate to complete the program as described, effort in the trained rater testing will be reduced accordingly.

INDIVIDUAL LABORATORY INSPECTION DATA

FUEL 3

D 86 Distillation, deg F @ % evap.

% Evap.	Lab A	Lab B	Lab C	Lab D	Lab E	Avg.	Std. Dev.
IBP	92	85	84	--	96	--	--
5	106	100	--	--	107	--	--
10	116	114	112	119	124	117	4.7
20	138	140	--	144	149	--	--
30	166	169	--	172	178	--	--
40	194	198	--	199	202	--	--
50	218	220	213	220	225	219	4.3
60	234	235	--	236	243	--	--
70	250	250	--	255	258	--	--
80	280	286	--	293	292	--	--
90	350	360	344	362	364	356	8.6
95	390	406	--	407	409	--	--
EP	429	440	412	435	435	430	10.9
Loss,%	2.0	1.9	2.0	--	--	--	--
Gravity, deg API	57.2	57.2	57.4	57.4	57.0	57.2	0.17
RVP, psi	10.2	10.4	10.9	10.7	11.0	10.6	0.34

T, deg F @ V/L Ratio

V/L							
5		117.0	118.0	118.6	117.0	117.6	0.79
10		121.4	125.0	123.4	121.5	122.8	1.72
15		125.5	130.0	127.8	125.3	127.2	2.21
20	133*	129.4	134.5	131.9	128.7	131.1	2.64
25		132.9	138.5	136.0	132.0	134.8	2.98
30		136.2	143.0	140.2	135.4	138.7	3.55
35		139.2	147.0	144.3	138.5	142.2	4.09

* Not included in average.

INDIVIDUAL LABORATORY INSPECTION DATA

FUEL 2

D 86 Distillation, deg F @ % evap.

% Evap.	Lab A	Lab B	Lab C	Lab D	Lab E	Avg.	Std. Dev.
IBP	94	90	90	--	99	--	--
5	116	112	--	--	116	--	--
10	127	126	124	129	131	127	2.7
20	150	150	--	153	156	--	--
30	176	176	--	179	183	--	--
40	201	202	--	205	208	--	--
50	222	223	217	223	228	222	3.9
60	238	238	--	239	243	--	--
70	253	252	--	256	259	--	--
80	284	286	--	297	292	--	--
90	356	358	349	365	366	359	7.0
95	396	402	--	409	408	--	--
EP	429	431	414	434	438	429	9.1
Loss,%	1.0	1.2	1.0	--	--	--	--
Gravity, deg API	56.1	55.8	56.0	56.1	56.0	56.0	0.12
RVP, psi	8.2	8.6	8.8	8.7	9.0	8.7	0.30

T, deg F @ V/L Ratio

V/L							
5		128.8	130.5	130.0	127.5	129.2	1.34
10		133.5	137.0	134.5	132.1	134.3	2.07
15		137.8	142.0	138.6	135.7	138.5	2.62
20	143*	141.7	146.0	142.5	139.0	142.3	2.89
25		145.3	150.5	146.3	142.2	146.1	3.43
30		148.6	154.5	150.1	145.4	149.6	3.78
35		151.5	158.5	153.8	148.5	153.1	4.22

* Not included in average.

INDIVIDUAL LABORATORY INSPECTION DATA

FUEL 1

D 86 Distillation, deg F @ % evap.

% Evap.	Lab A	Lab B	Lab C	Lab D	Lab E	Avg.	Std. Dev.
IBP	96	98	83	--	98	--	--
5	122	124	--	--	127	--	--
10	135	137	124	139	142	135	6.9
20	157	159	--	161	163	--	--
30	180	182	--	184	188	--	--
40	204	205	--	207	215	--	--
50	224	224	214	224	231	223	6.1
60	238	238	--	238	246	--	--
70	284	283	--	257	262	--	--
80	286	289	--	297	288	--	--
90	356	361	350	370	372	362	9.3
95	396	404	--	412	413	--	--
EP	430	440	410	426	440	429	12.4
Loss,%	1.0	0.7	1.0	--	--	--	--
Gravity, deg API	55.2	54.2	55.1	55.3	55.2	55.0	0.45
RVP, psi	7.3	7.0	7.5	7.1	7.5	7.3	0.23

T, deg F @ V/L Ratio

V/L							
5		140.6	141.5	141.9	139.1	140.8	1.24
10		145.0	147.5	146.2	143.1	145.4	1.87
15		148.9	152.0	149.8	146.3	149.2	2.36
20	153*	152.4	156.0	153.1	149.0	152.6	2.88
25		155.4	159.0	156.2	151.6	155.6	3.05
30		158.0	162.5	159.3	154.3	158.5	3.39
35		160.1	166.5	162.3	156.9	161.4	4.03

* Not included in average.

A P P E N D I X D

FUEL INSPECTION DATA

INDIVIDUAL COOPERATIVE LABORATORY RESULTS

CUSTOMER NAME John Doe

PERFORMANCE QUESTIONNAIRE

Car Number: 75 Date: 6/10

Office Use Only 1 2 3 4 5

How well did your car start the very first time today? ☐ Excellent ☒ Good ☐ Fair ☐ Poor

ANSWER QUESTIONS 1-13 AT THE END OF EACH DAY. IF YOU EXPERIENCE PROBLEMS 3-10, INDICATE THE TIME OF DAY WHEN THE INDIVIDUAL PROBLEMS WERE MOST SEVERE. IN ANSWERING QUESTION 13, INDICATE THE TRAFFIC AND DRIVING CONDITIONS EXISTING WHEN THE WORST PROBLEM OF THE DAY (QUESTION 12) OCCURRED. WE ARE PRIMARILY INTERESTED IN OBTAINING YOUR OPINIONS ABOUT YOUR CAR'S PERFORMANCE WHEN THE ENGINE IS FULLY WARMED-UP. WHENEVER THE CAR IS PARKED FOR MORE THAN 2 HOURS, THE ENGINE IS CONSIDERED "COOL" AND IT IS NOT WARM UNTIL AFTER DRIVING 5 MILES.

1) Time(s) of Day When You Drove Your Car: ☒ Before 9 AM ☐ 9 AM - 12 N ☒ 12 N - 3 PM ☒ 3 PM - 6 PM ☐ After 6 PM

	None or Insignificant	Slightly Bothersome	Annoying	Very Troublesome	If problem occurred, indicate approximate time of day when it was most severe.
2) Overall, Performance Problems Were	☐	☒	☐	☐	
3) Excessive Cranking During Start	☒	☐	☐	☐	____ AM / PM
4) Engine Stalls During or Immediately After Start. Number of Stalls 1	☐	☐	☒	☐	8:00 (AM) / PM
5) Engine Stalls - Any Other Time. Number of Stalls 0	☒	☐	☐	☐	____ AM / PM
6) Idle Roughness	☒	☐	☐	☐	____ AM / PM
7) Hesitation, Bucking or Coughing	☒	☐	☐	☐	____ AM / PM
8) Lack of Power (Sluggish Acceleration)	☒	☐	☐	☐	____ AM / PM
9) Surge (Cyclic Pulses of Power)	☐	☐	☒	☐	3:30 AM / (PM)
10) Backfire (Popping Sounds From the Engine or Exhaust Pipe)	☒	☐	☐	☐	____ AM / PM

11) Did you consider performance acceptable today? ☒ Yes ☐ No

12) If any problems occurred, indicate the one you considered to be most severe today. Enter the problem number (3-10) from above. 4

13) Describe the type of driving existing when you experienced the most severe problem today.

Traffic Condition

1. Steady 0-45 mph ..... ____
2. Steady Above 45 mph ..... ____
3. Sitting at Stop ..... ____
4. Heavy Stop-and-Go Traffic ____
5. Accelerating From Stop ... ____
6. Accelerating onto Freeway ____
7. During Start-Up X

Road Grade

1. Uphill ____
2. Downhill ____
3. No Grade ____

14) Compared with last week, performance this week was: ☐ Better ☐ Same ☐ Worse (Answer Only on Fuel Change Day)

COMMENTS _____

not complete this work before the end of your workday, you will be given a rental car to use overnight.

Even though we will be refueling your car, we will not be checking engine fluid (oil, water, etc.) levels or performing maintenance on your car – these items remain your responsibility.

We have installed three pieces of equipment on your car. They are:

1. A connection in the fuel line to ease the job of draining the cars fuel tank;
2. A connection on a vacuum line for use when CRC evaluates the cars performance;
3. Stickers in the front and rear windows for vehicle identification.

These items will be removed at the end of the program, and they will not interfere with your car's operation.

We do not expect you to have difficulty with the test gasolines in this program, but to ease your mind, we have arranged for 24-hour road-service. Simply call if you have car trouble which you believe is directly caused by our gasoline test.

If you have any questions or comments about the program, please call us at 267-9396. We sincerely thank you for taking an active interest in our gasoline research program.

The Coordinating Research Council

CRC GASOLINE TEST PARTICIPANTS

You and your car have been selected to participate in the Coordinating Research Council gasoline test program. Throughout the program, you will receive free unleaded gasoline and continue to use your car as usual. Each day you drive your car, you are to fill out one data sheet pertaining to the car's performance. A book of sheets is in your car and an example of a properly completed data sheet is attached. With the exception of the question concerning how well the car started the first time of the day, all answers should refer to your car's performance when the engine is fully warmed up. At the end of each day, take a moment to complete the sheet, recalling as well as possible any problems experienced during the day. Notice that Question 14 is only to be answered on "fuel change day" (as explained below). We emphasize that in order for the information to be reliable, the questions must be answered completely and faithfully. There are no right or wrong answers to any of the questions – we are simply seeking your opinions.

One day each week, participants must leave their car with CRC (at 3601 E. Washington) so the test gasoline in the car can be drained and replenished. Participants should plan to leave their car for the entire workday. The schedule for car refueling is as follows:

Car Number	Refueling Day
1 thru 14	Monday
15 thru 28	Tuesday
29 thru 42	Wednesday
43 thru 56	Thursday
57 thru 70	Friday

The assigned car number and refueling day are shown on a decal on the front and back car windows. If one tank of fuel is not enough to last you for a full week, we will fill your car tank on any day you leave your car with us. If you must buy gasoline over a weekend (etc.), simply bring the car to CRC as soon as you return to work, so test fuel can be put back into the car.

Besides filling your car with gasoline, CRC will frequently evaluate your car's performance on refueling days. This consists of driving your car several miles at highway speeds and several miles at city speeds. In total, we expect to drive your car about 500 miles during the program. Normally, these evaluations will be done during working hours, but if we do

APPLICATION FORM - CRC TEST PROGRAM

Name _____ Department Number _____ Building Number _____

Phone Numbers: Garrett _____ Normal Work Hours _____
(8:00a — 4:00p etc.)

*Home _____

*(Garrett management has requested that CRC contact employees at home rather than at work whenever possible.)

Do you plan any vacation or travel on company business between June 15 and August 15? ____

If yes, about how many total days will you be away from Garrett? _____

Vehicle Information:

Make _____ (Ford, Chevrolet, etc.) Model _____ (LTD, Citation, etc.) Model Year _____ (1979, 1980, etc.)

Engine Size _____ (350 cubic inch, 2.3 litre, etc.) Number of Carburetor Venturis _____ (if known) (?)

Transmission Type: Automatic _____ Current odometer reading _____ miles (approximate)
Manual _____

Driving Patterns

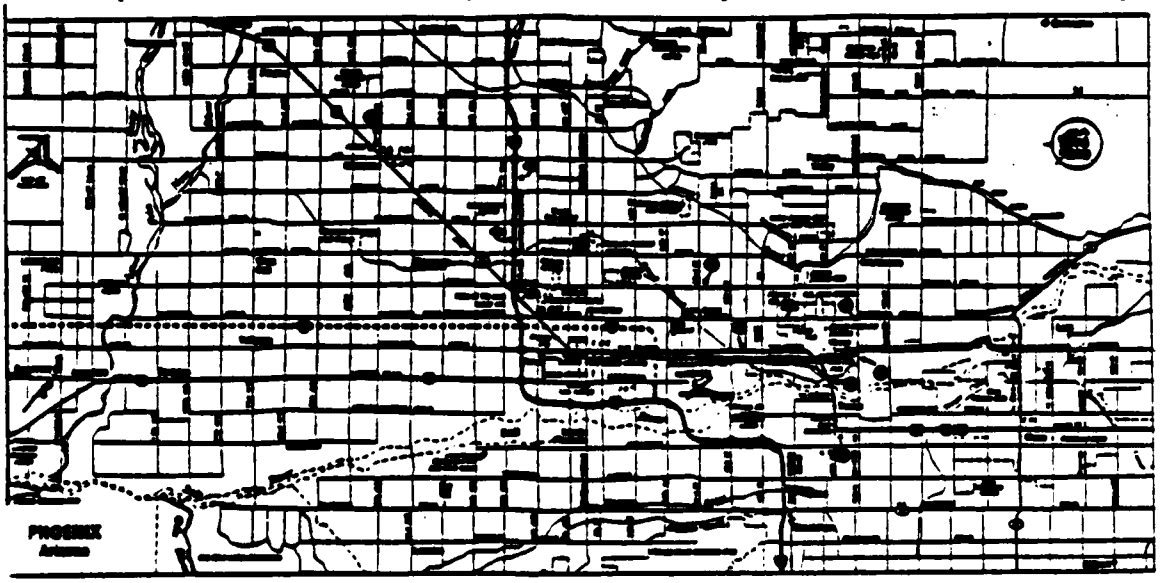
Distance from your home to work. _____ miles

Approximate time required to drive home each evening. _____

About how many stops in traffic (stop signs, traffic lights, etc.) do you normally make during your trip home each evening? _____

About how many other stops (school, grocery store, etc.) do you normally make during your trip home each evening? _____

On the map below, indicate the approximate route you drive home each evening: ho e)



A P P E N D I X C

CUSTOMER APPLICATION

AND

INFORMATION FORMS

FIGURE B-1

PERFORMANCE QUESTIONNAIRE

CUSTOMER NAME _____

Car Number: _____ Date: _____

Office Use Only 1 2 3 4 5

How well did your car start the very first time today? ☐ Excellent ☐ Good ☐ Fair ☐ Poor

ANSWER QUESTIONS 1-13 AT THE END OF EACH DAY. IF YOU EXPERIENCE PROBLEMS 3-10, INDICATE THE TIME OF DAY WHEN THE INDIVIDUAL PROBLEMS WERE MOST SEVERE. IN ANSWERING QUESTION 13, INDICATE THE TRAFFIC AND DRIVING CONDITIONS EXISTING WHEN THE WORST PROBLEM OF THE DAY (QUESTION 12) OCCURRED. WE ARE PRIMARILY INTERESTED IN OBTAINING YOUR OPINIONS ABOUT YOUR CAR'S PERFORMANCE WHEN THE ENGINE IS FULLY WARMED-UP. WHENEVER THE CAR IS PARKED FOR MORE THAN 2 HOURS, THE ENGINE IS CONSIDERED "COOL" AND IT IS NOT WARM UNTIL AFTER DRIVING 5 MILES.

1) Time(s) of Day When You Drove Your Car: ☐ Before 9 AM ☐ 9 AM - 12 N ☐ 12 N - 3 PM ☐ 3 PM - 6 PM ☐ After 6 PM

	None or Insignificant	Slightly Bothersome	Annoying	Very Troublesome	If problem occurred, indicate approximate time of day when it was most severe.
2) Overall, Performance Problems Were	☐	☐	☐	☐	
3) Excessive Cranking During Start	☐	☐	☐	☐	_____ am pm
4) Engine Stalls During or Immediately After Start Number of Stalls _____	☐	☐	☐	☐	_____ am pm
5) Engine Stalls - Any Other Time Number of Stalls _____	☐	☐	☐	☐	_____ am pm
6) Idle Roughness	☐	☐	☐	☐	_____ am pm
7) Hesitation, Bucking or Coughing	☐	☐	☐	☐	_____ am pm
8) Lack of Power (Sluggish Acceleration)	☐	☐	☐	☐	_____ am pm
9) Surge (Cyclic Pulses of Power)	☐	☐	☐	☐	_____ am pm
10) Backfire (Popping Sounds From the Engine or Exhaust Pipe)	☐	☐	☐	☐	_____ am pm

11) Did you consider performance acceptable today? ☐ Yes ☐ No

12) If any problems occurred, indicate the one you considered to be most severe today. Enter the problem number (3-10) from above. ☐

13) Describe the type of driving existing when you experienced the most severe problem today.

Traffic Condition

1. Steady 0-45 mph ..... _____
2. Steady Above 45 mph ..... _____
3. Sitting at Stop ..... _____
4. Heavy Stop-and-Go Traffic _____
5. Accelerating from Stop ... _____
6. Accelerating onto Freeway _____
7. During Start-Up ..... _____

Road Grade

1. Uphill _____
2. Downhill _____
3. No Grade _____

14) Compared with last week, performance this week was: ☐ Better ☐ Same ☐ Worse (Answer Only on Fuel Change Day)

COMMENTS _____

TABLE B-III

TRAINED RATER HOT-START AND DRIVEAWAY TEST SCHEDULE
(Rental Cars Only)

Rental Car	Test Fuel*	Sunday 6/21	Saturday - 6/27		Friday - 7/3		Saturday - 7/11	
			90-100°F	>110°F	90-100°F	>110°F	90-100°F	>110°F
1	3	Rater A, B, and C Training	B,B**	-	C	-	A	-
	5		-	A,A	B,C	B	[C],A	C
2	3		C	-	A,A	-	B	-
	5		[B],C	B	-	C,C	A,B	A
3	3		A	-	B	-	C,C	-
	5		C,A	C	[A],B	A	-	B,C
4	3		[B]	-	[A]	-	[C]	-
	5		A,B	A	C,A	C	B,C	B

		Wednesday 7/15	Saturday - 7/18		Saturday - 7/25		Saturday - 8/1	
			90-100°F	>110°F	90-100°F	>110°F	90-100°F	>110°F
1	3	Rater D, E, and F Training	[E]	-	[D]	-	[F]	-
	5		D,E	D	F,D	F	E,F	E
2	3		E,E	-	F	-	D	-
	5		-	D,D	E,F	E	[F],D	F
3	3		F	-	D,D	-	E	-
	5		[E],F	E	-	F,F	D,E	D
4	3		D	-	E	-	F,F	-
	5		F,D	F	[D],E	D	-	E,E

* Fuel 3 is a 50/50 blend of the high and low volatility base fuels and Fuel 5 is 10[illegible] high volatility base fuel.

** Letters are trained-rater identifications.

[ ] Tests to be eliminated if temperatures are not between 90 and 100°F long enough.

TABLE B-II

TRAINED RATER HOT-START AND DRIVEAWAY TEST SCHEDULE
(Customer Cars Only)
- Continued -

Week	Rater	Monday (Cars 1-14) Car	Monday (Cars 1-14) Fuels	Tuesday (Cars 15-28) Car	Tuesday (Cars 15-28) Fuels	Wednesday (Cars 29-42) Car	Wednesday (Cars 29-42) Fuels	Thursday (Cars 43-56) Car	Thursday (Cars 43-56) Fuels	Friday (Cars 57-70) Car	Friday (Cars 57-70) Fuels
7/27	D	11*	2,4,5	25*	2,4,5	37*	2,4,5	47*	2,4,5	63	2,4
		12	2,4	26	2,4	38	2,4	48	2,4	64	2,4
	E	13*	2,4,5	27*	2,4,5	39*	2,4,5	49*	2,4,5	65	2,4
		14	2,4	28	2,4	40	2,4	50	2,4	66	2,4
	F	-	-	-	-	-	-	51*	2,4,5	61,62	1
		-	-	-	-	-	-	52	2,4	63,64	1
8/3	D	Make-Up Work		Make-Up Work		Make-Up Work		53*	2,4,5	67*	2,3,4
								54	2,4	68	2,4
	E							55*	2,4,5	69*	2,3,4
								56	2,4	70	2,4
	F			-	-	41*	2,4,5	-	-	65,66	1
				-	-	42	2,4	-	-	68,70	1

* Owner scheduled to take a rental car home overnight.

TABLE B-II

TRAINED RATER HOT-START AND DRIVEAWAY TEST SCHEDULE
(Customer Cars Only)

		Monday (Cars 1-14)		Tuesday (Cars 15-28)		Wednesday (Cars 29-42)		Thursday (Cars 43-56)		Friday (Cars 57-70)	
Week	Rater	Car	Fuels	Car	Fuels	Car	Fuels	Car	Fuels	Car	Fuels
6/22	A	1	1,3	15	1,3	29	1,3	43	1,3	57	3,5
		2*	1,3,5	16*	1,3,5	30*	1,3,5	44*	1,3,5	58	3,5
	B	3	1,3	17	1,3	31	1,3	45	1,3	59	3,5
		4*	1,3,5	18*	1,3,5	32*	1,3,5	46*	1,3,5	60	3,5
	C	5	1,3	-	-	Make-Up Work		-	-	61	3,5
		6*	1,3,5	-	-			-	-	62	3,5
6/29	A	7	1,3	19	1,3	33	1,3	43*	2,4,5	-	-
		8*	1,3,5	20*	1,3,5	34*	1,3,5	44	2,4	-	-
	B	9	1,3	21	1,3	35	1,3	45*	2,4,5	-	-
		10*	1,3,5	22*	1,3,5	36*	1,3,5	46	2,4	-	-
	C	-	-	23	1,3	-	-	Make-Up Work		-	-
		-	-	24*	1,3,5	-	-			-	
7/6	A	1*	2,4,5	15*	2,4,5	29*	2,4,5	Make-Up Work ↓		57	2,4
		2	2,4	16	2,4	30	2,4			58	2,4
	B	3*	2,4,5	17*	2,4,5	31*	2,4,5			59	2,4
		4	2,4	18	2,4	32	2,4			60	2,4
	C	5*	2,4,5	-	-	Make-Up Work		-	-	61	2,4
		6	2,4	-	-			-	-	62	2,4
7/13	A	7*	2,4,5	19*	2,4,5	33*	2,4,5	-	-	-	-
		8	2,4	20	2,4	34	2,4	-	-	-	-
	B	9*	2,4,5	21*	2,4,5	35*	2,4,5	-	-	-	-
		10	2,4	22	2,4	36	2,4	-	-	-	-
	C	-	-	23*	2,4,5	-	-	-	-	-	-
		-	-	24	2,4	-	-	-	-	-	-
	D	-	-	-	-	-	-	47	1,3	63	3,5
		-	-	-	-	-	-	48*	1,3,5	64	3,5
	E	-	-	-	-	-	-	49	1,3	65	3,5
		-	-	-	-	-	-	50*	1,3,5	66	3,5
	F	-	-	-	-	-	-	51	1,3	-	-
		-	-	-	-	-	-	52*	1,3,5	-	
7/20	D	11	1,3	25	1,3	37	1,3	53	1,3	67	3,5
		12*	1,3,5	26*	1,3,5	38*	1,3,5	54*	1,3,5	68	3,5
	E	13	1,3	27	1,3	39	1,3	55	1,3	69	3,5
		14*	1,3,5	28*	1,3,5	40*	1,3,5	56*	1,3,5	70	3,5
	F	Make-Up Work		-	-	41	1,3	-	-	57,58	
				-	-	42*	1,3,5	-	-	59,60	

TABLE B-I

TEST FUEL SPECIFICATIONS

	Low Volatility	High Volatility
Distillation, °F (D 86)		
10% Evap.	130 Min	110 Max
30% Evap.	180 ±5	150 ±5
50% Evap.	230 ±10	210 ±10
70% Evap.	275 ±10	260 ±10
90% Evap.	340 ±10	335 ±10
EP	437 Max	437 Max
Reid Vapor Pressure, (RVP), lbs. (D-323)	7.5 - 8.0	13.5 - 14.0
Temperature for 20:1 Vapor - Liquid Ratio ($T_{V/L=20}$), °F (D 2533)	140 - 145	110 - 115
Lead Content, g/gal	0.05 Max	
Phosphorus Content, g/gal	0.005 Max	
Sulfur Content, % Wt.	0.10 Max	
Benzene Content, % Vol.	1.0 Max	
Octane		
MON	85 Min	
(RON + MON)/2	89 Min	
Sensitivity (RON-MON)	8-11	
Antioxidant - phenylene diamine, ptb	5	

INDIVIDUAL LABORATORY INSPECTION DATA

FUEL 4

D 86 Distillation, deg F @ % evap.

% Evap.	Lab A	Lab B	Lab C	Lab D	Lab E	Avg.	Std. Dev.
IBP	89	80	86	--	94	--	--
5	96	89	--	--	105	--	--
10	108	106	104	115	118	110	6.0
20	129	129	--	139	141	--	--
30	158	160	--	168	172	--	--
40	190	191	--	196	195	--	--
50	216	214	213	219	225	217	4.8
60	234	232	--	236	242	--	--
70	249	249	--	256	258	--	--
80	277	284	--	295	292	--	--
90	349	358	347	361	368	357	8.7
95	388	405	--	407	412	--	--
EP	429	428	421	444	437	432	8.9
Loss,%	4.0	3.2	3.0	--	--	--	--
Gravity, deg API	58.5	58.4	58.6	58.4	58.1	58.4	0.19
RVP, psi	12.0	12.4	12.5	12.4	12.7	12.4	0.25
T, deg F @ V/L Ratio							
V/L							
5		110.4	110.5	109.2	108.5	109.6	0.97
10		114.8	116.5	114.2	113.0	114.6	1.46
15		119.0	121.5	118.6	116.6	118.9	2.01
20	122*	122.9	125.5	122.8	120.0	122.8	2.25
25		126.5	129.5	126.8	123.4	126.6	2.50
30		129.9	134.0	130.8	126.7	130.4	3.00
35		133.0	138.5	134.7	129.9	134.0	3.58

* Not included in average.

INDIVIDUAL LABORATORY INSPECTION DATA

FUEL 5

D 86 Distillation, deg F @ % evap.

% Evap.	Lab A	Lab B	Lab C	Lab D	Lab E	Avg.	Std. Dev.
IBP	78	79	76	--	94	--	--
5	--	90	--	--	98	--	--
10	95	102	91	99	107	99	6.2
20	119	123	--	120	131	--	--
30	148	155	--	149	162	--	--
40	184	189	--	183	194	--	--
50	214	217	201	212	221	213	7.5
60	232	235	--	233	238	--	--
70	248	250	--	250	255	--	--
80	277	282	--	282	288	--	--
90	352	352	338	352	361	351	8.2
95	394	400	--	398	408	--	--
EP	432	439	415	432	440	432	10.0
Loss,%	6.0	1.8	4.0	--	--	--	--
Gravity, deg API	59.9	59.6	59.9	59.5	59.4	59.7	0.23
RVP, psi	13.8	14.0	14.3	14.2	14.6	14.2	0.30

T, deg F @ V/L Ratio

V/L						
5	99.8	102.0	100.3	98.8	100.2	1.34
10	103.1	107.5	104.4	102.8	104.4	2.15
15	106.5	111.5	108.5	106.3	108.2	2.41
20	113* 110.0	115.5	112.6	109.8	112.0	2.67
25	113.6	119.5	116.7	113.2	115.8	2.95
30	117.4	123.5	120.8	116.6	119.6	3.19
35	121.2	128.0	125.0	119.9	123.5	3.68

* Not included in average.

APPENDIX E

CRC VAPOR LOCK

AND

HOT DRIVEABILITY TEST PROCEDURES

I. TEST PROCEDURES

A. CRC Vapor Lock Test Technique

1. Drain gasoline tank and refill with 8 gallons* of test fuel for the next test. Test fuel shall not be put in tanks more than 10 minutes before the start of the test.

2. Drive 20 miles at 55 mph for vehicle warm-up, establishing base total start time after 15 miles of operation.

3. Obtain baseline acceleration time on the track following 15 miles of warm up by accelerating from a stop, at light throttle, to reach 10 mph within 5 seconds. Then accelerate at the desired throttle position (wide-open throttle) to 70 mph, timing by stopwatch from 15 mph to 50, 60, and 70 mph, as indicated by speedometer. Record acceleration times and note surging or abnormal vehicle performance. Complete one lap around the track at 55 mph and return to wind shelter.

4. Park car in soak shed for 15 minutes with engine off. Obtain soak fuel sample in duplicate.

5. At end of soak period, start car using vehicle manufacturer's recommended procedure. Record start time to nearest 0.1 second and number of stalls. Idle for 5 seconds in neutral after the original start and any restarts, and record any abnormality in the stability of idle performance. Accelerate from soak shed as described in Item 6.

6. Turn headlights on. Obtain wide-open throttle acceleration time by accelerating from the soak shed at part throttle to reach 10 mph in 5 seconds, and then accelerate at wide-open throttle to 70 mph, recording time from 15 mph to 50, 60, and 70 mph. Record acceleration time and abnormal vehicle performance. In this technique, a transient and/or abnormal change in acceleration rate is called surge. The intensity of surge may vary, as described below:

   Satisfactory (S) - A rating indicating no malfunction. Some loss in acceleration may be measured, but no surging in the accepted understanding of the term may be recognized.

   Trace (T) - A rating that is just discernible to a test driver, or might not be observed by the casual driver.

   Moderate (M) - A rating that is judged to be probably noticeable to the average driver and definitely noticeable to the test driver. It is occasional in frequency and is associated with limited delays in acceleration rather than an actual decrease in speed.

* six gallons with tanks of 16-gallon capacity or less.

Heavy (H) - A rating that is pronounced and judged to be obvious to any driver. It is persistent or constant in frequency and is associated with prolonged delays in acceleration or even actual decreases in speed level reached.

Lock (L) - That which completely stalls the engine over a stretch of at least 3/10 of a mile, or a period of time in excess of 20 seconds.

7. Complete two laps around the track at 60 mph, to restabilize temperatures.

8. Idle for 10 minutes in neutral in the soak shed. Record number of stalls. Obtain "idle" fuel sample in duplicate.

9. At end of idle period, accelerate from soak shelter as described in Item 6.

10. Complete one lap around the track at 60 mph, and return to fueling area.

11. Car volatility tolerances are to be defined only for the more critical condition (soak or idle); the remaining tests will be run as follows:

    a. If the fuel selected for the previous test was either too volatile or too low in volatility to determine whether the idle or the soak acceleration was the more critical, the soak and idle procedure shall be repeated on a new test fuel.

    b. If, during the preceding test, the soak acceleration is found to be appreciably more critical than the idle acceleration (>20% increase in acceleration time) with a fuel giving 25 to 75% loss in acceleration performance, the remaining tests will be run using only the soak procedures; otherwise the idle procedure will be used in all cases.

12. Continue testing with other fuels of different T-V/L levels to obtain curves of acceleration time from 15-50, 15-60, and 15-70 mph versus fuel volatility. To establish the vehicle limiting T-V/L data, a minimum of five fuels will be tested at the desired limiting condition (soak or idle). Fuels will be selected with the following objectives:

    a. A fuel with sufficient volatility to cause acceleration time to 70 mph to increase between 50 and 100%.

    b. A fuel with sufficient volatility to cause acceleration time to 70 mph to increase between 25 and 50%.

c. A fuel with sufficient volatility to cause acceleration time to 70 mph to increase between 10 and 25%.

d. A fuel with sufficient volatility to result in less than a 10% increase in acceleration time; or if minimum acceleration time exceeds 10%, two fuels giving essentially equal performance and differing by at least 4°F in the temperature for 20:1 V/L ratio (0.5 to 1.0 lb RVP).

e. A fuel estimated to give a 25% increase in acceleration time to 70 mph.

B. CRC 1975 Hot Start and Driveaway Test Technique

1. Drain fuel tank and fill with six gallons of test fuel.

2. Drive 20 miles at 55 mph for vehicle warm-up, establishing base total start time after running 15 miles of operation.

3. Pull into soak shed and idle in neutral for 10 minutes. Record idle speed and quality initially, after 5 minutes, and at the end of 10 minutes.

4. Back vehicle out of soak shed for approximately 30 feet and stop abruptly (10 ft./sec.^{2}). Record idle quality during 10-second idle in drive. Also record the number of stalls, and restart time, if any.

5. Accelerate from 0 to 30 mph at 5 ft./sec.^{2}, and stop abruptly (20 ft./sec.^{2}). Evaluate and record hesitation, stumble, surge, and stall.

6. Idle in drive for 15 seconds, recording idle quality.

7. Accelerate at 5 ft./sec.^{2} from 0-45 mph. Evaluate and record hesitation, stumble, surge, and stall.

8. Make four successive accelerations from 0-25 mph at 5 ft./sec.^{2}. Decelerate moderately, using brake, and idle for 15 seconds following each acceleration. Record hesitation, stumble, surge, stall, and idle speed and quality for each cycle of operation.

9. Immediately following the final 15-second idle in Item 8, accelerate at 8" Hg constant manifold vacuum from 0-55 mph. Record hesitation, stumble, surge, and stalls.

10. Complete 10 miles at 55 mph for temperature restabilization.

11. Pull into soak shed and idle in drive for one minute. Record idle speed and quality.

12. Turn off engine and soak for 20 minutes. Obtain duplicate fuel sample.

13. At the end of the soak period, with the transmission in park or neutral, set the throttle to manufacturer's recommendation. Engage the starter immediately after opening throttle. Do not pump the throttle before making the start. If the engine does not start after 15 seconds of cranking, depress throttle to floor board; crank an additional 15 seconds to check for overrich condition. If engine does not start, manipulate throttle as required to start engine. Record initial start time and detail any abnormal starting procedure.

14. When engine starts, allow it to accelerate to 1000 rpm before de-energizing start motor and releasing throttle to idle position. The engine must continue to run for one minute after the throttle is returned to idle to constitute a successful start and run test. If engine stalls, immediately repeat starting and idle procedure. If engine stalls four times in succession, increase idle speed as required to keep engine running. Evaluate and record idle quality and speed, number of stalls, and total starting time. Total starting time is the cumulative period of time the starter motor is engaged. The time interval that the engine is idling between stalls is not included in total starting time.

15. Repeat Items 4 through 9 and return to fueling area.

C. City Driveability Procedure

1. Stabilize engine and fuel system temperatures by driving 15 miles at 55 mph.

2. Drive 4 miles in "city" traffic, simulated as follows:

   a. Within each mile, stop 4 times for a 15-second idle, and at the end of each mile, idle for 30 seconds to record driveability problems. All idle soaks should be about 0.2 miles apart.

   b. Maximum car speed should be 20 mph.

   c. Accelerate very gently following each idle by dropping the engine vacuum at the start of an acceleration by 5" Hg below its idle value and hold the throttle at this position until the car reaches 20 mph.

The purpose of this portion of the test is to maximize engine heating and underhood temperatures. During this portion of the test, the driver should rate the severity of subjective problems, such as hesitation, stumble, surge, idle roughness, and backfire; and count the number of stalls.

3. Idle for 10 minutes in the soak shelter with the transmission in neutral or "Park" for safety. Appraise idle quality, record stalls and restart times if stalling occurs. Obtain fuel samples for RVP inspection.

4. Leave the soak shelter and make a 0-30 mph part-throttle (3" Hg manifold vacuum) acceleration. Observe severity of any acceleration problems including hesitation, stumble, and surge.

5. Drive 3 miles in city traffic per Step 2 above.

6. Park in a soak shelter for 20 minutes with key off. Observe hot start stalls and measure restart time. Obtain fuel samples for RVP inspection.

7. Repeat Step 4 above.

8. Compile driveability demerits for the cycle using an appropriate rating scale which weights problems according to their relative severity.

II. DATA RATING SYSTEMS

Driveability Demerit Rating System

Starting Time - Time recorded in seconds (hot-start time is the sum of times for initial start and all restarts).

Stalls at Idle - Number of occurrences during each maneuver or time period.

Stalls, Driving - Number of occurrences during each maneuver.

Idle Roughness)
Backfire)
Hesitation) - Severity of any occurrence rated as trace (T), moderate (M), or heavy (H) during each maneuver.
Stumble)
Surge)

Weighted demerits are assigned to each malfunction as summarized below:

	Weighted Demerits**		
Starting time:	Seconds - 2.0 (but zero if negative)		
Stalls at idle:	8		
Stalls, driving:	32		
	T	M	H
Idle roughness	1	2	4
Backfire	6	12	24
Hesitation	6	12	24
Stumble	6	12	24
Surge	4	8	16

The total weighted demerit (TWD) value for each run was computed by adding the weighted demerits for the several malfunctions in each maneuver or idling period, subject to the following constraints:

1. Only one driving stall was counted per maneuver.

2. No more than three idling stalls were counted per idling interval.

3. No more than five idling stalls were counted for the whole hot-start and idle procedure (lines 14-18 of data sheet).

4. For each maneuver or idling interval, only the one malfunction giving the highest weighted demerits was counted. Thus, if heavy hesitation (24 weighted demerits) and a stall were recorded in the same maneuver, only 32 weighted demerits were counted towards the TWD.

** "Evaluation of a High Temperature Driveability Test Procedure - 1971 Yuma Program," CRC Report No. 455.

APPENDIX F

CUSTOMER DATA

SUMMARIZED FROM DAILY REPORTS

(47 CARS, 1896 CAR-DAYS)

APPENDIX F

CUSTOMER DATA

DATA ENTRY CODES AND ABBREVIATIONS:

Q# = Question Number from questionnaire

Entry for Q#2: 0, 1, 2, 3 = Column checked.

Entry for Q#11: 1 = Yes, 0 = No.

Entry for Q#12: Problem number cited (3-10).

Entry for Driving Conditions:
First four digits = #'s (0-7) of traffic conditions cited.
Last digit = # (0-3) of Road Grade cited.

Entry for "Compare Week"--
Q#14: 0 = No comparison, 1 = Better, 2 = Same, 3 = Worse.
Old F#: Identification number of fuel used previous week.

Entry for "Time": 1 = Time(s) of driving were reported.
0 = Time for driving not reported.

Entry for "CMT?": 1 = Comments on data form, 0 = No comments.

DATA ON FUEL 3 OMITTED FROM ANALYSIS:

Car # 01, Runs 1-5
Car # 16, Runs 1-6
Car # 24, Runs 1-4
Car # 46, Runs 1-5
Car # 48, Runs 1-6
Car # 52, Runs 1-7
Car # 53, Runs 1-3

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 1 , TOTAL RUNS = 46

RUN	DATE	AIR TMP	ADJ T@2OV/L FRESH FUEL	ADJ T@2OV/L TANK FUEL	STALLS, ST-ART	STALLS, AT--DRIVE	DEMERITS Q@3 STRT DIFF	DEMERITS Q@4 STRT STLL	DEMERITS Q@5 DRIV STLL	DEMERITS Q@6 IDLE RUFF	DEMERITS Q@7 HES-ITZN	DEMERITS Q@8 LACK POWR	DEMERITS Q@9 SUR-GE	DEMERITS Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRD BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE OLD F@	TIME	CMT ?
FUEL = 1, BLEND T@2OV/L = 152.6, EST. TANK FUEL T@2OV/L = 155.2																							
1	622	110	142.6	145.2	2	0	4	8	0	0	0	6	0	0	18	1	1	0	7 0 0 0 0	0	0	1	0
2	623	109	143.6	146.2	0	0	4	0	0	0	0	0	0	0	4	1	1	0	0 0 0 0 0	0	0	1	0
3	624	109	143.6	146.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	625	113	139.6	142.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	626	110	142.6	145.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	627	105	147.6	150.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	628	90	162.6	165.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
8	707	105	147.6	150.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	708	104	148.6	151.2	3	0	0	8	0	0	0	0	0	0	8	2	1	0	0 0 0 0 0	0	0	1	0
10	709	107	145.6	148.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	710	104	148.6	151.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	711	96	156.6	159.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	0	0
13	712	100	152.6	155.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	0	0
FUEL = 3, BLEND T@2OV/L = 131.1, EST. TANK FUEL T@2OV/L = 140.6																							
1	617	107	124.1	133.6	3	0	8	16	0	0	0	6	0	0	30	1	1	4	7 0 0 0 0	0	0	1	0
2	618	109	122.1	131.6	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1	0
3	619	109	122.1	131.6	1	0	8	8	0	0	0	6	0	0	22	1	0	0	0 0 0 0 0	0	0	1	0
4	620	111	120.1	129.6	0	0	8	0	0	0	0	0	0	0	8	1	1	0	7 0 0 0 0	0	0	1	0
5	621	101	130.1	139.6	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 5, BLEND T@2OV/L = 112.0, EST. TANK FUEL T@2OV/L = 140.0																							
1	630	96	116.0	144.0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0 0 0 0 0	0	0	0	0
2	701	100	112.0	140.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	702	106	106.0	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	703	106	106.0	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	704	107	105.0	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	705	107	105.0	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	706	92	120.0	148.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	1	1	1
8	714	103	109.0	137.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	715	105	107.0	135.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	716	99	113.0	141.0	2	0	0	8	0	0	0	0	0	0	8	1	1	0	0 0 0 0 0	0	0	1	0
11	717	104	108.0	136.0	3	0	16	8	0	0	0	0	0	0	24	2	1	0	0 0 0 0 0	0	0	1	0
12	718	103	109.0	137.0	4	0	0	8	0	0	0	0	0	0	8	2	1	0	0 0 0 0 0	0	0	1	0
13	719	97	115.0	143.0	2	0	8	8	0	0	0	0	0	0	16	2	1	0	0 0 0 0 0	0	0	1	0
14	720	91	121.0	149.0	3	0	8	8	0	0	0	0	0	0	16	2	1	0	7 0 0 0 0	3	1	1	1
15	721	110	102.0	130.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	722	102	110.0	138.0	0	0	0	0	0	?	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	723	110	102.0	130.0	0	0	0	0	0	u	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	724	109	103.0	131.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	725	99	113.0	141.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	726	97	115.0	143.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	727	92	120.0	148.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	1
22	728	106	106.0	134.0	2	0	0	8	0	0	0	6	0	0	14	1	1	0	0 0 0 0 0	0	0	1	0
23	729	105	107.0	135.0	3	1	8	8	16	0	0	0	0	0	32	2	0	0	0 0 0 0 0	0	0	1	0
24	730	98	114.0	142.0	0	0	0	8	0	0	0	0	0	0	8	2	1	0	0 0 0 0 0	0	0	1	0
25	731	98	114.0	142.0	1	2	8	8	32	0	0	0	0	0	48	2	0	0	0 0 0 0 0	0	0	1	0
26	801	102	110.0	138.0	0	0	8	0	0	0	0	0	0	0	8	1	0	0	0 0 0 0 0	0	0	1	0
27	802	106	106.0	134.0	3	5	8	8	32	0	0	0	0	0	48	2	0	0	0 0 0 0 0	0	0	1	0
28	803	107	105.0	133.0	1	0	8	8	0	0	0	0	0	0	16	2	0	0	7 0 0 0 0	0	0	0	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 2 , TOTAL RUNS = 51

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT- ST-ART	STALLS, -# AT- DR-IVE	DEMERITS @#3 STRT DIFF	DEMERITS @#4 STRT STLL	DEMERITS @#5 DRIV STLL	DEMERITS @#6 IDLE RUFF	DEMERITS @#7 HES-ITZN	DEMERITS @#8 LACK POWR	DEMERITS @#9 SUR-GE	DEMERITS @#10 BACK FIRE	TO-TAL	@#2 OVER ALL PERF	@#11 ACC EPT ABL	@#12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @# 14	COMPARE OLD F#	TIME E	CAM T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 149.2																							
1	622	110	142.6	139.2	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1	0
2	623	109	143.6	140.2	3	0	4	8	0	0	0	0	0	0	12	0	1	4	7 0 0 0 0	0	0	1	0
3	624	109	143.6	140.2	1	0	0	8	0	0	0	0	0	0	8	0	0	4	7 0 0 0 0	0	0	1	0
4	625	113	139.6	136.2	2	0	8	8	0	0	0	0	0	0	16	0	1	4	7 0 0 0 3	0	0	1	0
5	626	110	142.6	139.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	627	105	147.6	144.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	628	98	154.6	151.2	2	0	8	8	0	0	0	0	0	0	16	0	1	4	7 0 0 0 0	2	3	1	0
8	713	101	151.6	148.2	1	1	0	8	32	0	0	0	0	0	40	0	1	4	7 0 0 0 0	0	0	1	0
9	714	103	149.6	146.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	715	105	147.6	144.2	1	1	0	8	32	0	0	12	0	0	52	0	0	4	7 0 0 0 0	0	0	1	0
11	716	99	153.6	150.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	717	104	148.6	145.2	1	0	0	0	0	0	0	0	0	0	0	0	1	4	7 0 0 0 0	0	0	1	0
13	718	107	145.6	142.2	1	0	0	0	0	0	0	0	0	0	0	0	1	4	7 0 0 0 0	0	0	1	0
14	719	104	148.6	145.2	1	0	0	8	0	0	0	0	0	0	8	0	1	4	7 0 0 0 0	0	0	1	0
15	720	106	146.6	143.2	2	0	8	8	0	2	0	0	0	0	18	0	0	4	7 0 0 0 0	3	3	1	1
16	721	110	142.6	139.2	1	1	4	8	16	0	0	12	0	0	40	0	0	4	7 0 0 0 0	0	0	1	1
17	722	102	150.6	147.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	723	110	142.6	139.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	724	109	143.6	140.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	725	96	156.6	153.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	726	105	147.6	144.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
22	727	107	145.6	142.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	1	1	0
23	728	106	146.6	143.2	1	1	8	8	32	0	0	0	0	0	48	0	1	4	0 0 0 0 0	0	0	1	0
24	729	105	147.6	144.2	1	1	0	8	32	0	0	0	0	0	40	0	1	4	7 0 0 0 0	0	0	1	0
25	730	98	154.6	151.2	1	0	0	4	0	0	0	12	0	0	16	0	1	4	7 0 0 0 0	0	0	1	0
26	731	98	154.6	151.2	1	0	0	8	0	0	6	6	0	0	20	0	1	4	7 0 0 0 0	0	0	1	0
27	801	98	154.6	151.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
28	802	104	148.6	145.2	1	1	8	8	32	0	12	12	8	0	80	0	0	4	0 0 0 0 0	0	0	1	1
29	803	107	145.6	142.2	1	1	0	8	32	0	0	0	0	0	40	0	1	4	1 7 0 0 0	2	1	1	0
30	804	105	147.6	144.2	1	1	0	8	32	0	12	12	8	0	72	0	1	4	7 0 0 0 0	0	0	1	0
31	805	105	147.6	144.2	1	0	8	8	0	0	0	0	0	0	16	0	1	4	7 0 0 0 0	0	0	1	0
32	806	106	146.6	143.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 143.4																							
1	629	107	135.3	136.4	1	0	0	0	0	0	0	0	0	0	0	0	1	4	7 0 0 0 0	0	0	1	0
2	630	96	146.3	147.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 0	0	0	1	0
3	701	100	142.3	143.4	1	0	0	8	0	0	0	0	0	0	8	0	1	4	7 0 0 0 0	0	0	1	0
4	702	106	136.3	137.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	703	96	146.3	147.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	704	107	135.3	136.4	1	0	8	8	0	0	0	0	0	0	16	0	1	3	7 0 0 0 0	0	0	1	0
7	705	107	135.3	136.4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	7 0 0 0 0	2	1	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 135.3																							
1	617	88	143.1	147.3	1	0	4	8	0	0	0	6	0	0	18	0	1	4	7 0 0 0 0	0	0	1	0
2	618	109	122.1	126.3	2	1	4	8	32	0	6	6	4	0	60	0	1	4	7 0 0 0 0	0	0	1	0
3	619	109	122.1	126.3	1	1	0	8	0	0	0	6	0	0	14	0	1	4	7 0 0 0 0	0	0	1	0
4	620	111	120.1	124.3	1	0	0	8	0	0	0	6	0	0	14	0	1	4	7 0 0 0 0	0	0	1	0
5	621	105	126.1	130.3	1	1	0	8	32	0	0	0	0	0	40	0	1	4	7 0 0 0 0	0	0	1	0
6	706	107	124.1	128.3	1	0	0	8	0	0	0	0	0	0	8	0	1	4	7 0 0 0 0	0	0	1	0
7	707	104	127.1	131.3	1	3	0	8	32	0	0	0	0	0	40	0	0	5	7 0 0 0 0	0	0	1	0
8	708	102	129.1	133.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	709	107	124.1	128.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	710	104	127.1	131.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	711	96	135.1	139.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	712	92	139.1	143.3	1	0	4	8	0	0	0	0	0	0	12	0	1	4	7 0 0 0 0	2	2	1	0

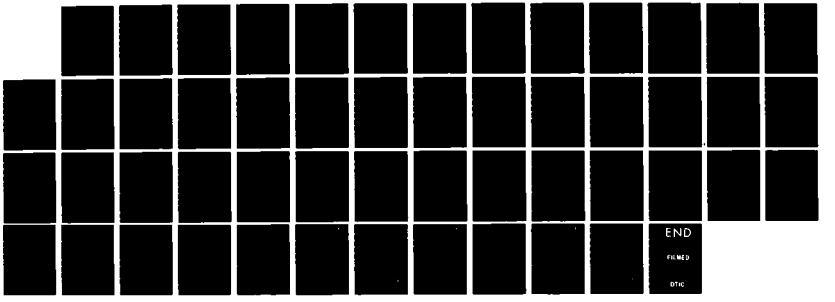
CUSTOMER DATA FROM DAILY REPORTS

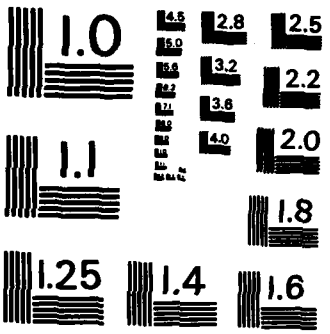
CAR NO. 3 , TOTAL RUNS = 44

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# ST-ART	STALLS, AT-- DRIVE	Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q#	COMPARE WEEK OLD F#	T I M E	C M T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 153.6																							
1	622	110	142.6	143.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	623	109	143.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	624	109	143.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	625	111	141.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	626	111	141.6	142.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	627	106	146.6	147.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	628	98	154.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	629	89	163.6	164.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
9	728	106	146.6	147.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	729	105	147.6	148.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	730	98	154.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	731	98	154.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	802	104	148.6	149.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	803	91	161.6	162.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 138.4																							
1	616	106	125.1	132.4	2	0	0	0	0	0	0	0	0	0	0	0	1	4	7 0 0 0 0	0	0	1	0
2	617	107	124.1	131.4	2	0	0	0	0	2	0	0	0	0	2	0	1	4	7 0 0 0 0	0	0	1	0
3	618	104	127.1	134.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	619	109	122.1	129.4	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	620	109	122.1	129.4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	621	101	130.1	137.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	714	103	128.1	135.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	715	105	126.1	133.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	716	99	132.1	139.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	717	104	127.1	134.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	718	107	124.1	131.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	719	103	128.1	135.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	720	91	140.1	147.4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	4	1	1
14	721	110	121.1	128.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	722	102	129.1	136.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	723	110	121.1	128.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	724	109	122.1	129.4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	726	102	129.1	136.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	727	92	139.1	146.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 133.2																							
1	629	107	115.8	126.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	630	96	126.8	137.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	701	100	122.8	133.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	702	106	116.8	127.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	1	1	1
5	707	105	117.8	128.2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	708	104	118.8	129.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	709	107	115.8	126.2	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1	0
8	710	92	130.8	141.2	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1	0
9	711	98	124.8	135.2	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1	0
10	712	98	124.8	135.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	713	85	137.8	148.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	4	1	1

AD-A159 112 CUSTOMER PERCEPTION OF HOT-WEATHER DRIVEABILITY IN 1977-1981 PASSENGER VEHICLES(U) COORDINATING RESEARCH COUNCIL INC ATLANTA GA JUL 85 CRC-543 DAAK70-81-C-0128 2/2

UNCLASSIFIED F/G 13/6 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 5 , TOTAL RUNS = 51

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	STALLS, AT-- DRIVE	DEMERITS Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM @	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	OLD F@	TIME	COMM ?
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 140.0																							
1	616	106	125.1	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	617	107	124.1	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	618	104	127.1	136.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	619	105	126.1	135.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	620	111	120.1	129.0	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 0	0	0	1	1
6	621	110	121.1	130.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 136.3																							
1	622	105	117.8	131.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	623	106	116.8	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	624	106	116.8	130.3	2	0	4	4	0	0	0	0	0	0	8	0	1	4	7 0 0 0 0	0	0	1	1
4	625	106	116.8	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	626	106	116.8	130.3	2	0	4	4	0	2	0	0	0	0	10	0	1	3	0 0 0 0 0	0	0	1	1
6	627	106	116.8	130.3	2	0	8	4	0	0	0	0	0	0	12	0	1	2	0 0 0 0 0	0	0	1	0
7	628	100	122.8	136.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	3	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 131.9																							
1	629	107	105.0	124.9	0	0	4	0	0	0	0	0	0	0	4	0	1	3	0 0 0 0 0	0	0	1	0
2	630	92	120.0	139.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	701	97	115.0	134.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	702	101	111.0	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	703	106	106.0	125.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	704	109	103.0	122.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	705	110	102.0	121.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	706	105	107.0	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
9	707	105	107.0	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	708	102	110.0	129.9	1	0	4	4	0	0	6	6	0	0	20	0	1	4	0 0 0 0 0	0	0	1	0
11	709	105	107.0	126.9	0	0	8	0	0	0	6	6	0	0	20	1	1	3	0 0 0 0 0	0	0	1	0
12	710	103	109.0	128.9	0	0	4	0	0	0	6	0	0	0	10	0	1	3	0 0 0 0 0	0	0	1	0
13	711	98	114.0	133.9	0	0	4	0	0	0	6	0	0	0	10	1	1	3	0 0 0 0 0	0	0	1	0
14	712	98	114.0	133.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
15	713	93	119.0	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	714	103	109.0	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	715	103	109.0	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	716	94	118.0	137.9	0	0	4	0	0	0	0	0	0	0	4	0	1	3	0 0 0 0 0	0	0	1	0
19	717	102	110.0	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	718	107	105.0	124.9	0	0	4	0	0	0	0	0	0	0	4	0	1	3	0 0 0 0 0	0	0	1	0
21	719	106	106.0	125.9	0	0	4	0	0	0	0	0	0	0	4	0	1	3	0 0 0 0 0	0	0	1	0
22	720	106	106.0	125.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0
23	721	110	102.0	121.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
24	722	102	110.0	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
25	723	110	102.0	121.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
26	724	109	103.0	122.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	1
27	725	99	113.0	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
28	726	105	107.0	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
29	727	101	111.0	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	1	0
30	728	104	108.0	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
31	729	103	109.0	128.9	3	0	0	4	0	0	0	0	0	0	4	1	1	0	0 0 0 0 0	0	0	1	0
32	730	96	116.0	135.9	0	0	4	4	0	0	0	0	0	0	8	0	1	4	0 0 0 0 0	0	0	1	0
33	731	92	120.0	139.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
34	801	93	119.0	138.9	0	0	4	4	0	0	0	0	0	0	8	1	1	0	0 0 0 0 0	0	0	1	0
35	803	107	105.0	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	1	0
36	804	105	107.0	126.9	0	0	4	0	0	2	0	0	0	0	6	0	1	6	0 0 0 0 0	0	0	1	0
37	805	102	110.0	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
38	806	102	110.0	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 6 , TOTAL RUNS = 42

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	STALLS, AT-- DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q10 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F# 5	T IM E	C M T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 152.0																							
1	714	96	156.6	156.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	715	100	152.6	152.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	716	83	169.6	169.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
4	717	104	148.6	148.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	718	97	155.6	155.0	0	1	0	0	16	0	0	0	0	0	16	0	1	1	3 0 0 0 0	0	0	1	0
6	720	91	161.6	161.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	1	5	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 134.8																							
1	617	107	124.1	127.8	0	0	4	0	0	0	0	0	0	0	4	0	1	0	7 0 0 0 0	0	0	1	0
2	618	109	122.1	125.8	0	0	4	0	0	0	6	0	0	0	10	0	1	0	7 0 0 0 0	0	0	1	0
3	619	109	122.1	125.8	0	0	4	0	0	0	6	0	0	0	10	0	1	0	7 0 0 0 0	0	0	1	0
4	620	101	130.1	133.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 129.9																							
1	622	92	130.8	137.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
2	623	109	113.8	120.9	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
3	624	109	113.8	120.9	0	0	8	0	0	0	6	6	0	0	20	1	1	3	7 0 0 0 0	0	0	1	0
4	625	113	109.8	116.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
5	626	111	111.8	118.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	2	3	1	1
6	629	89	133.8	140.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 124.0																							
1	630	96	116.0	128.0	0	0	4	0	0	0	6	0	0	0	10	0	1	0	0 0 0 0 0	0	0	1	0
2	701	101	111.0	123.0	0	0	8	0	0	0	6	0	0	0	14	0	1	3	7 0 0 0 0	0	0	1	0
3	702	106	106.0	118.0	1	0	8	8	0	2	6	0	0	0	24	0	1	0	0 0 0 0 0	0	0	1	0
4	705	100	112.0	124.0	0	0	8	0	0	0	0	0	0	0	8	0	1	3	7 0 0 0 0	0	0	1	0
5	706	92	120.0	132.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	3	4	1	1
6	707	105	107.0	119.0	1	0	4	4	0	0	6	0	0	0	14	0	1	0	0 0 0 0 0	0	0	1	0
7	708	102	110.0	122.0	0	0	4	0	0	0	6	0	0	0	10	0	1	0	0 0 0 0 0	0	0	1	0
8	709	107	105.0	117.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	710	103	109.0	121.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
10	711	98	114.0	126.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
11	713	85	127.0	139.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	2	5	1	1
12	720	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	721	110	102.0	114.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
14	722	102	110.0	122.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
15	723	92	120.0	132.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
16	724	93	119.0	131.0	1	0	0	4	0	0	0	0	0	0	4	0	1	4	3 0 0 0 0	0	0	1	0
17	725	99	113.0	125.0	1	0	8	4	0	0	0	0	0	0	12	1	1	4	7 0 0 0 0	0	0	1	0
18	726	102	110.0	122.0	0	0	4	0	0	0	0	0	0	0	4	1	1	0	0 0 0 0 0	0	0	1	0
19	727	92	120.0	132.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	3	1	1	1
20	728	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	729	91	121.0	133.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
22	730	98	114.0	126.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
23	731	87	125.0	137.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
24	801	102	110.0	122.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
25	802	103	109.0	121.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
26	803	91	121.0	133.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	3	5	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 7 , TOTAL RUNS = 36

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	STALLS, AT-- DRIVE	DEMERITS Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM @	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	OLD F@	IMT E ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 149.2																						
1	622	110	142.6	139.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	623	109	143.6	140.2	2	0	0	16	0	4	12	12	0	12	56	1	0	4	3 7 0 0 0	0	0	1 1
3	624	109	143.6	140.2	1	0	0	4	0	2	0	0	0	0	6	1	1	6	7 0 0 0 0	0	0	1 0
4	625	113	139.6	136.2	0	0	0	0	0	2	0	0	0	0	2	1	1	6	3 0 0 0 0	0	0	1 0
5	626	110	142.6	139.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	627	106	146.6	143.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	628	100	152.6	149.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
8	629	107	145.6	142.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1 0
9	630	96	156.6	153.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
10	701	100	152.6	149.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
11	702	106	146.6	143.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.3																						
1	616	106	125.1	130.3	3	0	0	16	0	2	6	0	0	0	24	3	0	4	3 7 0 0 0	0	0	1 0
2	617	107	124.1	129.3	0	0	0	0	0	2	6	0	0	0	8	1	1	0	3 0 0 0 0	0	0	1 0
3	618	109	122.1	127.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1 0
4	619	109	122.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	620	109	122.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	715	105	126.1	131.3	0	0	0	0	0	2	0	6	0	0	8	1	1	6	5 0 0 0 0	0	0	1 1
7	716	99	132.1	137.3	0	0	0	0	0	2	0	6	0	0	8	1	1	6	3 0 0 0 0	1	4	1 0
8	717	104	127.1	132.3	0	0	0	0	0	0	0	6	0	0	6	1	1	8	5 0 0 0 0	0	0	1 0
9	718	103	128.1	133.3	0	0	0	0	0	2	0	6	0	0	8	1	1	6	5 0 0 0 0	0	0	1 0
10	719	97	134.1	139.3	0	0	0	0	0	2	0	6	0	0	8	0	1	6	5 0 0 0 0	0	0	1 0
11	720	106	125.1	130.3	0	0	0	0	0	2	0	6	0	0	8	0	1	8	6 0 0 0 0	0	0	1 0
12	721	110	121.1	126.3	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 0	0	0	1 0
13	722	102	129.1	134.3	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 0	1	3	1 0
14	723	110	121.1	126.3	0	0	8	0	0	4	0	12	0	0	24	2	0	8	3 5 0 0 0	0	0	1 1
15	724	109	122.1	127.3	0	0	0	0	0	2	0	6	0	0	8	1	1	8	5 0 0 0 0	0	0	1 0
16	725	97	134.1	139.3	0	0	0	0	0	2	0	6	0	0	8	1	1	8	5 0 0 0 0	0	0	1 0
17	726	102	129.1	134.3	0	0	0	0	0	0	0	6	0	0	6	1	1	8	5 0 0 0 0	0	0	1 0
18	727	107	124.1	129.3	0	0	0	0	0	0	0	6	0	0	6	0	1	0	5 0 0 0 0	0	0	1 0
19	728	106	125.1	130.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	5 0 0 0 0	0	0.	1 0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 132.1																						
1	708	104	118.8	128.1	5	0	4	16	0	8	24	12	0	0	64	3	0	4	5 7 0 0 0	0	0	1 1
2	709	107	115.8	125.1	12	0	16	16	0	8	12	12	0	0	64	3	0	4	3 5 7 0 0	3	1	1 1
3	710	104	118.8	128.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
4	711	98	124.8	134.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
5	712	100	122.8	132.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
6	714	103	119.8	129.1	1	0	4	4	0	2	0	6	0	0	16	1	0	3	3 5 7 0 0	0	0	1 1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 8 , TOTAL RUNS = 52

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ START	STALLS, AT DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	CMT ?
FUEL = 1,			BLEND T@20V/L = 152.6,				EST. TANK FUEL T@20V/L = 152.0																
1	706	107	145.6	145.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	707	105	147.6	147.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	708	90	162.6	162.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	709	107	145.6	145.0	0	0	0	0	16	0	0	0	0	0	16	0	1	5	2 0 0 0 3	0	0	1	1
5	710	104	148.6	148.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	711	96	156.6	156.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	712	100	152.6	152.0	0	0	0	0	-0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	1	0
FUEL = 3,			BLEND T@20V/L = 131.1,				EST. TANK FUEL T@20V/L = 135.8																
1	616	106	125.1	129.8	0	0	0	0	0	2	6	0	0	0	8	0	1	7	5 0 0 0 3	0	0	1	1
2	617	107	124.1	128.8	0	0	0	0	0	0	6	0	0	0	6	0	1	7	5 0 0 0 3	0	0	1	0
3	618	109	122.1	126.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	619	108	123.1	127.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	620	109	122.1	126.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	621	110	121.1	125.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4,			BLEND T@20V/L = 122.8,				EST. TANK FUEL T@20V/L = 130.3																
1	622	110	112.8	120.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	623	109	113.8	121.3	0	0	0	0	0	0	0	6	0	0	6	1	1	8	0 0 0 0 1	0	0	1	1
3	624	106	116.8	124.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	625	113	109.8	117.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	626	105	117.8	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	627	101	121.8	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	628	98	124.8	132.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 5,			BLEND T@20V/L = 112.0,				EST. TANK FUEL T@20V/L = 124.0																
1	629	107	105.0	117.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	630	96	116.0	128.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	701	100	112.0	124.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	702	106	106.0	118.0	0	0	0	0	0	2	6	0	0	0	8	0	1	7	3 5 0 0 3	0	0	1	1
5	703	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	704	109	103.0	115.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	705	110	102.0	114.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
8	713	101	111.0	123.0	0	0	0	0	0	0	0	6	4	0	10	0	1	8	5 0 0 0 3	0	0	1	1
9	714	103	109.0	121.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	715	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	716	99	113.0	125.0	0	0	0	0	0	2	0	6	4	0	12	0	1	9	2 5 0 0 3	0	0	1	1
12	717	104	108.0	120.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	718	107	105.0	117.0	0	0	0	0	0	0	0	6	4	0	10	0	1	9	2 0 0 0 3	0	0	1	1
14	719	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	720	91	121.0	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	1	1	1
16	721	110	102.0	114.0	0	5	0	0	32	0	0	12	0	0	44	2	0	5	1 2 5 0 3	0	0	1	1
17	722	102	110.0	122.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
18	723	110	102.0	114.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	724	109	103.0	115.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	725	99	113.0	125.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	726	97	115.0	127.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
22	727	107	105.0	117.0	0	0	0	0	0	0	6	6	0	0	12	0	1	8	1 2 0 0 3	1	5	1	1
23	728	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
24	729	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
25	730	98	114.0	126.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
26	731	98	114.0	126.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
27	801	102	110.0	122.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
28	802	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
29	803	107	105.0	117.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
30	804	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
31	805	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
32	806	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 9 , TOTAL RUNS = 35

RUN	DATE	AIR TMP	ADJ T@2OV/L FRESH FUEL	ADJ T@2OV/L TANK FUEL	STALLS, -@ START	STALLS, AT-- DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK PWR	Q09 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F#	TEST MET ?
FUEL = 1, BLEND T@2OV/L = 152.6, EST. TANK FUEL T@2OV/L = 152.8																						
1	622	110	142.6	142.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
2	623	109	143.6	143.8	0	0	0	0	0	0	6	0	8	0	14	0	1	9	1 0 0 0 3	0	0	1 1
3	624	109	143.6	143.8	0	0	0	0	0	0	0	0	4	0	4	0	1	9	1 0 0 0 3	0	0	1 1
4	625	113	139.6	139.8	0	0	0	0	0	0	6	0	4	0	10	1	0	0	1 5 0 0 3	0	0	1 1
5	626	106	146.6	146.8	0	0	0	0	0	0	6	6	0	0	12	0	1	0	1 5 0 0 3	0	0	1 1
6	627	101	151.6	151.8	0	0	0	0	0	0	6	0	0	0	6	1	1	8	1 5 0 0 3	0	0	1 1
7	628	90	162.6	162.8	0	0	0	0	0	0	0	6	0	0	6	0	1	0	1 7 0 0 3	2	3	1 1
8	701	100	152.6	152.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	0 1
9	702	106	146.6	146.8	0	0	0	0	0	0	6	0	0	0	6	0	1	7	5 0 0 0 3	0	0	1 1
10	703	109	143.6	143.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1 1
11	704	109	143.6	143.8	0	2	0	0	16	0	6	0	0	0	22	0	1	5	5 0 0 0 3	0	0	1 1
12	706	107	145.6	145.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 0 0 0 3	3	1	1 1
13	707	105	147.6	147.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	1 2 4 5 3	0	0	1 0
14	709	107	145.6	145.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	4 5 6 0 3	0	0	1 1
15	710	104	148.6	148.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 6 0 0 3	0	0	1 1
16	711	96	156.6	156.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	4 5 6 0 3	0	0	1 0
17	712	92	160.6	160.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	4 5 6 0 3	0	0	1 0
18	713	101	151.6	151.8	1	0	0	4	0	0	6	6	0	0	16	0	1	8	4 5 6 0 3	3	1	1 0
19	714	103	149.6	149.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	4 5 6 0 3	0	0	1 0
20	715	105	147.6	147.8	0	0	0	0	0	0	6	6	0	0	12	0	1	8	4 5 6 0 3	0	0	1 0
FUEL = 2, BLEND T@2OV/L = 142.3, EST. TANK FUEL T@2OV/L = 143.3																						
1	727	107	135.3	136.3	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 3	0	0	1 1
2	728	106	136.3	137.3	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 0 0 0 3	0	0	0 0
3	729	105	137.3	138.3	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 0 0 0 3	0	0	1 0
4	730	98	144.3	145.3	0	0	0	0	0	0	6	6	0	0	12	0	1	7	5 0 0 0 3	0	0	1 1
5	731	98	144.3	145.3	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 0 0 0 3	0	0	0 1
6	801	102	140.3	141.3	0	0	0	0	0	0	6	12	0	0	18	0	1	8	6 0 0 0 1	0	0	1 1
7	803	107	135.3	136.3	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 6 0 0 3	1	1	1 0
8	804	105	137.3	138.3	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 6 0 0 3	0	0	1 0
9	805	105	137.3	138.3	0	0	0	0	0	0	6	6	0	0	12	0	1	8	0 0 0 0 3	0	0	1 0
10	806	106	136.3	137.3	0	0	0	0	0	0	6	6	0	0	12	0	1	8	4 5 6 0 3	0	0	1 0
FUEL = 3, BLEND T@2OV/L = 131.1, EST. TANK FUEL T@2OV/L = 132.7																						
1	617	107	124.1	125.7	0	0	0	0	0	0	0	0	4	0	4	0	1	9	1 0 0 0 3	0	0	1 1
2	618	109	122.1	123.7	0	0	0	0	0	0	0	0	4	0	4	0	1	9	1 0 0 0 3	0	0	1 0
3	619	109	122.1	123.7	0	0	0	0	0	0	6	6	0	0	12	0	1	7	1 0 0 0 3	0	0	1 1
4	620	109	122.1	123.7	0	0	0	0	0	0	6	6	0	0	12	0	1	7	1 0 0 0 0	0	0	1 0
5	621	110	121.1	122.7	0	2	0	0	32	4	6	6	0	0	48	2	0	5	1 5 0 0 3	0	0	1 1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 10 , TOTAL RUNS = 44

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	AT--DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	DEMERITS Q06 IDLE RUFF	Q07 HESITZN	Q08 LACK POWR	Q09 SURGE	Q010 BACK FIRE	TOTAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM @	DRIVING CONDITIONS TRAFF,GRD	COMPARE WEEK Q@ 14	OLD F@	I M E ?	C M T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 153.2																							
1	623	106	146.6	147.2	3	0	0	8	0	0	0	0	0	0	8	1	1	0	0 0 0 0 0 0	0	0	1	1
2	624	109	143.6	144.2	0	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	0	0	1	0
3	625	113	139.6	140.2	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	2	3	1	0
4	626	110	142.6	143.2	3	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	0	0	0	0
5	627	106	146.6	147.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
6	628	100	152.6	153.2	2	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	0	0	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 143.3																							
1	618	109	122.1	134.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
2	619	87	144.1	156.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	1
3	620	111	120.1	132.3	4	0	16	8	0	0	0	0	0	0	24	0	1	5	0 0 0 0 0 0	0	0	1	1
4	621	110	121.1	133.3	0	0	8	8	0	0	0	0	0	0	16	0	1	0	0 0 0 0 0 0	0	0	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 137.8																							
1	629	107	115.8	130.8	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	0	0	1	0
2	630	96	126.8	141.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
3	701	100	122.8	137.8	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
4	702	106	116.8	131.8	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
5	703	106	116.8	131.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
6	704	107	115.8	130.8	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
7	705	110	112.8	127.8	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
8	706	92	130.8	145.8	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	1	1	1	0
9	720	106	116.8	131.8	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
10	721	110	112.8	127.8	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
11	722	102	120.8	135.8	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
12	723	110	112.8	127.8	3	0	0	8	0	0	0	0	0	0	8	0	1	4	0 0 0 0 0 0	0	0	1	0
13	725	99	123.8	138.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
14	726	89	133.8	148.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 132.5																							
1	706	107	105.0	125.5	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	0	0	1	0
2	707	105	107.0	127.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
3	708	104	108.0	128.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	1	4	1	1
4	713	101	111.0	131.5	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	0	0
5	714	103	109.0	129.5	0	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
6	715	105	107.0	127.5	2	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0 0	0	0	1	0
7	716	99	113.0	133.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
8	717	104	108.0	128.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
9	718	107	105.0	125.5	4	0	4	8	0	0	0	0	0	0	12	0	1	0	0 0 0 0 0 0	0	0	1	0
10	719	106	106.0	126.5	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	3	5	1	1
11	727	107	105.0	125.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
12	728	106	106.0	126.5	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
13	729	91	121.0	141.5	3	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
14	730	98	114.0	134.5	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
15	731	98	114.0	134.5	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
16	801	102	110.0	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	3	4	0	1
17	803	107	105.0	125.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
18	804	105	107.0	127.5	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	0	0	1	0
19	805	105	107.0	127.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
20	806	106	106.0	126.5	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0 0	1	5	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 13 , TOTAL RUNS = 46

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	STALLS, AT- DRIVE	DEMERITS Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES- ITZN	Q08 LACK POWR	Q09 SUR- GE	Q@10 BACK FIRE	TO- TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI- TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F@	TIME ?	COMM ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 153.2																							
1	720	106	146.6	147.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	721	110	142.6	143.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	722	102	150.6	151.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
4	723	110	142.6	143.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	724	107	145.6	146.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	725	92	160.6	161.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	726	105	147.6	148.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 144.9																							
1	727	107	135.3	137.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	728	106	136.3	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	729	105	137.3	139.9	0	0	0	0	0	0	0	6	0	0	6	0	1	8	0 0 0 0 0	0	0	1	0
4	730	98	144.3	146.9	0	0	0	0	0	0	0	6	0	0	6	0	1	8	0 0 0 0 0	0	0	1	0
5	731	98	144.3	146.9	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1	0
6	801	102	140.3	142.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	802	103	139.3	141.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 134.3																							
1	618	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	619	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	620	111	120.1	123.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	621	110	121.1	124.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	7 0 0 0 3	0	0	1	0
5	629	107	124.1	127.3	0	0	0	0	0	0	0	0	4	0	4	1	1	9	5 0 0 0 0	0	0	1	0
6	630	96	135.1	138.3	3	0	4	4	0	0	0	0	4	0	12	1	0	4	7 0 0 0 0	0	0	1	1
7	701	101	130.1	133.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	702	106	125.1	128.3	1	0	0	4	0	0	0	0	0	0	4	1	1	4	7 0 0 0 0	0	0	1	0
9	703	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	704	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	705	107	124.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
12	706	107	124.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	707	100	131.1	134.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	708	104	127.1	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	709	107	124.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
16	710	104	127.1	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
17	711	93	138.1	141.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	712	100	131.1	134.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	3	1	0
19	713	101	130.1	133.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	714	103	128.1	131.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	715	105	126.1	129.3	0	1	0	0	16	0	0	12	0	0	28	1	0	0	5 0 0 0 0	0	0	1	0
22	716	99	132.1	135.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
23	717	104	127.1	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
24	718	107	124.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
25	719	106	125.1	128.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 132.8																							
1	622	110	112.8	122.8	0	4	0	0	32	0	0	0	0	0	32	2	0	5	5 0 0 0 0	0	0	1	0
2	623	109	113.8	123.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	624	109	113.8	123.8	0	0	0	0	0	0	0	6	0	0	6	0	1	0	5 0 0 0 0	0	0	1	0
4	625	113	109.8	119.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	626	110	112.8	122.8	1	0	0	4	0	0	0	0	0	0	4	1	1	4	7 0 0 0 0	0	0	1	0
6	627	105	117.8	127.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	628	98	124.8	134.8	1	0	0	4	0	0	0	0	0	0	4	1	1	4	0 0 0 0 0	3	3	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 14 , TOTAL RUNS = 50

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# ST-ART	STALLS, AT— DR-IVE	DEMERITS Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIM E	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 148.0																							
1	629	107	145.6	141.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	630	96	156.6	152.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	701	87	165.6	161.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	702	106	146.6	142.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	703	109	143.6	139.0	0	0	0	0	0	0	0	6	0	0	6	0	1	8	7 0 0 0 3	0	0	1	0
6	704	104	148.6	144.0	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 0	0	0	1	0
7	705	110	142.6	138.0	2	0	4	4	0	2	0	0	4	0	14	0	1	6	7 0 0 0 3	2	4	1	1
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 142.2																							
1	713	101	141.3	141.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	714	103	139.3	139.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	715	105	137.3	137.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	716	99	143.3	143.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	717	104	138.3	138.2	1	0	0	4	0	0	0	0	0	0	4	0	1	0	7 0 0 0 3	0	0	1	0
6	718	104	138.3	138.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	719	106	136.3	136.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.9																							
1	617	107	124.1	129.9	0	0	0	0	0	0	0	6	4	0	10	0	1	8	6 0 0 0 3	0	0	1	0
2	618	109	122.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	619	109	122.1	127.9	0	0	0	0	0	2	0	6	4	0	12	0	1	8	6 0 0 0 3	0	0	1	0
4	620	111	120.1	125.9	0	0	4	0	0	0	0	0	4	0	8	1	0	9	6 0 0 0 0	0	0	1	0
5	727	107	124.1	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	728	106	125.1	130.9	2	0	4	4	0	2	0	0	0	0	10	0	0	4	0 0 0 0 0	0	0	1	0
7	729	105	126.1	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	730	98	133.1	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	731	98	133.1	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	801	102	129.1	134.9	2	0	4	4	0	0	0	0	0	0	8	1	0	4	7 0 0 0 3	0	0	1	0
11	802	103	128.1	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	7 0 0 0 3	2	5	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 129.5																							
1	622	110	112.8	119.5	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 3	0	0	1	0
2	623	109	113.8	120.5	0	0	0	0	0	0	0	6	0	0	6	0	1	8	4 5 0 0 3	0	0	1	0
3	624	109	113.8	120.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	625	113	109.8	116.5	1	0	0	0	0	2	0	6	0	0	8	0	1	6	7 0 0 0 0	2	3	1	0
5	626	110	112.8	119.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	627	106	116.8	123.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	628	100	122.8	129.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6 0 0 0 0	0	0	1	1
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 122.6																							
1	706	107	105.0	115.6	2	1	4	4	16	0	0	0	4	0	28	1	0	3	7 0 0 0 3	0	0	1	0
2	707	105	107.0	117.6	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
3	708	104	108.0	118.6	2	2	4	4	16	0	0	0	0	0	24	1	0	4	7 0 0 0 3	0	0	1	0
4	709	107	105.0	115.6	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
5	710	104	108.0	118.6	2	0	4	4	0	0	0	0	0	0	8	1	0	3	0 0 0 0 0	0	0	1	0
6	711	98	114.0	124.6	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1	0
7	712	100	112.0	122.6	2	1	4	4	16	0	0	0	0	0	24	0	1	4	7 0 0 0 3	2	1	1	1
8	720	106	106.0	116.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	721	110	102.0	112.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	722	102	110.0	120.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	723	110	102.0	112.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	724	93	119.0	129.6	1	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
13	725	99	113.0	123.6	2	0	4	4	0	2	0	6	0	0	16	1	0	4	7 0 0 0 3	0	0	1	0
14	726	105	107.0	117.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	2	1	1
15	803	107	105.0	115.6	3	2	4	8	16	0	0	0	0	0	28	2	0	4	0 0 0 0 0	0	0	1	0
16	804	105	107.0	117.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	805	105	107.0	117.6	2	2	4	4	16	0	0	0	0	0	24	1	1	4	0 0 0 0 0	0	0	1	0
18	807	91	121.0	131.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 15 , TOTAL RUNS = 42

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ ST-ART	STALLS, AT-- DR-IVE	DEMERITS Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	OLD F@	TIME ?	CAR ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.6																							
1	624	107	145.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
2	625	113	139.6	138.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	626	111	141.6	140.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
4	627	106	146.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	629	107	145.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
6	630	96	156.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 144.4																							
1	701	100	142.3	144.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	702	106	136.3	138.4	0	0	4	0	0	2	0	0	0	0	6	0	1	3	7 0 0 0 0	0	0	1	1
3	703	106	136.3	138.4	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
4	704	104	138.3	140.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
5	705	107	135.3	137.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
6	706	107	135.3	137.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 0	2	1	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.9																							
1	618	109	122.1	127.9	4	3	0	8	0	2	12	12	0	12	46	1	0	5	5 0 0 0 0	0	0	1	1
2	619	109	122.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	621	110	121.1	126.9	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0 0 0 0 0	0	0	1	0
4	707	105	126.1	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
5	708	104	127.1	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	709	107	124.1	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	710	104	127.1	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	711	96	135.1	140.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	712	100	131.1	136.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	713	101	130.1	135.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	2	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 130.6																							
1	714	103	119.8	127.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	715	105	117.8	125.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	716	99	123.8	131.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	717	104	118.8	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	718	107	115.8	123.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	719	106	116.8	124.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	720	106	116.8	124.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 124.0																							
1	721	110	102.0	114.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	722	102	110.0	122.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	723	110	102.0	114.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	724	109	103.0	115.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	726	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	727	107	105.0	117.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	728	106	106.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	4	1	0
8	729	105	107.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	730	98	114.0	126.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	731	98	114.0	126.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	801	102	110.0	122.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	802	104	108.0	120.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	803	107	105.0	117.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 16 , TOTAL RUNS = 47

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS -# AT- ST-ART	STALLS -# AT- DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF	DRIVING CONDI-TIONS GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	CHMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 150.4																								
1	630	96	156.6	154.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4	1	0
2	701	100	152.6	150.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
3	702	106	146.6	144.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4	703	90	162.6	160.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
5	707	92	160.6	158.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 143.7																								
1	707	105	137.3	138.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
2	708	104	138.3	139.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
3	709	107	135.3	136.7	2	0	0	4	0	0	0	0	0	0	4	0	1	4	5	0	0	3	1	0
4	710	104	138.3	139.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
5	711	98	144.3	145.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
6	712	100	142.3	143.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7	713	101	141.3	142.7	0	0	0	4	0	0	0	0	0	0	4	0	1	4	5	0	0	3	1	0
8	714	89	153.3	154.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
9	721	110	132.3	133.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
10	722	102	140.3	141.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
11	723	110	132.3	133.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
12	724	109	133.3	134.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
13	726	102	140.3	141.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
14	727	107	135.3	136.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
15	728	89	153.3	154.7	0	0	0	0	0	0	0	0	0	0	0	0	1	7	5	0	0	3	1	0
16	728	106	136.3	137.7	1	0	0	4	0	0	6	0	0	0	10	0	1	4	5	6	0	3	0	0
17	729	105	137.3	138.7	0	1	0	0	16	0	6	0	0	0	22	0	1	5	6	0	0	3	0	0
18	730	98	144.3	145.7	0	0	0	0	16	0	6	0	0	0	22	0	1	5	5	0	0	3	0	0
19	731	98	144.3	145.7	0	0	0	0	16	0	6	0	0	0	22	0	1	5	5	0	0	3	0	0
20	802	106	136.3	137.7	0	0	0	0	16	0	0	0	0	0	16	0	1	0	5	0	0	3	0	0
21	803	107	135.3	136.7	0	1	0	0	16	0	0	0	0	0	16	0	1	5	5	0	0	3	0	0
22	804	90	152.3	153.7	0	0	0	0	16	0	6	0	0	0	22	0	1	0	5	0	0	3	3	2
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 135.6																								
1	617	107	124.1	128.6	3	0	4	4	0	0	0	0	0	0	8	0	1	4	7	0	0	0	0	0
2	618	109	122.1	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
3	619	109	122.1	126.6	4	0	4	4	0	0	0	0	0	0	8	0	1	4	7	0	0	0	1	1
4	621	110	121.1	125.6	1	0	4	4	0	0	0	0	0	0	8	0	1	4	7	0	0	0	1	1
5	622	110	121.1	125.6	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7	0	0	0	0	0
6	623	90	141.1	145.6	0	0	4	0	0	0	0	0	0	0	4	0	1	0	7	0	0	0	0	0
7	714	103	128.1	132.6	2	1	4	4	16	0	0	6	0	0	30	1	0	8	0	0	0	3	0	0
8	715	105	126.1	130.6	2	0	0	4	0	0	0	6	0	0	10	1	1	8	2	5	0	3	0	0
9	716	99	132.1	136.6	0	1	4	0	16	0	0	6	0	0	26	1	1	5	2	4	5	0	3	0
10	717	104	127.1	131.6	0	0	4	0	16	0	0	6	0	0	26	1	1	0	4	5	0	0	3	0
11	719	103	128.1	132.6	1	0	0	4	0	0	0	0	0	0	4	0	1	0	1	0	0	0	0	0
12	720	106	125.1	129.6	0	2	0	0	16	0	0	6	0	0	22	0	1	5	4	5	0	0	3	0
13	721	93	138.1	142.6	1	0	4	4	0	0	0	0	0	0	8	0	1	4	5	0	0	0	0	3
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 133.0																								
1	623	109	113.8	124.0	0	0	8	0	0	0	0	0	0	0	8	1	1	0	0	0	0	0	0	0
2	624	109	113.8	124.0	8	0	16	16	0	0	6	6	0	0	44	2	0	4	3	7	0	3	0	0
3	625	113	109.8	120.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
4	626	110	112.8	123.0	2	0	0	4	0	0	0	0	0	0	4	0	1	4	7	0	0	0	0	0
5	627	105	117.8	128.0	3	1	0	8	32	0	0	0	0	0	40	0	1	5	3	0	0	3	0	0
6	629	107	115.8	126.0	0	1	0	0	64	0	0	0	0	0	64	0	0	5	5	0	0	3	0	0
7	630	91	131.8	142.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	3

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 17 , TOTAL RUNS = 39

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	TANK FUEL	STALLS, -@ START	AT-- DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	DEMERITS Q06 IDLE RUFF	Q07 HESITZN	Q08 LACK POWR	Q09 SURGE	Q@10 BACK FIRE	TOTAL	Q@2 OVERALL PERF	Q11 ACCEPTABL	Q12 PROBLM #	DRIVING CONDITIONS TRAFF,	GRD	COMPARE WEEK Q@ 14	OLD F@	IMET ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.8																							
1	625	113	139.6	138.8	0	0	0	0	0	0	0	0	0	0	0	0	1	3	7	0 0 0 0	0	0	1 0
2	626	110	142.6	141.8	1	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
3	627	106	146.6	145.8	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
4	629	107	145.6	144.8	1	0	0	0	0	0	0	0	0	0	0	0	1	4	7	0 0 0 0	0	0	1 0
5	630	96	156.6	155.8	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	2	3	0 0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 143.8																							
1	618	109	122.1	134.8	1	0	4	8	0	0	0	6	0	0	18	0	1	4	7	0 0 0 0	0	0	1 0
2	619	109	122.1	134.8	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0	0 0 0 0	0	0	1 0
3	620	109	122.1	134.8	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0 0 0 0	0	0	1 0
4	622	110	121.1	133.8	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	7 0 0 0	0	0	0 0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 133.9																							
1	702	106	116.8	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
2	703	105	117.8	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
3	704	109	113.8	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	0 0
4	706	107	115.8	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	2	1	0 0
5	714	103	119.8	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0 0 0 0	0	0	1 0
6	715	105	117.8	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0 0 0 0	0	0	1 0
7	717	104	118.8	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0 0 0 0	0	0	1 0
8	718	107	115.8	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0 0 0 0	0	0	1 0
9	720	106	116.8	127.9	2	0	0	0	0	0	0	0	0	0	0	0	1	4	7	0 0 0 0	2	5	1 0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 125.7																							
1	707	105	107.0	120.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	7 0 0 0	0	0	1 0
2	708	104	108.0	121.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	7 0 0 0	0	0	1 0
3	709	107	105.0	118.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
4	710	104	108.0	121.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
5	711	98	114.0	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	5 0 0 0	0	0	1 0
6	712	98	114.0	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	5 0 0 0	0	0	1 0
7	713	101	111.0	124.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	5 0 0 0	2	4	1 1
8	721	110	102.0	115.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
9	722	102	110.0	123.7	2	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
10	723	110	102.0	115.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
11	724	109	103.0	116.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
12	725	97	115.0	128.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
13	726	102	110.0	123.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
14	728	106	106.0	119.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
15	729	105	107.0	120.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	0 0
16	729	105	107.0	120.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
17	730	98	114.0	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
18	731	98	114.0	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
19	801	98	114.0	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
20	802	106	106.0	119.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	0	0	1 0
21	803	107	105.0	118.7	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3	0 0 0 0	2	5	1 1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 18 , TOTAL RUNS = 50

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ START	STALLS, AT-DRIVE	DEMERITS @@3 STRT DIFF	DEMERITS @@4 STRT STLL	DEMERITS @@5 DRIV STLL	DEMERITS @@6 IDLE RUFF	DEMERITS @@7 HES-ITZN	DEMERITS @@8 LACK POWR	DEMERITS @@9 SUR-GE	DEMERITS @@10 BACK FIRE	DEMERITS TO-TAL	@@2 OVER ALL PERF	@11 ACC EPT ABL	@12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	COMPARE OLD F@	TIME	CMT ?
FUEL = 3,		BLEND	T@20V/L =	131.1,	EST.	TANK	FUEL	T@20V/L =	136.3														
1	617	107	124.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	618	109	122.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	619	109	122.1	127.3	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
4	620	111	120.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	621	107	124.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	622	110	121.1	126.3	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
7	623	90	141.1	146.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4,		BLEND	T@20V/L =	122.8,	EST.	TANK	FUEL	T@20V/L =	127.4														
1	623	109	113.8	118.4	3	0	16	16	0	4	6	0	0	0	42	1	0	4	7 0 0 0 3	0	0	1	1
2	624	109	113.8	118.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	625	113	109.8	114.4	2	0	8	8	0	2	12	12	0	0	42	2	0	7	5 0 0 0 3	0	0	1	0
4	626	110	112.8	117.4	1	0	4	4	0	4	12	6	0	0	30	2	0	6	3 0 0 0 3	0	0	1	0
5	627	101	121.8	126.4	0	0	0	0	0	2	12	0	0	0	14	1	0	7	5 0 0 0 3	0	0	1	0
6	628	92	130.8	135.4	0	0	0	0	0	2	6	0	0	0	8	0	1	7	5 0 0 0 3	0	0	1	0
7	629	107	115.8	120.4	0	0	0	0	0	2	0	0	0	0	2	1	1	0	0 0 0 0 0	0	0	1	0
8	630	91	131.8	136.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	3	3	1	1
9	714	103	119.8	124.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	715	105	117.8	122.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	716	99	123.8	128.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	716	99	123.8	128.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	718	104	118.8	123.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	719	104	118.8	123.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	720	106	116.8	121.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0
16	721	110	112.8	117.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	722	102	120.8	125.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	723	110	112.8	117.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	724	109	113.8	118.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	725	99	123.8	128.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	726	105	117.8	122.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
22	727	107	115.8	120.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	1
23	728	106	116.8	121.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0.	1	0
24	729	105	117.8	122.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
25	730	98	124.8	129.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
26	731	98	124.8	129.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
27	801	98	124.8	129.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
28	802	104	118.8	123.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
29	803	107	115.8	120.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	4	1	0
FUEL = 5,		BLEND	T@20V/L =	112.0,	EST.	TANK	FUEL	T@20V/L =	119.0														
1	630	96	116.0	123.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	701	100	112.0	119.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	702	106	106.0	113.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	703	109	103.0	110.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	704	109	103.0	110.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	705	110	102.0	109.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	706	107	105.0	112.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	707	105	107.0	114.0	0	0	0	0	0	2	6	0	0	6	14	1	0	7	5 0 0 0 3	0	0	1	0
9	708	104	108.0	115.0	0	0	0	0	0	2	6	0	0	0	8	1	0	7	5 0 0 0 3	0	0	1	0
10	709	107	105.0	112.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	710	104	108.0	115.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	711	98	114.0	121.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	712	98	114.0	121.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	713	101	111.0	118.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 44 , TOTAL RUNS = 38

RUN	DAT E	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# ST-ART	AT-- DR-IVE	DEMERITS Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	OLD F#	I E	M T ?
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.9																							
1	626	105	126.1	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	627	101	130.1	135.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	628	100	131.1	136.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	629	107	124.1	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	630	96	135.1	140.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	701	101	130.1	135.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 133.8																							
1	702	106	116.8	127.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	703	109	113.8	124.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	704	109	113.8	124.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	705	110	112.8	123.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	706	107	115.8	126.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	707	105	117.8	128.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	708	104	118.8	129.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	709	99	123.8	134.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	1
9	717	104	118.8	129.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
10	718	107	115.8	126.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
11	719	103	119.8	130.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	720	106	116.8	127.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	721	110	112.8	123.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
14	722	102	120.8	131.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	723	110	112.8	123.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0
16	724	109	113.8	124.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	725	99	123.8	134.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	726	105	117.8	128.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
19	729	105	117.8	128.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	4	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 129.6																							
1	710	104	108	125.6	0	0	0	0	64	8	24	24	0	120	3	1	0	1	2 3 4 3 3	4	2	1	1
2	711	86	126	143.6	0	0	0	0	32	4	12	12	0	0	60	2	0	8	1 2 3 4 3	0	0	1	0
3	712	84	128	145.6	0	0	0	0	32	4	12	12	0	0	60	2	0	8	1 2 3 5 3	0	0	1	1
4	713	101	111	128.6	0	0	0	0	32	4	12	12	0	0	60	2	0	8	1 2 3 4 3	0	0	1	1
5	714	103	109	126.6	0	0	0	0	32	4	12	12	0	0	60	2	0	8	1 2 3 4 3	0	0	1	1
6	715	105	107	124.6	0	0	0	0	16	2	6	6	0	0	30	0	0	8	1 2 3 4 3	0	0	1	1
7	730	98	114	131.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	731	98	114	131.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	801	102	110	127.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	802	106	106	123.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	803	107	105	122.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	804	105	107	124.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	805	105	107	124.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 38 , TOTAL RUNS = 35

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	AT-- DRIVE	Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	DEMERITS Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM @	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	OLD F@	TIME ?	CMT
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.6																							
1	701	100	152.6	151.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	702	106	146.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	703	109	143.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	704	109	143.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	705	110	142.6	141.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	707	105	147.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
7	724	109	143.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	725	99	153.6	152.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	726	102	150.6	149.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	727	107	145.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	728	106	146.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
12	729	105	147.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	730	98	154.6	153.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	731	87	165.6	164.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	801	102	150.6	149.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	802	106	146.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 143.6																							
1	708	104	138.3	139.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	709	107	135.3	136.6	0	1	0	0	16	0	0	0	0	0	16	0	1	0	4 0 0 0 3	0	0	1	0
3	710	104	138.3	139.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	711	98	144.3	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	712	100	142.3	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	713	101	141.3	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	714	103	139.3	140.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	1	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 135.3																							
1	626	110	121.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	627	101	130.1	134.3	1	1	0	8	32	0	0	0	0	0	40	1	0	5	4 0 0 0 3	0	0	1	0
3	628	100	131.1	135.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
4	629	107	124.1	128.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	630	96	135.1	139.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	715	105	126.1	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	716	99	132.1	136.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	717	104	127.1	131.3	0	0	0	0	0	0	0	0	0	6	6	1	1	0	7 0 0 0 3	0	0	1	0
9	718	107	124.1	128.3	0	1	0	0	16	0	0	0	0	6	22	1	1	5	0 0 0 0 0	0	0	1	0
10	719	103	128.1	132.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
11	720	106	125.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	721	93	138.1	142.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	2	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 34 , TOTAL RUNS = 34

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT-- ST-ART	DR-IVE	DEMERITS Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	OLD F#	THIS WEEK?
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 134.8																						
1	623	106	125.1	128.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	624	109	122.1	125.8	1	0	0	0	0	0	0	0	0	0	0	0	1	4	0 0 0 0 0	0	0	1 0
3	625	113	118.1	121.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	626	110	121.1	124.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	627	106	125.1	128.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	628	98	133.1	136.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	629	107	124.1	127.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
8	630	96	135.1	138.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
9	701	100	131.1	134.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 127.6																						
1	703	109	113.8	118.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	704	109	113.8	118.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	705	107	115.8	120.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	706	107	115.8	120.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	707	105	117.8	122.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	708	90	132.8	137.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1 1
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 120.1																						
1	709	107	105	113.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	710	104	108	116.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	711	96	116	124.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	712	92	120	128.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	713	101	111	119.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	714	103	109	117.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	715	89	123	131.1	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	2	4	1 1
8	716	99	113	121.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
9	71?	104	108	116.1	0	0	0	4	0	0	0	0	0	0	4	0	1	3	7 0 0 0 0	0	0	1 0
10	718	107	105	113.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
11	719	[illegible]	106	114.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
12	720	106	106	114.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
13	721	93	119	127.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	1 0
14	723	110	102	110.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
15	724	109	103	111.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
16	725	92	120	128.1	2	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1 0
17	727	107	105	113.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
18	728	106	106	114.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
19	729	91	121	129.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	1 0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 33 , TOTAL RUNS = 36

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# ST-ART	STALLS, AT-- DR-IVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE OLD F#	TIME ?	CMT
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.2																							
1	701	100	152.6	151.2	1	1	0	4	16	0	0	0	0	12	32	0	0	1	2 5 7 3 3	0	2	1	1
2	702	106	146.6	145.2	2	0	0	4	0	0	0	0	8	0	12	0	0	9	1 2 5 7 3	0	0	1	0
3	703	106	146.6	145.2	1	0	0	0	0	0	0	0	0	12	12	0	0	1	2 5 7 3 0	0	2	0	1
4	706	107	145.6	144.2	1	1	0	4	16	0	0	0	0	12	32	1	0	2	7 0 0 3 0	0	2	0	1
5	707	105	147.6	146.2	1	2	0	4	0	0	0	0	0	12	16	0	0	1	2 7 0 3 1	0	2	0	1
6	708	90	162.6	161.2	4	0	0	8	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
7	708	104	148.6	147.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
8	709	107	145.6	144.2	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 3	0	0	1	0
9	710	104	148.6	147.2	2	0	4	8	0	0	0	6	0	0	18	0	1	4	7 0 0 0 3	0	0	1	0
10	711	98	154.6	153.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	713	101	151.6	150.2	2	0	4	8	0	0	0	6	0	0	18	0	1	4	7 0 0 0 0	0	0	1	0
12	714	103	149.6	148.2	1	0	0	4	0	0	0	6	0	0	10	0	1	8	1 5 0 0 3	0	0	1	0
13	715	89	163.6	162.2	3	0	8	8	0	0	0	0	0	0	16	0	0	3	7 0 0 0 3	3	1	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 137.1																							
1	620	101	130.1	136.1	1	0	0	0	0	0	0	6	0	0	6	0	1	4	7 0 0 0 3	0	0	1	0
2	621	101	130.1	136.1	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 3	0	0	1	0
3	622	110	121.1	127.1	1	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 3	0	0	1	0
4	623	109	122.1	128.1	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 3	0	0	1	0
5	624	91	140.1	146.1	0	0	0	0	0	0	0	6	0	0	6	1	1	8	5 0 0 0 3	0	0	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 128.7																							
1	625	113	109.8	115.7	0	0	0	0	0	0	0	6	0	0	6	0	1	8	5 0 0 0 3	0	0	1	1
2	626	110	112.8	118.7	1	0	0	4	0	0	0	6	0	0	10	0	1	8	5 0 0 0 3	0	0	1	0
3	627	106	116.8	122.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	629	89	133.8	139.7	2	0	0	4	0	0	0	0	0	0	4	1	0	4	7 0 0 0 3	0	0	1	0
5	630	96	126.8	132.7	5	0	0	8	0	0	6	0	0	0	14	0	0	4	7 0 0 0 3	3	3	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 120.7																							
1	715	105	107	115.7	3	0	0	16	0	0	0	6	0	0	22	1	0	0	1 5 7 0 3	0	0	1	0
2	716	83	129	137.7	3	0	0	4	0	0	6	0	0	0	10	1	1	4	7 0 0 0 3	0	0	1	0
3	717	104	108	116.7	4	0	0	16	0	0	6	0	0	24	46	0	1	0	1 5 7 0 3	0	0	1	0
4	720	106	106	114.7	3	0	0	8	0	0	6	6	0	0	20	0	0	8	1 5 7 0 3	0	0	1	0
5	721	110	102	110.7	4	0	0	16	0	0	6	6	0	0	28	0	0	4	1 5 0 0 0	0	0	0	0
6	722	90	122	130.7	3	0	0	8	0	0	6	6	0	0	20	0	0	4	1 5 0 0 3	0	0	1	0
7	722	102	110	118.7	1	0	0	0	0	0	0	6	0	0	6	1	1	8	5 0 0 0 3	2	1	1	1
8	723	110	102	110.7	3	0	0	4	0	2	0	6	0	0	12	0	0	8	5 0 0 0 3	0	0	1	1
9	724	105	107	115.7	3	0	0	4	0	0	0	6	0	0	10	0	0	8	5 0 0 0 3	0	0	1	1
10	726	105	107	115.7	3	0	0	8	0	0	6	6	0	0	20	0	0	8	5 0 0 0 3	0	0	1	1
11	727	107	105	113.7	4	0	0	8	0	0	0	6	0	0	14	0	1	8	5 0 0 0 3	0	0	1	0
12	728	106	106	114.7	1	0	0	4	0	0	0	6	0	0	10	0	1	8	5 0 0 0 3	0	0	1	0
13	730	81	131	139.7	1	0	0	4	0	0	0	6	0	0	10	0	1	8	5 0 0 0 3	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 32 , TOTAL RUNS = 32

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ START	STALLS, AT-- DRIVE	DEMERITS @3 STRT DIFF	DEMERITS @4 STRT STLL	DEMERITS @5 DRIV STLL	DEMERITS @6 IDLE RUFF	DEMERITS @7 HES-ITTN	DEMERITS @8 LACK POWR	DEMERITS @9 SUR-GE	DEMERITS @10 BACK FIRE	TO-TAL	@@2 OVER ALL PERF	@11 ACC EPT ABL	@12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	COMPARE OLD F@	IME?	CMT?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 153.6																							
1	701	100	152.6	153.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	702	106	146.6	147.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	703	109	143.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	704	109	143.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	705	110	142.6	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	706	107	145.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	707	105	147.6	148.6	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	1	4	1	1
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 145.8																							
1	708	104	138.3	141.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	709	107	135.3	138.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	710	99	143.3	146.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	711	96	146.3	149.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	712	100	142.3	145.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	713	101	141.3	144.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	714	103	139.3	142.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	1	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 137.5																							
1	618	109	122.1	128.5	0	1	0	0	32	2	12	12	0	0	58	1	1	8	3 0 0 0 2	0	0	1	0
2	619	108	123.1	129.5	1	0	0	4	0	0	0	0	0	0	4	0	1	4	4 0 0 0 3	0	0	1	1
3	620	106	125.1	131.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	621	107	124.1	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	622	102	129.1	135.5	0	1	0	0	16	0	0	0	0	0	16	0	1	5	3 0 0 0 3	0	0	1	0
6	623	100	131.1	137.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
7	715	105	126.1	132.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	716	99	132.1	138.5	0	0	4	0	0	0	6	0	0	0	10	0	1	7	3 0 0 0 3	0	0	1	0
9	717	102	129.1	135.5	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
10	718	103	128.1	134.5	0	0	4	0	0	0	6	0	0	0	10	0	1	3	7 0 0 0 3	0	0	1	0
11	719	106	125.1	131.5	0	0	4	0	0	2	6	0	0	0	12	1	1	6	7 0 0 0 3	0	0	1	0
12	720	106	125.1	131.5	0	0	4	0	0	0	6	0	0	0	10	1	1	7	4 0 0 0 3	0	0	1	0
13	721	110	121.1	127.5	1	1	4	4	16	2	6	0	0	0	32	0	1	5	5 0 0 0 3	3	2	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 131.0																							
1	625	113	109.8	118.0	2	0	0	4	0	0	6	0	0	0	10	1	1	4	7 0 0 0 3	0	0	1	0
2	626	111	111.8	120.0	3	0	0	4	0	0	0	0	0	0	4	1	1	4	7 0 0 0 3	0	0	1	0
3	628	100	122.8	131.0	0	0	4	0	0	0	0	6	0	0	10	1	1	3	7 0 0 0 3	0	0	1	0
4	629	107	115.8	124.0	0	2	0	0	32	0	0	0	0	0	32	1	1	5	3 0 0 0 1	0	0	1	0
5	630	96	126.8	135.0	2	0	0	4	0	2	0	0	0	0	6	1	1	4	7 0 0 0 3	1	3	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 31 , TOTAL RUNS = 45

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #AT-ST-ART	STALLS, #AT-DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	DEMERITS Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q10 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	CHAT?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.8																							
1	625	113	139.6	138.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	626	110	142.6	141.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	627	105	147.6	146.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	628	92	160.6	159.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	629	107	145.6	144.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	630	96	156.6	155.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 144.7																							
1	701	100	142.3	144.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	702	106	136.3	138.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	703	105	137.3	139.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	704	107	135.3	137.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	705	110	132.3	134.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	706	107	135.3	137.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	707	105	137.3	139.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	708	104	138.3	140.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	1	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.9																							
1	619	109	122.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	620	109	122.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	621	110	121.1	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
4	622	110	121.1	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	623	109	122.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	709	107	124.1	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	710	104	127.1	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	711	98	133.1	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	712	100	131.1	136.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	713	101	130.1	135.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	714	103	128.1	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	2	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 131.6																							
1	715	105	117.8	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	716	99	123.8	132.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	717	104	118.8	127.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	718	107	115.8	124.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	719	106	116.8	125.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	720	106	116.8	125.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	721	110	112.8	121.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 125.7																							
1	722	102	110	123.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	723	110	102	115.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	724	109	103	116.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	725	99	113	126.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	726	105	107	120.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	727	107	105	118.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	728	106	106	119.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	729	105	107	120.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	4	1	0
9	730	98	114	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	731	98	114	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	801	102	110	123.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	802	106	106	119.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	803	107	105	118.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 30 , TOTAL RUNS = 31

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #ST-ART	STALLS, AT--DRIVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q#11 ACC EPT ABL	Q#12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 149.6																							
1	702	106	146.6	143.6	0	0	0	0	0	2	12	0	8	0	22	1	1	7	5 0 0 0 0	0	0	1	1
2	703	106	146.6	143.6	0	0	0	0	0	2	0	6	0	0	8	1	1	8	1 0 0 0 0	1	3	1	0
3	705	110	142.6	139.6	0	0	0	0	0	2	0	6	0	0	8	1	1	8	5 0 0 0 0	0	0	1	0
4	706	107	145.6	142.6	0	0	0	0	0	2	0	6	0	0	8	1	1	8	5 0 0 0 0	0	0	1	0
5	707	105	147.6	144.6	0	0	0	0	0	2	0	6	0	0	8	1	1	8	5 0 0 0 0	2	3	1	0
6	708	90	162.6	159.6	1	0	0	8	0	2	0	6	0	0	16	1	1	8	5 0 0 0 0	0	0	1	0
7	715	105	147.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	716	99	153.6	150.6	1	0	0	8	0	0	0	0	0	0	8	0	1	4	7 0 0 0 0	0	0	1	0
9	717	104	148.6	145.6	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1	0
10	718	107	145.6	142.6	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1	0
11	719	106	146.6	143.6	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1	0
12	720	106	146.6	143.6	2	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1	0
13	721	110	142.6	139.6	1	1	0	8	32	0	0	0	0	0	40	0	1	4	7 0 0 0 0	1	2	1	0
14	723	110	142.6	139.6	2	0	0	8	0	0	0	0	4	0	12	0	0	4	7 0 0 0 0	0	0	1	0
15	724	109	143.6	140.6	1	0	0	8	0	0	0	0	4	0	12	1	1	4	7 0 0 0 0	0	0	1	0
16	725	99	153.6	150.6	1	0	0	8	0	0	0	0	4	0	12	1	1	4	7 0 0 0 0	0	0	1	0
17	726	105	147.6	144.6	1	0	0	4	0	0	0	0	4	0	8	1	1	4	7 0 0 0 0	0	0	1	0
18	727	107	145.6	142.6	0	0	0	0	0	0	0	0	4	0	4	0	1	9	1 0 0 0 0	0	0	1	0
19	728	106	146.6	143.6	0	0	0	0	0	0	0	0	4	0	4	0	1	9	1 0 0 0 0	0	0	1	0
20	729	91	161.6	158.6	0	0	0	0	0	0	0	0	4	0	4	0	1	9	1 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 145.5																							
1	710	104	138.3	141.5	2	1	4	8	32	2	0	0	0	0	46	1	1	0	3 0 0 0 0	0	0	1	0
2	711	98	144.3	147.5	2	1	4	4	32	0	0	0	0	0	40	1	1	5	3 0 0 0 0	0	0	1	0
3	712	92	150.3	153.5	1	0	4	8	0	0	0	0	4	0	16	1	1	4	7 0 0 0 0	0	0	1	0
4	713	101	141.3	144.5	1	0	4	4	0	0	0	0	4	0	12	1	1	4	7 0 0 0 0	0	0	1	0
5	714	103	139.3	142.5	1	0	4	4	0	0	0	0	4	6	18	1	0	4	7 0 0 0 0	1	1	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 140.6																							
1	626	110	121.1	130.6	2	1	0	8	32	4	0	6	0	0	50	2	0	6	3 0 0 0 0	0	0	1	0
2	627	106	125.1	134.6	2	0	0	8	0	2	0	6	0	0	16	1	0	4	5 0 0 0 0	0	0	1	0
3	628	100	131.1	140.6	1	0	0	4	0	2	0	12	0	0	18	1	0	8	5 0 0 0 0	0	0	1	0
4	629	107	124.1	133.6	0	0	0	0	0	0	0	6	0	0	6	1	1	8	5 0 0 0 0	0	0	1	0
5	630	91	140.1	149.6	0	0	0	0	0	2	0	0	0	0	2	1	1	6	3 0 0 0 0	0	0	1	0
6	701	100	131.1	140.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	3 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 26 , TOTAL RUNS = 26

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #ST-ART	STALLS, #AT--DRIVE	DEMERITS Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	CHAT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 150.4																							
1	722	102	150.6	148.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	723	108	144.6	142.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	727	92	160.6	158.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 142.8																							
1	729	105	137.3	137.8	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1	0
2	730	98	144.3	144.8	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1	0
3	731	98	144.3	144.8	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1	0
4	801	100	142.3	142.8	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1	0
5	802	103	139.3	139.8	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1	0
6	803	107	135.3	135.8	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	1	1	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 133.7																							
1	629	107	124.1	126.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	630	96	135.1	137.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	701	100	131.1	133.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	702	106	125.1	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	706	107	124.1	126.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
6	714	103	128.1	130.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	715	105	126.1	128.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	716	99	132.1	134.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	717	104	127.1	129.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	718	103	128.1	130.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	720	106	125.1	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 130.4																							
1	707	105	117.8	125.4	0	0	0	0	0	0	12	0	0	0	12	2	0	7	4 0 0 0 3	0	0	1	0
2	708	104	118.8	126.4	0	0	0	0	0	0	6	0	0	0	6	1	1	7	4 0 0 0 3	0	0	1	0
3	709	107	115.8	123.4	0	0	0	0	0	0	6	0	0	0	6	1	1	7	4 0 0 0 3	0	0	1	0
4	710	99	123.8	131.4	0	0	0	0	0	0	6	0	0	0	6	1	1	7	5 0 0 0 0	0	0	1	0
5	712	100	122.8	130.4	0	0	0	0	0	0	0	6	0	0	6	0	1	8	2 0 0 0 1	0	0	1	0
6	713	101	121.8	129.4	0	0	0	0	0	0	0	6	0	0	6	0	1	7	4 5 0 0 3	3	3	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 24 , TOTAL RUNS = 47

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #ST-ART	STALLS, #AT-DRIVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	DEMERITS Q06 IDLE RUFF	Q07 HES-ITIN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE OLD F#	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.6																							
1	623	109	143.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
2	624	109	143.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
3	625	113	139.6	138.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	626	110	142.6	141.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	627	106	146.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	628	98	154.6	153.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	629	107	145.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
8	630	96	156.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 144.9																							
1	701	100	142.3	144.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	702	106	136.3	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	704	109	133.3	135.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	705	110	132.3	134.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	706	107	135.3	137.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	1	1	0
6	707	92	150.3	152.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 137.5																							
1	619	105	126.1	132.5	0	1	0	0	16	2	0	0	0	0	18	1	1	5	3 0 0 0 3	0	0	1	0
2	620	111	120.1	126.5	0	1	0	0	16	2	0	0	0	0	18	0	1	5	3 0 0 0 3	0	0	1	0
3	621	110	121.1	127.5	0	2	0	0	16	2	0	0	0	0	18	0	1	5	0 0 0 0 0	0	0	1	0
4	622	110	121.1	127.5	0	2	0	0	16	2	0	0	0	0	18	0	1	5	0 0 0 0 3	0	0	1	0
5	707	105	126.1	132.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	708	104	127.1	133.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	709	107	124.1	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	710	104	127.1	133.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	711	98	133.1	139.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	712	100	131.1	137.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	713	101	130.1	136.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	714	103	128.1	134.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	2	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 132.7																							
1	715	105	117.8	127.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	716	99	123.8	133.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	717	102	120.8	130.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	718	107	115.8	125.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	719	106	116.8	126.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	720	106	116.8	126.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	721	110	112.8	122.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
8	722	102	120.8	130.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 127.3																							
1	723	110	102	117.3	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0 0 0 0 0	0	0	1	0
2	724	93	119	134.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	725	99	113	128.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	726	105	107	122.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	727	107	105	120.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	728	89	123	138.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	729	105	107	122.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	730	98	114	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	731	98	114	129.3	0	0	0	0	0	0	6	6	4	0	16	1	1	7	0 0 0 0 2	0	0	1	1
10	801	102	110	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	802	106	106	121.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	803	107	105	120.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 2	0	0	1	0
13	804	90	122	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	5	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 23 , TOTAL RUNS = 50

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ ST-ART	STALLS, AT-- DR-IVE	DEMERITS Q03 STRT DIFF	DEMERITS Q04 STRT STLL	DEMERITS Q05 DRIV STLL	DEMERITS Q06 IDLE RUFF	DEMERITS Q07 HES-ITZN	DEMERITS Q08 LACK POWR	DEMERITS Q09 SUR-GE	DEMERITS Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM @	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	COMPARE WEEK OLD F@	T E	C M T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 153.6																							
1	623	109	143.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	624	107	145.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
3	625	113	139.6	140.6	1	0	0	4	0	2	0	0	0	0	6	0	1	4	7 0 0 0 0	0	0	1	0
4	626	110	142.6	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	627	105	147.6	148.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	628	98	154.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	629	107	145.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	630	91	161.6	162.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 135.8																							
1	620	109	122.1	126.8	1	0	4	8	0	0	0	0	0	0	12	0	1	4	7 0 0 0 0	0	0	1	0
2	621	110	121.1	125.8	1	0	4	8	0	0	0	0	0	0	12	0	1	4	7 0 0 0 0	0	0	1	0
3	622	92	139.1	143.8	1	0	4	8	0	0	0	0	0	0	12	0	1	4	7 0 0 0 0	0	0	1	0
4	623	90	141.1	145.8	1	0	4	8	0	0	0	0	0	0	12	0	1	4	7 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 136.4																							
1	630	96	126.8	140.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	701	101	121.8	135.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	702	106	116.8	130.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	703	109	113.8	127.4	1	0	16	8	0	4	0	0	0	0	28	3	0	3	7 0 0 0 0	0	0	1	1
5	704	109	113.8	127.4	1	0	8	8	0	4	0	0	0	0	20	2	0	3	7 0 0 0 0	0	0	1	0
6	705	110	112.8	126.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	706	105	117.8	131.4	1	1	0	4	16	2	0	0	0	0	22	0	1	4	7 0 0 0 0	0	0	1	0
8	707	92	130.8	144.4	1	0	0	4	0	2	0	0	0	0	6	0	1	4	7 0 0 0 0	0	0	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 134.2																							
1	707	105	107	129.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	708	97	115	137.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	709	107	105	127.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	710	99	113	135.2	1	0	4	4	0	2	6	0	0	0	16	1	1	3	7 0 0 0 0	0	0	1	0
5	711	96	116	138.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	712	100	112	134.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	713	85	127	149.2	0	0	0	0	0	2	0	0	0	0	2	0	1	6	7 0 0 0 0	0	0	1	0
8	714	89	123	145.2	0	0	4	0	0	2	0	0	0	0	6	0	1	6	7 0 0 0 0	0	0	1	0
9	714	103	109	131.2	1	0	4	4	0	0	0	0	0	0	8	0	1	4	7 0 0 0 0	0	0	1	0
10	715	97	115	137.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
11	716	83	129	151.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	717	104	108	130.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	718	107	105	127.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	719	106	106	128.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	720	106	106	128.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	721	110	102	124.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	722	102	110	132.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	5	1	1
18	723	110	102	124.2	1	0	4	4	0	2	0	0	0	0	10	0	1	3	7 0 0 0 0	0	0	1	0
19	724	105	107	129.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	725	99	113	135.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	726	102	110	132.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
22	727	105	107	129.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
23	728	89	123	145.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
24	729	105	107	129.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0
25	730	96	116	138.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
26	731	98	114	136.2	0	0	4	4	0	2	0	0	0	0	10	0	1	0	0 0 0 0 0	0	0	1	0
27	801	102	110	132.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
28	802	106	106	128.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
29	803	107	105	127.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
30	804	90	122	144.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 22 , TOTAL RUNS = 38

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #ST-ART	STALLS, AT--DRIVE	Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q#11 ACC EPT ABL	Q#12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	COMMENT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 152.0																							
1	715	105	147.6	147.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	716	99	153.6	153.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	717	104	148.6	148.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	718	107	145.6	145.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	719	106	146.6	146.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	720	103	149.6	149.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 139.0																							
1	623	109	122.1	130.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	624	109	122.1	130.0	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	1
3	625	113	118.1	126.0	0	0	0	0	0	4	6	0	0	0	10	1	0	0	4 7 0 0 3	0	0	1	1
4	627	106	125.1	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
5	628	98	133.1	141.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	629	104	127.1	135.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 134.0																							
1	701	100	122.8	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	702	106	116.8	128.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	703	109	113.8	125.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	704	109	113.8	125.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	705	110	112.8	124.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	706	107	115.8	127.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 128.5																							
1	707	105	107	123.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	708	104	108	124.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	709	107	105	121.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	710	104	108	124.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	711	96	116	132.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	712	100	112	128.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	713	101	111	127.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
8	721	110	102	118.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	722	102	110	126.5	0	0	4	0	0	0	12	0	0	0	16	1	0	0	5 0 0 0 3	0	0	1	1
10	723	110	102	118.5	0	0	8	0	16	2	0	0	0	0	26	1	0	0	0 0 0 0 0	3	1	1	1
11	724	109	103	119.5	0	0	16	0	16	2	0	0	0	0	34	1	0	0	0 0 0 0 0	0	0	1	1
12	725	99	113	129.5	0	0	4	0	0	2	0	0	0	0	6	1	1	0	0 0 0 0 0	0	0	1	1
13	726	102	110	126.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	727	107	105	121.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	0	0
15	729	105	107	123.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	730	98	114	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	731	98	114	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	801	98	114	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	802	104	108	124.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	803	107	105	121.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 21 , TOTAL RUNS = 41

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# ST-ART	STALLS, AT-- DR-IVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	DEMERITS Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	COMPARE WEEK OLD F#	TIM E	CMT ?
FUEL = 1,			BLEND	T@20V/L =	152.6,		EST.	TANK	FUEL	T@20V/L =	155.0												
1	623	109	143.6	146.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	624	109	143.6	146.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	625	113	139.6	142.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	626	110	142.6	145.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	627	106	146.6	149.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	629	107	145.6	148.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
FUEL = 3,			BLEND	T@20V/L =	131.1,		EST.	TANK	FUEL	T@20V/L =	135.6												
1	617	107	124.1	128.6	0	0	4	0	0	0	0	6	0	0	10	1	1	3	7 0 0 0 3	0	0	1	1
2	618	109	122.1	126.6	0	0	4	0	0	0	0	6	0	0	10	1	1	3	7 0 0 0 3	0	0	1	1
3	619	109	122.1	126.6	0	0	4	0	0	0	0	6	0	0	10	1	0	8	4 0 0 0 0	0	0	1	1
4	620	111	120.1	124.6	0	0	4	0	0	0	0	12	0	0	16	1	1	3	7 0 0 0 3	0	0	1	1
5	621	107	124.1	128.6	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	1	1
6	622	110	121.1	125.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
FUEL = 4,			BLEND	T@20V/L =	122.8,		EST.	TANK	FUEL	T@20V/L =	132.7												
1	630	96	126.8	136.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	701	100	122.8	132.7	0	0	4	0	0	0	0	0	0	0	4	1	0	3	7 0 0 0 0	0	0	1	1
3	702	106	116.8	126.7	0	0	4	0	0	0	0	0	0	0	4	1	0	3	2 7 0 0 1	0	0	1	1
4	705	110	112.8	122.7	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 0	0	0	1	1
5	706	107	115.8	125.7	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2 0 0 0 0	3	1	1	1
6	707	105	117.8	127.7	0	0	4	0	0	0	0	0	0	0	4	1	0	3	1 7 0 0 3	0	0	1	1
7	708	104	118.8	128.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
8	728	106	116.8	126.7	0	0	8	0	0	0	0	0	0	0	8	1	0	3	2 7 0 0 1	0	0	1	1
9	729	105	117.8	127.7	1	0	8	4	0	0	0	0	0	0	12	1	0	3	7 0 0 0 0	0	0	1	1
10	730	98	124.8	134.7	2	0	8	8	0	0	0	0	0	0	16	1	0	3	7 0 0 0 0	0	0	1	1
11	731	87	135.8	145.7	1	0	0	8	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	1
12	803	107	115.8	125.7	0	0	8	0	0	0	0	0	0	0	8	2	0	3	7 0 0 0 0	1	5	1	1
FUEL = 5,			BLEND	T@20V/L =	112.0,		EST.	TANK	FUEL	T@20V/L =	127.9												
1	709	107	105	120.9	0	0	4	0	0	0	0	0	0	0	4	1	0	3	1 7 0 0 3	0	0	1	1
2	710	104	108	123.9	0	0	4	0	0	0	0	0	0	0	4	2	0	3	1 7 0 0 0	0	0	1	1
3	711	98	114	129.9	0	0	4	0	0	0	0	0	0	0	4	2	0	3	1 7 0 0 0	0	0	1	1
4	712	100	112	127.9	0	0	4	0	0	0	0	0	0	0	4	2	0	3	1 7 0 0 0	0	0	1	1
5	713	101	111	126.9	0	0	4	0	0	0	0	0	0	0	4	2	0	3	1 7 0 0 3	3	4	1	1
6	714	103	109	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	715	105	107	122.9	1	0	4	8	0	0	0	0	0	0	12	2	0	3	7 0 0 0 0	0	0	1	1
8	716	99	113	128.9	2	0	4	8	0	0	0	6	0	0	18	2	0	3	1 7 0 0 3	0	0	1	1
9	717	104	108	123.9	1	0	4	8	0	0	0	6	0	0	18	2	0	3	1 2 7 0 3	0	0	1	1
10	718	107	105	120.9	0	0	8	0	0	0	0	6	0	0	14	2	0	3	1 2 7 0 3	0	0	1	1
11	719	106	106	121.9	1	0	4	4	0	0	0	6	0	0	14	1	0	3	1 7 0 0 3	0	0	1	1
12	720	106	106	121.9	1	0	8	4	0	0	0	6	0	0	18	2	0	3	1 2 7 0 3	2	5	1	1
13	722	102	110	125.9	2	0	4	8	0	[illegible]	0	0	0	0	12	2	0	3	7 0 0 0 0	0	0	1	1
14	723	110	102	117.9	1	0	4	4	[illegible]	0	0	0	0	0	12	2	0	3	7 0 0 0 0	0	0	1	1
15	724	109	103	118.9	0	0	8	0	0	0	0	0	0	0	8	2	0	3	7 0 0 0 0	0	0	1	1
16	725	97	115	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
17	727	107	105	120.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 20 , TOTAL RUNS = 30

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #ST-ART	STALLS, #AT--DRIVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	DEMERITS TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE OLD F#	IMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 150.4																						
1	707	105	147.6	145.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	0 0
2	708	104	148.6	146.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	709	107	145.6	143.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
4	710	104	148.6	146.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	711	98	154.6	152.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	712	92	160.6	158.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	713	101	151.6	149.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1 0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 135.3																						
1	617	107	124.1	128.3	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 0
2	618	109	122.1	126.3	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 0
3	619	109	122.1	126.3	0	0	0	0	0	0	6	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 1
4	620	109	122.1	126.3	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 0
5	622	110	121.1	125.3	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 131.3																						
1	624	109	113.8	122.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	625	113	109.8	118.3	0	0	0	0	0	0	6	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
3	626	110	112.8	121.3	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 1
4	627	106	116.8	125.3	0	0	0	0	0	0	6	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
5	628	98	124.8	133.3	0	0	0	0	0	0	6	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
6	629	107	115.8	124.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	0 0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 126.2																						
1	701	100	112	126.2	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 0
2	702	106	106	120.2	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0	0	0	1 0
3	703	106	106	120.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	704	107	105	119.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	705	107	105	119.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	706	107	105	119.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	714	103	109	123.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
8	715	105	107	121.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
9	716	99	113	127.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
10	717	104	108	122.2	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1 1
11	727	107	105	119.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
12	728	106	106	120.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	0 1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 19 , TOTAL RUNS = 42

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	STALLS, AT-- DRIVE	Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	DEMERITS Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F@	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 154.8																							
1	626	110	142.6	144.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
2	627	105	147.6	149.8	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
3	628	97	155.6	157.8	0	0	4	0	0	0	0	0	0	0	4	0	1	3	3 6 0 0 0	0	0	1	0
4	629	89	163.6	165.8	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	1	3	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 144.4																							
1	617	107	124.1	137.4	0	0	0	0	0	0	0	6	0	0	6	0	1	8	6 0 0 0 0	0	0	1	0
2	618	109	122.1	135.4	0	0	16	0	0	0	0	6	0	0	22	1	1	3	1 0 0 0 0	0	0	1	0
3	619	109	122.1	135.4	0	0	16	0	0	0	0	6	0	0	22	1	1	3	1 0 0 0 0	0	0	1	0
4	620	111	120.1	133.4	0	0	16	0	0	0	0	6	0	0	22	1	1	3	2 0 0 0 0	0	0	1	0
5	621	110	121.1	134.4	0	0	16	0	0	0	0	6	0	0	22	1	1	3	2 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 139.1																							
1	630	96	126.8	143.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	3 0 0 0 0	0	0	1	0
2	701	100	122.8	139.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
3	702	106	116.8	133.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
4	703	109	113.8	130.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
5	704	92	130.8	147.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	1 0 0 0 0	0	0	1	0
6	705	107	115.8	132.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1 0 0 0 0	0	0	1	0
7	706	107	115.8	132.1	0	0	4	0	0	0	0	0	0	0	4	1	1	3	2 0 0 0 0	2	3	1	0
8	715	105	117.8	134.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
9	716	99	123.8	140.1	0	0	4	0	0	0	0	0	0	0	4	0	1	0	2 0 0 0 0	0	0	1	0
10	717	104	118.8	135.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
11	718	103	119.8	136.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
12	719	103	119.8	136.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1 0 0 0 0	0	0	1	0
13	720	106	116.8	133.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	1	5	1	0
14	721	110	112.8	129.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
15	722	102	120.8	137.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
16	723	110	112.8	129.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	0 0 0 0 0	0	0	1	0
17	724	109	113.8	130.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
18	725	99	123.8	140.1	0	0	4	0	0	2	0	0	0	0	6	0	1	0	1 0 0 0 0	0	0	1	0
19	726	105	117.8	134.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
20	727	107	115.8	132.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 3 0 0 0	1	4	1	0
21	728	106	116.8	133.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
22	729	105	117.8	134.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
23	730	98	124.8	141.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
24	731	98	124.8	141.1	0	0	4	0	0	0	0	0	0	0	4	0	1	3	2 0 0 0 0	0	0	1	0
25	801	86	136.8	153.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
26	802	103	119.8	136.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	0	0	1	0
27	803	106	116.8	133.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 0 0 0 0	2	4	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 133.9																							
1	708	104	108.0	129.9	0	0	4	0	0	2	0	0	0	0	6	0	1	0	2 0 0 0 0	0	0	1	0
2	709	107	105.0	126.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	2 0 0 0 0	0	0	1	0
3	710	104	108.0	129.9	0	0	4	4	0	2	0	0	0	0	10	1	0	0	2 0 0 0 0	0	0	1	0
4	711	96	116.0	137.9	0	0	8	4	0	2	0	6	0	0	20	1	0	0	1 0 0 0 0	0	0	1	0
5	712	100	112.0	133.9	0	0	8	4	0	0	6	0	0	0	18	1	0	0	2 0 0 0 0	0	0	1	0
6	713	101	111.0	132.9	0	0	8	4	16	0	6	0	0	0	34	1	0	0	2 0 0 0 0	3	4	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 45 , TOTAL RUNS = 43

RUN	DATE	AIR TMP	ADJ T@2OV/L FRESH FUEL	ADJ T@2OV/L TANK FUEL	STALLS, -# ST-ART	STALLS, -# AT-DRIVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	DEMERITS TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	IMT E	CM T ?
FUEL = 3, BLEND T@2OV/L = 131.1, EST. TANK FUEL T@2OV/L = 134.3																							
1	618	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	619	108	123.1	126.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	621	105	126.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	622	110	121.1	124.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	623	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	624	91	140.1	143.3	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
7	724	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	725	97	134.1	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	726	105	126.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	727	107	124.1	127.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	728	89	142.1	145.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	729	105	126.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@2OV/L = 122.8, EST. TANK FUEL T@2OV/L = 131.1																							
1	625	113	109.8	118.1	0	0	4	0	0	2	0	0	0	0	6	0	1	0	0 0 0 0 0	0	0	1	0
2	626	110	112.8	121.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	627	106	116.8	125.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	628	100	122.8	131.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	629	107	115.8	124.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	630	96	126.8	135.1	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
7	701	100	122.8	131.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	704	109	113.8	122.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
9	717	104	118.8	127.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	718	107	115.8	124.1	1	1	0	4	16	0	0	0	4	0	24	0	1	0	0 0 0 0 0	0	0	1	0
11	719	106	116.8	125.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	720	91	131.8	140.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
13	723	106	116.8	125.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	5	1	0
14	730	98	124.8	133.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	731	98	124.8	133.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	801	100	122.8	131.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	802	106	116.8	125.1	0	0	4	0	0	0	0	0	0	0	4	1	1	0	0 0 0 0 0	0	0	1	0
18	803	107	115.8	124.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	804	105	117.8	126.1	0	0	0	0	0	2	6	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
20	805	105	117.8	126.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 5, BLEND T@2OV/L = 112.0, EST. TANK FUEL T@2OV/L = 126.8																							
1	706	107	105	119.8	3	0	4	8	0	2	0	0	4	0	18	1	0	4	0 0 0 0 0	0	0	1	0
2	707	105	107	121.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	708	104	108	122.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	709	107	105	119.8	1	2	4	4	32	0	0	0	4	0	44	1	0	0	0 0 0 0 0	0	0	1	0
5	710	104	108	122.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	711	98	114	128.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	712	100	112	126.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	713	101	111	125.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	714	103	109	123.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	715	105	107	121.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4 0 0 0 0	3	4	1	0
11	716	83	129	143.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 46 , TOTAL RUNS = 38

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ START	STALLS, AT-- DRIVE	DEMERITS Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F@	TIME	CAR ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.2																							
1	702	106	146.6	145.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	703	90	162.6	161.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	704	109	143.6	142.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	706	107	145.6	144.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	707	105	147.6	146.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	708	104	148.6	147.2	1	0	0	4	0	0	0	0	0	0	4	0	1	4	5 0 0 0 3	1	4	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 145.8																							
1	709	107	135.3	138.8	2	1	0	4	16	0	0	0	0	0	20	0	1	5	7 0 0 0 3	0	0	1	1
2	710	104	138.3	141.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	711	93	149.3	152.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	712	98	144.3	147.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	720	106	136.3	139.8	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
6	721	110	132.3	135.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	722	102	140.3	143.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	2	1	0
8	730	98	144.3	147.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	731	98	144.3	147.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	801	102	140.3	143.8	1	0	0	4	0	0	0	0	0	0	4	0	1	4	5 0 0 0 3	0	0	0	0
11	803	107	135.3	138.8	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 3	0	0	1	0
12	804	105	137.3	140.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	805	105	137.3	140.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	806	106	136.3	139.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 137.9																							
1	619	109	122.1	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	620	109	122.1	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	621	110	121.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	623	109	122.1	128.9	0	1	0	0	16	0	0	0	0	0	16	0	1	5	5 0 0 0 3	0	0	0	0
5	624	109	122.1	128.9	0	0	0	0	16	0	0	0	0	0	16	0	1	5	5 0 0 0 3	0	0	1	0
6	723	92	139.1	145.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	724	109	122.1	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	725	99	132.1	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 ^ 0 0	0	0	1	0
9	727	107	124.1	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 ∪ 0 0	0	0	1	1
10	728	106	125.1	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	729	105	126.1	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	730	81	150.1	156.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	2	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 139.9																							
1	625	113	16?.J	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	626	110	112.8	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	0	0
3	627	101	121.8	138.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	629	107	115.8	132.9	1	0	0	4	0	0	0	0	0	0	4	0	1	0	7 0 0 0 3	0	0	1	1
5	630	96	126.8	143.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	701	100	122.8	139.9	0	1	0	0	16	0	0	0	0	0	16	0	1	5	5 0 0 0 3	1	3	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 47 , TOTAL RUNS = 21

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ START	STALLS, AT DRIVE	DEMERITS Q@3 STRT DIFF	DEMERITS Q@4 STRT STLL	DEMERITS Q@5 DRIV STLL	DEMERITS Q@6 IDLE RUFF	DEMERITS Q@7 HES-ITZN	DEMERITS Q@8 LACK POWR	DEMERITS Q@9 SUR-GE	DEMERITS Q@10 BACK FIRE	TOTAL	Q@2 OVERALL PERF	Q11 ACCEPTABL	Q12 PROBLM #	DRIVING CONDITIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F@	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.8																							
1	704	109	143.6	142.8	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	0	0	1	1
2	705	100	152.6	151.8	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	0	0	1	1
3	706	107	145.6	144.8	0	0	0	0	0	2	6	0	4	0	12	0	1	0	0 0 0 0 0 0	0	0	1	0
4	707	105	147.6	146.8	0	0	0	0	0	2	0	0	4	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
5	708	104	148.6	147.8	0	0	4	0	0	2	0	0	0	0	6	1	1	3	0 0 0 0 0 0	0	0	1	0
6	709	92	160.6	159.8	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	1	3	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 132.2																							
1	623	109	122.1	123.2	0	0	0	0	0	2	6	6	0	0	14	1	1	0	7 0 0 0 0 0	0	0	1	1
2	624	91	140.1	141.2	0	0	0	0	0	2	6	6	0	0	14	1	1	0	7 0 0 0 0 0	0	0	1	1
3	625	113	118.1	119.2	0	0	8	0	0	4	0	0	0	0	12	0	1	6	7 0 0 0 0 0	0	0	1	0
4	626	110	121.1	122.2	5	0	16	16	16	2	6	0	0	0	56	3	0	3	3 0 0 0 0 0	0	0	1	0
5	628	98	133.1	134.2	2	0	8	8	0	2	0	0	0	0	18	1	1	3	7 0 0 0 0 0	0	0	1	0
6	629	98	133.1	134.2	0	0	0	4	0	2	0	0	0	0	6	1	1	6	7 0 0 0 0 0	0	0	1	0
7	701	100	131.1	132.2	0	0	0	0	0	2	0	0	0	0	2	0	1	6	0 0 0 0 0 0	0	0	1	0
8	702	88	143.1	144.2	0	0	0	4	0	2	0	0	4	0	10	1	1	6	1 7 0 0 0 0	0	0	1	0
9	717	104	127.1	128.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0 0	0	0	1	0
10	728	106	125.1	126.2	0	0	0	0	0	2	0	0	0	0	2	1	1	0	0 0 0 0 0 0	0	0	1	0
11	729	105	126.1	127.2	0	0	0	0	0	2	6	6	0	0	14	0	1	0	0 0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 129.3																							
1	710	92	130.8	137.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	0	0	1	0
2	711	93	129.8	136.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	0	0	1	0
3	712	100	122.8	129.3	0	2	4	4	16	2	0	0	0	0	26	0	1	5	7 0 0 0 0 0	0	0	1	1
4	715	89	133.8	140.3	0	3	4	0	32	2	0	0	0	0	38	0	1	5	3 0 0 0 0 0	3	1	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 48 , TOTAL RUNS = 47

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ ST-ART	STALLS, AT DRIVE	@03 STRT DIFF	@04 STRT STLL	@05 DRIV STLL	DEMERITS @06 IDLE RUFF	@07 HES-ITZN	@08 LACK POWR	@09 SUR-GE	@10 BACK FIRE	TOTAL	@02 OVER ALL PERF	@11 ACC EPT ABL	@12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	COMPARE WEEK OLD F@	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 152.4																							
1	625	95	157.6	157.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
2	626	110	142.6	142.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	627	105	147.6	147.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	628	92	160.6	160.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	629	107	145.6	145.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	630	96	156.6	156.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	701	100	152.6	152.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	1
8	723	110	142.6	142.4	0	1	0	0	16	2	0	0	0	0	18	0	1	0	0 0 0 0 0	0	0	1	0
9	724	109	143.6	143.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
10	725	99	153.6	153.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
11	726	105	147.6	147.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
12	727	107	145.6	145.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
13	728	106	146.6	146.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
14	729	105	147.6	147.4	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	2	5	0	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 137.9																							
1	619	109	122.1	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	620	111	120.1	126.9	5	3	0	8	32	4	0	0	4	0	48	2	0	5	3 4 5 0 0	0	0	1	0
3	621	107	124.1	130.9	0	0	0	4	32	4	0	0	0	0	40	1	1	0	3 5 0 0 0	0	0	1	0
4	622	110	121.1	127.9	1	0	0	0	0	2	0	0	0	0	2	0	1	6	0 0 0 0 0	0	0	1	0
5	623	109	122.1	128.9	0	0	0	0	0	2	0	0	0	0	2	0	1	0	3 0 0 0 0	0	0	1	0
6	624	109	122.1	128.9	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
7	702	106	125.1	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	703	109	122.1	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	704	109	122.1	128.9	1	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
10	705	110	121.1	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	706	107	124.1	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	707	105	126.1	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	708	104	127.1	133.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	2	1	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 137.6																							
1	709	107	115.8	130.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	710	104	118.8	133.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
3	711	98	124.8	139.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
4	712	100	122.8	137.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
5	713	101	121.8	136.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
6	714	103	119.8	134.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
7	715	105	117.8	132.6	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	3	3	1	1
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 135.3																							
1	716	99	113	136.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
2	717	104	108	131.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
3	718	107	105	128.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
4	719	106	106	129.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
5	720	106	106	129.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
6	721	110	102	125.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
7	722	102	110	133.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
8	730	98	114	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	731	98	114	137.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
10	801	102	110	133.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
11	803	107	105	128.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
12	804	105	107	130.3	0	0	0	0	0	4	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
13	805	105	107	130.3	0	0	0	0	0	2	6	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 49 , TOTAL RUNS = 45

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT-- START	STALLS, -# AT-- DRIVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TIME	CAR MNT?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 152.8																							
1	709	107	145.6	145.8	0	0	4	0	0	0	6	0	4	0	14	0	1	3	7 0 0 0 3	0	0	1	1
2	710	104	148.6	148.8	1	0	4	4	0	2	6	0	4	0	20	0	1	7	1 2 5 0 3	0	0	1	1
3	711	98	154.6	154.8	1	0	4	4	0	2	6	0	4	0	20	1	1	7	1 3 0 0 3	0	0	1	0
4	712	92	160.6	160.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5 0 0 0 0	0	0	1	1
5	713	101	151.6	151.8	1	0	4	4	0	2	6	0	4	12	32	1	0	4	0 0 0 1 0	0	2	1	1
6	714	103	149.6	149.8	0	0	4	0	0	2	6	0	4	6	22	0	1	6	3 0 0 0 3	0	0	1	1
7	715	105	147.6	147.8	1	0	4	4	0	2	6	0	0	6	22	0	1	3	7 0 0 0 3	0	0	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 137.5																							
1	622	110	121.1	127.5	0	0	0	0	0	0	0	6	0	0	6	0	1	0	5 0 0 0 3	0	0	1	0
2	623	109	122.1	128.5	0	0	8	0	0	0	0	12	0	0	20	2	1	3	7 0 0 0 3	0	0	1	1
3	624	109	122.1	128.5	1	0	8	8	0	0	6	6	4	0	32	1	1	3	7 0 0 0 3	0	0	1	1
4	730	98	133.1	139.5	1	0	4	4	0	2	6	6	0	6	28	1	1	3	7 0 0 0 3	0	0	1	1
5	731	98	133.1	139.5	0	0	4	0	0	2	6	6	0	0	18	0	1	8	1 7 0 0 1	0	0	1	0
6	801	102	129.1	135.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	802	104	127.1	133.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
8	803	107	124.1	130.5	0	0	4	8	0	2	0	0	0	0	14	1	1	4	7 0 0 0 3	0	0	1	1
9	804	105	126.1	132.5	1	0	4	4	0	0	0	6	0	6	20	0	1	8	1 5 0 0 1	0	0	1	1
10	805	105	126.1	132.5	1	0	4	4	0	2	12	6	0	0	28	1	1	7	2 0 0 0 3	1	5	1	1
11	806	106	125.1	131.5	0	0	16	0	0	2	0	6	0	0	24	0	0	3	7 0 0 0 3	0	0	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 136.5																							
1	625	113	109.8	123.5	2	0	8	8	0	0	6	0	4	0	26	1	1	3	7 0 0 0 3	3	3	1	0
2	626	110	112.8	126.5	1	0	4	4	0	0	0	0	4	0	12	0	1	3	7 0 0 0 3	0	0	1	1
3	627	106	116.8	130.5	2	0	8	8	0	2	0	0	4	0	22	2	1	3	7 0 0 0 3	0	0	1	1
4	628	98	124.8	138.5	2	0	8	8	0	0	0	0	4	0	20	2	1	3	7 0 0 0 3	0	0	1	1
5	629	107	115.8	129.5	2	0	4	8	0	0	0	0	4	0	16	1	1	3	7 0 0 0 3	0	0	1	0
6	630	96	126.8	140.5	1	0	8	0	0	0	0	0	4	0	12	1	1	3	7 0 0 0 3	0	0	1	1
7	701	101	121.8	135.5	1	0	0	4	0	0	6	6	4	0	20	0	1	4	7 0 0 0 3	0	0	1	1
8	702	106	116.8	130.5	0	0	0	0	0	0	0	6	4	0	10	0	1	8	5 0 0 0 3	2	4	1	1
9	703	109	113.8	127.5	2	0	4	8	0	0	6	6	0	0	24	0	1	0	0 0 0 0 3	0	0	1	1
10	705	107	115.8	129.5	0	0	4	0	0	0	0	6	0	0	10	0	1	2	7 0 0 0 3	0	0	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 133.6																							
1	706	107	105	126.6	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
2	707	105	107	128.6	1	0	8	8	0	0	0	0	0	0	16	0	1	3	7 0 0 0 3	0	0	1	1
3	708	104	108	129.6	0	0	8	0	0	0	6	6	0	0	20	1	1	3	7 0 0 0 3	2	4	1	0
4	716	99	113	134.6	0	0	4	0	0	2	0	0	0	6	12	0	1	3	7 0 0 0 3	0	0	1	0
5	717	104	108	129.6	0	0	4	0	0	2	0	0	0	0	6	0	1	6	3 7 0 0 3	0	0	1	0
6	718	107	105	126.6	0	0	4	0	0	4	6	0	4	6	24	1	1	6	3 0 0 0 3	0	0	1	0
7	719	104	108	129.6	0	0	4	0	0	2	0	0	0	0	6	0	1	6	3 0 0 0 3	0	0	1	0
8	720	106	106	127.6	0	0	4	0	0	2	0	0	0	0	6	0	1	6	3 0 0 0 3	0	0	1	1
9	721	110	102	123.6	0	0	4	0	0	2	0	0	0	0	6	0	1	0	3 0 0 0 3	0	0	1	1
10	722	102	110	131.6	0	0	4	0	0	2	0	0	0	0	6	0	1	6	3 0 0 0 3	0	0	1	0
11	723	110	102	123.6	1	0	4	4	0	2	6	6	0	12	34	0	1	8	1 5 0 0 1	0	0	1	1
12	724	109	103	124.6	2	0	4	4	0	2	6	12	0	6	34	0	1	8	5 0 0 0 1	0	0	1	1
13	725	99	113	134.6	0	0	4	0	0	0	0	6	0	0	10	0	1	8	5 0 0 0 3	0	0	1	0
14	726	102	110	131.6	0	0	0	0	0	2	6	0	0	0	8	0	1	7	1 0 0 0 3	0	0	1	0
15	727	107	105	126.6	3	0	8	8	0	0	6	6	0	12	40	1	0	3	5 7 0 0 3	0	0	1	1
16	728	106	106	127.6	2	0	8	8	0	2	0	6	0	6	30	0	1	3	7 0 0 0 3	0	0	1	1
17	729	105	107	128.6	0	0	4	0	0	2	0	6	0	12	24	1	1	6	3 7 0 0 3	2	5	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 50 , TOTAL RUNS = 17

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ AT-- ST-ART	STALLS, -@ AT-- DR-IVE	Q03 STRT DIFF	Q04 STRT STLL	Q05 DRIV STLL	Q06 IDLE RUFF	Q07 HES-ITZN	Q08 LACK POWR	Q09 SUR-GE	Q010 BACK FIRE	TO-TAL	Q02 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F@	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 151.6																							
1	727	105	147.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2 3	0 0	3	3	5	1	0
2	728	106	146.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	0	0	1	0
3	729	105	147.6	146.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	0	0	1	0
4	730	96	156.6	155.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	1	5	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.9																							
1	625	113	118.1	123.9	0	0	0	0	0	2	0	0	0	0	2	0	1	6	0 0	0 0	0	0	0	1	0
2	626	95	136.1	141.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3 0	0 0	0	0	0	1	0
3	627	93	138.1	143.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	0	0	1	0
4	628	92	139.1	144.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	0	0	1	0
5	629	107	124.1	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3 0	0 0	0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 136.8																							
1	702	106	116.8	130.8	0	0	0	0	0	2	0	0	0	0	2	1	1	0	1 0	0 0	0	0	0	1	0
2	703	96	126.8	140.8	0	0	4	0	0	2	0	0	0	0	6	1	1	2	0 0	0 0	0	0	0	1	0
3	704	109	113.8	127.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	0	0	1	0
4	705	110	112.8	126.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0	0 0	0	2	3	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 134.7																							
1	716	97	115	137.7	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0	0 0	0	0	0	1	0
2	717	98	114	136.7	0	0	8	0	0	0	6	0	0	0	14	1	1	0	0 0	0 0	0	0	0	1	0
3	721	106	106	128.7	0	0	4	0	0	2	6	0	0	0	12	1	0	0	0 0	0 0	0	0	0	1	0
4	722	102	110	132.7	0	0	4	0	0	2	0	0	0	0	6	1	1	0	0 0	0 0	0	3	4	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 52 , TOTAL RUNS = 45

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT-- ST-ART	STALLS, -# AT-- DR-IVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE OLD F# 3	TEST ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 154.0																						
1	706	107	145.6	147.0	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 3	0	0	1 1
2	707	105	147.6	149.0	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1 1
3	708	90	162.6	164.0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
4	709	107	145.6	147.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1 1
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 146.0																						
1	710	104	138.3	142.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	711	96	146.3	150.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	712	100	142.3	146.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	713	101	141.3	145.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	714	103	139.3	143.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	715	105	137.3	141.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	1	1 0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 136.3																						
1	624	109	122.1	127.3	4	2	0	16	16	2	12	12	0	0	58	2	0	4	7 0 0 0 0	0	0	1 0
2	625	113	118.1	123.3	2	1	0	4	16	2	12	24	4	0	62	1	0	7	5 0 0 0 0	0	0	1 0
3	626	111	120.1	125.3	2	1	0	4	16	2	12	24	4	0	62	1	0	7	5 0 0 0 0	0	0	1 0
4	627	106	125.1	130.3	2	1	0	4	16	2	12	24	4	0	62	1	0	7	5 0 0 0 0	0	0	1 0
5	628	100	131.1	136.3	0	0	0	4	16	2	6	6	4	0	38	1	1	7	5 0 0 0 0	0	0	1 0
6	629	107	124.1	129.3	0	0	0	4	16	2	6	6	4	0	38	1	1	7	5 0 0 0 0	0	0	1 0
7	630	96	135.1	140.3	2	1	0	4	16	2	6	6	4	0	38	1	1	7	0 0 0 0 0	0	0	1 0
8	701	87	144.1	149.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
9	702	106	125.1	130.3	2	2	0	8	16	2	6	0	0	0	32	0	1	6	3 0 0 0 0	0	0	1 0
10	703	105	126.1	131.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
11	704	109	122.1	127.3	2	2	4	4	16	2	6	6	4	0	42	1	0	4	3 5 0 0 0	0	0	1 1
12	705	107	124.1	129.3	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 5 0 0 0	0	0	1 0
13	716	99	132.1	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
14	717	104	127.1	132.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
15	718	107	124.1	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
16	719	104	127.1	132.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
17	720	106	125.1	130.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
18	721	110	121.1	126.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
19	722	102	129.1	134.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
20	723	101	130.1	135.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	2	1 0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 133.5																						
1	723	110	112.8	123.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
2	724	109	113.8	124.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	725	99	123.8	134.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	726	105	117.8	128.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	727	107	115.8	126.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	728	89	133.8	144.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 129.0																						
1	729	105	107	124.0	0	2	0	0	16	0	6	0	0	0	22	0	1	0	0 0 0 0 0	0	0	1 0
2	730	98	114	131.0	0	3	0	0	16	0	6	0	0	0	22	0	1	0	0 0 0 0 0	0	0	1 0
3	731	98	114	131.0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
4	801	100	112	129.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	802	106	106	123.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	803	107	105	122.0	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 0 0 0 0	2	4	1 0
7	804	105	107	124.0	0	0	0	0	0	6	6	0	0	0	12	0	1	8	5 0 0 0 0	0	0	1 0
8	805	105	107	124.0	0	0	0	0	0	0	6	6	0	0	12	0	1	8	5 0 0 0 0	0	0	1 0
9	806	96	116	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 53 , TOTAL RUNS = 34

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT-- ST-ART	STALLS, -# AT-- DR-IVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE OLD F#	TIME	CAR ?
FUEL = 1,			BLEND	T@20V/L =	152.6,		EST.	TANK	FUEL	T@20V/L =	152.0												
1	710	104	148.6	148.0	2	0	4	4	0	2	0	0	0	0	10	1	1	0	0 0 0 0 0	0	0	1	0
2	711	96	156.6	156.0	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
3	712	98	154.6	154.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	713	101	151.6	151.0	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
5	714	103	149.6	149.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
6	715	89	163.6	163.0	1	1	4	4	16	2	0	0	0	0	26	1	0	5	0 0 0 0 0	0	0	1	0
7	716	83	169.6	169.0	2	0	8	8	0	4	0	0	0	0	20	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2,			BLEND	T@20V/L =	142.3,		EST.	TANK	FUEL	T@20V/L =	145.6												
1	717	104	138.3	141.6	2	0	4	0	0	2	0	0	0	0	6	1	0	0	0 0 0 0 0	0	0	1	0
2	718	107	135.3	138.6	2	0	4	4	0	2	0	0	0	0	10	0	0	0	0 0 0 0 0	0	0	1	0
3	719	104	138.3	141.6	4	0	4	8	0	2	0	0	0	0	14	1	0	0	0 0 0 0 0	0	0	1	0
4	720	106	136.3	139.6	2	0	4	4	0	2	0	0	0	0	10	1	0	0	0 0 0 0 0	0	0	1	0
5	721	110	132.3	135.6	3	0	4	4	0	2	0	0	0	0	10	1	0	0	0 0 0 0 0	0	0	1	0
6	722	102	140.3	143.6	2	0	4	4	0	2	0	0	0	0	10	1	0	0	0 0 0 0 0	0	0	1	0
FUEL = 3,			BLEND	T@20V/L =	131.1,		EST.	TANK	FUEL	T@20V/L =	137.5												
1	626	110	121.1	127.5	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	627	101	130.1	136.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	628	98	133.1	139.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	723	110	121.1	127.5	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
5	724	109	122.1	128.5	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	1	0
6	725	97	134.1	140.5	1	0	4	4	0	2	0	0	0	0	10	1	1	0	0 0 0 0 0	0	0	1	0
7	726	102	129.1	135.5	2	0	4	4	0	2	0	0	0	0	10	1	1	0	0 0 0 0 0	0	0	1	0
8	727	107	124.1	130.5	2	0	4	4	0	2	0	0	0	0	10	1	0	0	0 0 0 0 0	0	0	1	0
9	728	106	125.1	131.5	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0	0	0	0	0
10	729	105	126.1	132.5	1	0	4	4	0	2	0	0	0	0	10	0	1	0	0 0 0 0 0	2	2	1	0
FUEL = 4,			BLEND	T@20V/L =	122.8,		EST.	TANK	FUEL	T@20V/L =	136.4												
1	629	107	115.8	129.4	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
2	630	96	126.8	140.4	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
3	701	100	122.8	136.4	1	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
4	702	88	134.8	148.4	2	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	0
5	703	109	113.8	127.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	704	104	118.8	132.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	705	110	112.8	126.4	2	1	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1	1
8	706	107	115.8	129.4	1	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
9	707	105	117.8	131.4	2	0	4	4	0	0	0	0	0	0	8	1	1	0	0 0 0 0 0	0	0	1	0
10	708	104	118.8	132.4	2	2	4	4	0	0	0	0	0	0	8	1	1	0	0 0 0 0 0	0	0	1	0
11	709	92	130.8	144.4	1	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	2	4	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 58 , TOTAL RUNS = 47

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ ST-ART	STALLS, AT-- DR-IVE	DEMERITS Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	OLD F@	TIME	COMMENTS ?
FUEL = 1,	BLEND	T@20V/L =	152.6,	EST. TANK FUEL	T@20V/L =	153.6																	
1	626	110	142.6	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	627	105	147.6	148.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	628	100	152.6	153.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	629	104	148.6	149.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	630	96	156.6	157.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	701	101	151.6	152.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	702	106	146.6	147.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	703	109	143.6	144.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	3	1	0
9	704	109	143.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	713	101	151.6	152.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	1
11	714	101	151.6	152.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	715	105	147.6	148.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	716	99	153.6	154.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 3,	BLEND	T@20V/L =	131.1,	EST. TANK FUEL	T@20V/L =	139.5																	
1	617	107	124.1	132.5	2	0	0	4	0	0	0	6	0	0	10	0	1	8	6 0 0 0 2	0	0	1	0
2	618	109	122.1	130.5	3	0	0	8	0	2	0	0	0	0	10	0	1	4	7 0 0 0 0	0	0	1	1
3	619	87	144.1	152.5	1	0	0	0	0	2	6	6	0	0	14	0	1	8	3 6 0 0 3	0	0	1	1
4	620	109	122.1	130.5	3	0	0	4	0	2	0	6	0	0	12	0	1	8	1 0 0 0 3	0	0	1	0
5	621	110	121.1	129.5	2	0	0	4	0	0	0	0	0	0	4	0	1	4	0 0 0 0 3	0	0	1	0
6	622	102	129.1	137.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
7	623	109	122.1	130.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	624	109	122.1	130.5	1	0	0	0	0	0	0	0	0	0	0	0	1	4	0 0 0 0 0	0	0	1	0
9	625	113	118.1	126.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4,	BLEND	T@20V/L =	122.8,	EST. TANK FUEL	T@20V/L =	137.2																	
1	706	107	115.8	130.2	0	26	0	0	64	0	0	24	0	0	88	3	0	5	3 0 0 0 0	3	1	1	0
2	707	105	117.8	132.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	708	104	118.8	133.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	709	92	130.8	145.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 5,	BLEND	T@20V/L =	112.0,	EST. TANK FUEL	T@20V/L =	133.6																	
1	717	104	108	129.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	718	107	105	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	719	106	106	127.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	720	106	106	127.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	721	110	102	123.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	722	102	110	131.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	723	108	104	125.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	724	107	105	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	725	99	113	134.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	726	105	107	128.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	727	107	105	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	728	106	106	127.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	729	105	107	128.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	730	98	114	135.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	731	87	125	146.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	801	102	110	131.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
17	802	106	106	127.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
18	803	107	105	126.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
19	804	105	107	128.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
20	805	105	107	128.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
21	806	90	122	143.6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 59 , TOTAL RUNS = 34

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #AT-START	STALLS, DRIVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TOTAL	Q#2 OVERALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	IME	CM T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 150.4																							
1	710	104	148.6	146.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
2	711	96	156.6	154.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	712	100	152.6	150.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	713	101	151.6	149.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	714	103	149.6	147.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	715	105	147.6	145.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	716	99	153.6	151.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 2, BLEND T@20V/L = 142.3, EST. TANK FUEL T@20V/L = 145.3																							
1	717	104	138.3	141.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	1	1	0
2	718	107	135.3	138.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	719	106	136.3	139.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	720	106	136.3	139.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	721	110	132.3	135.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	722	102	140.3	143.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	723	110	132.3	135.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 139.0																							
1	626	110	121.1	129.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	627	101	130.1	138.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	628	97	134.1	142.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	629	107	124.1	132.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	630	96	135.1	143.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	701	100	131.1	139.0	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
7	702	88	143.1	151.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	703	96	135.1	143.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	704	109	122.1	130.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
10	724	109	122.1	130.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	2	1	0
11	725	99	132.1	140.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	726	97	134.1	142.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	727	107	124.1	132.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	728	106	125.1	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
15	729	105	126.1	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
16	730	98	133.1	141.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 137.7																							
1	706	107	115.8	130.7	0	1	0	0	32	0	0	0	0	0	32	0	0	5	3 5 0 0 3	3	3	1	1
2	707	105	117.8	132.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	708	104	118.8	133.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	709	107	115.8	130.7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 61 , TOTAL RUNS = 35

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT-- ST-ART	DR-IVE	DEMERITS Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q#11 ACC EPT ABL	Q#12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	OLD F#	THIS WEEK M E	CAR T ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 149.6																								
1	626	110	142.6	139.6	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
2	627	106	146.6	143.6	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
3	628	98	154.6	151.6	0	0	4	0	0	0	0	6	0	0	10	0	1	0	0 0 0 0 0 0	0	0	1	0
4	629	107	145.6	142.6	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
5	630	96	156.6	153.6	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
6	701	101	151.6	148.6	0	0	0	0	0	0	0	6	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
7	702	106	146.6	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	2	3	1	0
8	703	90	162.6	159.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
9	706	107	145.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
10	707	105	147.6	144.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
11	708	104	148.6	145.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
12	709	107	145.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	1	1	1	0
13	717	98	154.6	151.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
14	718	107	145.6	142.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
15	719	106	146.6	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
16	720	106	146.6	143.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
17	721	110	142.6	139.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
18	722	102	150.6	147.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
19	723	108	144.6	141.6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	1	4	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 134.3																								
1	619	109	122.1	125.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
2	620	109	122.1	125.3	0	0	4	0	0	2	0	0	0	0	6	0	1	3	0 0 0 0 0 0	0	0	1	0
3	621	107	124.1	127.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	0	0	1	0
4	622	110	121.1	124.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
5	623	109	122.1	125.3	0	1	4	0	16	2	0	0	0	0	22	0	1	0	3 0 0 0 0 0	0	0	1	0
6	624	109	122.1	125.3	1	0	4	4	0	2	0	0	0	0	10	0	0	0	1 0 0 0 0 0	0	0	1	0
7	625	111	120.1	123.3	2	3	4	8	32	2	0	0	8	0	54	0	0	5	3 4 0 0 0	0	0	1	1
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 128.3																								
1	710	104	118.8	124.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
2	713	101	121.8	127.3	0	0	0	0	0	2	0	0	0	0	2	0	1	0	0 0 0 0 0 0	0	0	1	0
3	714	103	119.8	125.3	0	0	4	0	0	2	0	0	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
4	715	105	117.8	123.3	0	0	4	0	0	2	0	0	0	0	6	0	1	0	0 0 0 0 0 0	0	0	1	0
5	716	99	123.8	129.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	2	1	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 121.8																								
1	727	105	107	116.8	4	1	0	4	0	2	0	0	0	0	6	1	0	5	3 0 0 0 0 0	0	0	1	0
2	728	106	106	115.8	2	0	0	4	16	2	0	0	0	0	22	0	0	5	3 0 0 0 0 0	0	0	1	0
3	729	105	107	116.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	0	0	1	0
4	730	98	114	123.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0 0	2	1	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 62 , TOTAL RUNS = 46

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ ST-ART	AT-- DR-IVE	DEMERITS @03 STRT DIFF	@04 STRT STLL	@05 DRIV STLL	@06 IDLE RUFF	@07 HES-ITZN	@08 LACK POWR	@09 SUR-GE	@10 BACK FIRE	TO-TAL	@02 OVER ALL PERF	@11 ACC EPT ABL	@12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @# 14	OLD F#	MT E?	CM T
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 153.2																							
1	626	110	142.6	143.2	0	3	0	4	32	4	0	0	0	0	40	2	0	5	3 0 0 0 3	0	0	1	0
2	627	106	146.6	147.2	0	3	8	0	64	2	6	0	0	0	80	2	0	5	4 0 0 0 3	0	0	1	0
3	628	92	160.6	161.2	0	3	0	0	32	0	0	0	0	0	32	1	0	5	3 0 0 0 3	0	0	1	0
4	629	107	145.6	146.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	3 7 0 0 0	0	0	0	0
5	630	96	156.6	157.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	3 7 0 0 3	0	0	1	0
6	701	100	152.6	153.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	702	106	146.6	147.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
8	703	106	146.6	147.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	1	3	1	1
9	704	109	143.6	144.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
10	705	110	142.6	143.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
11	706	107	145.6	146.2	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	1	0
12	707	105	147.6	148.2	0	0	4	0	0	0	0	0	0	0	4	1	1	3	4 0 0 0 3	0	0	1	0
13	708	104	148.6	149.2	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	1	0
14	709	107	145.6	146.2	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	1	0
15	710	104	148.6	149.2	0	0	8	0	0	0	0	0	0	0	8	1	1	3	3 6 0 0 3	2	1	1	0
16	711	98	154.6	155.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
17	712	100	152.6	153.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	3 7 0 0 3	0	0	1	0
18	713	101	151.6	152.2	0	0	16	0	0	0	0	0	0	0	16	1	0	3	3 0 0 0 1	0	0	1	0
19	714	103	149.6	150.2	0	0	4	0	0	0	0	0	0	0	4	0	1	3	3 7 0 0 3	0	0	1	0
20	715	105	147.6	148.2	0	0	8	0	0	0	0	0	0	0	8	1	1	3	7 0 0 0 0	0	0	1	0
21	716	99	153.6	154.2	0	0	8	0	0	0	0	0	0	0	8	1	1	3	3 7 0 0 3	0	0	1	0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 146.3																							
1	619	109	122.1	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	620	111	120.1	135.3	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
3	621	110	121.1	136.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	622	110	121.1	136.3	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
5	623	109	122.1	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	624	109	122.1	137.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	625	113	118.1	133.3	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 142.9																							
1	720	106	116.8	136.9	0	0	4	0	0	0	0	0	0	0	4	1	1	3	3 7 0 0 3	0	0	1	0
2	721	110	112.8	132.9	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	1	0
3	722	102	120.8	140.9	0	0	8	0	0	0	0	0	0	0	8	2	1	3	7 0 0 0 3	0	0	1	0
4	723	110	112.8	132.9	0	0	8	0	0	0	0	0	0	0	8	1	1	3	7 0 0 0 3	2	1	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 139.4																							
1	724	109	103	130.4	0	0	8	0	0	0	0	0	0	0	8	1	1	3	7 0 0 0 3	0	0	1	0
2	725	92	120	147.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
3	726	102	110	137.4	0	0	8	0	0	0	0	0	0	0	8	1	1	3	7 0 0 0 3	0	0	1	0
4	727	107	105	132.4	0	0	8	0	0	0	0	0	0	0	8	1	1	3	7 0 0 0 3	0	0	0	0
5	728	106	106	133.4	0	0	8	0	0	0	0	0	0	0	8	0	1	3	7 0 0 0 3	0	0	1	0
6	729	105	107	134.4	0	0	8	0	0	0	0	0	0	0	8	1	1	3	7 0 0 0 3	0	0	1	0
7	730	98	114	141.4	1	0	8	4	0	0	12	12	4	0	40	1	0	3	6 7 0 0 3	0	0	1	0
8	731	98	114	141.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	2	4	1	0
9	801	102	110	137.4	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 0	0	0	1	0
10	802	106	106	133.4	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	1	0
11	803	107	105	132.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
12	804	105	107	134.4	0	0	4	0	0	0	0	0	0	0	4	1	1	3	7 0 0 0 3	0	0	0	0
13	805	105	107	134.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0
14	806	106	106	133.4	0	0	4	0	0	0	0	0	0	0	4	0	1	3	7 0 0 0 3	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 63 , TOTAL RUNS = 49

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# AT-- STARTS	DRIVE	DEMERITS @#3 STRT DIFF	@#4 STRT STLL	@#5 DRIV STLL	@#6 IDLE RUFF	@#7 HESITZN	@#8 LACK POWR	@#9 SURGE	@#10 BACK FIRE	TOTAL	@#2 OVERALL PERF	@11 ACCEPT ABL	@12 PROBLM #	DRIVING CONDITIONS TRAFF,GRD	COMPARE WEEK @#	OLD F#	IMT E ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 152.4																						
1	626	110	142.6	142.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
2	627	106	146.6	146.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
3	628	98	154.6	154.4	0	0	8	0	0	2	0	6	0	0	16	1	1	3	0 0 0 0 0	0	0	1 0
4	629	107	145.6	145.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
5	630	96	156.6	156.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
6	701	100	152.6	152.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	0 0
7	702	106	146.6	146.4	0	0	4	0	0	2	0	6	0	0	12	1	1	3	0 0 0 0 0	0	0	1 0
8	703	109	143.6	143.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
9	704	109	143.6	143.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
10	705	107	145.6	145.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
11	706	107	145.6	145.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
12	707	105	147.6	147.4	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
13	708	104	148.6	148.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
14	709	107	145.6	145.4	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	2	1	1 0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 141.1																						
1	619	109	122.1	132.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
2	620	111	120.1	130.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
3	621	110	121.1	131.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
4	622	110	121.1	131.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
5	623	109	122.1	132.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
6	624	109	122.1	132.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
7	625	113	118.1	128.1	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 137.7																						
1	710	104	118.8	133.7	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
2	711	96	126.8	141.7	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
3	712	100	122.8	137.7	2	0	8	8	0	2	6	6	0	0	30	1	0	3	7 0 0 0 3	0	0	1 0
4	713	101	121.8	136.7	0	0	8	0	0	2	0	6	0	0	16	1	1	0	0 0 0 0 0	0	0	1 0
5	714	103	119.8	134.7	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
6	715	105	117.8	132.7	0	0	4	0	0	2	6	6	0	0	18	0	1	0	0 0 0 0 0	0	0	1 0
7	716	99	123.8	138.7	1	0	8	8	0	4	6	6	0	0	32	1	0	3	7 0 0 0 3	3	1	1 0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 138.2																						
1	717	104	108	134.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 1
2	718	107	105	131.2	1	0	4	4	0	2	0	6	0	0	16	0	1	0	0 0 0 0 0	0	0	1 0
3	719	104	108	134.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
4	720	106	106	132.2	2	0	8	8	0	2	0	6	0	0	24	0	1	4	7 0 0 0 3	0	0	1 0
5	721	110	102	128.2	2	1	8	8	16	2	0	6	0	0	40	0	1	4	7 0 0 0 3	0	0	1 0
6	722	102	110	136.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
7	723	110	102	128.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
8	724	109	103	129.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	2	4	1 0
9	725	97	115	141.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
10	726	102	110	136.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
11	727	105	107	133.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
12	728	104	108	134.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
13	729	105	107	133.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
14	730	98	114	140.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
15	731	98	114	140.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 1
16	901	100	112	138.2	0	0	4	0	0	2	0	6	0	0	12	0	1	0	0 0 0 0 0	0	0	1 0
17	802	103	109	135.2	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
18	803	107	105	131.2	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
19	804	105	107	133.2	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
20	805	105	107	133.2	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
21	806	106	106	132.2	0	0	0	0	0	2	0	6	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 64 , TOTAL RUNS = 45

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, #ST-ART	#AT-DRIVE	DEMERITS Q#3 STRT DIFF	Q#4 STRT STLL	Q#5 DRIV STLL	Q#6 IDLE RUFF	Q#7 HES-ITZN	Q#8 LACK POWR	Q#9 SUR-GE	Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	OLD F#	TIME	CMT ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 150.4																							
1	710	104	148.6	146.4	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
2	711	98	154.6	152.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	712	100	152.6	150.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	713	101	151.6	149.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
5	714	103	149.6	147.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
6	715	105	147.6	145.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
7	716	99	153.6	151.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	1	5	1	1
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 138.4																							
1	623	109	122.1	129.4	0	0	0	0	0	2	12	6	0	0	20	1	1	7	5 0 0 0 3	0	0	1	0
2	624	109	122.1	129.4	0	0	0	0	0	0	6	0	0	0	6	0	1	7	5 0 0 0 3	0	0	1	0
3	625	113	118.1	125.4	0	0	0	0	0	0	6	0	0	0	6	0	1	7	5 0 0 0 3	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 136.0																							
1	626	110	112.8	126.0	0	0	8	0	0	0	0	0	0	0	8	0	1	3	4 7 0 0 3	0	0	1	0
2	627	105	117.8	131.0	0	0	0	0	0	0	6	0	0	0	6	1	1	7	4 5 0 0 3	0	0	1	0
3	628	100	122.8	136.0	0	0	0	0	0	0	6	0	0	0	6	1	1	7	4 5 0 0 3	0	0	1	0
4	629	107	115.8	129.0	0	0	0	0	0	0	6	0	0	0	6	1	1	7	4 5 0 0 3	0	0	1	0
5	630	96	126.8	140.0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
6	701	101	121.8	135.0	0	0	0	0	0	0	6	0	0	0	6	0	1	7	4 5 0 0 3	2	3	1	1
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 131.9																							
1	702	106	106	125.9	1	0	4	4	0	0	0	0	0	0	8	0	1	3	0 0 0 0 3	0	0	1	0
2	703	106	106	125.9	1	0	4	4	0	0	6	0	0	0	14	1	1	7	4 5 0 0 3	0	0	1	0
3	704	109	103	122.9	1	0	4	0	0	0	6	0	0	0	10	1	1	7	4 5 0 0 3	0	0	1	0
4	705	107	105	124.9	0	0	0	0	0	0	6	0	0	0	6	0	1	7	4 5 0 0 3	0	0	1	0
5	706	105	107	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
6	707	105	107	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
7	708	104	108	127.9	0	0	0	0	0	0	6	0	0	0	6	0	1	7	4 5 0 0 3	0	0	1	0
8	709	107	105	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	2	4	1	1
9	717	104	108	127.9	0	0	0	0	0	0	6	0	0	0	6	0	1	7	4 0 0 0 3	0	0	1	0
10	718	104	108	127.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
11	719	97	115	134.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
12	720	106	106	125.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
13	721	110	102	121.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	5 0 0 0 0	0	0	1	0
14	722	102	110	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
15	723	110	102	121.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	3	1	1	1
16	724	109	103	122.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
17	725	99	113	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 0 0 0 3	0	0	1	0
18	726	102	110	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	0	0	1	0
19	727	107	105	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
20	728	106	106	125.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 0	0	0	1	0
21	729	105	107	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
22	730	98	114	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 3	2	5	1	0
23	731	98	114	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 0 0 0 0	0	0	1	0
24	801	86	126	145.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
25	802	106	106	125.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	5 0 0 0 3	0	0	1	0
26	803	107	105	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
27	804	105	107	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
28	805	105	107	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	0	0	1	0
29	806	106	106	125.9	0	0	0	0	0	0	0	0	0	0	0	0	1	7	4 5 0 0 3	2	5	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 65 , TOTAL RUNS = 45

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -# ST-ART	STALLS, -# AT-DRIVE	DEMERITS Q#3 STRT DIFF	DEMERITS Q#4 STRT STLL	DEMERITS Q#5 DRIV STLL	DEMERITS Q#6 IDLE RUFF	DEMERITS Q#7 HES-ITZN	DEMERITS Q#8 LACK POWR	DEMERITS Q#9 SUR-GE	DEMERITS Q#10 BACK FIRE	TO-TAL	Q#2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRD BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q# 14	COMPARE WEEK OLD F#	TMT E	CMT ?
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 139.0																							
1	625	113	118.1	126.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	626	106	125.1	133.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	627	106	125.1	133.0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	628	100	131.1	139.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	629	107	124.1	132.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	630	96	135.1	143.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	701	101	130.1	138.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
8	702	88	143.1	151.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 135.9																							
1	703	109	113.8	126.9	0	0	0	0	0	0	0	0	16	0	16	0	1	0	1 2 0 0 3	0	0	1	1
2	704	104	118.8	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	705	100	122.8	135.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	706	107	115.8	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	707	92	130.8	143.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	708	104	118.8	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	709	92	130.8	143.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1	0
8	731	98	124.8	137.9	0	0	0	0	0	2	6	6	4	0	18	0	0	0	1 2 0 0 3	0	0	1	0
9	801	102	120.8	133.9	0	0	0	0	0	2	6	6	8	0	22	0	0	9	1 2 0 0 3	0	0	1	0
10	802	106	116.8	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	803	106	116.8	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
12	804	104	118.8	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
13	805	101	121.8	134.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
14	806	102	120.8	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 131.9																							
1	709	107	105	124.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	710	98	114	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	713	98	114	133.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	714	103	109	128.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	715	100	112	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	716	99	113	132.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	717	86	126	145.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	4	1	0
8	717	104	108	127.9	0	0	0	0	0	2	6	6	4	0	18	0	0	9	1 2 0 0 3	0	0	1	0
9	718	103	109	128.9	0	0	0	0	0	2	6	6	4	0	18	1	0	8	1 2 0 0 3	0	0	1	0
10	719	106	106	125.9	0	0	0	0	0	2	0	6	0	6	14	0	0	8	1 2 0 0 3	0	0	1	0
11	720	106	106	125.9	0	0	0	0	0	2	0	6	4	6	18	0	0	8	1 2 0 0 3	0	0	1	0
12	721	110	102	121.9	0	0	0	0	0	2	6	6	4	6	24	0	0	0	1 2 0 0 3	0	0	1	1
13	722	102	110	129.9	0	0	0	0	0	2	6	6	4	6	24	1	0	0	1 2 0 0 3	0	0	1	0
14	723	110	102	121.9	0	0	0	0	0	2	6	6	4	6	24	1	0	0	1 2 0 0 3	0	0	1	0
15	724	93	119	138.9	0	0	0	0	0	2	6	6	4	0	18	0	0	0	1 2 0 0 3	3	5	1	1
16	724	109	103	122.9	0	0	0	0	0	2	6	6	4	0	18	0	0	0	1 2 0 0 3	0	0	1	0
17	725	97	115	134.9	0	0	0	0	0	2	6	6	4	0	18	0	0	0	1 2 0 0 3	0	0	1	0
18	726	97	115	134.9	0	0	0	0	0	2	6	6	4	6	24	0	0	0	1 2 0 0 3	0	0	1	0
19	727	105	107	126.9	0	0	0	0	0	2	6	6	4	6	24	0	0	0	1 2 0 0 3	0	0	1	0
20	728	106	106	125.9	0	0	0	0	0	2	6	6	4	6	24	0	0	0	1 2 0 0 3	0	0	1	0
21	729	103	109	128.9	0	0	0	0	0	2	6	6	4	6	24	0	0	0	1 2 0 0 3	0	0	1	0
22	730	98	114	133.9	0	0	0	0	0	2	0	0	0	0	2	0	1	0	1 2 0 0 3	0	0	1	0
23	731	87	125	144.9	0	0	0	0	0	2	0	6	0	6	14	0	1	0	1 2 0 0 3	2	5	1	1

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 66 , TOTAL RUNS = 34

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @# START	STALLS, AT-- DRIVE	@@3 STRT DIFF	@@4 STRT STLL	@@5 DRIV STLL	DEMERITS @@6 IDLE RUFF	@@7 HES-ITIN	@@8 LACK POWR	@@9 SUR-GE	@@10 BACK FIRE	TO-TAL	@@2 OVER ALL PERF	@11 ACC EPT ABL	@12 PRD BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @# 14	COMPARE WEEK OLD F#	IMT E	CM T ?
FUEL = 1,			BLEND T@20V/L = 152.6,				EST. TANK FUEL T@20V/L = 152.0																
1	718	107	145.6	145.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	719	106	146.6	146.0	0	1	0	0	16	0	0	6	0	0	22	1	1	5	5 0 0 0 0	0	0	1	0
3	720	106	146.6	146.0	0	1	0	0	16	0	0	0	0	0	16	0	1	5	5 0 0 0 3	0	0	1	0
4	721	110	142.6	142.0	0	0	0	0	0	0	12	0	0	0	12	1	0	7	1 0 0 0 3	0	0	1	0
5	722	102	150.6	150.0	0	0	0	0	0	0	6	0	0	0	6	1	0	7	1 0 0 0 3	0	0	1	0
6	723	92	160.6	160.0	0	0	0	0	0	0	12	0	0	0	12	2	0	7	1 0 0 0 3	3	5	1	0
FUEL = 3,			BLEND T@20V/L = 131.1,				EST. TANK FUEL T@20V/L = 137.4																
1	627	106	125.1	131.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	628	100	131.1	137.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	629	104	127.1	133.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	630	96	135.1	141.4	2	0	0	4	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
5	701	100	131.1	137.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
FUEL = 4,			BLEND T@20V/L = 122.8,				EST. TANK FUEL T@20V/L = 136.1																
1	702	106	116.8	130.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
2	703	109	113.8	127.1	0	0	4	0	0	0	0	6	0	0	10	0	1	8	5 0 0 0 0	0	0	1	0
3	704	109	113.8	127.1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	705	110	112.8	126.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	706	107	115.8	129.1	0	0	0	0	0	2	0	0	0	0	2	0	1	0	3 0 0 0 0	0	0	1	1
6	707	105	117.8	131.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	708	104	118.8	132.1	0	0	0	0	0	2	0	0	0	0	2	0	1	0	3 0 0 0 0	0	0	1	1
8	709	107	115.8	129.1	0	0	0	0	0	2	0	0	0	0	2	0	1	6	3 0 0 0 0	0	0	1	1
9	710	92	130.8	144.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	3	3	1	1
FUEL = 5,			BLEND T@20V/L = 112.0,				EST. TANK FUEL T@20V/L = 133.0																
1	711	98	114	135.0	0	1	4	0	16	0	6	0	0	0	26	0	1	5	3 0 0 0 0	0	0	1	0
2	712	100	112	133.0	1	0	0	4	0	2	6	6	4	0	22	0	1	7	1 0 0 0 0	0	0	1	0
3	713	101	111	132.0	0	0	0	0	0	2	6	6	0	0	14	0	1	7	3 0 0 0 0	0	0	1	0
4	714	101	111	132.0	0	0	0	0	0	2	6	0	4	0	12	0	1	7	5 0 0 0 0	0	0	1	0
5	715	105	107	128.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	716	99	113	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
7	717	86	126	147.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	0
8	724	109	103	124.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
9	725	97	115	136.0	0	0	0	0	0	0	6	6	0	0	12	0	1	8	1 0 0 0 3	0	0	1	0
10	726	105	107	128.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
11	727	105	107	128.0	1	0	0	4	0	0	0	6	0	0	10	0	1	4	7 0 0 0 3	0	0	1	0
12	628	97	115	136.0	1	0	0	4	0	2	6	6	0	0	18	0	1	4	7 0 0 0 3	0	0	1	0
13	629	107	105	126.0	0	0	0	0	0	2	6	6	0	0	14	0	1	8	5 0 0 0 3	0	0	1	0
14	730	93	119	140.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 69 , TOTAL RUNS = 39

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, @ ST-ART	STALLS, AT-- DR-IVE	DEMERITS Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM #	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK @@ 14	COMPARE WEEK OLD F@ E	TIM ?
FUEL = 1, BLEND T@20V/L = 152.6, EST. TANK FUEL T@20V/L = 152.0																						
1	721	101	151.6	151.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	722	102	150.6	150.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	723	110	142.6	142.0	0	0	0	0	0	2	0	0	0	0	2	0	1	6	7 0 0 0 0	0	0	1 0
FUEL = 3, BLEND T@20V/L = 131.1, EST. TANK FUEL T@20V/L = 141.1																						
1	625	113	118.1	128.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	626	110	121.1	131.1	1	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	0	0	1 0
3	627	106	125.1	135.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
4	628	100	131.1	141.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 1
5	629	107	124.1	134.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
6	630	96	135.1	145.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	701	100	131.1	141.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
8	702	106	125.1	135.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
9	703	109	122.1	132.1	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1 1
10	704	104	127.1	137.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
11	705	110	121.1	131.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
12	706	92	139.1	149.1	2	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	2	3	1 0
FUEL = 4, BLEND T@20V/L = 122.8, EST. TANK FUEL T@20V/L = 139.0																						
1	707	105	117.8	134.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
2	708	104	118.8	135.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	709	107	115.8	132.0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	2	3	1 1
FUEL = 5, BLEND T@20V/L = 112.0, EST. TANK FUEL T@20V/L = 135.9																						
1	710	99	113	136.9	1	0	0	0	0	0	0	0	0	0	0	0	1	4	7 0 0 0 0	0	0	1 0
2	711	93	119	142.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
3	712	98	114	137.9	0	0	0	0	0	0	6	0	0	0	6	0	1	7	7 0 0 0 0	0	0	1 0
4	713	101	111	134.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
5	714	89	123	146.9	2	0	0	4	0	0	0	0	0	0	4	0	1	4	7 0 0 0 0	2	4	1 0
6	715	105	107	130.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
7	716	99	113	136.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
8	720	91	121	144.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
9	724	109	103	126.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
10	725	99	113	136.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
11	728	106	106	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
12	729	105	107	130.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1 0
13	730	98	114	137.9	0	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0
14	731	87	125	148.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
15	801	102	110	133.9	2	0	0	0	0	0	0	6	0	0	6	1	1	3	0 0 0 0 0	3	1	1 0
16	802	106	106	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
17	803	91	121	144.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
18	804	104	108	131.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
19	805	105	107	130.9	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1 0
20	806	106	106	129.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1 0
21	807	91	121	144.9	2	0	4	4	0	0	0	0	0	0	8	0	1	0	0 0 0 0 0	0	0	1 0

CUSTOMER DATA FROM DAILY REPORTS

CAR NO. 70 , TOTAL RUNS = 32

RUN	DATE	AIR TMP	ADJ T@20V/L FRESH FUEL	ADJ T@20V/L TANK FUEL	STALLS, -@ ST-ART	STALLS, AT-- DR-IVE	DEMERITS Q@3 STRT DIFF	Q@4 STRT STLL	Q@5 DRIV STLL	Q@6 IDLE RUFF	Q@7 HES-ITZN	Q@8 LACK POWR	Q@9 SUR-GE	Q@10 BACK FIRE	TO-TAL	Q@2 OVER ALL PERF	Q11 ACC EPT ABL	Q12 PRO BLM @	DRIVING CONDI-TIONS TRAFF,GRD	COMPARE WEEK Q@ 14	COMPARE WEEK OLD F@	T I M E	C M T ?
FUEL = 1,			BLEND T@20V/L = 152.6,				EST. TANK FUEL T@20V/L = 151.2																
1	710	104	148.6	147.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	711	98	154.6	153.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	712	98	154.6	153.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
4	713	101	151.6	150.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
5	714	103	149.6	148.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
6	715	103	149.6	148.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	716	94	158.6	157.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	1	4	1	1
FUEL = 3,			BLEND T@20V/L = 131.1,				EST. TANK FUEL T@20V/L = 134.3																
1	627	106	125.1	128.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	628	100	131.1	134.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
3	629	107	124.1	127.3	0	0	0	0	0	2	0	0	0	0	2	1	1	2	0 0 0 0 0	0	0	1	1
4	630	96	135.1	138.3	0	0	0	0	0	2	0	0	0	0	2	0	1	2	0 0 0 0 0	0	0	1	1
5	701	101	130.1	133.3	0	0	0	0	0	2	0	0	0	0	2	0	1	2	0 0 0 0 0	0	0	1	1
6	702	106	125.1	128.3	0	0	0	0	0	2	0	0	0	0	2	0	1	2	0 0 0 0 0	0	0	1	1
FUEL = 4,			BLEND T@20V/L = 122.8,				EST. TANK FUEL T@20V/L = 129.4																
1	703	106	116.8	123.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
2	704	109	113.8	120.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	705	110	112.8	119.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
4	706	107	115.8	122.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
5	707	104	118.8	125.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0
6	708	104	118.8	125.4	0	0	0	0	0	2	0	0	0	0	2	0	1	2	0 0 0 0 0	0	0	1	1
7	709	92	130.8	137.4	0	0	0	0	0	2	0	0	0	0	2	0	1	2	0 0 0 0 0	1	3	1	1
FUEL = 5,			BLEND T@20V/L = 112.0,				EST. TANK FUEL T@20V/L = 123.4																
1	717	104	108	119.4	0	0	4	0	0	0	0	0	0	0	4	0	1	0	0 0 0 0 0	0	0	1	0
2	718	103	109	120.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
3	719	106	106	117.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
4	720	106	106	117.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
5	721	106	106	117.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
6	722	102	110	121.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
7	723	106	106	117.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
8	724	109	103	114.4	1	0	8	4	0	4	0	0	0	12	28	2	0	1	0 0 0 0 3	1	2	0	1
9	725	97	115	126.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
10	726	105	107	118.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	1
11	727	107	105	116.4	0	0	0	0	0	2	0	0	0	6	8	0	0	0	0 0 0 0 0	0	2	1	1
12	728	89	123	134.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 0 0 0 0	0	0	1	0

APPENDIX 6

PHOENIX CLIMATOLOGICAL DATA

JUNE, JULY & AUGUST 1981

SKY HARBOR INTERNATIONAL AIRPORT

FROM

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

JUN 1981
PHOENIX, ARIZONA
NAT WEATHER SERVICE FCST OFC
SKY HARBOR INTL AIRPORT

Local Climatological Data

MONTHLY SUMMARY

LATITUDE 33 °26 'N LONGITUDE 112 °01 'W ELEVATION (GROUND) 1110 FT. STANDARD TIME USED: MOUNTAIN WBAN #23183

DATE	TEMPERATURE °F MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEW POINT	DEGREE DAYS BASE 65F HEATING (SEASON BEGINS WITH JULY)	COOLING (SEASON BEGINS WITH JAN.)	WEATHER TYPES ON DATES OF OCCURRENCE (1 FOG, 2 HEAVY FOG, 3 THUNDERSTORM, 4 ICE PELLETS, 5 HAIL, 6 GLAZE, 7 DUSTSTORM, 8 SMOKE, HAZE, 9 BLOWING SNOW)	SNOW, ICE PELLETS OR ICE ON GROUND AT 0SAM IN.	PRECIPITATION WATER EQUIVALENT IN.	SNOW, ICE PELLETS IN.	AVG. STATION PRESSURE IN. - - - ELEV. 1107 FEET M.S.L.	WIND RESULTANT DIR.	RESULTANT SPEED M.P.H.	AVERAGE SPEED M.P.H.	FASTEST MILE SPEED M.P.H.	FASTEST MILE DIRECTION	SUNSHINE MINUTES	SUNSHINE PERCENT OF POSSIBLE	SKY COVER TENTHS SUNRISE TO SUNSET	SKY COVER TENTHS MIDNIGHT TO MIDNIGHT	DATE
1	2	3	4	5	6	7A	7B	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	100	74	87	6	49	0	22		0	0	0	28.62	35	1.2	3.7	33	NE/	737	86	8	6	1
2	100	75	88	7	47	0	23		0	0	0	28.58	31	1.6	3.7	14	W/	746	87	7	6	2
3	99	75	87	6	38	0	22		0	0	0	28.53	26	2.3	3.5	22	W/	828	97	1	1	3
4	103	75	89	8	39	0	24		0	0	0	28.53	16	.9	2.5	16	SE/	855	100	0	0	4
5	106	79	93	11	43	0	28		0	0	0	28.57	24	2.1	3.5	21	E/	857	100	0	0	5
6	107	82	95	13	45	0	30		0	0	0	28.61	27	1.6	3.7	17	W/	857	100	0	0	6
7	111	82	97	15	45	0	32		0	0	0	28.61	27	1.2	3.6	18	W/	858	100	0	0	7
8	110	82	96	14	43	0	31		0	0	0	28.61	28	2.0	3.2	21	W/	858	100	0	0	8
9	108	81	95	12	43	0	30		0	0	0	28.55	28	2.9	4.0	20	W/	859	100	0	0	9
10	105	81	93	10	44	0	28		0	0	0	28.54	28	3.3	4.3	17	W/	859	100	0	0	10
11	103	80	92	9	48	0	27		0	0	0	28.57	28	4.5	4.8	20	W/	860	100	0	0	11
12	101	78	90	6	49	0	25		0	0	0	28.57	26	4.5	5.8	23	SW/	860	100	0	0	12
13	99	80	90	6	52	0	25		0	0	0	28.57	26	3.4	6.8	24	W/	860	100	0	0	13
14	99	78	89	5	44	0	24		0	0	0	28.59	26	5.0	5.8	26	W/	861	100	0	0	14
15	100	70+	85+	1	12	0	20		0	0	0	28.75	01	.3	5.6	20	S/	861	100	0	0	15
16	107	71	89	4	25	0	24		0	0	0	28.73	11	4.0	6.0	32	E/	861	100	0	0	16
17	108	80	94	9	34	0	29		0	0	0	28.65	08	.6	4.5	16	S/	862	100	0	0	17
18	110	78	94	9	32	0	29		0	0	0	28.62	26	1.5	4.3	21	NW/	862	100	0	0	18
19	110	80	95	9	36	0	30		0	0	0	28.65	21	2.4	4.8	31	NW/	862	100	0	0	19
20	112	82	97	11	40	0	32		0	0	0	28.64	26	2.1	4.2	23	W/	863	100	0	0	20
21	111	85	98	12	44	0	33		0	0	0	28.63	29	1.8	4.2	32	W/	862	100	0	0	21
22	111	85	98	12	50	0	33		0	0	0	28.60	28	3.2	4.2	23	W/	862	100	0	0	22
23	110	84	97	10	51	0	32		0	0	0	28.57	27	1.2	4.5	18	W/	862	100	0	0	23
24	110	86	98	11	50	0	33		0	0	0	28.62	25	2.1	4.0	22	NW/	862	100	0	1	24
25	114+	89	102+	15	52	0	37		0	0	0	28.67	02	.4	5.6	47	E/	787	91	1	3	25
26	112	90	101	13	56	0	36		0	0	0	28.66	11	4.2	5.3	26	NE/	655	76	3	4	26
27	107	87	97	9	55	0	32		0	0	0	28.59	22	3.0	5.6	25	W/	819	95	3	4	27
28	102	86	94	6	59	0	29		0	T	0	28.65	13	3.6	4.6	35	NE/	587	68	6	6	28
29	108	83	96	8	56	0	31		0	0	0	28.64	26	1.0	4.3	18	W/	836	97	1	2	29
30	96	86	91	2	60	0	26		0	0	0	28.68	13	5.9	6.8	25	SE/	110	13	10	8	30
	SUM	SUM				TOTAL	TOTAL			TOTAL	TOTAL		FOR THE MONTH:					TOTAL	%	SUM	SUM	
	3174	2424				0	957	NUMBER OF DATES		1	0	28.61	25	1.2	4.6	47	E/	24168	FOR	40	41	
	AVG.	AVG.	AVG.	DEP.	AVG.	DEP.	DEP.	PRECIPITATION		DEP.						DATE:	25	POSSIBLE	MONTH	AVG.	AVG.	
	106.0	80.8	93.4	8.9	45	0	269	> .01 INCH	0	-0.12								25745	94	1.3	1.4	
	NUMBER OF DAYS					SEASON TO DATE		SNOW, ICE PELLETS														
	MAXIMUM TEMP.		MINIMUM TEMP.			TOTAL	TOTAL	> 1.0 INCH	0	GREATEST IN 24 HOURS AND DATES								GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE				
	> 90 °	< 32 °	< 32 °	< 0 °		636	1772	THUNDERSTORMS	0	PRECIPITATION		SNOW, ICE PELLETS						0				
	30	0	0	0		DEP.	DEP.	HEAVY FOG	0	T	28	0										
						-916	653	CLEAR 26	PARTLY CLOUDY 2	CLOUDY 2												

+ EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT
+ ALSO ON AN EARLIER DATE, OR DATES.
HEAVY FOG: - VISIBILITY 1/4 MILE OR LESS.
FIGURES FOR WIND DIRECTIONS ARE TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. 00 = CALM.
DATA IN COLS. 8 AND 12-15 ARE BASED ON 7 OR MORE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
FASTEST MILE WIND SPEEDS ARE FASTEST OBSERVED *ONE-MINUTE VALUES* WHEN DIRECTIONS ARE IN TENS OF DEGREES. THE / WITH THE DIRECTION INDICATES PEAK GUST SPEED.
ANY ERRORS DETECTED WILL BE CORRECTED AND CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN THE ANNUAL SUMMARY

AVERAGE TEMP. IS NEW HIGH RECORD FOR JUNE.

SUMMARY BY HOURS

HOUR (LST)	AVERAGES SKY COVER TENTHS	STATION PRESSURE IN.	TEMPERATURE AIR °F	WET BULB °F	DEW PT. °F	RELATIVE HUMIDITY %	RESULTANT WIND SPEED M.P.H.	RESULTANT WIND DIRECTION	RESULTANT WIND SPEED M.P.H.
02	2	28.60	88	63	45	24	2.4	26	9
05	1	28.62	82	62	47	30	2.1	11	.9
08	1	28.68	87	64	47	26	4.9	10	3.7
11	1	28.67	98	67	45	18	5.7	16	.7
14	1	28.62	104	68	43	14	6.9	25	4.2
17	1	28.56	105	68	41	12	7.6	28	5.1
20	2	28.56	101	67	43	15	4.6	26	2.7
23	1	28.59	93	65	46	21	2.3	24	1.4

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

DATE	A.M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	P.M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	DATE
1																									1
2																									2
3																									3
4																									4
5																									5
6																									6
7																									7
8																									8
9																									9
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28		T	T																						28
29																									29
30																									30

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noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATIC CENTER

USCOMM--NOAA--ASHEVILLE 07/31/81 525

JUN 1981 PHOENIX, ARIZONA

OBSERVATIONS AT 3-HOUR INTERVALS

HOUR	SKY COVER	CEILING	VISIBILITY	WEATHER	TEMPERATURE			PRECIP.	WIND	
					AIR °F	WET BULB °F	DEW PT. °F	HRLY. AMT.	DIR	SPEED (KNOTS)
				DAY 01						
02	0		35		81	63	51	35	09	5
05	1		35		78	63	52	43	08	6
08	1		35		92	63	52	35	08	5
11	10		40		98	63	52	26	32	4
14	7		35		97	63	48	19	25	6
17	9		35		100	63	47	17	34	7
20	2		35		98	63	48	20	28	7
23	2		35		85	63	47	27	08	8
				DAY 02						
02	0		35		78	63	51	43	08	6
05	0		40		78	63	51	36	09	5
08	0		40		92	63	50	34	09	5
11	9		40		102	63	47	21	07	7
14	7		40		100	66	47	18	28	7
17	9		40		100	66	47	17	32	5
20	2		35		98	66	48	18	28	3
23	2		35		98	64	47	19	27	3
				DAY 03						
02	2		35		95	66	41	21	34	3
05	2		35		78	58	43	31	08	8
08	1		35		91	62	39	22	11	3
11	10		40		93	62	38	19	26	4
14	7		40		97	60	25	07	25	7
17	9		40		93	64	38	12	26	4
20	2		35		93	64	41	15	25	3
23	2		35		86	66	48	20	00	0
				DAY 04						
02	0		35		82	57	36	18	08	0
05	0		35		77	54	38	28	08	0
08	0		35		93	63	41	22	10	3
11	0		40		102	65	45	16	32	4
14	0		40		102	67	45	11	26	4
17	0		40		102	67	45	12	26	4
20	0		40		98	66	45	13	27	3
23	0		40		93	66	45	13	27	3
				DAY 05						
02	0		35		84	62	46	27	21	3
05	0		35		84	62	46	28	08	3
08	0		35		97	63	43	23	20	4
11	0		35		106	67	47	18	12	5
14	0		35		106	67	47	17	26	6
17	0		35		106	67	37	09	29	7
20	0		35		101	67	46	12	27	5
23	0		35		94	66	46	13	00	0
				DAY 06						
02	0		35		90	65	48	24	08	0
05	0		35		82	63	47	24	08	0
08	0		35		97	63	48	26	09	3
11	0		35		95	66	47	19	04	5
14	0		35		103	67	35	14	25	6
17	0		35		107	66	35	08	26	7
20	0		35		102	66	41	12	27	5
23	0		35		94	66	45	18	08	0
				DAY 07						
02	0		35		88	64	46	22	08	0
05	0		35		83	63	46	30	08	0
08	0		35		88	63	45	25	11	3
11	0		35		101	65	45	17	10	4
14	0		35		108	67	41	11	22	6
17	0		35		109	67	41	10	28	5
20	0		35		103	65	39	11	28	5
23	0		35		93	64	46	16	08	0
				DAY 08						
02	0		35		91	64	45	20	08	0
05	0		40		93	63	47	20	08	0
08	0		40		101	66	48	25	12	3
11	0		40		101	66	43	14	26	4
14	0		40		106	67	41	10	32	5
17	0		40		109	67	39	09	29	6
20	0		40		103	65	39	11	28	5
23	0		35		93	65	45	19	08	0
				DAY 09						
02	0		35		95	63	45	22	08	0
05	0		35		82	63	47	29	08	0
08	0		35		98	65	50	27	08	4
11	0		35		100	68	47	17	29	5
14	0		35		107	67	41	11	27	6
17	0		40		108	65	37	07	28	10
20	0		35		103	65	39	11	28	3
23	0		35		94	65	45	18	00	0
				DAY 10						
02	0		35		98	63	43	19	08	0
05	0		45		81	63	44	27	08	0
08	0		40		87	63	45	22	12	3
11	0		40		98	65	44	16	25	4
14	0		40		103	67	42	12	28	5
17	0		40		107	67	42	12	28	7
20	0		35		102	66	44	14	28	7
23	0		35		93	66	46	21	27	7
				DAY 11						
02	0		35		90	65	51	28	33	3
05	0		45		81	63	51	35	00	0
08	0		40		88	65	51	30	26	3
11	0		40		98	67	46	21	25	4
14	0		40		103	67	45	16	28	5
17	0		40		103	67	42	12	25	6
20	0		40		102	66	44	15	25	3
23	0		35		91	67	52	26	24	4
				DAY 12						
02	0		35		87	65	50	28	28	4
05	0		35		81	63	51	35	03	0
08	0		35		84	65	53	26	02	4
11	0		40		92	67	51	25	29	5
14	0		40		98	67	47	18	26	5
17	0		40		100	67	44	15	22	7
20	0		40		97	67	48	19	25	7
23	0		35		90	65	49	24	26	8
				DAY 13						
02	0		35		83	65	53	36	26	5
05	0		45		81	65	53	36	25	4
08	0		35		88	67	53	37	15	7
11	0		35		95	67	50	22	22	7
14	0		35		95	67	50	19	29	8
17	0		35		98	67	50	22	28	7
20	0		35		98	65	51	28	25	4
23	0		35		88	65	51	28	25	4
				DAY 14						
02	0		35		86	65	53	32	24	3
05	0		45		81	65	53	38	30	3
08	0		35		88	66	54	36	30	4
11	0		35		95	66	51	26	30	5
14	0		35		98	67	49	21	22	6
17	0		35		98	67	49	21	22	6
20	0		35		97	66	51	31	27	5
23	0		35		93	66	52	26	24	4
				DAY 15						
02	0		35		84	63	53	32	01	3
05	0		40		74	49	28	13	26	7
08	0		35		82	52	11	07	05	5
11	0		35		95	54	05	04	05	4
14	0		35		97	59	06	04	21	5
17	0		40		100	59	06	03	18	4
20	0		35		95	58	16	05	29	3
23	0		35		93	56	16	05	02	4
				DAY 16						
02	0		35		78	52	16	00	23	3
05	0		45		73	50	23	15	28	4
08	0		35		88	55	12	05	07	6
11	0		35		95	63	20	06	05	6
14	0		35		105	63	25	06	12	6
17	0		35		107	66	26	06	12	6
20	0		35		103	63	34	09	03	3
23	0		35		91	63	41	17	08	0
				DAY 17						
02	0		35		84	58	36	18	00	0
05	0		45		81	57	36	20	09	3
08	0		35		88	57	36	16	10	3
11	0		35		100	61	37	07	13	5
14	0		35		105	63	28	07	17	5
17	0		35		107	66	30	06	31	4
20	0		35		106	65	32	08	34	4
23	0		35		91	65	48	23	00	0
				DAY 18						
02	0		35		84	58	36	19	26	4
05	0		45		79	59	36	20	09	3
08	0		35		84	59	36	15	09	3
11	0		35		95	62	29	08	16	4
14	0		35		107	65	27	06	26	4
17	0		35		110	66	31	06	29	8
20	0		35		106	63	38	07	27	3
23	0		35		95	63	37	13	00	0
				DAY 19						
02	0		35		95	59	36	17	00	0
05	0		35		83	58	37	20	09	3
08	0		35		88	59	37	18	11	4
11	0		35		101	64	35	10	18	6
14	0		35		109	66	35	08	26	6
17	0		35		110	66	32	07	26	6
20	0		35		105	66	37	10	25	3
23	0		35		95	63	37	13	21	4
				DAY 20						
02	0		35		88	63	48	18	00	0
05	0		35		88	62	48	21	09	3
08	0		35		88	62	48	20	10	4
11	0		35		102	66	39	11	26	5
14	0		35		110	67	35	08	28	6
17	0		35		112	70	43	10	27	6
20	0		35		106	66	44	10	26	3
23	0		35		95	63	41	15	00	0
				DAY 21						
02	0		30		93	63	41	16	00	0
05	0		35		86	63	42	21	12	3
08	0		35		90	63	42	19	12	4
11	0		35		102	66	41	12	26	5
14	0		35		108	70	45	12	29	6
17	0		35		110	70	45	11	29	7
20	0		35		105	70	48	15	25	4
23	0		35		98	67	48	18	00	0
				DAY 22						
02	0		30		93	66	52	25	00	0
05	0		40		86	65	52	25	08	0
08	0		30		102	67	52	26	10	3
11	0		30		103	71	51	18	31	5
14	0		30		109	71	48	13	27	6
17	0		35		110	71	49	13	28	6
20	0		35		105	70	48	15	26	4
23	0		35		97	68	50	20	00	0
				DAY 23						
02	0		35		90	68	52	25	31	3
05	0		40		85	66	54	25	13	3
08	0		35		92	67	54	29	09	3
11	0		35		101	71	54	21	10	4
14	0		30		106	72	50	16	25	6
17	0		35		110	69	44	11	33	5
20	0		40		106	70	48	14	26	5
23	0		35		98	69	51	20	00	0
				DAY 24						
02	0		35		91	66	51	26	26	3
05	0		35		86	65	52	31	09	3
08	0		35		93	67	53	27	10	3
11	0		35		102	71	53	19	28	6
14	0		30		107	70	48	14	22	5
17	0		35		110	69	45	11	27	5
20	0		35		106	70	48	14	25	3
23	0		35		100	68	46	16	00	0
				DAY 25						
02	0	150	35		93	69	52	23	31	3
05	2		35		88	67	54	29	09	3
08	0		35		95	69	55	26	07	4
11	0		30		105	71	52	17	08	6
14	0		30		112	73	52	14	29	6
17	0		45		114	70	42	09	29	6
20	2	250	45		105	71	51	16	11	6
23	2	150	30		98	70	55	24	19	4
				DAY 26						
02	2	150	35		92	69	57	31	14	3
05	2		35		90	69	58	34	10	3
08	0		35		95	71	58	29	09	3
11	0		35		107	73	55	18	16	6
14	0		35		112	74	53	14	14	6
17	0		45		110	71	49	13	07	4
20	2	250	45		105	71	52	17	31	3
23	2	250	35		97	69	53	23	00	0
				DAY 27						
02	5		35		90	68	55	31	20	3
05	3		35		81	68	54	29	10	4
08	0		35		92	69	55	29	14	4
11	0		35		102	72	55	21	22	6
14	0		35		105	72	54	18	29	6
17	0		40		106	73	55	19	26	7
20	0		40		101	71	54	21	24	5
23	0		30		93	70	57	30	15	4
				DAY 28						
02	0	100	35	Fu	89	70	60	38	14	4
05	1	120	35		87	70	61	42	12	3
08	1	250	40		89	70	59	38	27	3
11	5		35		98	72	58	27	17	4
14	5		35		101	73	58	24	19	5
17	5	150	35		98	73	60	28	13	4
20	5		35		91	70	68	33	08	6
23	2		35		86	70	59	36	14	3
				DAY 29						
02	7	120	35		87	69	60	40	08	3
05	7		35		86	69	60	44	08	0
08	7	250	30		89	70	60	38	09	3
11	7		40		99	72	58	26	16	5
14	5		40		105	72	54	18	35	5
17	5		45		107	71	50	15	26	7
20	5		45		104	69	62	19	29	4
23	4		35		96	65	61	16	28	3
				DAY 30						
02	7	140	35		91	66	45	20	23	4
05	9	250	35		82	70	59	33	14	5
08	8	250	30		88	71	62	39	14	12
11	10	120	40		98	73	62	34	10	5
14	10	120	45		94	73	61	31	10	5
17	10	120	40		86	73	61	31	13	7
20	9		40		92	72	62	37	16	6
23	8	140	35		87	72	64	46	14	3

STATION

PHOENIX ARIZONA

YEAR & MONTH

81 06

NOTES

CEILING

UNL - UNLIMITED

WEATHER

+	TORNADO
T	THUNDERSTORM
Q	SQUALL
R	RAIN
RW	RAIN SHOWERS
ZR	FREEZING RAIN
L	DRIZZLE
ZL	FREEZING DRIZZLE
S	SNOW
SP	SNOW PELLETS
IC	ICE CRYSTALS
SW	SNOW SHOWERS
SG	SNOW GRAINS
IP	ICE PELLETS
A	HAIL
F	FOG
IF	ICE FOG
GF	GROUND FOG
BD	BLOWING DUST
BN	BLOWING SAND
BS	BLOWING SNOW
BY	BLOWING SPRAY
K	SMOKE
H	HAZE
D	DUST

WIND

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS, INDICATED IN TENS OF DEGREES FROM TRUE NORTH: I.E., 09 FOR EAST, 18 FOR SOUTH, 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS; MULTIPLY BY 1.15 TO CONVERT TO MILES PER HOUR.

U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC CENTER
FEDERAL BUILDING
ASHEVILLE, N.C. 28801

AN EQUAL OPPORTUNITY EMPLOYER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-210

FIRST CLASS

JULY 1981
PHOENIX, ARIZONA
NAT WEATHER SERVICE FCST OFC
SKY HARBOR INTL AIRPORT

Local Climatological Data

MONTHLY SUMMARY

LATITUDE 33 °26 'N LONGITUDE 112 °01 'W ELEVATION (GROUND) 1110 FT. STANDARD TIME USED: MOUNTAIN WBAN #23183

DATE	TEMPERATURE °F MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEW POINT	DEGREE DAYS BASE 65F HEATING (SEASON BEGINS WITH JULY)	COOLING (SEASON BEGINS WITH JAN.)	WEATHER TYPES ON DATES OF OCCURRENCE (1 FOG 2 HEAVY FOG 3 THUNDERSTORM 4 ICE PELLETS 5 HAIL 6 GLAZE 7 DUSTSTORM 8 SMOKE, HAZE 9 BLOWING SNOW)	SNOW, ICE PELLETS ON ICE ON GROUND AT 0SAM IN.	PRECIPITATION WATER EQUIVALENT IN.	SNOW, ICE PELLETS IN.	AVG. STATION PRESSURE IN. ELEV. 1107 FEET M.S.L.	WIND RESULTANT DIR.	RESULTANT SPEED M.P.H.	AVERAGE SPEED M.P.H.	FASTEST MILE SPEED M.P.H.	FASTEST MILE DIRECTION	SUNSHINE MINUTES	SUNSHINE PERCENT OF POSSIBLE	SKY COVER TENTHS SUNRISE TO SUNSET	SKY COVER TENTHS MIDNIGHT TO MIDNIGHT	DATE
1	2	3	4	5	6	7A	7B	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	104	82	93	4	55	0	28	7	0	0	0	28.68	19	2.1	7.3	43	S	663	77	3	3	1
2	107	79	93	4	49	0	28		0	0	0	28.68	25	1.0	3.6	20	NW	860	100	1	1	2
3	110	86	98	8	63	0	33		0	0	0	28.68	27	3.1	3.3	22	NW	777	90	5	3	3
4	110	88	99	9	48	0	34		0	0	0	28.66	28	1.3	3.6	15	NW	710	83	8	7	4
5	111	86	99	9	53	0	34		0	0	0	28.59	27	3.4	3.7	17	NW	857	100	5	4	5
6	107	89	98	8	56	0	33		0	0	0	28.58	25	2.9	4.9	18	SE	857	100	2	2	6
7	106	87	97	7	61	0	32		0	0	0	28.61	22	3.5	6.3	37	S	793	93	4	5	7
8	105	85	95	4	61	0	30		0	0	0	28.75	04	1.0	5.5	29	NE	729	85	7	9	8
9	108	87	98	7	59	0	33		0	0	0	28.72	25	1.3	4.0	18	E	797	93	1	2	9
10	105	87	96	5	61	0	31		0	T	0	28.70	07	1.2	4.3	23	SE	819	96	3	4	10
11	100	83	92	1	69	0	27	3	0	02	0	28.74	21	2.2	4.6	26	SW	639	75	7	9	11
12	102	81	92	1	67	0	27		0	0	0	28.72	24	2.5	6.2	37	S	673	79	5	6	12
13	102	83	93	2	64	0	28		0	0	0	28.74	14	.9	6.3	24	E	571	67	8	8	13
14	105	84	95	3	62	0	30		0	0	0	28.69	23	1.2	4.8	35	NW	730	86	7	7	14
15	106	78	92	0	64	0	27	3	0	67	0	28.65	24	3.1	6.3	54	S	800	94	4	5	15
16	100	78+	89	-3	62	0	24	3	0	T	0	28.66	12	4.9	6.6	55	E	746	88	3	5	16
17	105	81	93	1	62	0	28		0	0	0	28.66	16	1.4	4.8	31	E	776	92	3	4	17
18	108	86	97	5	61	0	32		0	0	0	28.68	10	.3	4.8	22	NW	846	100	0	0	18
19	107	89	98	6	62	0	33		0	0	0	28.74	27	3.5	4.3	18	NW	846	100	2	3	19
20	106	87	97	5	60	0	32		0	0	0	28.76	21	3.3	5.3	25	S	844	100	6	6	20
21	111	88	100	8	62	0	35		0	T	0	28.69	25	1.5	3.2	47	E	771	91	5	6	21
22	103	88	96	4	61	0	31	3 7	0	0	0	28.67	11	3.8	4.8	45	E	622	74	8	8	22
23	111+	86	99	7	58	0	34		0	0	0	28.64	27	1.4	3.2	17	SW	819	97	1	0	23
24	110	89	100+	8	62	0	35		0	0	0	28.65	04	.6	4.3	17	W	839	100	0	1	24
25	100	89	95	3	63	0	30		0	0	0	28.69	13	5.3	5.6	25	S	838	100	7	6	25
26	106	86	96	4	62	0	31		0	0	0	28.69	22	.6	3.2	17	S	828	99	4	4	26
27	108	87	98	6	63	0	33		0	0	0	28.70	11	1.6	4.0	29	SE	823	99	4	4	27
28	107	85	96	4	60	0	31		0	0	0	28.70	21	.4	3.2	18	NE	775	93	1	2	28
29	106	80	93	2	61	0	28	3	0	.32	0	28.67	18	2.9	5.6	39	SE	767	92	4	5	29
30	99	79	89+	-2	70	0	24	3	0	.13	0	28.71	18	1.0	3.7	14	E	465	56	6	5	30
31	99	89	92	1	68	0	27		0	0	0	28.73	14	2.9	5.6	24	NW	437	53	9	8	31
	SUM 3274	SUM 2628				TOTAL 0	TOTAL 943	NUMBER OF DAYS		TOTAL 1.14	TOTAL 2	28.68	FOR THE MONTH: 20	1.1	4.7	55	E	TOTAL 23317	% FOR 133	SUM 140	SUM	
	AVG. 105.6	AVG. 84.8	AVG. 95.2	DEP. 4.0	AVG. 60	DEP. 0	DEP. 131	PRECIPITATION >.01 INCH 4		DEP. -.35						DATE: 16		POSSIBLE MONTH 26267	39	AVG. 4.3	AVG. 4.5	

NUMBER OF DAYS MAXIMUM TEMP. ≥ 90 °F	≤ 32 °F	MINIMUM TEMP. ≤ 32 °F	≤ 0 °F	SEASON TO DATE TOTAL DEP.	TOTAL DEP.
31	0	0	0	0 2715	784

SNOW, ICE PELLETS >.1.0 INCH 0
THUNDERSTORMS 6
HEAVY FOG 0
CLEAR 12 PARTLY CLOUDY 15 CLOUDY 4

GREATEST IN 24 HOURS AND DATES: PRECIPITATION 67 15-16; SNOW, ICE PELLETS 0

GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE: 0

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT
+ ALSO ON AN EARLIER DATE, OR DATES.
HEAVY FOG: - VISIBILITY 1/4 MILE OR LESS.
FIGURES FOR WIND DIRECTIONS ARE TENS OF DEGREES CLOCKWISE FROM TRUE NORTH, 00 = CALM. DATA IN COLS. 8 AND 12-15 ARE BASED ON 7 OR MORE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS. FASTEST MILE WIND SPEEDS ARE FASTEST OBSERVED ONE-MINUTE VALUES WHEN DIRECTIONS ARE IN TENS OF DEGREES. THE / WITH THE DIRECTION INDICATES PEAK GUST SPEED.
ANY ERRORS DETECTED WILL BE CORRECTED AND CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN THE ANNUAL SUMMARY

SUMMARY BY HOURS

HOUR LOCAL TIME	AVERAGES SKY COVER TENTHS	STATION PRESSURE IN.	TEMPERATURE AIR °F	TEMPERATURE WET BULB °F	TEMPERATURE DEW PT. °F	RELATIVE HUMIDITY %	WIND SPEED M.P.H.	RESULTANT WIND DIRECTION	RESULTANT WIND SPEED M.P.H.
02	5	28.69	89	71	62	42	3.4	11	2.1
05	5	28.70	86	71	62	46	2.4	11	2.3
08	4	28.75	89	72	62	43	4.1	12	2.6
11	5	28.74	97	73	61	32	5.3	20	2.1
14	3	28.68	103	74	58	24	5.9	26	3.4
17	4	28.62	105	74	58	22	7.2	27	5.0
20	5	28.63	100	72	58	26	4.3	25	1.8
23	5	28.67	93	71	60	35	5.3	14	2.7

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

DATE	A.M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	P.M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	DATE
1																									1
2																									2
3																									3
4																									4
5																									5
6																									6
7																									7
8																									8
9																									9
10																									10
11	T	T	T														T		02			T			11
12																									12
13																									13
14																									14
15	T	T																					45	22	15
16																									16
17																									17
18																									18
19																									19
20																									20
21			T	T																					21
22																									22
23																									23
24																									24
25																									25
26																									26
27																									27
28																									28
29																									29
30	.09	.01	02	01	T																		T	32	30
31																									31

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noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATIC CENTER

USCOMM--NOAA--ASHEVILLE 37-31-81 525

JULY 1981 PHOENIX, ARIZONA

OBSERVATIONS AT 3-HOUR INTERVALS

HOUR	SKY COVER	CEILING (HUNDS. OF FT.)	VISIBILITY (MILES)	VISIBILITY (TENTHS)	WEATHER	TEMPERATURE (°F)	WET BULB (°F)	DEW PT. (°F)	REL. HUM. (%)	WIND DIR.	WIND SPEED (KNOTS)
DAY 01											
02	4		35			83	70	53	48	09	5
05	1		35			83	70	53	51	10	4
08	3		35			87	71	53	43	10	6
11	3		35			97	75	56	34	29	6
14	2		35			102	78	58	31	32	5
17	6	4	35		BR	99	78	58	35	31	6
20	2		35			88	74	56	46	26	5
23	2		35			86	74	61	51	26	3
DAY 02											
02	0	UNL	35			87	66	53	31	00	0
05	0	UNL	40			88	66	54	31	00	0
08	0	UNL	35			88	66	52	29	14	5
11	0	UNL	40			98	66	44	18	16	5
14	0	UNL	45			105	66	44	13	32	4
17	0	UNL	45			105	66	44	13	32	5
20	2	UNL	35			101	67	44	14	27	3
23	1	UNL	35			92	67	49	33	25	3
DAY 03											
02	1	UNL	35			88	63	45	22	00	0
05	5	UNL	40			87	62	43	21	00	0
08	5	150	45			90	63	43	19	24	3
11	9	160	40			96	65	46	17	28	4
14	3	150	50			108	67	37	09	26	5
17	4	UNL	50			110	70	46	11	30	5
20	2	UNL	35			105	66	41	11	26	3
23	0	UNL	35			97	65	43	16	26	3
DAY 04											
02	5	UNL	35			91	64	46	21	00	0
05	5	UNL	35			90	64	46	22	00	0
08	1	160	35			92	64	46	23	09	3
11	0	160	35			98	63	43	17	32	4
14	2	UNL	35			106	67	46	13	28	5
17	1	UNL	35			106	67	46	13	28	5
20	1	UNL	35			107	69	47	13	26	3
23	0	UNL	35			100	69	47	16	28	3
DAY 05											
02	3	UNL	35			92	69	55	39	00	0
05	5	UNL	45			86	66	53	32	00	0
08	1	UNL	40			92	69	55	29	00	0
11	2	UNL	40			101	72	55	22	32	4
14	0	UNL	45			108	72	52	18	25	5
17	0	UNL	50			110	72	51	16	28	11
20	2	UNL	35			107	69	49	14	26	3
23	7	UNL	35			100	70	52	30	25	3
DAY 06											
02	0	UNL	35			96	71	57	37	28	4
05	0	UNL	45			90	68	56	32	10	3
08	0	UNL	35			91	69	57	32	09	3
11	2	UNL	40			101	72	56	22	21	5
14	0	UNL	45			106	73	56	19	27	8
17	0	UNL	50			107	74	56	19	25	5
20	2	UNL	35			105	72	56	18	26	3
23	7	UNL	35			99	71	57	25	23	3
DAY 07											
02	3	UNL	35			88	71	62	39	11	3
05	5	UNL	35			88	70	62	41	10	3
08	2	250	35			88	70	62	41	09	3
11	3	250	40			97	73	61	30	27	6
14	3	250	45			102	75	61	26	31	6
17	3	UNL	35			105	75	60	23	34	5
20	5	UNL	35			98	72	60	30	04	4
23	10	70	3		BR	80	72	65	77	19	6
DAY 08											
02	10	250	35			89	71	62	46	12	4
05	9	250	35			88	70	62	45	09	3
08	9	UNL	35			90	72	62	39	14	5
11	7	UNL	40			97	73	61	30	27	6
14	6	250	45			102	75	61	26	31	6
17	6	250	45			105	75	60	23	34	5
20	7	160	35			98	72	60	30	04	4
23	9	160	35			93	71	59	32	10	5
DAY 09											
02	6	UNL	35			91	71	60	35	00	3
05	3	UNL	35			87	71	62	43	00	0
08	3	UNL	40			90	72	62	37	08	3
11	0	UNL	45			100	73	59	26	26	5
14	0	UNL	45			105	74	58	21	27	5
17	1	UNL	40			108	75	58	19	28	5
20	2	UNL	35			105	73	55	19	23	4
23	0	UNL	35			97	72	59	28	10	3
DAY 10											
02	2	UNL	35			92	71	62	36	00	0
05	0	UNL	35			88	71	62	39	00	0
08	1	UNL	40			88	72	63	38	15	3
11	2	UNL	45			98	73	59	26	10	4
14	2	UNL	45			102	73	57	22	19	4
17	5	UNL	35			105	74	58	21	24	5
20	10	140	35			99	74	63	31	14	5
23	10	140	35			91	73	65	42	01	4
DAY 11											
02	10	140	35			95	75	71	63	10	3
05	10	140	35			84	74	70	63	00	0
08	4	250	35			88	74	69	57	25	3
11	7	250	35			97	76	68	44	11	4
14	7	50	35			99	75	65	33	13	5
17	9	250	25			96	76	67	39	25	10
20	10	150	30			94	74	69	61	25	4
23	8	UNL	35			93	74	70	65	23	3
DAY 12											
02	6	UNL	35			93	73	69	63	25	3
05	7	140	35			81	73	69	67	10	3
08	2	UNL	35			86	74	69	61	01	3
11	2	250	35			93	75	67	43	22	5
14	5	UNL	45			99	75	64	32	30	5
17	9	150	45			102	76	63	28	28	7
20	10	140	30			91	73	65	42	22	9
23	8	250	35			86	72	66	51	10	8
DAY 13											
02	8	140	35			88	72	66	53	08	6
05	8	UNL	35			88	72	66	55	13	3
08	9	140	40			88	72	66	53	17	3
11	9	150	45			97	73	65	35	29	5
14	9	250	35			101	73	64	30	27	5
17	9	250	35			102	75	62	27	34	9
20	9	140	35			98	73	63	36	28	5
23	9	140	35			92	74	68	48	08	12
DAY 14											
02	8	UNL	35			88	72	64	45	09	4
05	7	UNL	35			86	71	63	46	09	4
08	7	170	40			86	72	64	49	05	4
11	7	250	45			97	73	61	30	24	4
14	6	250	40			101	73	59	28	25	5
17	6	250	40			104	72	55	20	26	5
20	7	UNL	35			98	73	63	36	28	3
23	7	UNL	35			90	73	65	44	26	4
DAY 15											
02	9	150	35			88	72	65	47	26	3
05	3	UNL	35			85	72	66	53	16	3
08	3	UNL	35			88	73	66	48	17	3
11	4	UNL	45			98	76	66	35	26	6
14	4	UNL	45			104	76	68	32	28	7
17	7	UNL	40			105	74	58	21	32	6
20	7	UNL	40			102	75	61	26	28	4
23	13	50	4		TRW	78	72	70	77	16	12
DAY 16											
02	10	90	35			88	68	62	54	09	10
05	8	UNL	35			78	71	67	67	10	6
08	9	UNL	35			83	72	66	57	09	6
11	3	UNL	35			93	75	63	45	09	5
14	1	250	35			102	78	61	31	27	5
17	4	250	35			98	78	66	39	19	5
20	5	UNL	35			88	71	59	36	16	3
23	5	UNL	35			86	70	58	38	10	5
DAY 17											
02	5	UNL	35			85	71	64	49	09	3
05	3	UNL	35			83	71	65	55	09	3
08	3	UNL	35			85	72	65	51	09	4
11	1	UNL	50			97	73	62	31	18	5
14	1	UNL	50			102	75	61	26	32	6
17	0	250	40			101	75	58	24	27	7
20	0	UNL	40			98	73	61	30	08	5
23	0	UNL	40			94	72	61	33	08	0
DAY 18											
02	2	UNL	35			90	72	64	42	08	3
05	3	UNL	35			87	72	65	48	09	3
08	0	UNL	50			88	73	65	47	11	4
11	0	UNL	45			98	74	63	32	07	5
14	0	UNL	45			102	75	63	26	30	6
17	0	UNL	45			107	77	63	22	31	8
20	0	UNL	45			102	77	65	28	31	5
23	1	UNL	35			97	70	57	26	00	0
DAY 19											
02	5	UNL	35			92	73	59	33	28	3
05	8	UNL	35			88	73	64	42	35	3
08	3	UNL	40			88	73	65	44	28	4
11	1	UNL	45			98	76	67	36	25	4
14	3	UNL	45			106	76	63	26	25	4
17	3	UNL	45			107	75	58	20	26	5
20	2	UNL	35			104	76	63	28	26	4
23	2	UNL	35			98	72	59	36	27	3
DAY 20											
02	9	UNL	12			91	71	60	35	10	10
05	8	UNL	20			88	69	59	38	06	3
08	3	UNL	25			91	71	60	35	12	3
11	1	UNL	35			98	73	60	28	22	6
14	1	UNL	35			104	74	59	23	23	5
17	1	UNL	45			106	75	60	22	26	5
20	1	UNL	35			104	74	59	23	23	3
23	1	UNL	35			99	73	61	29	00	0
DAY 21											
02	6	140	35			96	74	64	35	08	3
05	5	UNL	35			88	75	66	48	00	0
08	5	UNL	45			92	76	66	42	13	4
11	4	UNL	35			102	77	66	31	20	5
14	5	UNL	40			108	77	62	22	31	5
17	0	UNL	45			111	74	55	16	28	5
20	4	UNL	45			106	76	57	20	26	3
23	7	250	35			101	73	59	25	00	0
DAY 22											
02	10	150	10			91	72	62	38	12	6
05	10	250	35			88	71	62	42	10	3
08	9	250	40			91	72	62	38	09	3
11	9	150	40			97	73	62	31	12	5
14	9	150	45			108	74	60	27	09	3
17	9	250	45			103	76	59	23	26	4
20	9	UNL	40			102	74	58	24	24	3
23	9	UNL	35			97	72	60	34	09	3
DAY 23											
02	0	UNL	35			92	72	62	37	00	0
05	0	UNL	35			87	71	62	43	00	0
08	1	UNL	40			91	72	62	38	09	3
11	2	UNL	35			102	72	59	26	26	3
14	2	UNL	40			109	73	59	25	29	5
17	3	UNL	40			111	73	53	15	31	5
20	0	UNL	40			106	71	53	17	28	3
23	0	UNL	35			99	71	57	29	19	3
DAY 24											
02	3	UNL	35			93	72	63	37	09	3
05	3	UNL	35			90	71	63	41	08	3
08	3	UNL	40			93	72	63	37	10	3
11	3	UNL	40			101	74	62	28	12	3
14	3	UNL	40			108	76	61	22	32	5
17	3	UNL	40			110	76	60	20	30	7
20	4	UNL	35			105	75	60	23	24	3
23	2	UNL	35			100	74	60	31	11	3
DAY 25											
02	1	UNL	35			93	74	65	40	09	3
05	1	UNL	35			90	74	65	45	14	4
08	4	UNL	30			92	74	65	42	14	4
11	3	UNL	40			97	73	62	35	12	5
14	3	250	45			97	73	61	30	12	4
17	3	150	55			108	74	60	27	17	3
20	3	UNL	35			98	72	60	32	10	3
23	3	UNL	35			97	71	61	33	11	3
DAY 26											
02	2	UNL	35			89	71	61	39	00	0
05	3	UNL	45			88	70	61	43	11	3
08	3	UNL	40			89	72	64	44	08	3
11	3	UNL	40			98	76	64	33	13	3
14	3	UNL	40			102	76	62	28	12	5
17	3	UNL	40			106	76	61	23	27	5
20	0	UNL	35			102	75	62	27	19	3
23	0	UNL	35			99	74	62	33	28	3
DAY 27											
02	9	160	35			92	73	63	38	00	0
05	8	160	40			90	72	64	42	00	0
08	8	160	40			91	76	66	44	12	3
11	4	UNL	40			101	76	63	29	15	4
14	1	UNL	40			106	77	63	25	27	6
17	2	160	30			108	77	63	23	05	7
20	2	160	20			101	73	64	31	07	3
23	2	160	20			90	72	64	42	14	5
DAY 28											
02	3	UNL	35			88	72	64	44	15	3
05	3	UNL	40			88	71	63	46	30	3
08	3	UNL	25			92	72	63	42	00	3
11	3	UNL	30			97	74	63	33	16	3
14	3	UNL	30			105	76	64	29	29	4
17	3	UNL	35			107	76	66	29	31	4
20	3	UNL	35			98	72	65	38	02	4
23	3	UNL	35			88	71	67	57	27	3
DAY 29											
02	3	UNL	35			92	71	60	30	00	0
05	3	UNL	40			89	72	63	42	00	0
08	3	UNL	25			90	73	65	44	13	3
11	3	UNL	25			98	76	62	31	25	4
14	3	UNL	20			103	78	60	26	26	4
17	3	UNL	10			106	76	61	23	27	5
20	3	UNL	10			103	73	57	23	25	3
23	3	UNL	35		TRW	86	72	65	50	14	20
DAY 30											
02	10	60	20		FU	80	76	74	82	09	6
05	9	150	35			80	75	73	79	13	5
08	9	130	45			81	75	72	74	27	3
11	9	130	25			97	76	72	61	20	4
14	9	130	25			98	75	69	57	22	4
17	3	UNL	35			99	76	66	54	28	4
20	3	UNL	35			98	75	65	56	00	3
23	3	UNL	35			92	76	70	69	00	0
DAY 31											
02	8	70	25			95	76	70	54	12	5
05	8	120	35			88	76	69	59	16	4
08	10	120	40			88	76	68	55	16	4
11	10	140	35			95	76	68	44	16	4
14	6	140	40			99	77	68	37	16	5
17	10	140	35			96	78	68	46	16	4
20	10	140	35			91	75	68	57	32	8
23	10	250	35			86	76	68	65	39	3

STATION

PHOENIX ARIZONA

YEAR & MONTH

81 07

NOTES

CEILING

UNL INDICATES UNLIMITED

WEATHER

+	TORNADO
T	THUNDERSTORM
Q	SQUALL
R	RAIN
RW	RAIN SHOWERS
ZR	FREEZING RAIN
L	DRIZZLE
ZL	FREEZING DRIZZLE
S	SNOW
SP	SNOW PELLETS
IC	ICE CRYSTALS
SW	SNOW SHOWERS
SG	SNOW GRAINS
IP	ICE PELLETS
A	HAIL
F	FOG
IF	ICE FOG
GF	GROUND FOG
BD	BLOWING DUST
BN	BLOWING SAND
BS	BLOWING SNOW
BY	BLOWING SPRAY
K	SMOKE
H	HAZE
D	DUST

WIND

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS, INDICATED IN TENS OF DEGREES FROM TRUE NORTH: I.E., 09 FOR EAST, 18 FOR SOUTH, 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

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U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC CENTER
FEDERAL BUILDING
ASHEVILLE, N.C. 28801

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POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-210

FIRST CLASS

AUG 1981
PHOENIX, ARIZONA
NAT WEATHER SERVICE FCST OFC
SKY HARBOR INTL AIRPORT

Local Climatological Data

MONTHLY SUMMARY

LATITUDE 33 °26 'N LONGITUDE 112 °01 'W ELEVATION (GROUND) 1110 FT. STANDARD TIME USED: MOUNTAIN WBAN #23183

DATE	TEMPERATURE °F MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEW POINT	DEGREE DAYS BASE 65F HEATING (SEASON BEGINS WITH JULY)	COOLING (SEASON BEGINS WITH JAN.)	WEATHER TYPES OR DATES OF OCCURRENCE (1 FOG, 2 HEAVY FOG, 3 THUNDERSTORM, 4 ICE PELLETS, 5 HAIL, 6 GLAZE, 7 DUSTSTORM, 8 SMOKE, HAZE, BLOWING SNOW)	SNOW, ICE PELLETS OR ICE ON GROUND AT 0SAM IN.	PRECIPITATION WATER EQUIVALENT IN	SNOW, ICE PELLETS IN.	AVG. STATION PRESSURE IN. ELEV. 1107 FEET M.S.L.	WIND RESULTANT DIR.	RESULTANT SPEED M.P.H.	AVERAGE SPEED M.P.H.	FASTEST MILE SPEED M.P.H.	FASTEST MILE DIRECTION	SUNSHINE MINUTES	SUNSHINE PERCENT OF POSSIBLE	SKY COVER TENTHS SUNRISE TO SUNSET	SKY COVER TENTHS MIDNIGHT TO MIDNIGHT	DATE
1	103	85	94	3	68	0	29		0	0	0	28.75	33	.2	3.0	22	NE/	634	77	4	6	1
2	107	86	97	6	63	0	32		0	0	0	28.68	26	.8	3.9	13	W/	818	99	4	3	2
3	108	85	97	6	53	0	32		0	0	0	28.60	22	.6	2.7	18	E/	824	100	4	2	3
4	106	85	96	5	54	0	31		0	0	0	28.63	17	.6	2.5	15	W/	657	80	8	6	4
5	106	84	95	4	57	0	30		0	T	0	28.71	25	2.4	3.2	14	W/	399	49	7	6	5
6	108	88	98	8	59	0	33		0	0	0	28.72	24	2.1	4.0	18	W/	474	58	8	8	6
7	107	88	98	8	64	0	33	3 7	0	0	0	28.69	11	1.5	6.3	39	E/	793	97	3	4	7
8	107	83	95	5	62	0	30	3	0	.02	0	28.69	14	5.3	7.2	32	E/	706	86	2	4	8
9	107	87	97	7	57	0	32		0	0	0	28.69	11	1.8	4.6	16	SE/	815	100	0	1	9
10	106	85	96	6	59	0	31		0	0	0	28.76	08	1.8	5.2	36	S/	520	64	6	5	10
11	99	77	88	-2	59	0	23	3	0	T	0	28.78	07	3.0	4.6	25	N/	532	66	4	4	11
12	102	77	90	0	59	0	25	3	0	.09	0	28.64	13	2.7	5.0	35	SE/	661	82	5	5	12
13	98	74°	86°	-3	61	0	21		0	T	0	28.71	17	2.4	3.9	17	S/	431	53	6	7	13
14	102	80	91	2	59	0	26		0	0	0	28.79	27	1.9	5.5	32	W/	720	89	3	4	14
15	102	79	91	2	59	0	26		0	0	0	28.78	24	2.7	4.0	14	NW/	804	100	2	1	15
16	105	82	94	5	56	0	29		0	0	0	28.67	14	.9	3.5	12	SW/	802	100	0	0	16
17	108	81	95	6	56	0	30		0	0	0	28.60	05	.8	2.2	14	S/	788	98	0	1	17
18	107	85	96	7	56	0	31		0	0	0	28.65	06	.7	4.0	14	NE/	633	79	2	3	18
19	106	87	97	8	57	0	32		0	0	0	28.69	05	.3	2.0	10	SW/	761	95	2	1	19
20	111	87	99	10	57	0	34		0	0	0	28.65	14	2.2	3.0	23	SE/	795	100	0	0	20
21	110	88	99	11	50	0	34		0	0	0	28.62	12	5.1	7.1	26	SE/	794	100	0	0	21
22	106	87	97	9	60	0	32		0	0	0	28.66	28	2.8	8.3	28	SW/	603	76	3	3	22
23	108	86	97	9	62	0	32		0	0	0	28.63	28	1.5	4.6	16	W/	789	100	0	1	23
24	112	86	99	11	58	0	34		0	0	0	28.60	10	5.5	6.6	20	E/	743	94	2	2	24
25	111	89	100	12	56	0	35		0	0	0	28.65	06	1.3	5.5	18	N/	697	89	2	4	25
26	112	86	99	11	56	0	34		0	0	0	28.60	31	1.9	5.6	24	NE/	739	94	2	3	26
27	113	86	100	12	55	0	35		0	0	0	28.54	10	5.3	6.8	30	SE/	782	100	1	2	27
28	111	88	100	12	55	0	35		0	0	0	28.56	09	6.4	8.2	28	E/	780	100	0	1	28
29	113°	90	102°	15	54	0	37		0	0	0	28.56	10	3.6	4.6	20	E/	778	100	0	0	29
30	108	88	98	11	59	0	33		0	0	0	28.54	18	2.0	5.5	29	S/	715	92	4	4	30
31	103	86	95	8	66	0	30		0	0	0	28.60	17	.6	3.9	29	E/	768	99	1	1	31
	SUM	SUM				TOTAL	TOTAL			TOTAL	TOTAL		FOR THE MONTH:					TOTAL	%	SUM	SUM	
	3312	2625				0	961	NUMBER OF DAYS		.11	0	28.66	12	1.1	4.7	35	E/	21755	FOR	85	93	
	AVG.	AVG.	AVG.	DEP.	AVG.	DEP.	DEP.	PRECIPITATION		DEP.							DATE: 07	POSSIBLE	MONTH	AVG.	AVG.	
	106.8	84.7	95.8	6.7	58	0	214	.01 INCH	2	-1.11								24864	87	2.7	3.0	

SEASON TO DATE	TOTAL	TOTAL
SNOW, ICE PELLETS		
1.0 INCH	0	
THUNDERSTORMS	4	
HEAVY FOG	0	
CLEAR 20	PARTLY CLOUDY 9	CLOUDY 2

NUMBER OF DAYS	MAXIMUM TEMP.	MINIMUM TEMP.			TOTAL	TOTAL
	≥ 90°	≤ 32°	≤ 32°	< 0°	0	3675
					DEP.	DEP.
31	0	0	0	0	0	598

GREATEST IN 24 HOURS AND DATES		GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE
PRECIPITATION	SNOW, ICE PELLETS	
.09 | 12	0	0

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT
• ALSO ON AN EARLIER DATE, OR DATES.
HEAVY FOG: - VISIBILITY 1/4 MILE OR LESS.
FIGURES FOR WIND DIRECTIONS ARE TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. 00 = CALM.
DATA IN COLS. 6 AND 12-15 ARE BASED ON 7 OR MORE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
FASTEST MILE WIND SPEEDS ARE FASTEST OBSERVED ONE-MINUTE VALUES WHEN DIRECTIONS ARE IN TENS OF DEGREES. THE / WITH THE DIRECTION INDICATES PEAK GUST SPEED.
ANY ERRORS DETECTED WILL BE CORRECTED AND CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN THE ANNUAL SUMMARY

AVERAGE TEMPERATURE IS NEW RECORD HIGH FOR AUGUST.

SUMMARY BY HOURS

HOUR LOCAL TIME	AVERAGES SKY COVER TENTHS	STATION PRESSURE IN.	TEMPERATURE AIR °F	TEMPERATURE WET BULB °F	TEMPERATURE DEW PT. °F	RELATIVE HUMIDITY %	WIND SPEED M.P.H.	RESULTANT WIND DIRECTION	RESULTANT WIND SPEED M.P.H.
02	3	28.66	91	70	59	35	2.9	06	3
05	3	28.68	86	69	60	42	2.7	11	1.9
08	3	28.72	89	70	60	40	4.6	10	3.9
11	3	28.72	98	73	60	29	6.3	13	3.8
14	2	28.66	104	74	57	22	6.5	20	2.0
17	2	28.59	106	73	56	19	6.0	28	1.7
20	4	28.61	100	72	56	24	5.9	34	1.0
23	4	28.64	94	71	58	30	3.0	10	1.2

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

DAY	A.M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	P.M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	DAY
1																									1
2																									2
3																									3
4																									4
5								T	T																5
6																									6
7																									7
8			.32	T																	T	T			8
9																									9
10																									10
11					T	T	T	T																	11
12												T	T						.07	01	T	.01	T		12
13																									13
14																									14
15																									15
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27																									27
28																									28
29																									29
30																									30
31																									31

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I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801.

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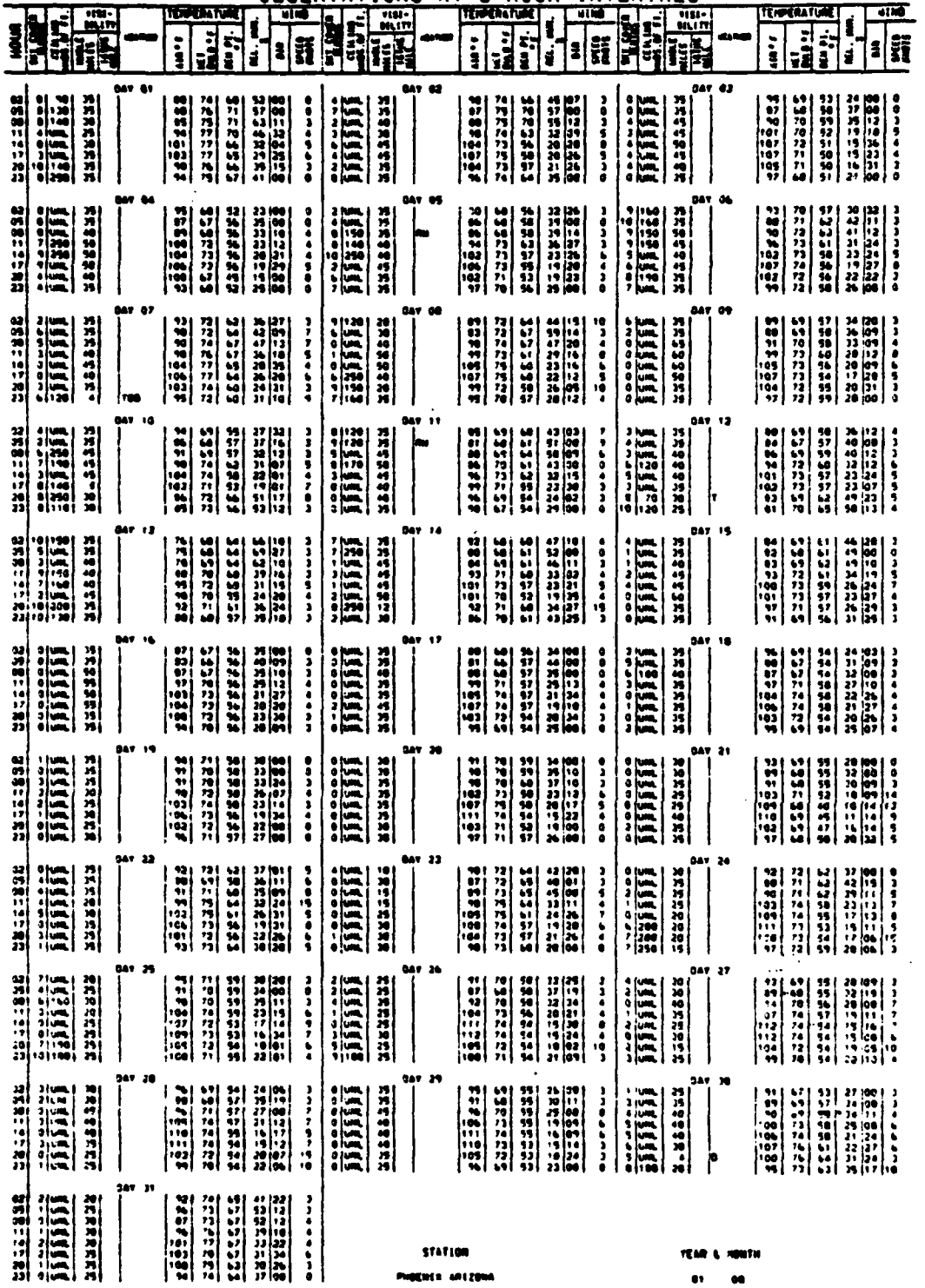
Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATIC CENTER

JSCOMM--NOAA--ASHEVILLE 09/11/81 525

OBSERVATIONS AT 3-HOUR INTERVALS



NOTES

CEILING

UNL INDICATES UNLIMITED

WEATHER

+ TORNADO
T THUNDERSTORM
G SQUALL
R RAIN
RW RAIN SHOWERS
ZR FREEZING RAIN
L DRIZZLE
ZL FREEZING DRIZZLE
S SNOW
SP SNOW PELLETS
IC ICE CRYSTALS
SW SNOW SHOWERS
SG SNOW GRAINS
IP ICE PELLETS
A HAIL
F FOG
IF ICE FOG
GF GROUND FOG
BD BLOWING DUST
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BS BLOWING SNOW
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K SMOKE
H HAZE
D DUST

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DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS, INDICATED IN TENS OF DEGREES FROM TRUE NORTH: I.E., 09 FOR EAST, 18 FOR SOUTH, 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

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PHOENIX ARIZONA

YEAR & MONTH

81 08

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