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HIGHWAY FUEL CONSUMPTION COMPUTER MODEL (VERSION I)

H. H. Gould
A. C. Malliaris

APRIL 1974

FINAL REPORT

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16. Abstract

A Highway Fuel Consumption Computer Model is given. The model allows the computation of fuel consumption of a highway vehicle class as a function of time. The model is of the initial value (in this case initial inventory) and lumped parameter type. Parameters included in the analysis are (a) vehicle population in the initial year by fuel economy category and age, (b) the miles driven as a function of age, (c) vehicle survival as a function of age, (d) projections of vehicle populations as a function of time, and (e) the projected fractional mix, by fuel categories, of new vehicles introduced in the vehicle population.

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PREFACE

The Transportation Systems Center of the U. S. Department of Transportation performs studies for the Department related to the usage, and the possible conservation, of fuel by the the transportation sector. The computer model described in this report provides a tool for determining the impact changes in the mix (by fuel consumption category) of new vehicles that are introduced yearly would have on total fuel consumption.

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1. INTRODUCTION

The Highway Fuel Consumption Computer Model computes the fuel consumption of a highway vehicle class as a function of time (years) given:

(a) the distribution of the vehicle population in the initial year by fuel economy category and age,

(b) the vehicle miles driven per year as a function of vehicle age,

(c) the survival functions of the vehicles as a function of age,

(d) the projected vehicle population (or projected vehicle miles) as a function of time, and

(e) the projected fractional mix, by fuel categories, of the new cars to be added to the vehicle population during each projected year.

The computation is of the "lumped" parameter type. All vehicles added to the population are added on the first day of the year, and all vehicles removed from the population are removed on the last day of the year.

The computer program should estimate well, on the average, the sensitivity of total fuel consumption to changes in the fuel economies of new cars introduced into the vehicle population and the effect of the existing inventory of vehicles on fuel consumption. However, the computed values for the new cars that are added in a given year should be used with caution because of the assumptions inherent in the mathematical model and the availability of precise input data.

2. ANALYSIS

The analysis consists of three major parts:

(a) The assignment of the initial conditions and assumed parameters governing the vehicle population.

(b) The computation of the distribution of the vehicle populations for each consecutive year.

(c) The computation of the fuel consumption of each group of vehicles of a given age and fuel consumption category in any given year, and the summarization of vehicle population distributions and fuel consumption as a function of time.

Let i = year under consideration

j = fuel consumption category

k = age of vehicle

N_{ijk} = number of vehicles in year i, of fuel category j, and age k

N_i' = new vehicles in year i (0-1 yr. old)

C_j = fuel consumption for a category j vehicle, gal./mi.

M_{ik} = miles per year for vehicle of age k during year i

S_{jk} = fraction of cars of fuel category j that survives from age k into age (k+1)

F_{ij} = fuel consumption during year i by all category j vehicles

R_{ijk} = arbitrary retirement factor for a given year, fuel category and age. Factor ranges between zero and one, inclusively, and is applied to "survived" vehicles prior to transfer to the next year

Q_i = total number of vehicles in year i

F_i' = fuel consumption, total during year i

X_{ij} = fraction of new vehicles in year i of fuel category j.

The fuel consumption of all vehicles in fuel category j and during the year i is from the above definitions:

$$F_{ij} = \sum_{k=2}^{k_{max}} N_{ijk} C_j M_{ik} + N_{ij1} C_j M_{i1} \tag{1}$$

and

$$F_i' = \sum_j F_{ij} \tag{2}$$

Also, from Figure 1,

$$N_{ijk} = S_{j,k-1} N_{i-1,j,k-1}\left(1-R_{i-1,j,k-1}\right) \tag{3}$$

where k = 2, 3, ...

From the problem definition N_{1jk} is given for all j and k, and N_{ij1} for all j and all i greater than one are solved from:

$$Q_i - \sum_j \sum_{k=2}^{k_{max}} \left\{S_{j,k-1} N_{i-1,j,k-1}\left(1-R_{i-1,j,k-1}\right)\right\} = \sum_j N_{ij1} = N_i' \tag{4}$$

Equation (4) states that the total vehicle population for the year i, less the vehicles carried over from the year (i-1), equals the deficiency of vehicles to be made up with new vehicles (age 0-1, or k=1) summed over all fuel categories, $\sum_j N_{ij1}$. By specifying X_{ij} and by multiplying it by N_i' the new vehicles in each year defined by fuel category are obtained, e.g.,

$$N_{ij1} = X_{ij} N'_i$$

$$\text{where } \sum_j X_{ij} = 1 \ .$$

The above corresponds to filling in the elements in the first column (k=1) of each of the matrices, other than the matrix for the initial year, shown in Figure 1.

As indicated by equation (1) the vehicle-miles for the vehicles in the matric element N(i,j,k) is obtained by multiplying this number of vehicles by the corresponding function M = M(i,k). Also, the fuel consumed by the vehicles in matrix element N(i,j,k) is obtained by multiplying the above product by the corresponding C_j. Typical values (for passenger vehicles) of M, and vehicle decay rates required for the computation of the survival probabilities (Ref. 1, Table B-2) are:

Age	Vehicle-Miles/Year (000)	Vehicle Decay Rate (Percent in use)
0-1	17.5	100
1-2	16.1	99.5
2-3	13.2	99.0
3-4	11.4	98.5
4-5	11.0	97.7
5-6	10.0	94.8
6-7	9.6	88.9
7-8	8.6	79.7
8-9	8.0	67.2
9-10	7.2	52.9
10-11	6.5	39.5
11-12	6.0	28.5
12-13	5.5	20.2
13-14	5.1	13.7
14-15	5.0	8.5
15-16	4.7	5.0
16-17	4.4	2.0
17-18	4.1	1.5
18-19	3.8	0.7
19-20	3.5	0.2

and the C_j are discrete values corresponding to typical miles/gallon values for vehicles. The survival factor S_{jk} is computed, if required, from the third column above, e.g.:

$$S_{jk} = \frac{\text{\% in use of age } (k+1)}{\text{\% in use of age } k}$$

The program also has the capability to compute the fuel consumption when a projection of anticipated total vehicle-miles of travel as a function of time, V_i, rather than the projected total vehicle population as a function of time is given. In this case the number of new vehicles to be added each year is computed from a modified equation (4), namely

$$V_i - \sum_{k=2}^{k_{max}} \sum_j \left\{ S_{j,k-1} N_{i-1,j,k} \left(1 - R_{i-1,j,k-1}\right) \right\} M_{ik} = M_{i1} \sum_j N_{ij1} = V' \tag{5}$$

and

$$N_{ij1} = \left(\frac{V'}{M_{i1}}\right) X_{ij} \tag{6}$$

If both vehicle-miles and vehicle population are given then function $M_{ik} = M(i,k) = M_i(k)$ is internally adjusted by shifting the curve $M = M_i(k)$ upward or downward, without change in the shape of the curve, by a constant

$$(\text{Const.})_i = \frac{V_i - \sum_k \sum_j N_{ijk} A_{ik}}{\sum_j \sum_k N_{ijk}} - M_{1,1} \tag{7}$$

$$\text{where } A_k = M_{1k} - M_{1,1} \tag{8}$$

$$\text{and } M_{ik} = M_{1k} + (\text{Const.})_i \tag{9}$$

TABLE 2. ASSUMED DISTRIBUTION, BY AGE, OF VEHICLES IN INITIAL YEAR (1972) (ALL VEHICLES ARE LUMPED IN A 13 mpg FUEL CATEGORY)

AGE	NUMBER OF VEHICLES (000,000)
1	8.4
2	9.7
3	9.7
4	10.
5	9.4
6	8.2
7	8.7
8	8.2
9	6.4
10	5.2
11	3.6
12	2.
13	1.5
14	0.8
15	0.4
16	0.6
17	0.5
18	0.5
19	0.5
20	0.3

TABLE 3. PASSENGER CAR FUEL CONSUMPTION, TOTAL, 1972-2000

RUN	GALLONS x 10^{-13}
1,2,3	.3258
4	.2606
5	.2671
6	.2372
7	.2188
8	.2701
9	.2756
10	.2501
11	.2344

TABLE 4. DEFINITION OF CAR MIXES AND SCENARIOS FOR RUNS 1-11

4(a). Definition of Car Mixes

FUEL CATEGORY NO.	MPG	MIX I (FRACTIONAL DISTRIBUTION)	MIX II (FRACTIONAL DISTRIBUTION)	MIX III (FRACTIONAL DISTRIBUTION)	MIX IV (FRACTIONAL DISTRIBUTION)	MIX V (FRACTIONAL DISTRIBUTION)	MIX VI (FRACTIONAL DISTRIBUTION)
1	10		0.25		0.10		
2	12		0.50		0.25		
3	13	1.0					
4	14		0.10	0.25	0.05	0.10	0.10
5	17		0.10	0.50	0.05	0.25	0.25
6	20			0.10		0.05	0.05
7	24		0.05	0.10	0.55	0.60	0.05
8	28						
9	34			0.05			0.55
			AVE. MPG.	AVE. MPG.	AVE. MPG	AVE. MPG	AVE. MPG.
			12.2	17.3	16.6	20.3	23.5

4(b). Scenarios for Runs 1-11

RUN NUMBER	MIX I (13 MPG. AVE.)	MIX II (12.2 MPG. AVE.)	MIX III (17.3 MPG. AVE.)	MIX IV (16.6 MPG. AVE.)	MIX V (20.3 MPG. AVE.)	MIX VI (23.5 MPG. AVE.)	TOTAL FUEL CONSUMPTION 1972-2000 GALLONS X 10^{-13}
1,2,3	1972	1973-2000					0.3258
4	1972	1973-1978	1979-2000				0.2606
5	1972	1973-1978		1979-2000			0.2671
6	1972	1973-1978			1979-2000		0.2372
7	1972	1973-1978				1979-2000	0.2188
8	1972	1973-1981	1982-2000				0.2701
9	1972	1973-1981		1982-2000			0.2756
10	1972	1973-1981			1982-2000		0.2501
11	1972	1973-1981				1982-2000	0.2344

[For example, in run #4 the initial inventory of cars is grouped in Category 3 (13 mpg); new cars during the years 1973-1978 are added in accordance with Mix II and during the years 1979-2000 new cars are added in accordance with Mix III. The total fuel used from 1972 to 2000 is 2606 billion gallons in the sample run #4.]

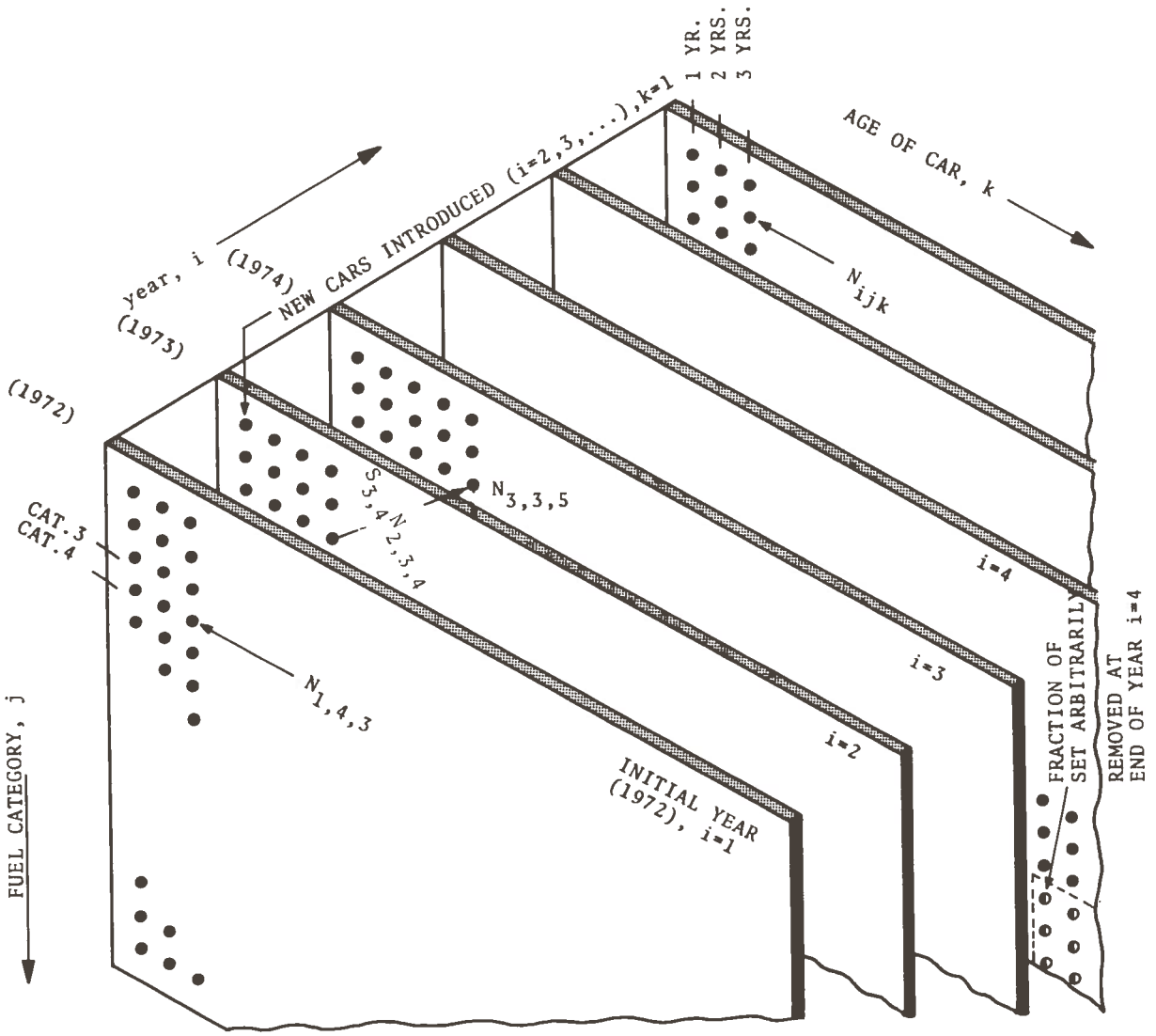


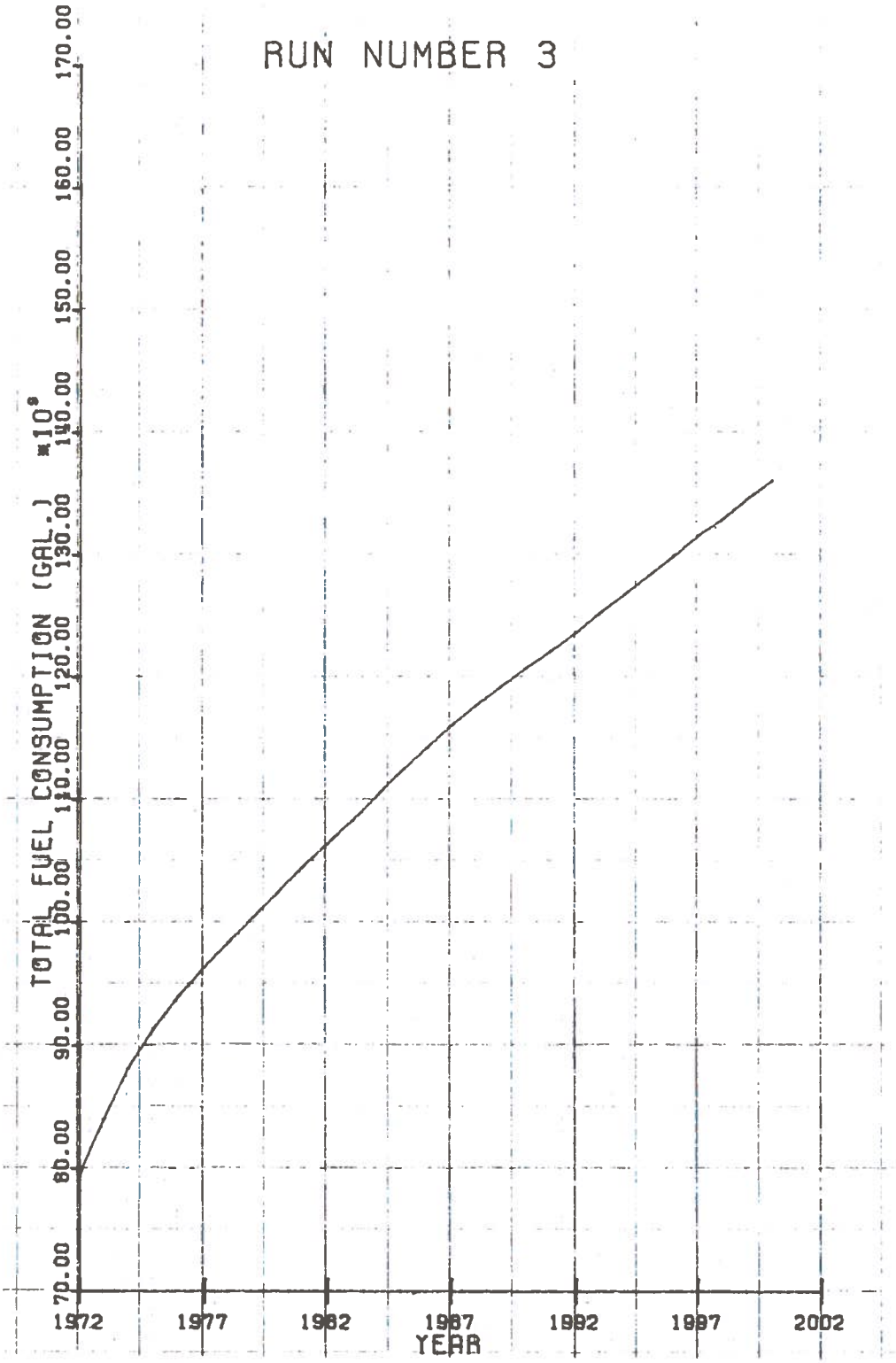
Figure 1. Development of Vehicle Population Matrixes

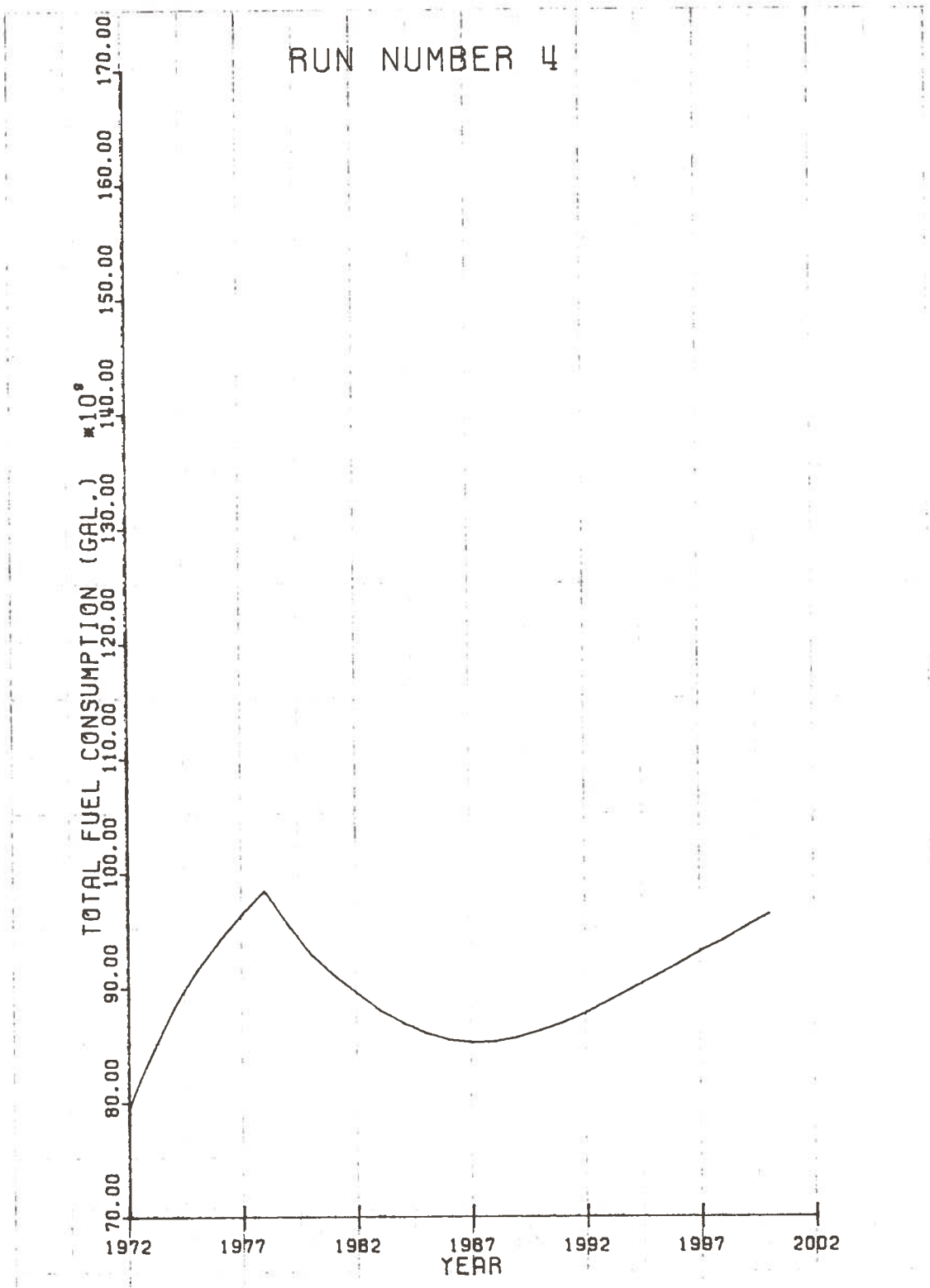
Figure 2

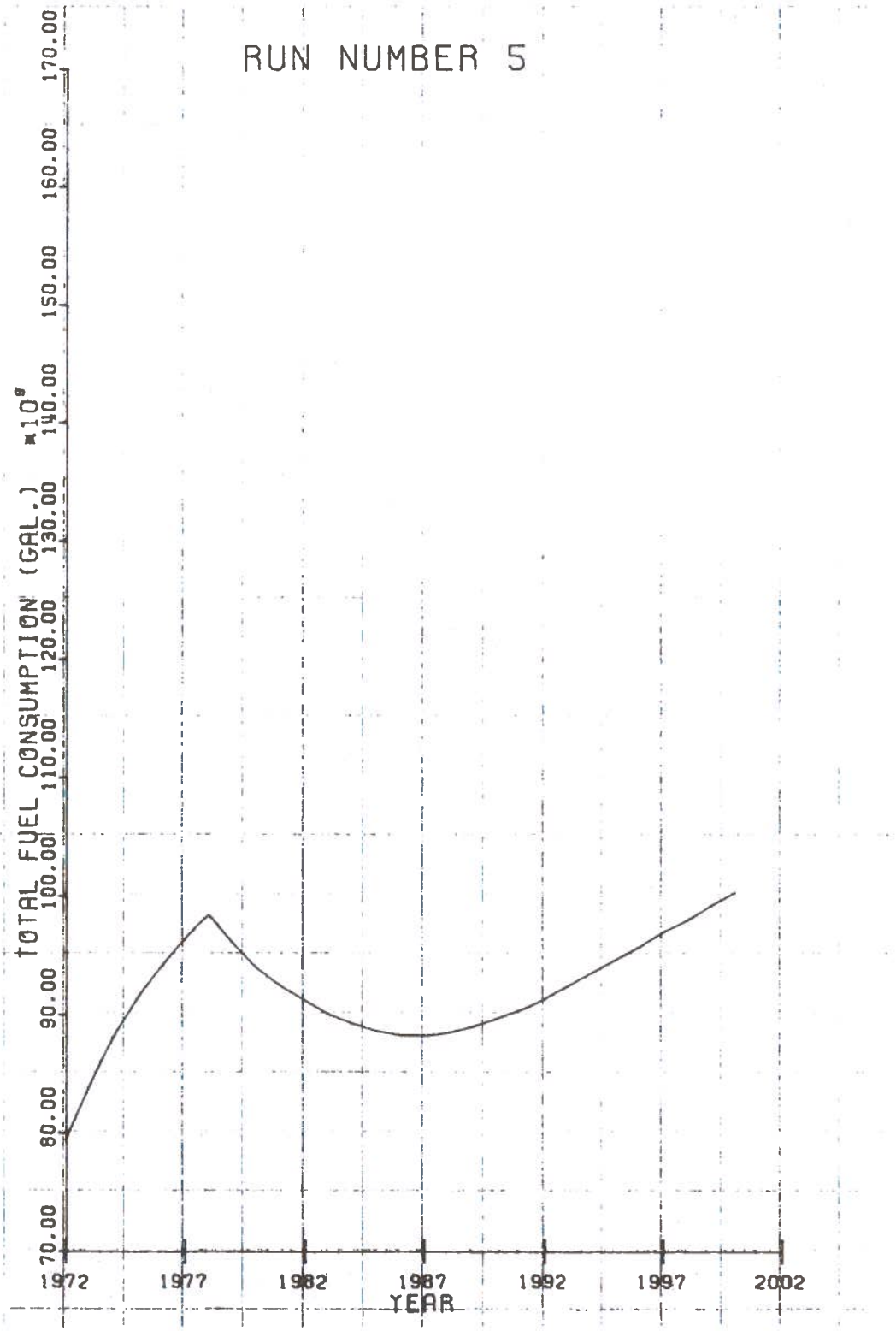
TOTAL FUEL CONSUMPTION

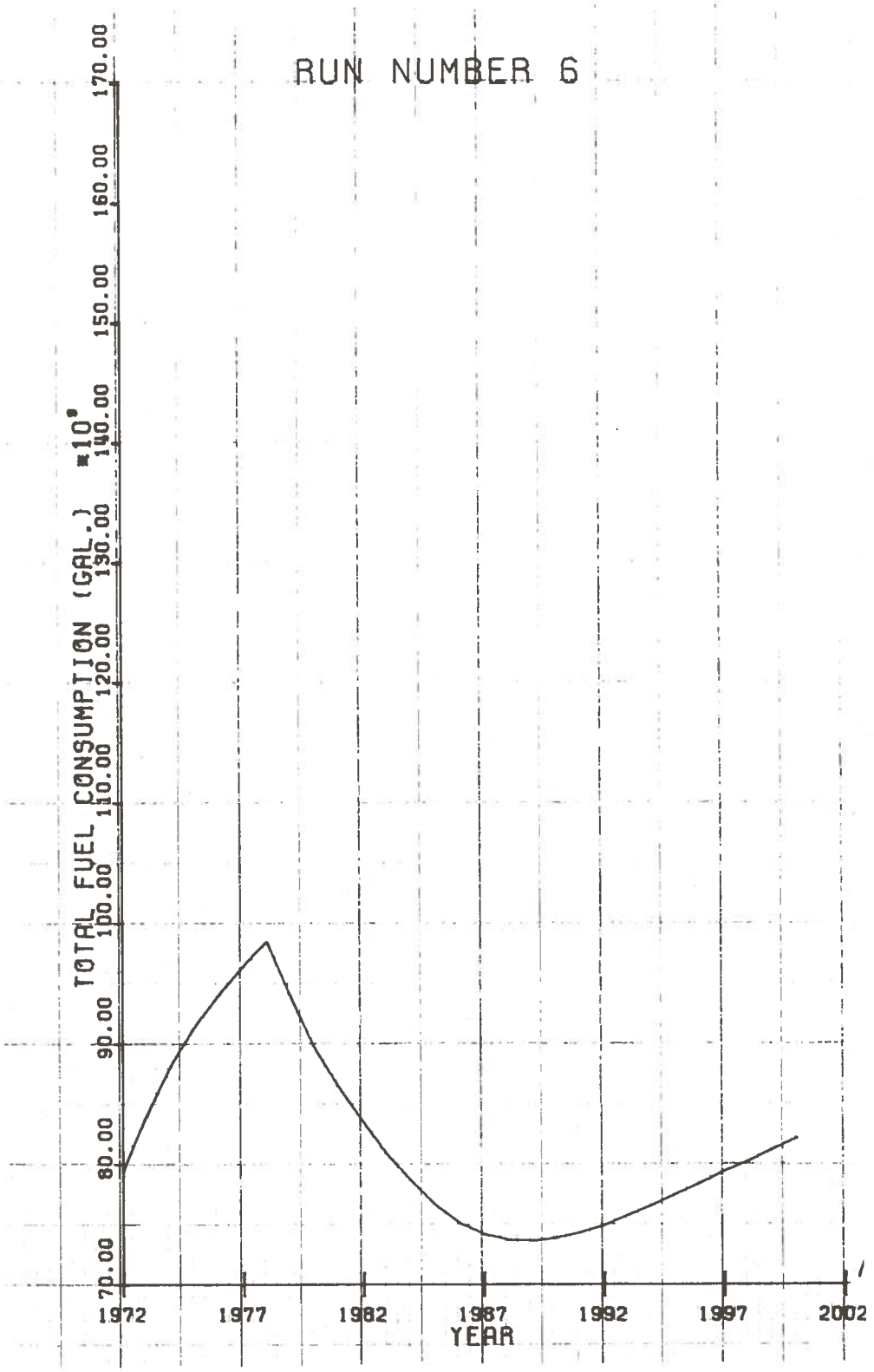
RUNS NO. 3-11

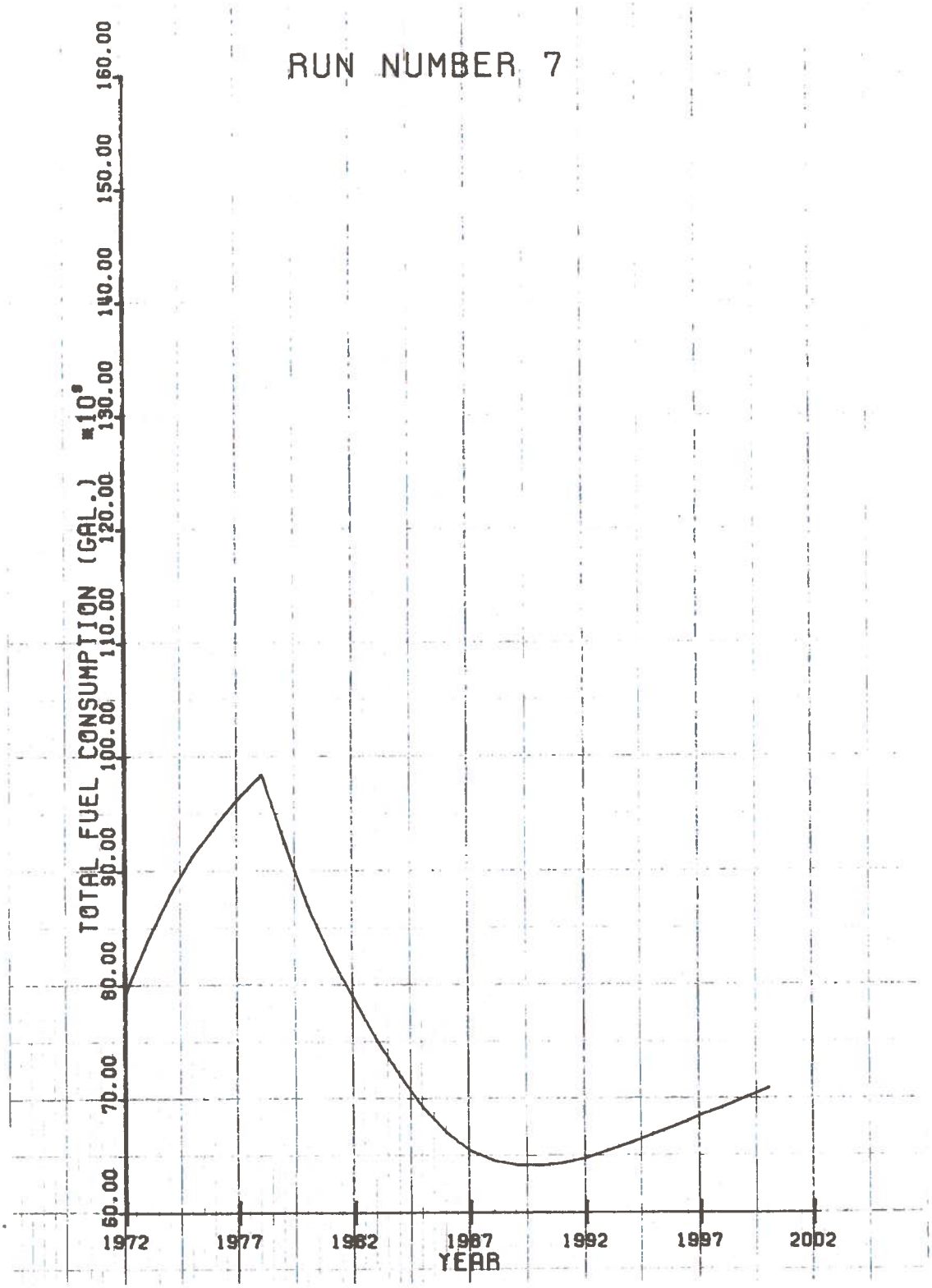
(Runs 1, 2, and 3 yield identical results)

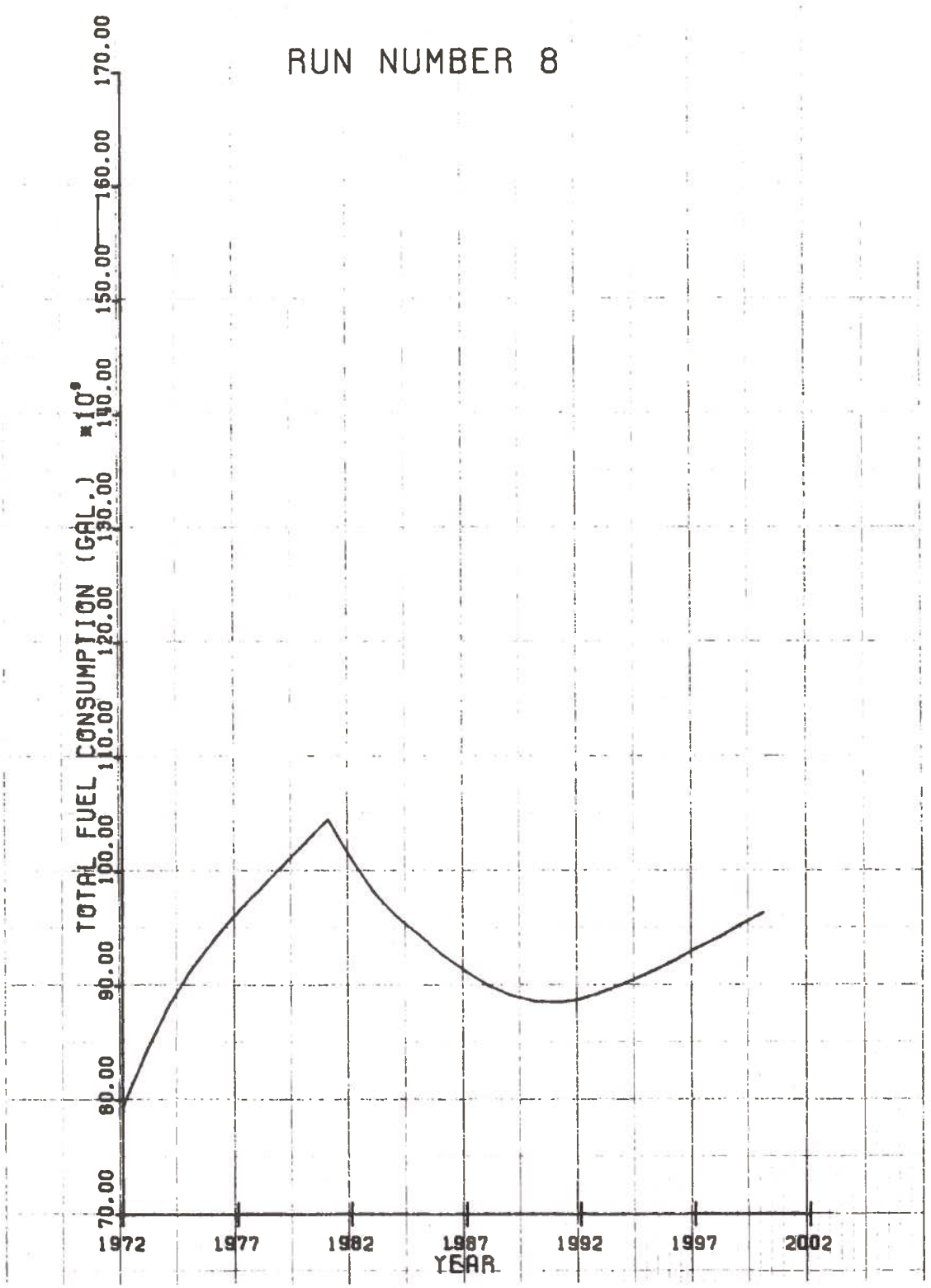

RUN NUMBER 3
TOTAL FUEL CONSUMPTION (GAL.) *10⁶
70.00
80.00
90.00
100.00
110.00
120.00
130.00
140.00
150.00
160.00
170.00
1972
1977
1982
1987
1992
1997
2002
YEAR

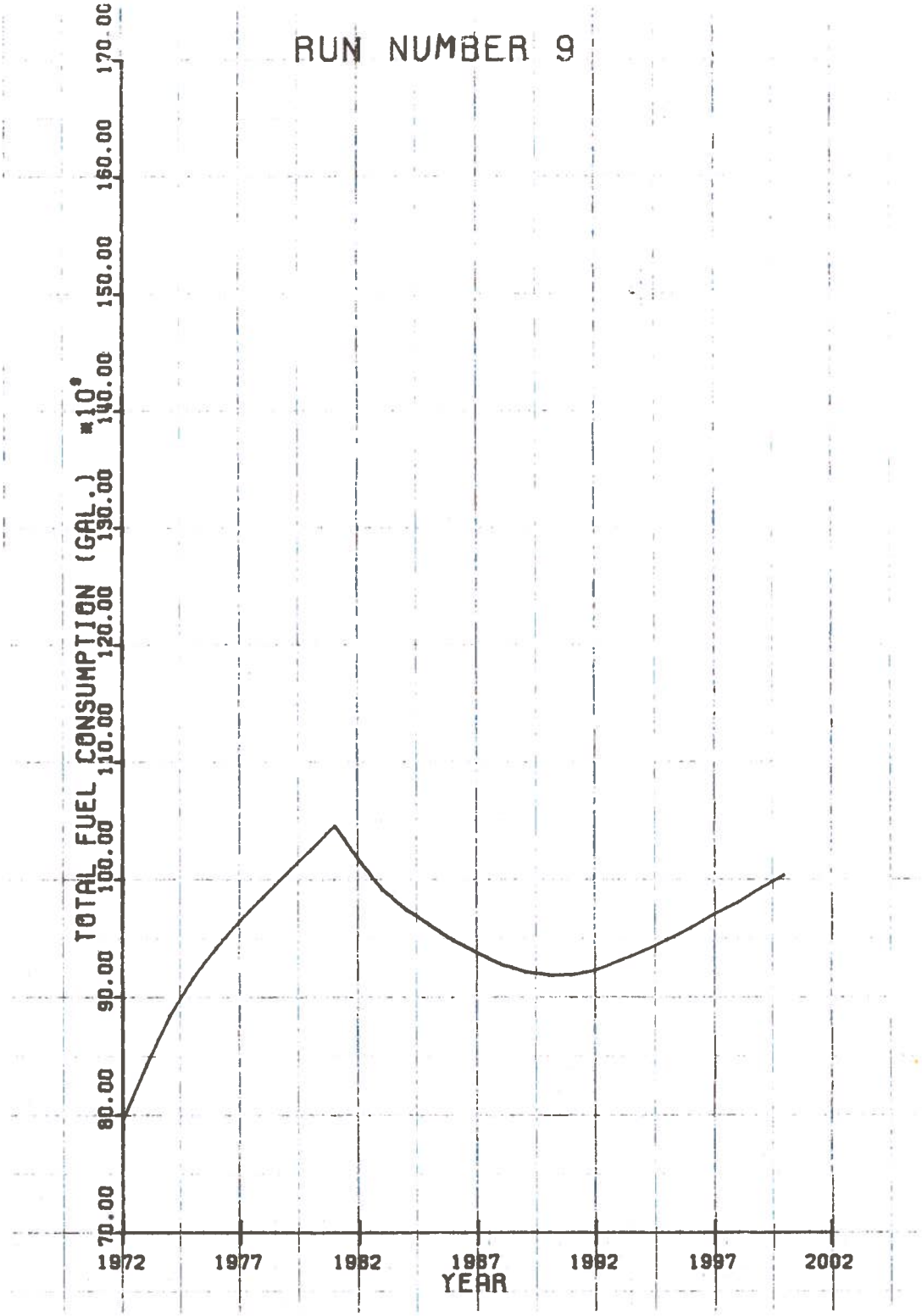

RUN NUMBER 4
TOTAL FUEL CONSUMPTION (GAL.) *10^9
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
1972
1977
1982
1987
1992
1997
2002
YEAR

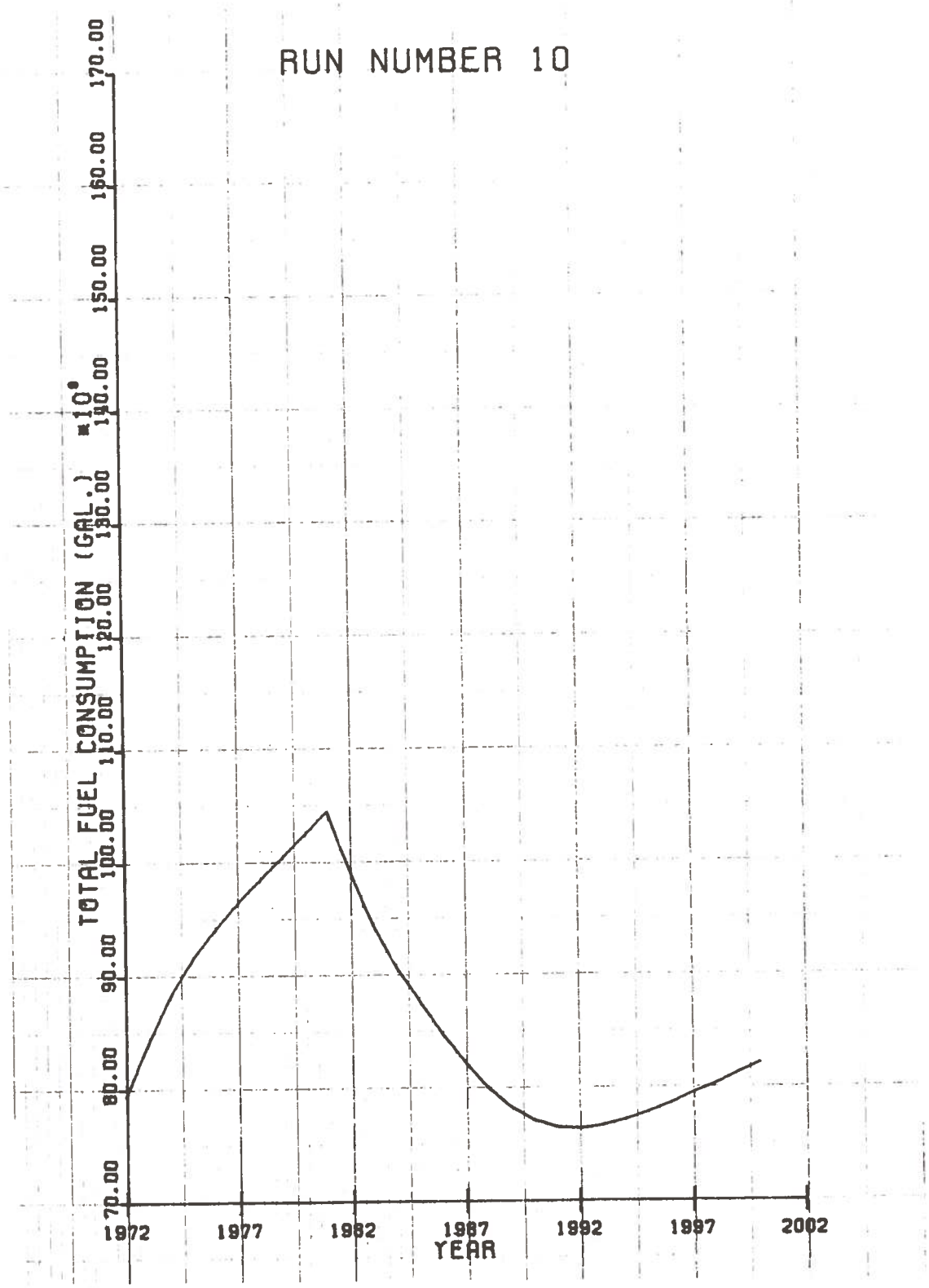

RUN NUMBER 5
TOTAL FUEL CONSUMPTION (GAL.) *10^9
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 6
TOTAL FUEL CONSUMPTION (GAL.) *10⁸
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 7
TOTAL FUEL CONSUMPTION (GAL.) *10^6
60.00
70.00
80.00
90.00
100.00
110.00
120.00
130.00
140.00
150.00
160.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 8
TOTAL FUEL CONSUMPTION (GAL.) *10⁶
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 9
TOTAL FUEL CONSUMPTION (GAL.) *10^6
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 10
TOTAL FUEL CONSUMPTION (GAL.) *10⁶
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
1972
1977
1982
1987
1992
1997
2002
YEAR

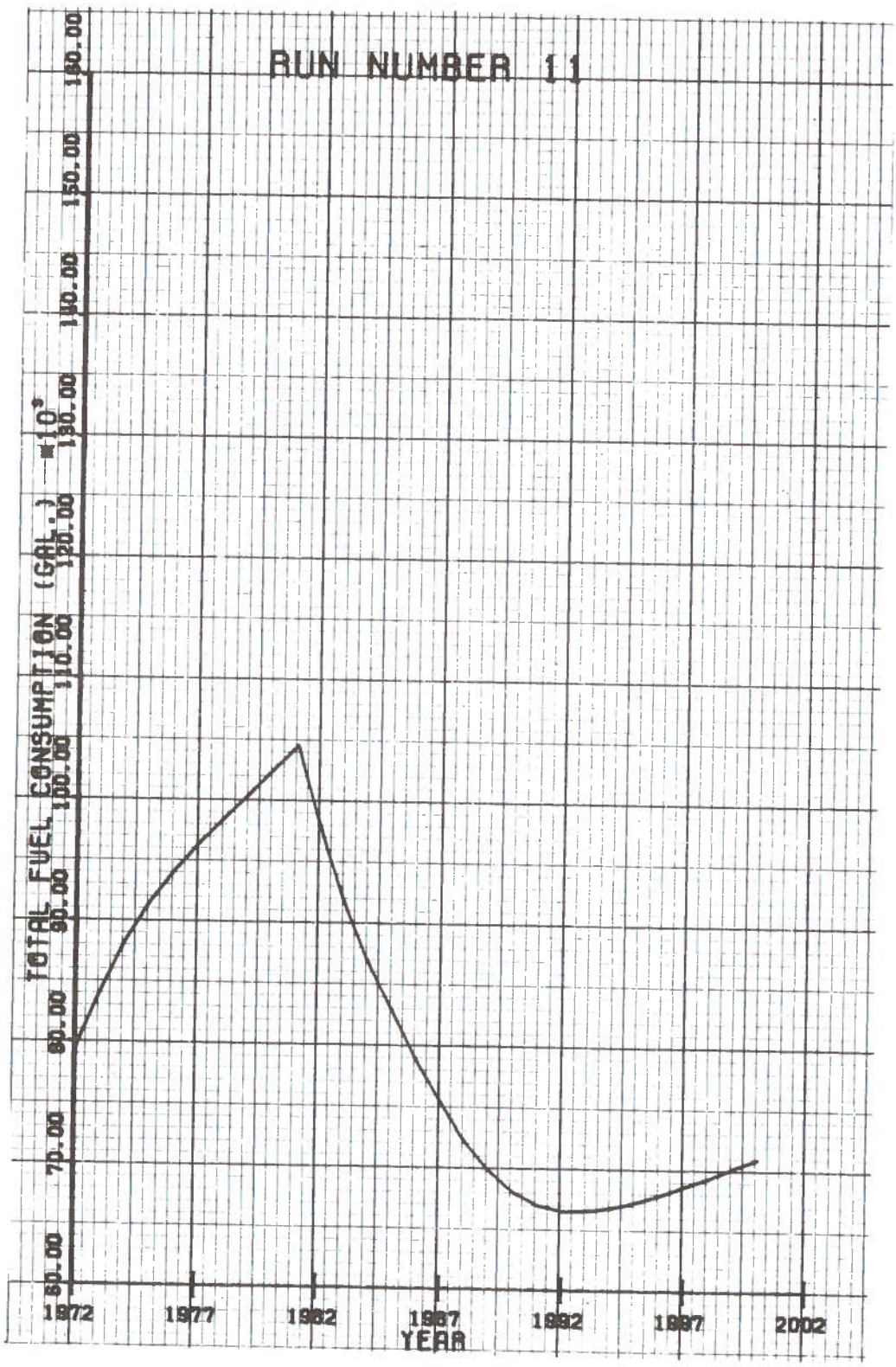
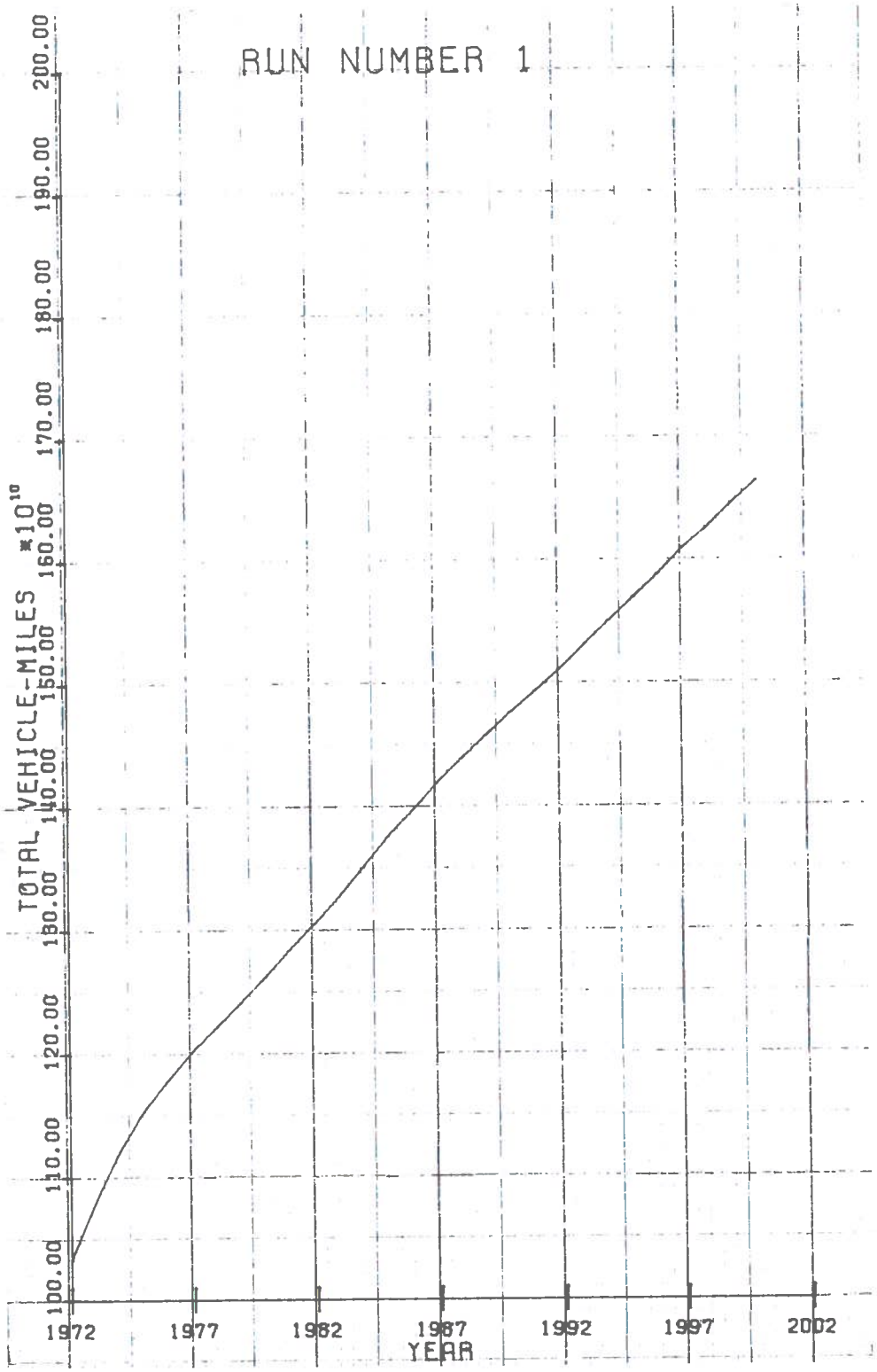
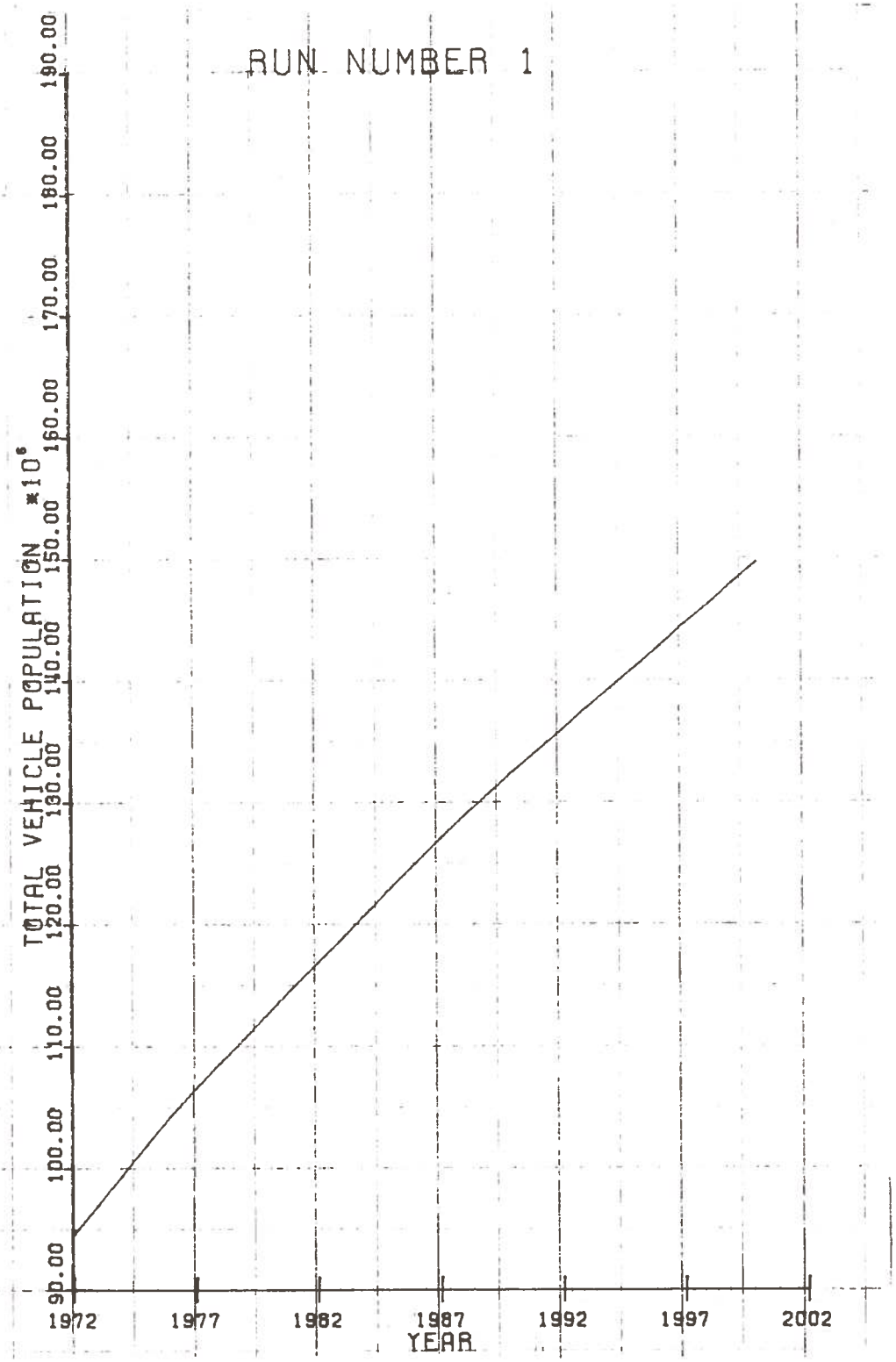
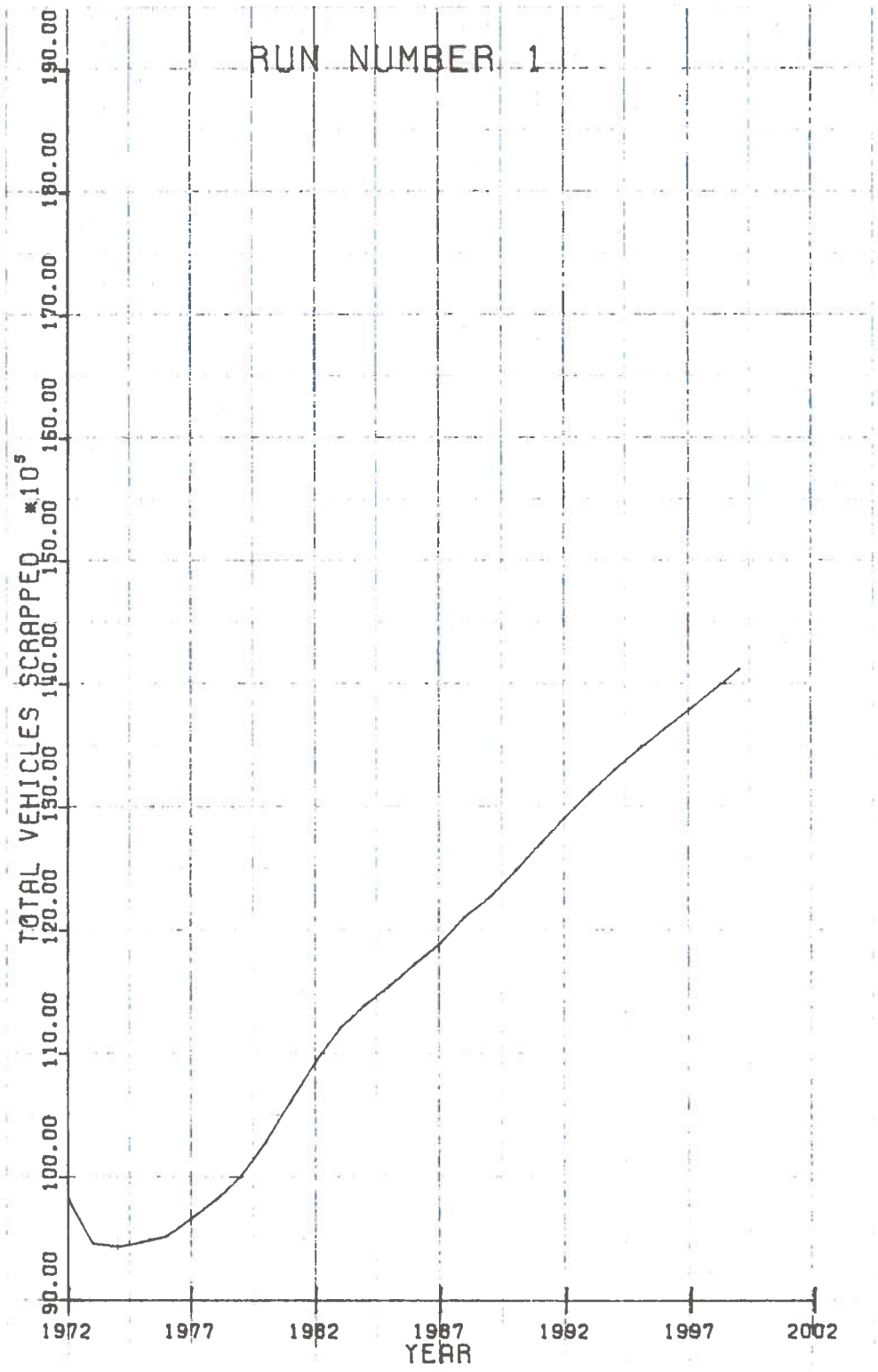

RUN NUMBER 11
TOTAL FUEL CONSUMPTION (GAL.) -*10³
180.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
1972
1977
1982
1987
1992
1997
2002
YEAR

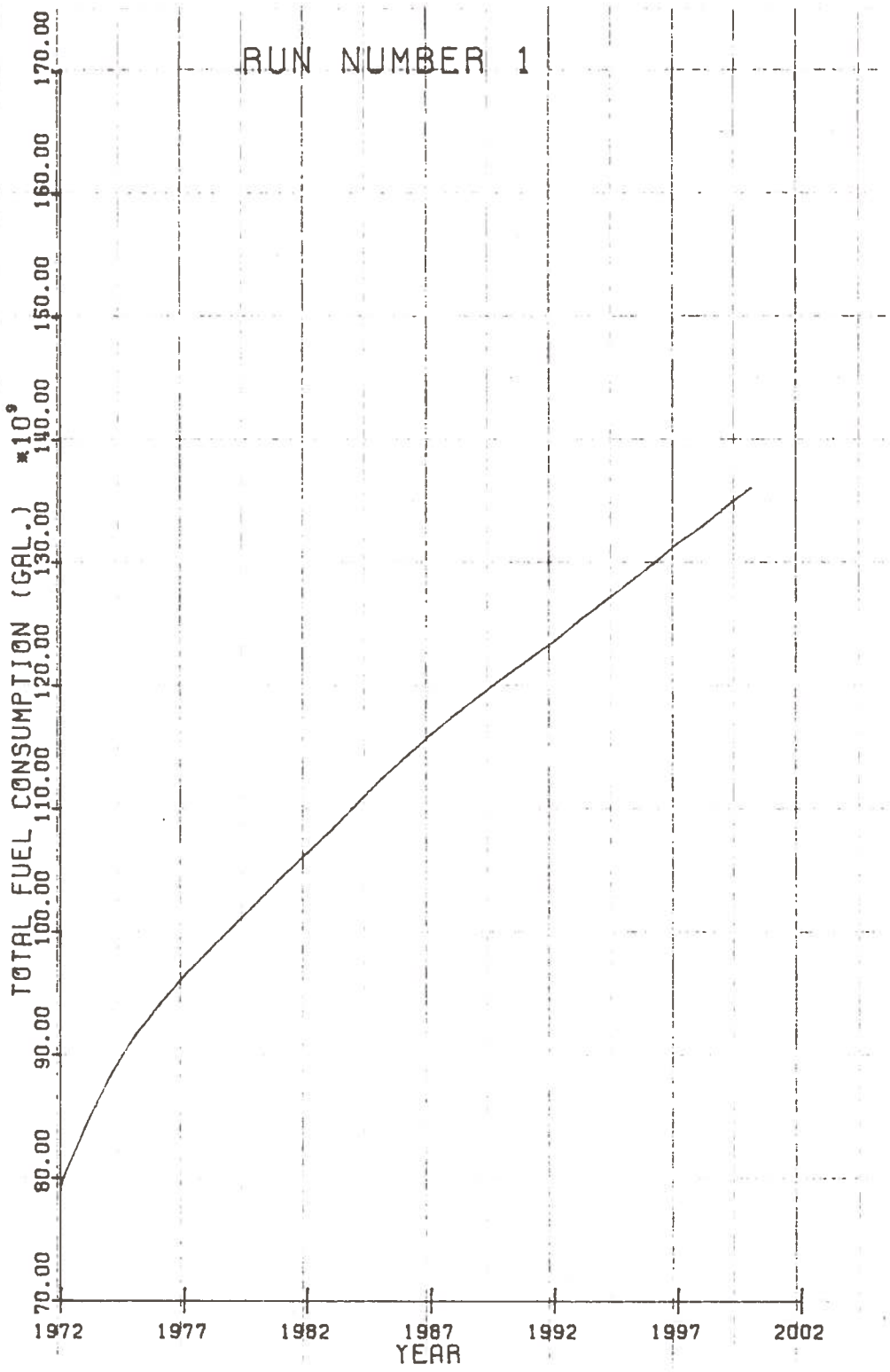
Figure 3

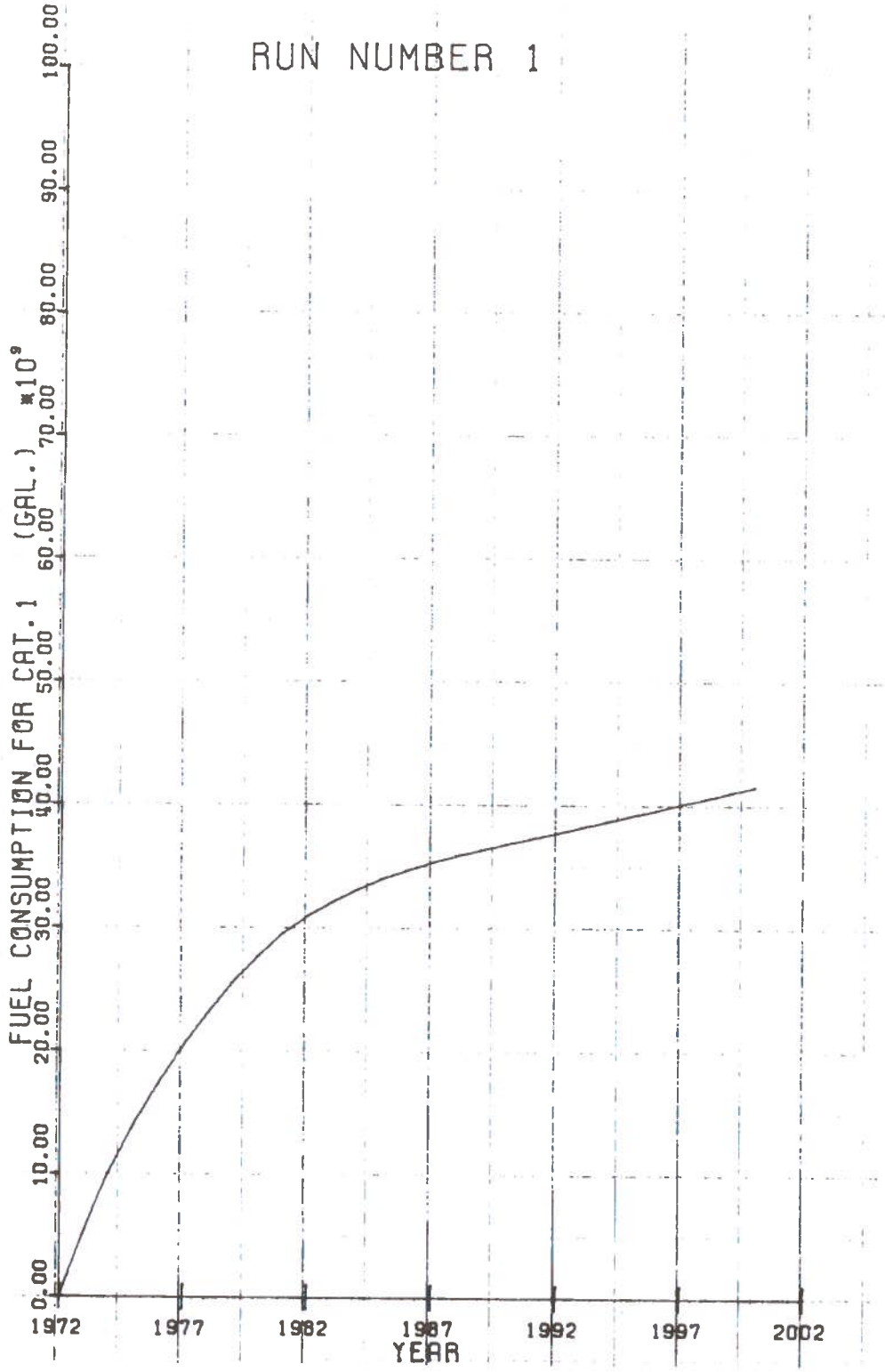
SAMPLE PLOTS FROM RUNS

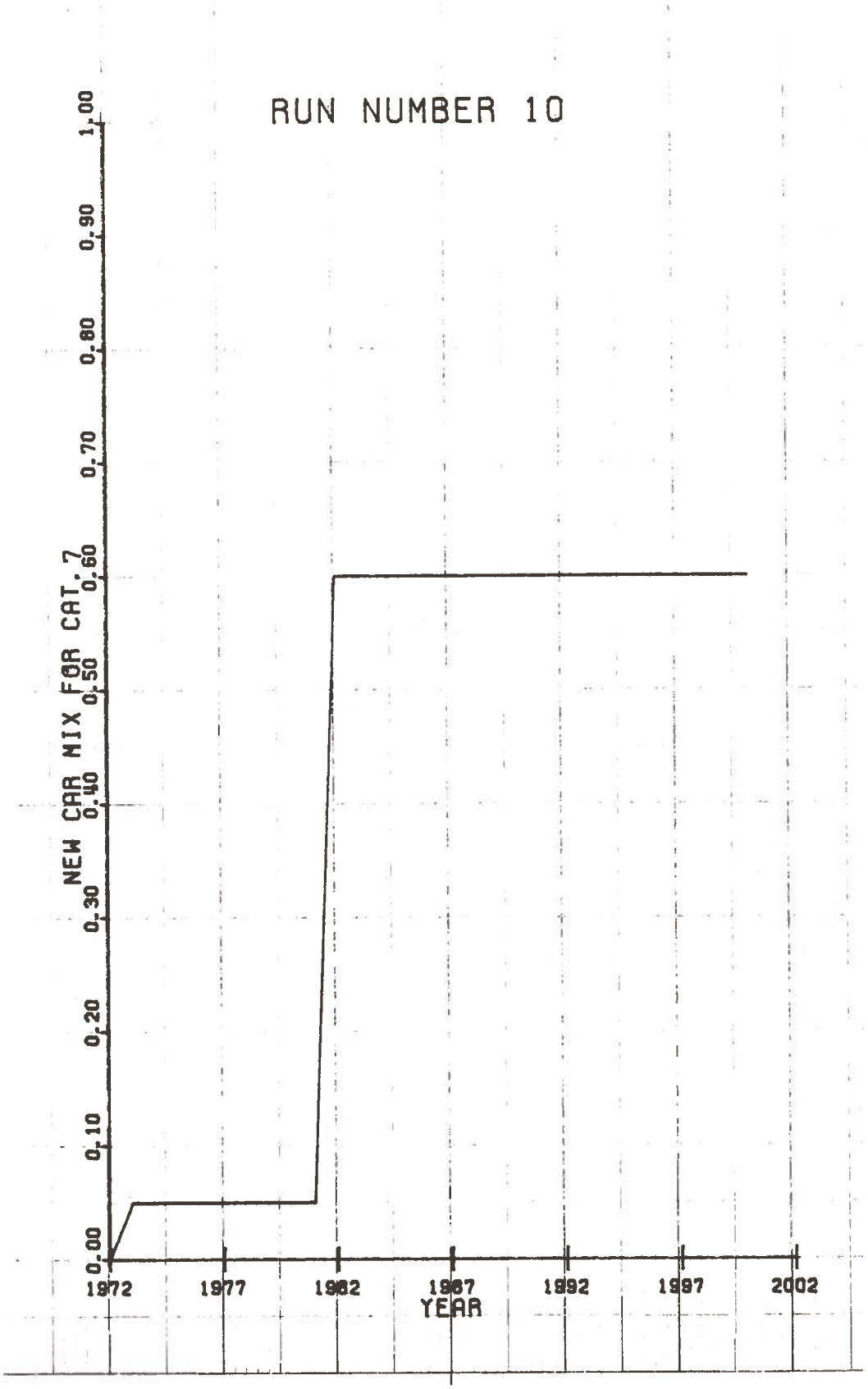

RUN NUMBER 1
TOTAL VEHICLE-MILES *10^10
100.00
110.00
120.00
130.00
140.00
150.00
160.00
170.00
180.00
190.00
200.00
1972
1977
1982
1987
1992
1997
2002
YEAR

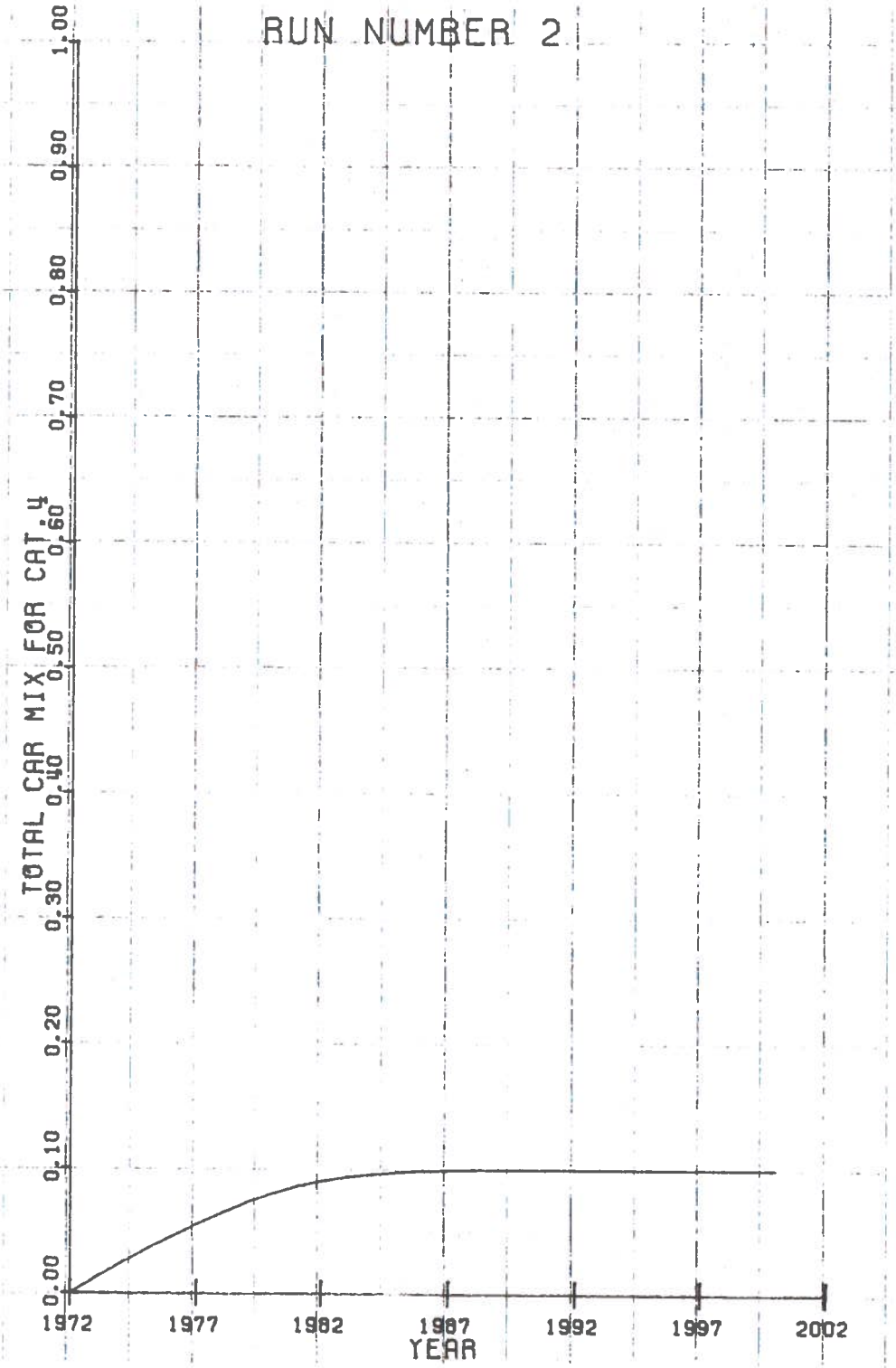

RUN NUMBER 1
TOTAL VEHICLE POPULATION *10⁶
90.00
100.00
110.00
120.00
130.00
140.00
150.00
160.00
170.00
180.00
190.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 1
TOTAL VEHICLES SCRAPPED *10³
190.00
180.00
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 1
TOTAL FUEL CONSUMPTION (GAL.) *10^9
70.00
80.00
90.00
100.00
110.00
120.00
130.00
140.00
150.00
160.00
170.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 1
FUEL CONSUMPTION FOR CAT. 1 (GAL.) *10⁹
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 10
NEW CAR MIX FOR CAT. 7
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
1972
1977
1982
1987
1992
1997
2002
YEAR


RUN NUMBER 2
TOTAL CAR MIX FOR CAT.4
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
1972
1977
1982
1987
1992
1997
2002
YEAR

APPENDIX A

USER'S AND PROGRAMMER'S MANUAL*

A.1 SCOPE OF THE PROGRAM

The overall goal of the program is to provide an accurate estimate of future vehicle population mixes by age of vehicle and fuel category, and to predict the fuel consumption rate of such a vehicle distribution.

A.2 ANALYTICAL TECHNIQUE USED

The basic technique used to predict future vehicle distributions follows.

Step 1 - A base year is chosen for which the user knows the complete distribution of cars by age and fuel category. This initial data is input directly to the program. (See Section 3.2.9 "N" Data Cards.) (Note: An additional feature allowing the user to input only the new cars distributed by fuel category for the years immediately prior to the base year, is currently being added to the program.)

Step 2 - The distribution for the base year and for each successive year up until the year just prior to the final distribution to be predicted are multiplied by a survival factor curve which is a function of age. This curve must be input by the user. (See Section A.3.2.4 "S" Data Cards.) The above process will be referred to from here on as "surviving" vehicles.

Step 3 - Each value in the distribution is multiplied by a retirement factor which may be arbitrarily specified by the user. This effectively reduces the number of vehicles after they have been "survived" from the previous year. (Unless input by the user this value is equal to 1. A value of .6 by the user would scrap 60% of the "survived" cars of the year, age and fuel category specified.)

Step 4 - Vehicle-miles driven are obtained by multiplying each vehicle by mileage-driven as a function of age.

Step 5 - The vehicle-mile distribution for each year is multiplied by the fuel consumption rates, input by the user, to obtain the total fuel usage for each year.

A.3 USER INPUT PARAMETERS

A.3.1 Data Card Number 1

The first card in the data deck must contain the following parameters written as integers in 5I4 format:

1) IBASE - the base year for the run (e.g. 1960)

2) II - the total number of years for the run including the base year (e.g. for 1960 to 1990, II = 31) up to maximum of 50.

3) JJ - the number of fuel categories to be considered up to a maximum of 10.

4) KK - the number of ages of cars to be considered up to a maximum of 20 (e.g. for KK = 15, new cars are considered of age 1 so that all cars over 14 years old are considered to be scrapped).

5) IOPTOT - this is an input option which allows the user three ways in which to compute the number of new vehicles to be added each year to the "survived" cars (i.e. total predicted vehicle population).

IOPTOT = 1: Total vehicle population vs. year (Q array) and the mileage driven vs. age of vehicle (M array) are input and the total vehicle-miles driven vs. year (VM array) is computed;

IOPTOT = 2: the VM and M arrays are input and Q is computed;

IOPTOT = 3: the VM and Q arrays are input and M is computed (Note: The M curve for the base year only must be input to obtain the shape of the mileage-driven vs. age distribution. For all subsequent years this curve is shifted by a constant in order to relate the number of vehicles (Q) to the vehicle-miles driven (VM).

A.3.2 Other Data Cards

The rest of the data arrays may be specified in any order, i.e. it does not matter whether the Q array is input before or after the C array. The program will check all input data and print out a message indicating what is missing (if all necessary data is input correctly, no message will be printed). In addition to this, the program also checks for errors in ranges of parameters and prints out an error message indicating the error and the data card sequence number on which the error occurred (e.g. the tenth card in the user's data deck).

This random sequencing of input data is made possible by using a keyword in card columns 1-6 (beginning in column 1) which indicates the type of data card to be processed. The following sections are named according to their keywords, indicated in quotes.

A.3.2.1 "Q" Data Cards. The "Q" card must have the base year (IBASE) in columns 7-10. If the base year does not agree with DATA CARD 1 an error message is printed and execution terminates. This is for the convenience of the user who may have several "Q" arrays beginning in different years for production runs. The card(s) immediately following the "Q" card contain(s) the actual total vehicle populations for each year beginning with the base year. There must be II of these integers punched in 8I10 format.

A.3.2.2 "VM" Data Cards. The "VM" card must have the base year (IBASE) in columns 7-10 as with the "Q" card. (See Section A.3.2.1 "Q" DATA CARDS.) The cards immediately following the "VM"

card contain(s) the total vehicle-miles driven by all cars in each year beginning with the base year. There must be II of these floating-point numbers punched in 8E10.5 format.

A.3.2.3 "C" Data Cards. The "C" card contains the fuel consumption rates for each of the JJ fuel categories. These rates are input in miles per gallon for convenience to the user and are punched in 10F7.3 format beginning in column 11.

A.3.2.4 "S" Data Cards. The "S" card contains a fuel category number in columns 9-10. The S array is a set of survival factors which are used to compute the number of cars in each age category to be "survived" into the next year. The user may specify a different survival factor curve for each of his JJ fuel categories by inputting JJ sets of "S" cards, or he may assume that the S arrays for all fuel categories are the same by inputting only one "S" card and array with a zero or a blank for the fuel category. (Note: If the user wishes to set one or more fuel categories to a different survival factor curve from the rest he may input the default curve first with a zero and then override it with other curves with specific fuel categories.) The card(s) immediately following the "S" card contain(s) the survival factors ($0 \leq$ factor ≤ 1) for KK-1 ages where the first factor will be the fraction of new cars to survive to the next year and so forth. They are punched in a 10F8.5 format. If the user does not wish to use survival factors and has data in terms of number of cars vs. age he may input an "NC" card set instead of an "S" set. (See Section A.3.2.5: "NC" Data Cards.) Do not use both an "NC" set and an "S" set on the same run or the program will terminate execution.

A.3.2.5 "NC" Data Cards. The "NC" card contains a fuel category number in exactly the same form as the "S" card. (See Section A.3.2.4 "S" Data Cards.) This curve of KK integer values may be used instead of the S curve to indicate survival rates of vehicles as a function of age. The program will then compute the

S array as the ratios between two successive NC values. The NC values are punched in 10I8 format beginning with initial number of new cars.

A.3.2.6 "M" Data Cards. The "M" card contains the base year in the same form as the "Q" card. (See Section A.3.2.1 "Q" Data Cards.) The following cards contain KK integer values for the average number of miles driven in a year by cars of that age. The first value is for new cars and so forth punched in 10I8 format.

A.3.2.7 "XN" Data Cards. The "XN" card contains the new car mix ($0 \leq$ mix ≤ 1) by fuel category for the year indicated in columns 7-10. For example, if the second calue were input as .35 for the year 1975, the program would compute the number of new cars to be added in 1975 and add thirty-five percent of them to fuel category number 2. If the year is zero or blank then the same XN array is used for all years under consideration. The values are punched in 10F7.4 format beginning in column 11 with the first fuel category mix. (Note: The sum of the mix fractions over all fuel categories for any given year must exactly equal 1.)

A.3.2.8 "R" Data Cards. Each "R" card contains a single arbitrary retirement factor ($0 \leq$ factor ≤ 1.0) for a specified year, fuel category and age. After the number of "survived" vehicles in this fuel category and age for this year has been computed, this number is then multiplied by the R factor specified and the result stored in the following year. This array was originally stored in core. However, due to the expanded size of the program, the R array is now stored on a scratch tape which must be mounted for each run. Because of the sequential structure of this tape the "R" cards must be sequenced properly within the data deck. They must be sorted first by year, second by fuel category within cards having the same year, and third by age within cards having the same year and fuel category. An error in sequencing will be detected by the program and the run terminated.

Any factors not specified by the user are set equal to 1. The year is an integer in columns 7-10, the fuel category is an interger in columns 12-13, the age is an integer in columns 15-16, and the retirement factor is a floating point number in F10.7 format beginning in column 18.

A.3.2.9 "N" Data Cards. The "N" card contains the year in columns 7-10. If this is the base year, the cards which follow (KK of them, one for each age beginning with new cars) contain JJ integers in 10I8 format, one for each fuel category beginning with category 1. If the year is within the range of from the base year minum KK-1 up until the base year minus 1, it is assumed that the user is generating his base year and the program reads one card with JJ integers in a 10I8 format which will be used as the new cars for that year. These cars will then be "survived" up to the base year. (Note: This feature is now being included into the program but is not a part of this version.)

It is understood that the user's data will be consistant within its own specifications. For example, the sum of all N array values for the base year should equal the first value of the Q array within a few vehicles in several million. No program can be expected to produce accurate predictions if given erroneous data.

A.3.2.10 "PLOT" Data Cards. This card contains from 1 to 5 integers in format 5I10 beginning in column 11. The first integer indicates the plot type and determines the meaning of the following integers if any. There are currently seven plot types operational and these are as follows:

"PLOT" 1 - the Q array is plotted vs. year

"PLOT" 2 - the VM array is plotted vs. year

"PLOT" 3 - the number of vehicles scrapped
(i.e. those which were not "survived" or were retired vs. year)

"PLOT" 4 - total fuel consumption for all ages and fuel categories vs. year

"PLOT" 5 - total fuel consumption for all ages within a specified fuel category (input as the first integer following the plot type 5) vs. year

"PLOT" 6 - the new car mix for a given fuel category (input as the first integer following the plot type 6) vs. year

"PLOT" 7 - the total car mix over all ages for a given fuel category (input as the first integer following the plot type 7) vs. year.

The program is currently able to accommodate up to 50 plots per run (i.e. 50 "PLOT" cards since each card specifies one plot). More plots are currently being included into the program but are not available in this version.

A.3.2.11 "TITLE" Data Card. This card contains any 70-character title for each run beginning in column 11. This title is printed on the output and plotted at the top of each plot (if any). A "TITLE" card is not required for a run.

A.3.2.12 "END" Data Card. The program may be used to compute more than one run using the "END" card after each set of data. There must also be an "END" card after the last set of data even if there is only one set being used.

A.4 SUPPLEMENTARY NOTES

If the user is using the program on the IBM 7094 he should not generate more than two or three plots for each run. This is due to the fact that certain of the plot subroutines (in the system library, not the program) have locally set variables in them which are destroyed by the overlay feature of the system. This causes the origins of successive plots to "creep" up the paper.

It should be noted that if input option 3 is specified (Q and VM input and M computed) the program will not shift the M curve for the base year but will for all successive years.

Figures A-2 through A-11 are flow charts of program. Appendix B is the listing and Appendix C is the sample run.

---

*The preparation of Appendix A and the computer programming were performed by J.P. Moffatt III of Kentron Hawaii, Ltd., under contract to the Transportation Systems Center (ADP Support Service Contract No. DOT-TSC-297).

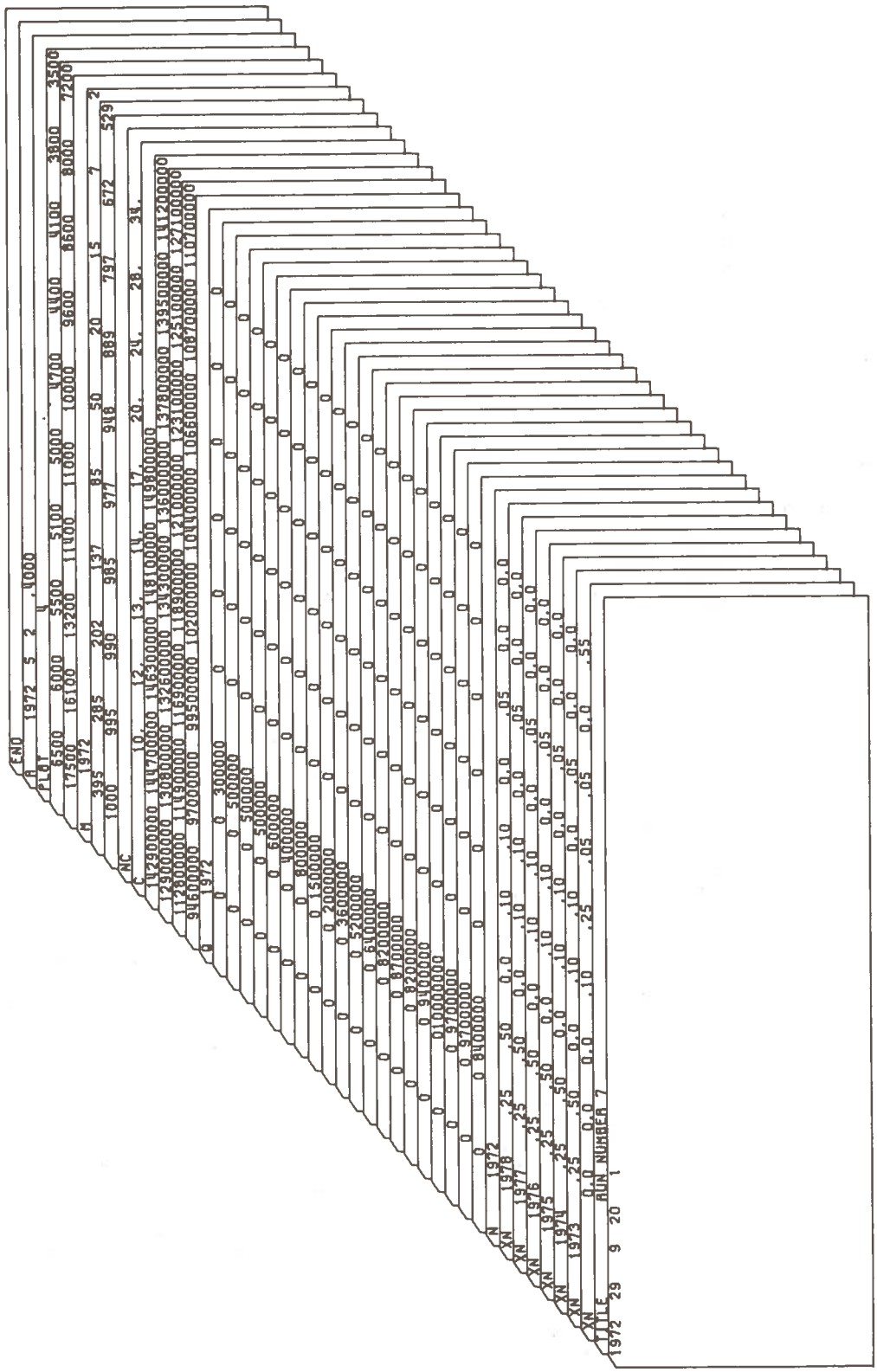


Figure A-1. Typical Data Deck Setup

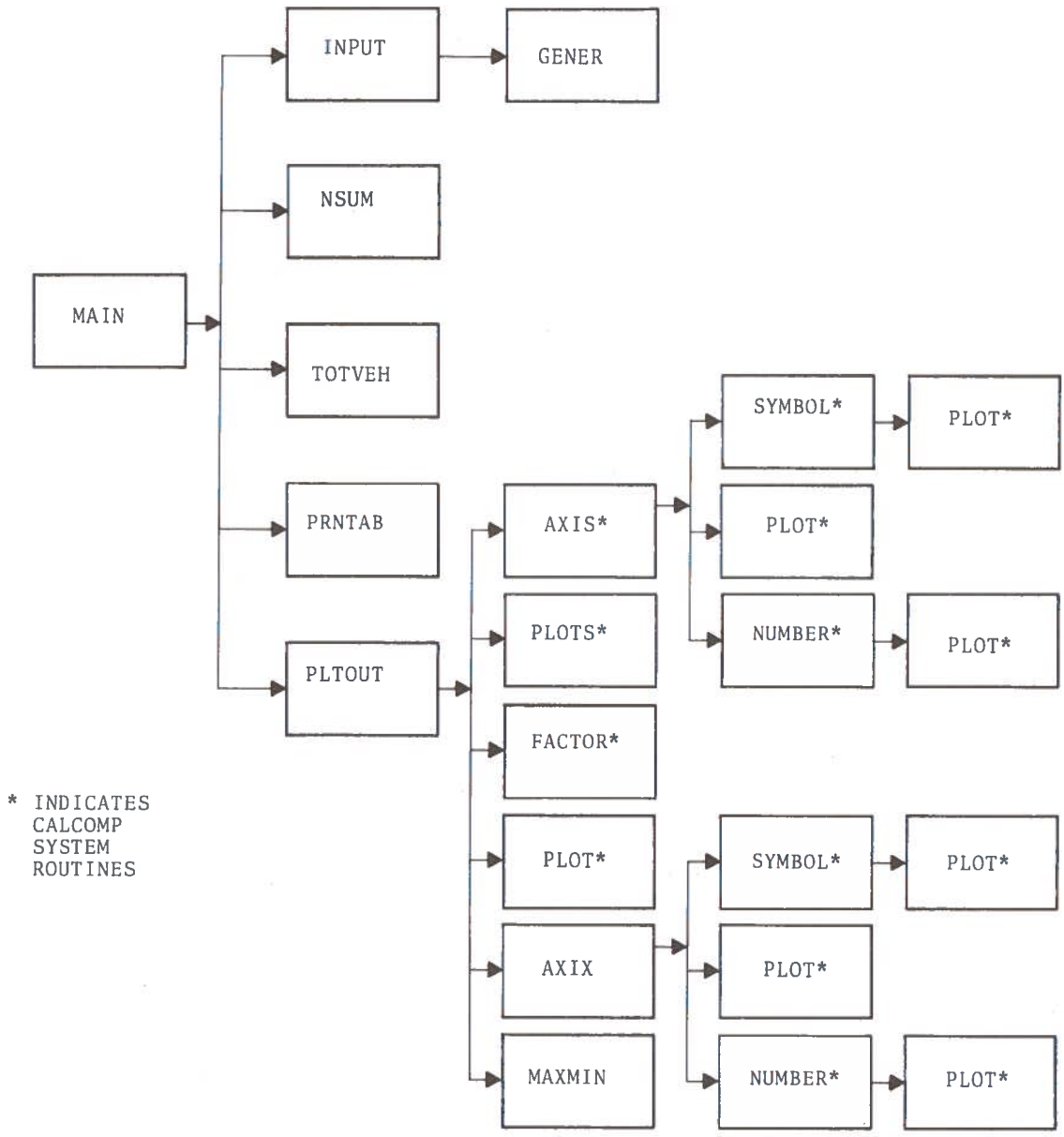


Figure A-2. Overall Flow Chart

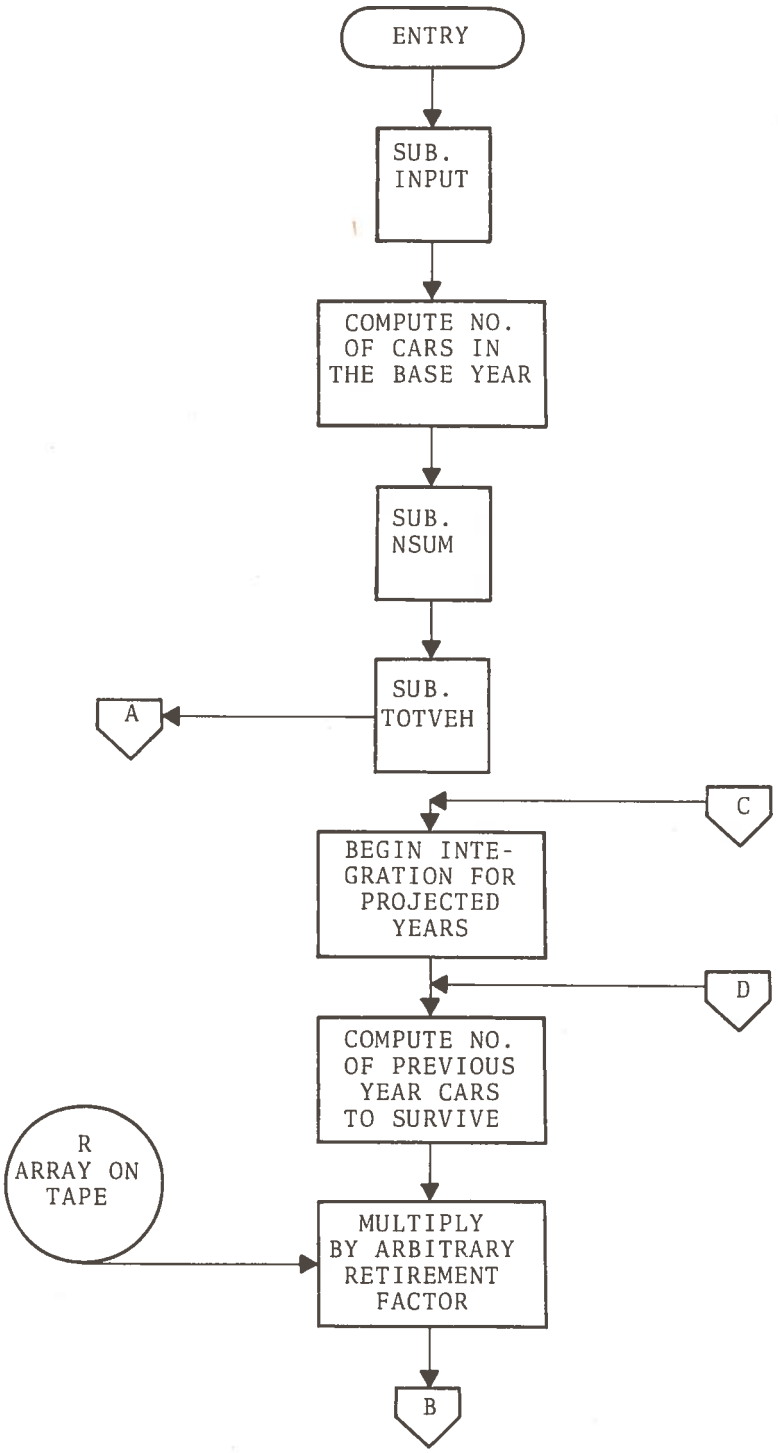


Figure A-3. Main

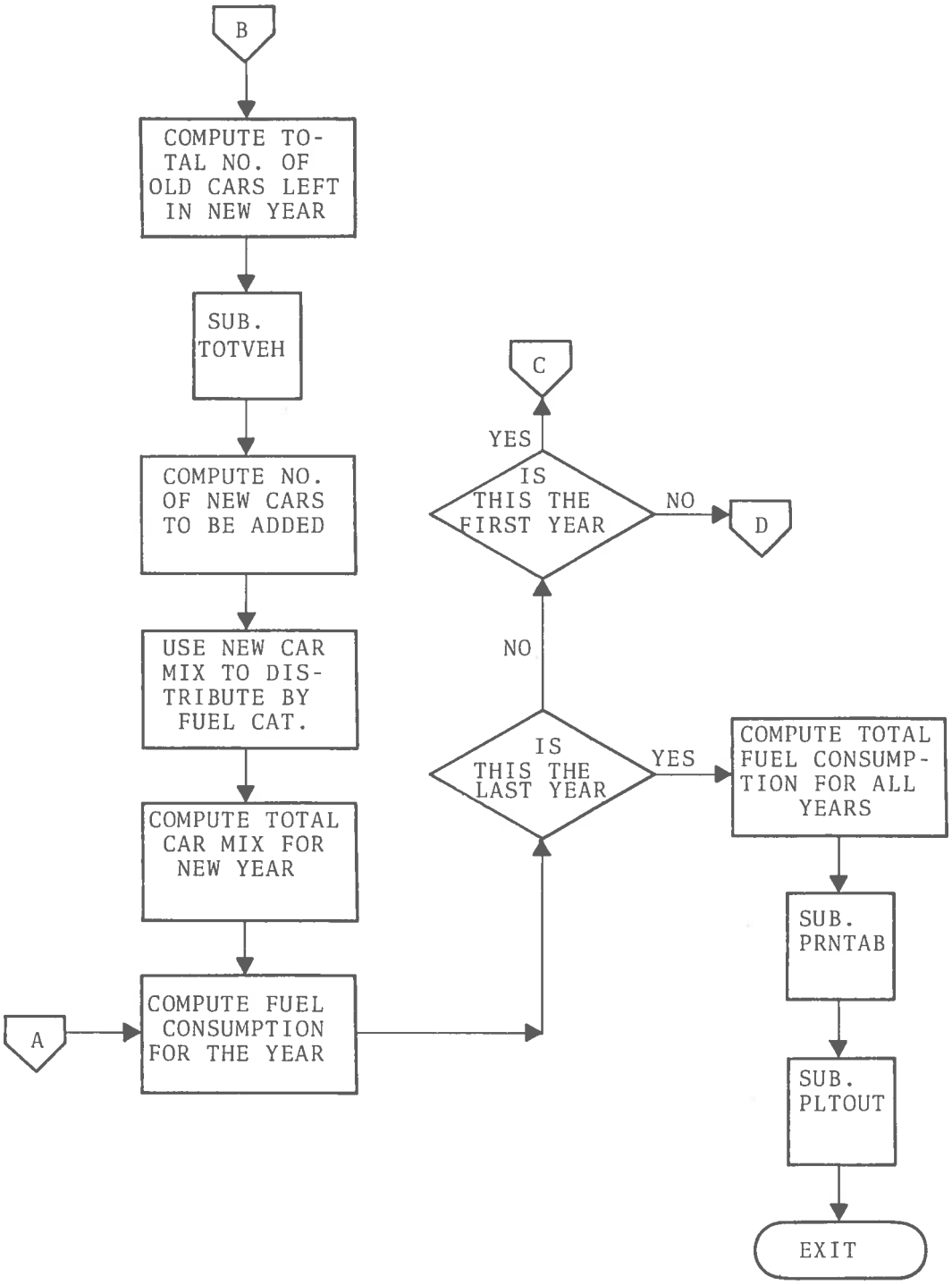


Figure A-3. Main (Continued)

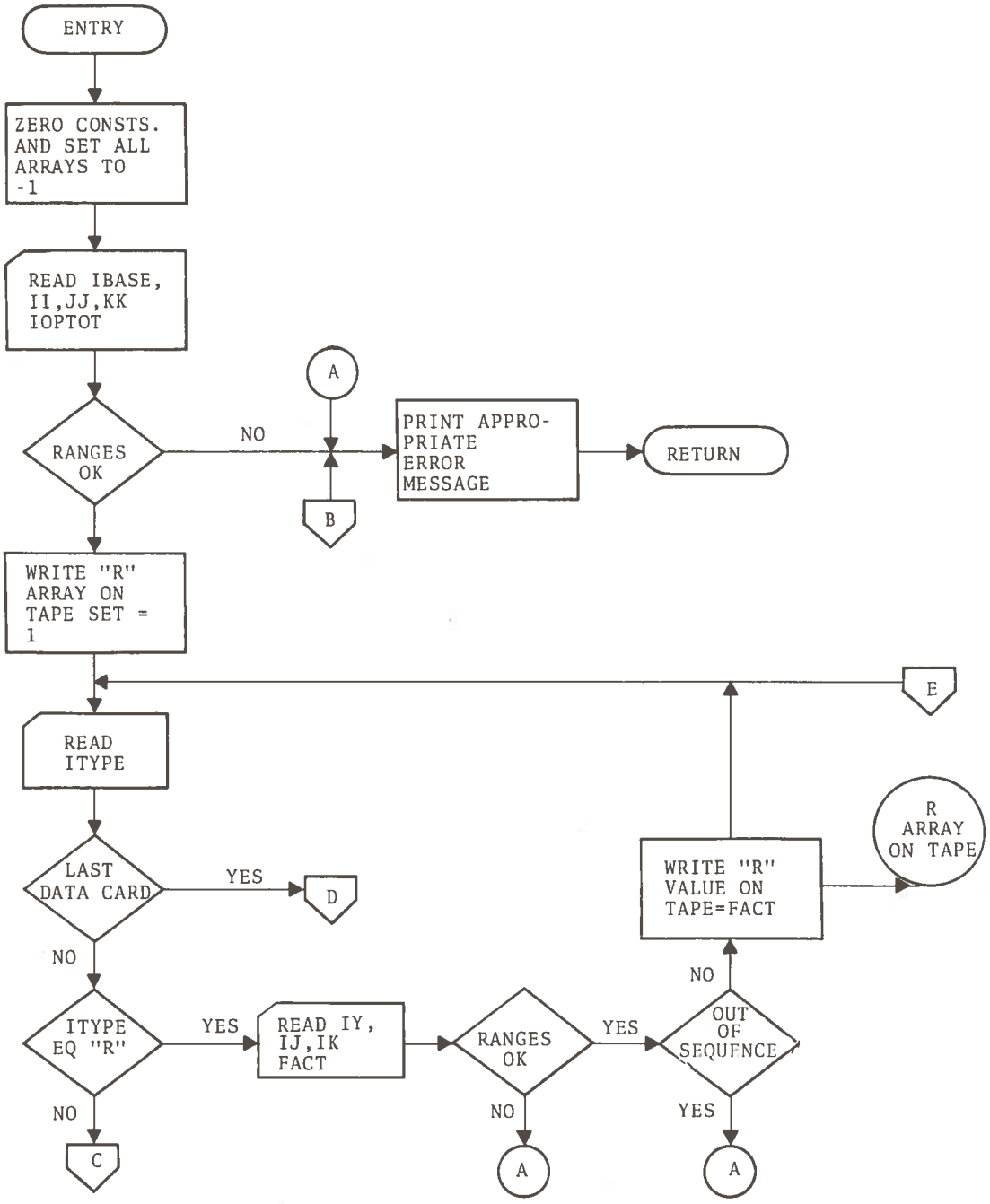


Figure A-4. Subroutine Input

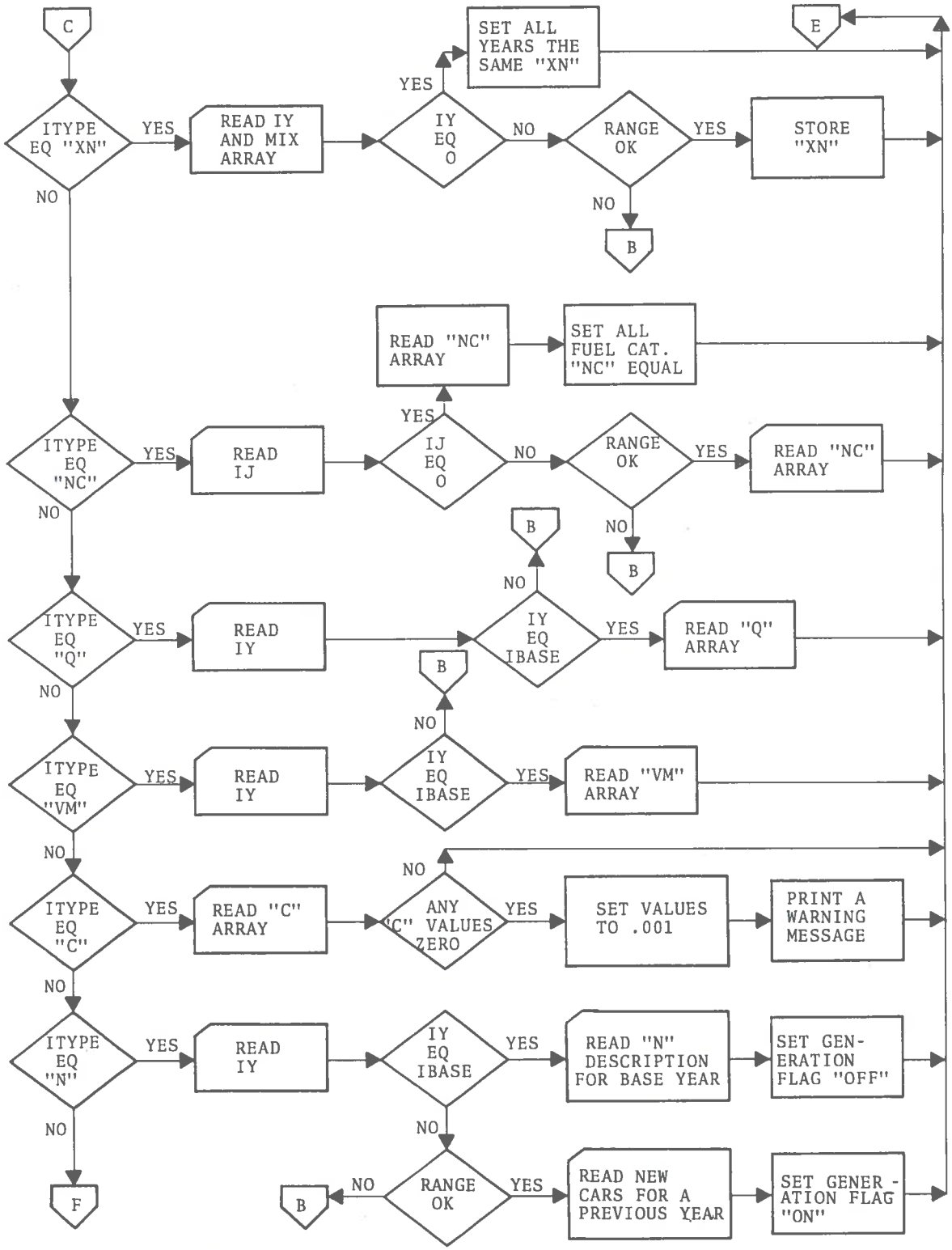


Figure A-4. Subroutine Input (Continued)

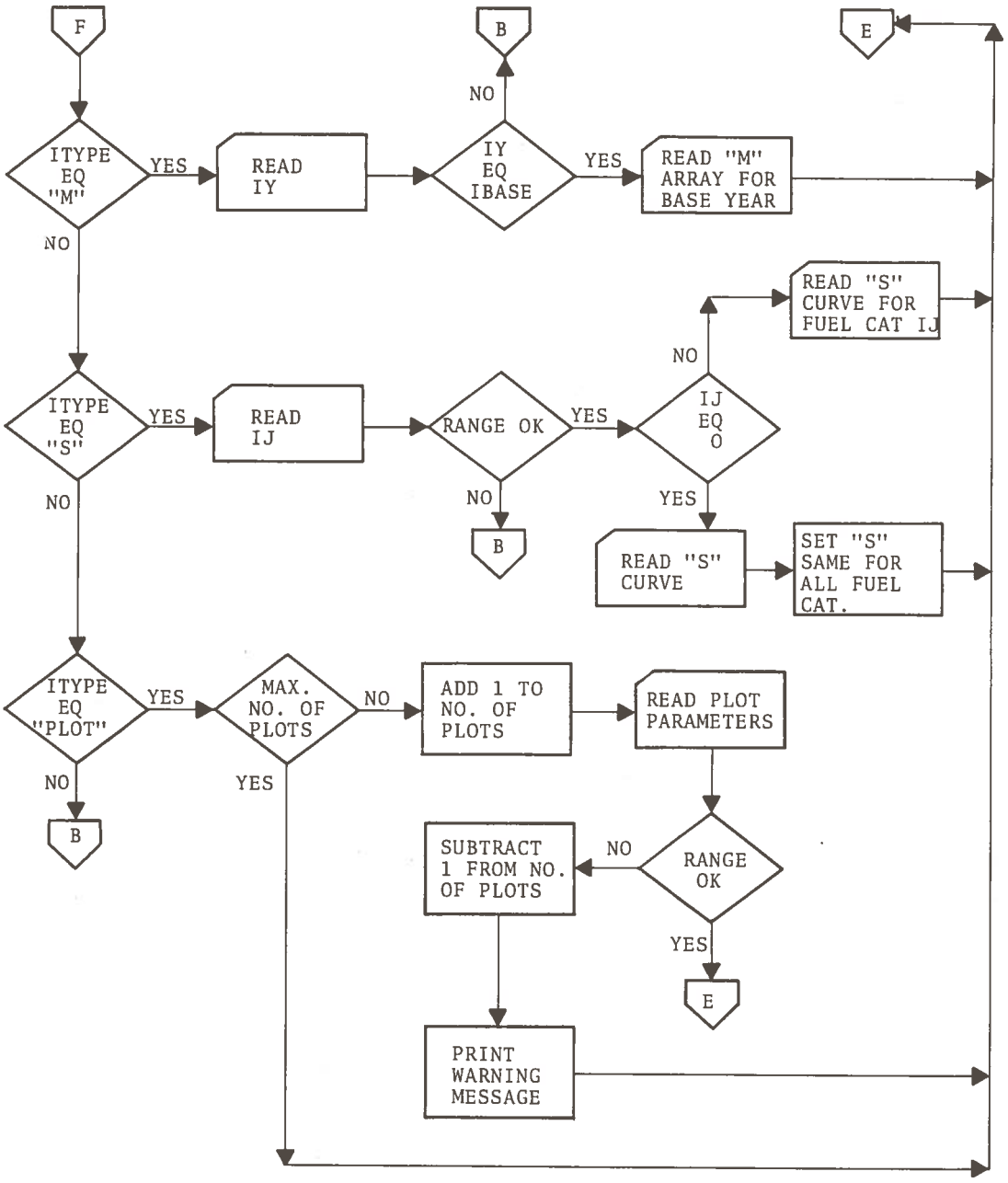


Figure A-4. Subroutine Input (Continued)

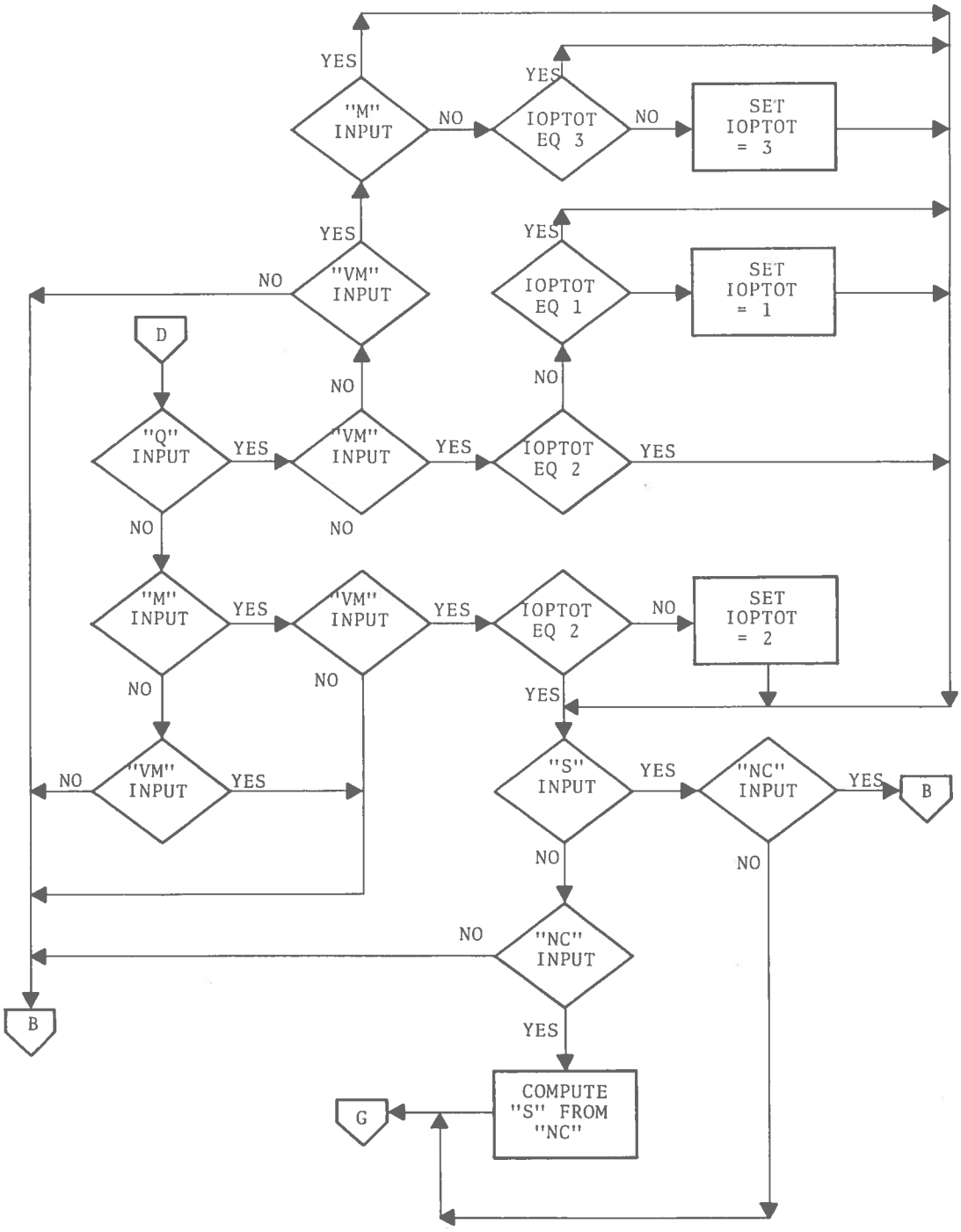


Figure A-4. Subroutine Input (Continued)

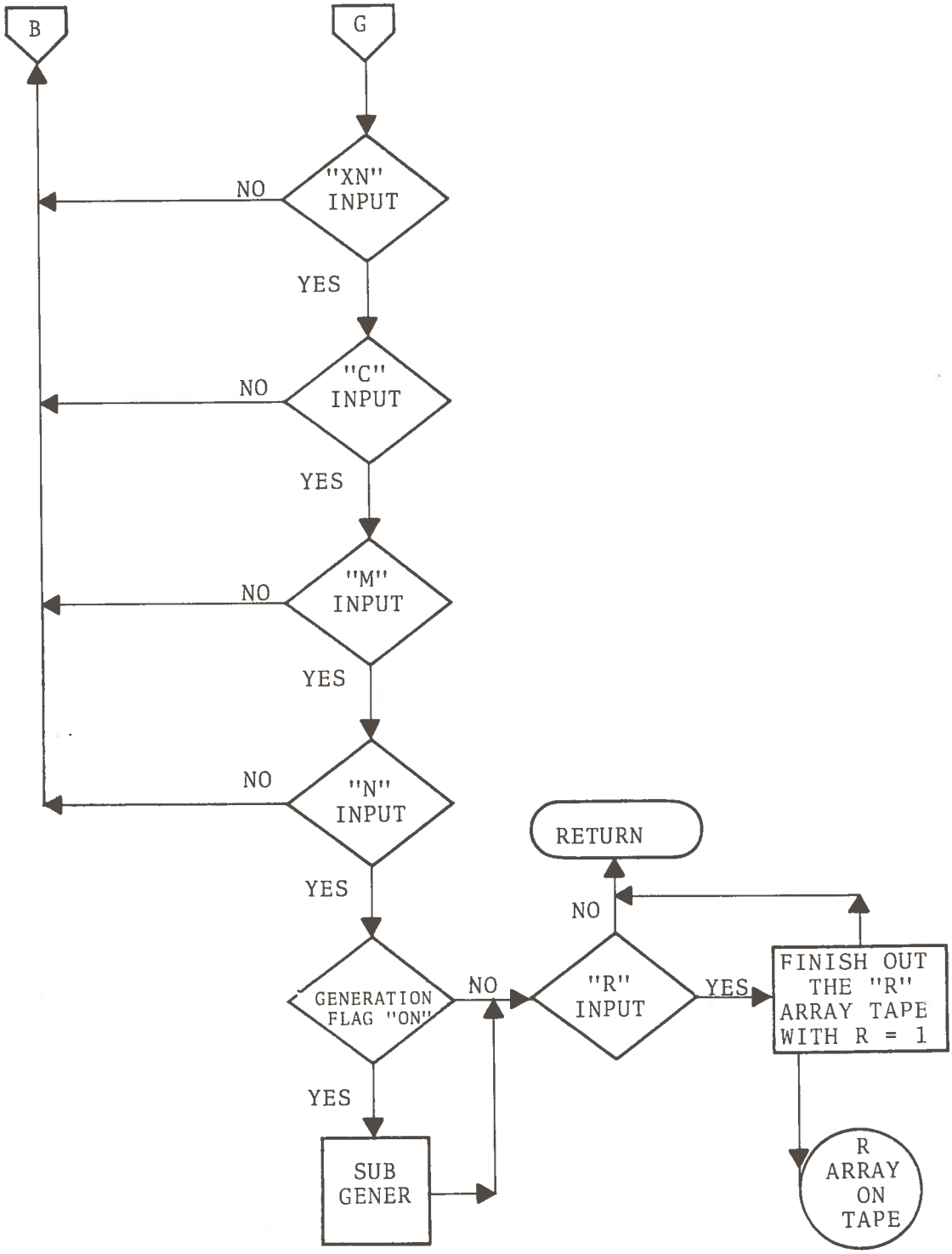


Figure A-4. Subroutine Input (Continued)

Figure A-5. Subroutine GENER

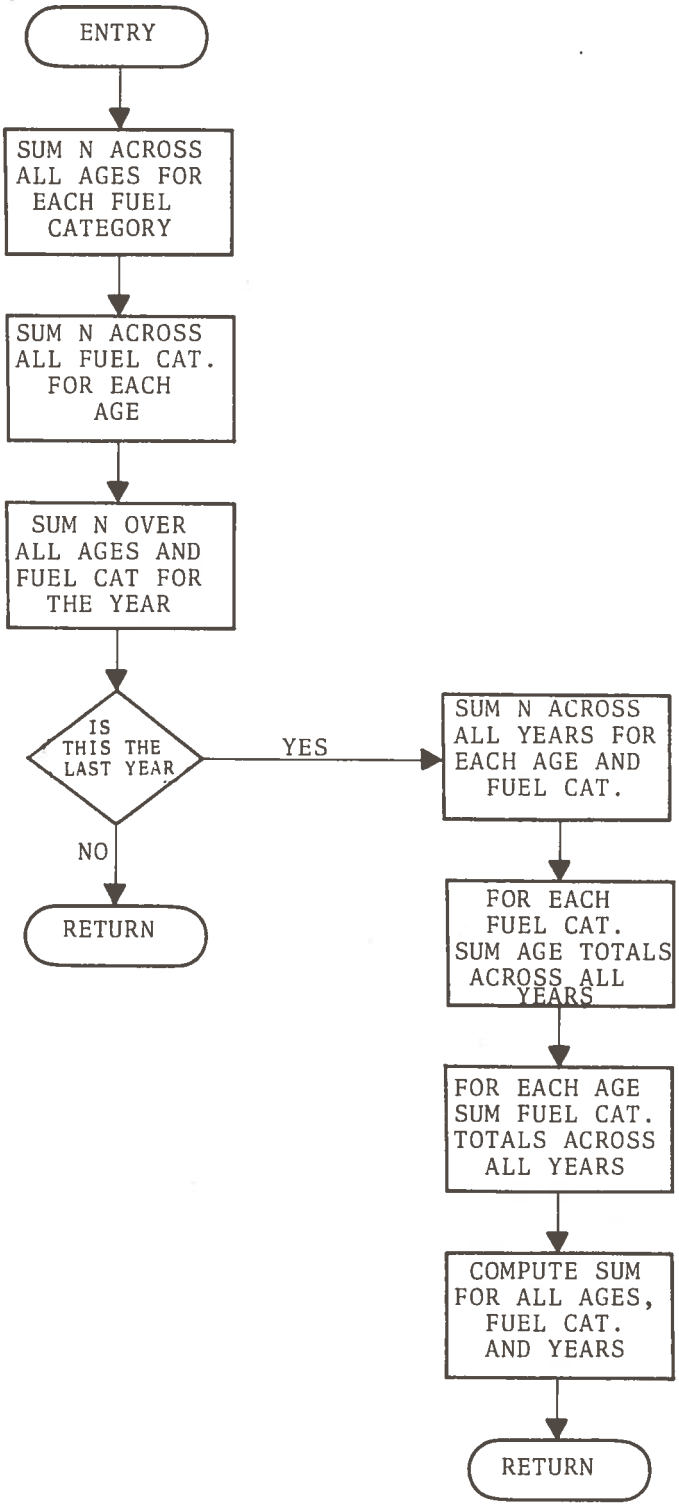


Figure A-6. Subroutine NSUM

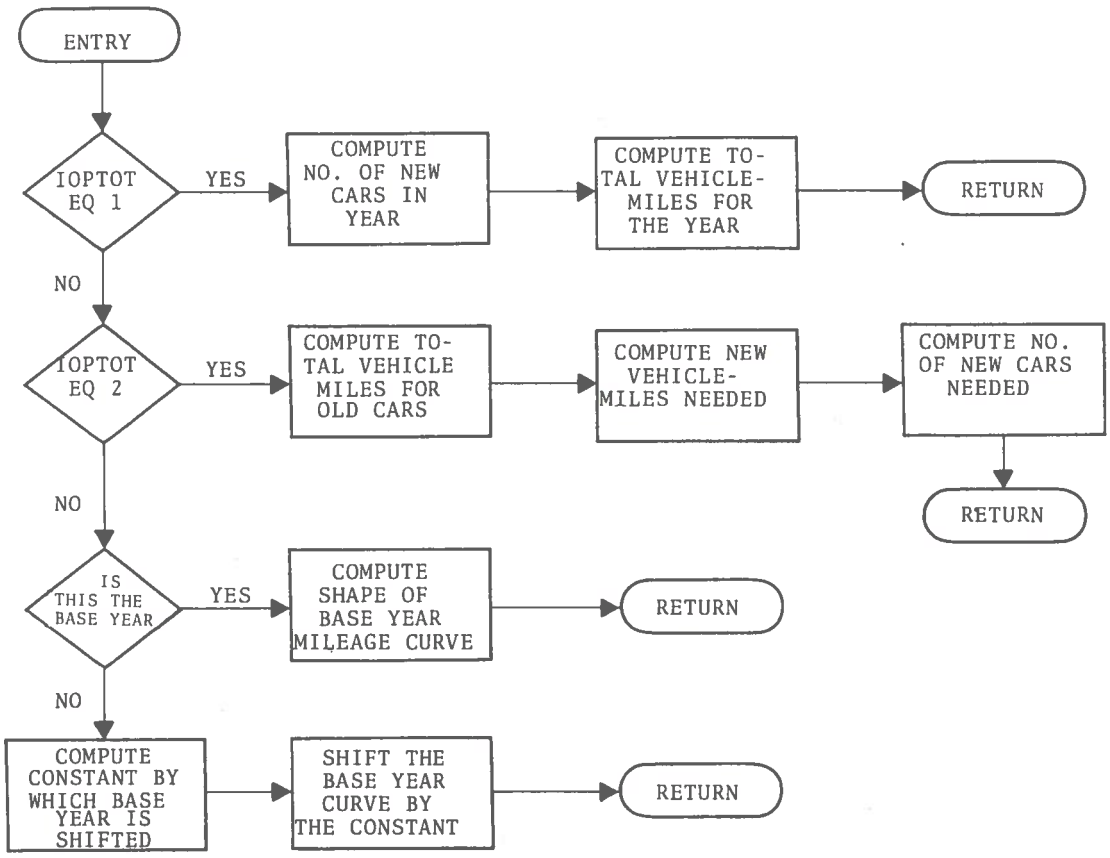


Figure A-7. Subroutine TOTVEH

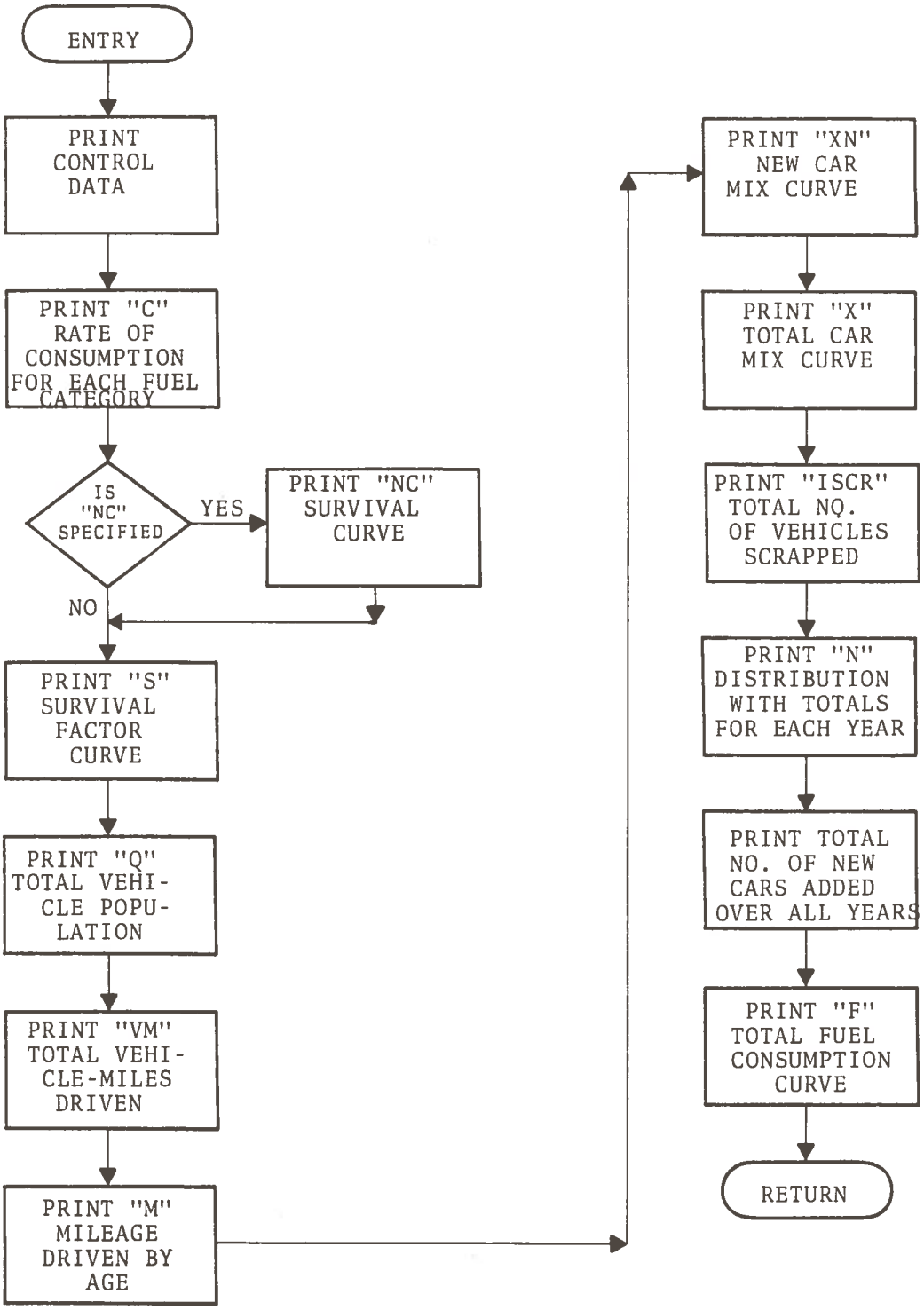


Figure A-8. Subroutine PRNTAB

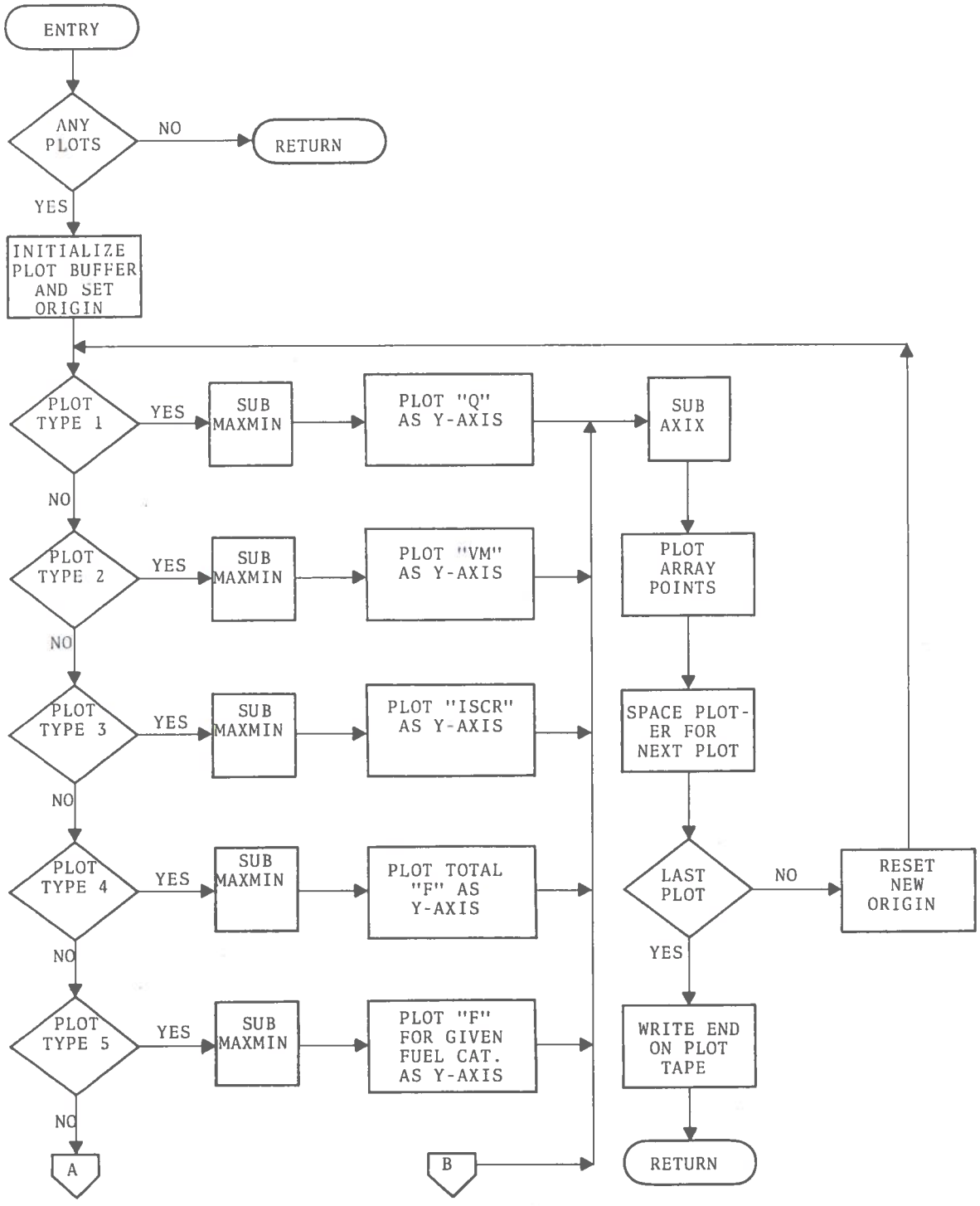


Figure A-9. Subroutine PLTOUT

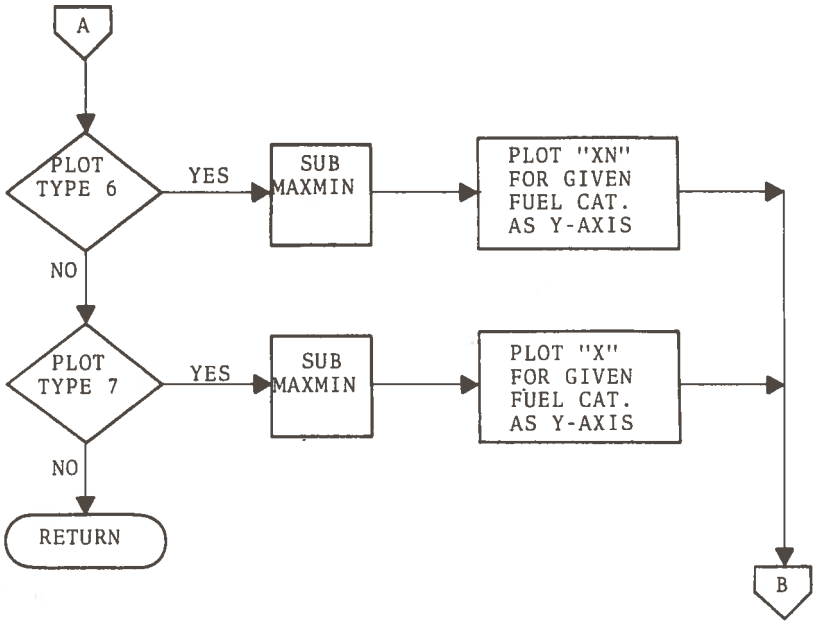


Figure A-9. Subroutine PLTOUT (Continued)

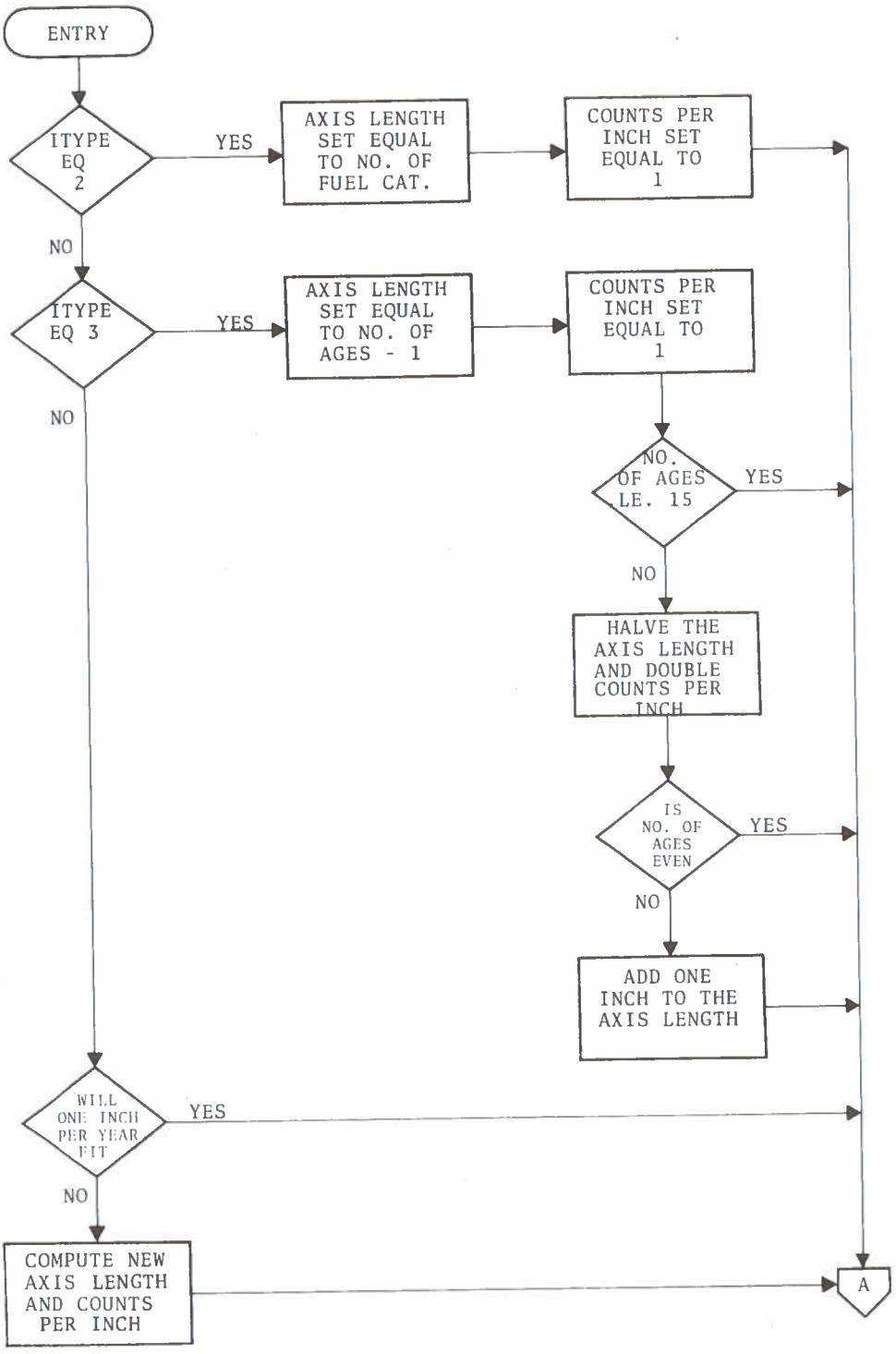


Figure A-10. Subroutine AXIX

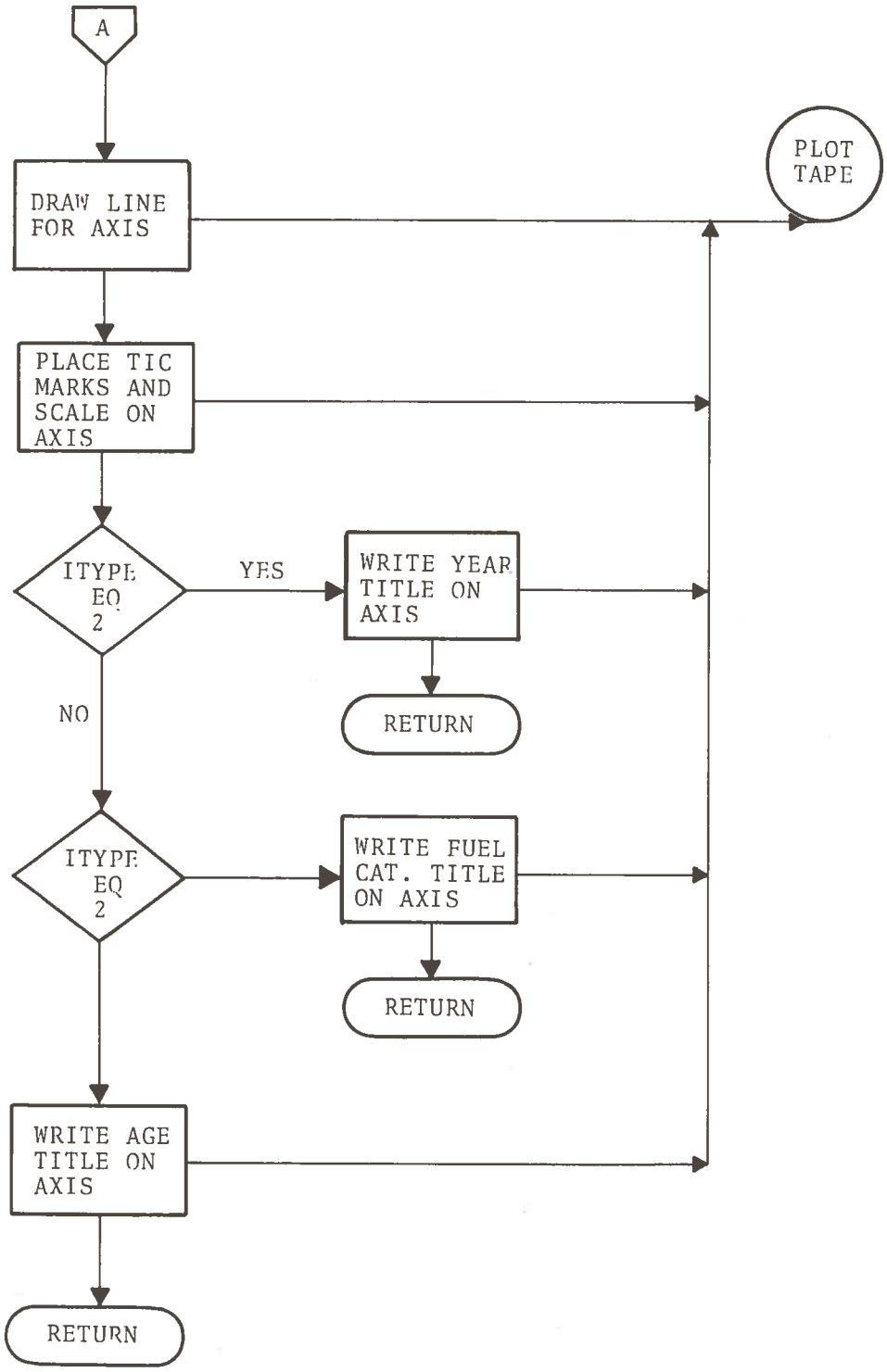


Figure A-10. Subroutine AXIX (Continued)

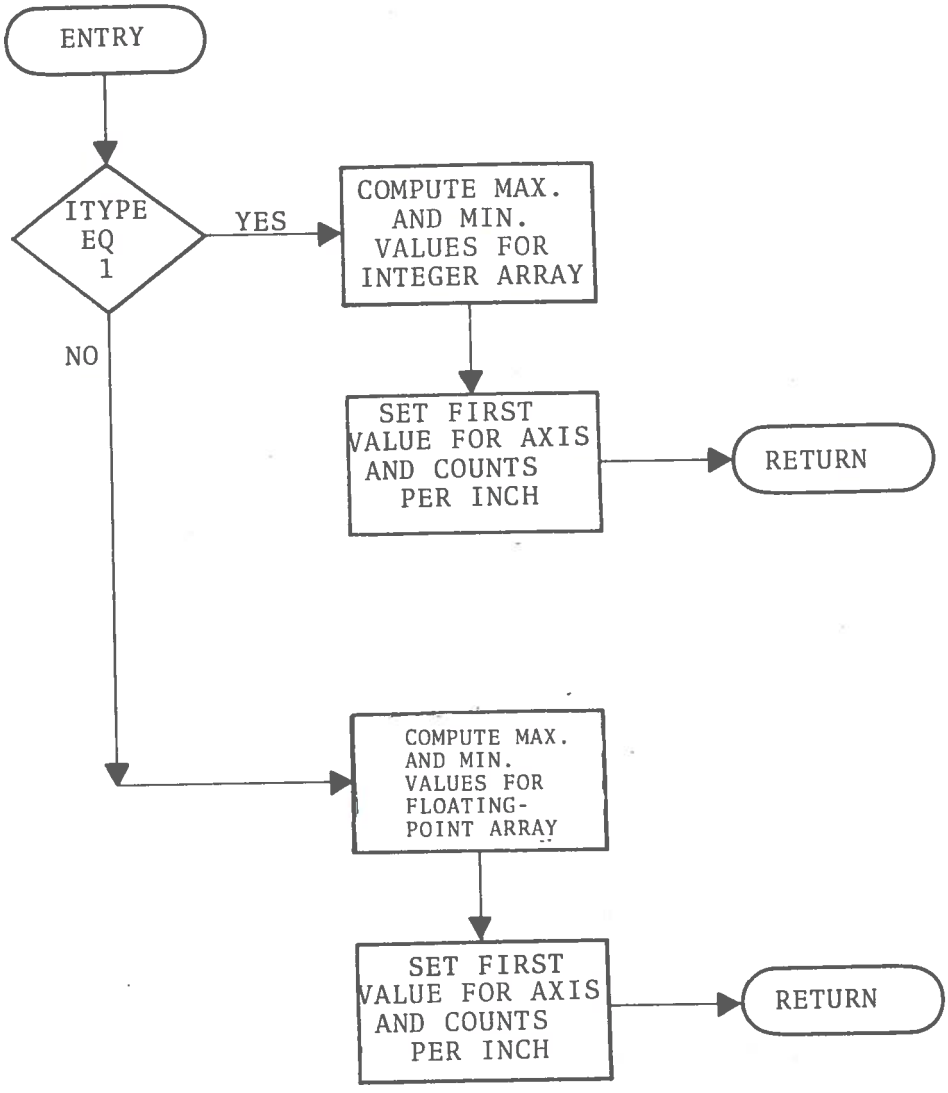


Figure A-11. Subroutine MAXMIN

APPENDIX B

LISTING

HIGHWAY FUEL CONSUMPTION

COMPUTER MODEL

(VERSION I)

```
$JOB D33518 1 KHL     MCFFATT - FUEL CONS          100 100

06/22/69  TIME... 0649.06 MIN
          $EXECUTE        IBJCB
IBJCB VERSION 5 HAS CONTROL.
$IBJCB FUEL     CECK
$IBFTC MAINX

                                                                  06/22/69                    PAGE  1
      FUEL
          MAINX       -  EFN   SOURCE STATEMENT  -  IFN(S)  -

      LOGICAL RDR
      COMMCN JQ(50),N(51,11,21),NC(10,2C),VM(50),S(10,19),C(10),
     1          M(50,20),XN(49,1C),F(51,11),X(50,10),II,JJ,KK,IOPTOT
      COMMCN /SCRAP/ISCR(49)
      COMMCN /IO/ IBASE,RDR
      COMMCN/CPLT/ NPLT,IPLT(50),MINX(50),MAXX(50),MINY(50),MAXY(50)
      COMMCN /TITL/TITLE(14)
1     CONTINUE
C
C     READ IN DATA
C
      CALL INPUT
C
C     COMPUTE THE NUMBER OF OLD CARS IN BASE YEAR                    2
C
      I=1
      IOLD=0
      DO 20 J=1,JJ
      DO 20 K=2,KK
 20   IOLD=IOLD+N(I,J,K)
      CALL NSUM(I)
C
C     COMPUTE INITIAL MIX AND FUEL CONSUMPTION FOR BASE YEAR        17
C                                                                   19
      CALL TOTVEH(I,IOLD)
      GO TO 50
C
C     BEGIN ITERATION FOR PROJECTED YEARS
C
 25   I=I+1
      IF(I.GT.II) GO TO 75
C
C     COMPUTE NUMBER OF PREVIOUS YEAR CARS TO SURVIVE
C
      I1=I-1
      DO 30 J=1,JJ
```

```
      DO 30 K=2,KK
 30   N(I,J,K)=FLOAT(N(II,J,K-1))*S(J,K-1)
C
C     COMPUTE NUMBER OF SURVIVED CARS TO BE ARBITRARILY RETIRED
C
      DO 35 J=1,JJ
      DO 35 K=2,KK
      R=1.
      IF(RDR) READ (9) R                                          44
 35   N(I,J,K)=FLOAT(N(I,J,K))*R
C
C     COMPUTE TOTAL NUMBER OF OLD CARS LEFT IN THE NEW YEAR
C
      IOLD=0
      DO 40 J=1,JJ
      DO 40 K=2,KK
 40   IOLD=IOLD+N(I,J,K)
C
C     COMPUTE NUMBER OF NEW CARS TO BE ADDED

 FUEL
     MAINX      - EFN   SOURCE STATEMENT  - IFN(S)  -   06/22/69        PAGE  2

C
      CALL TOTVEH(I,IOLD)                                         64
      ISCR(I-1)=JQ(I-1)-IOLD
      NEW=JQ(I)-IOLD
C
C     USE NEW CAR MIX TO DISTRIBUTE BY FUEL CATEGORY
C
      K=1
      ANEW=NEW
      DO 45 J=1,JJ
 45   N(I,J,K)=ANEW*XN(I-1,J)
      CALL NSUM(I)
C
C     COMPUTE THE TOTAL MIX FOR THE NEW YEAR
C
 50   FQ=JQ(I)                                                    79
      DO 60 J=1,JJ
 60   X(I,J)=FLOAT(N(I,J,KK+1))/FQ
C
C     COMPUTE FUEL CONSUMPTION FOR THE YEAR
C
      DO 70 J=1,JJ
      CEE=C(J)
      SUM=0.
      DO 65 K=1,KK
 65   SUM=SUM+FLOAT(N(I,J,K))*FLOAT(M(I,K))*CEE
 70   F(I,J)=SUM
      GO TO 25
```

```
C
C     COMPUTE TOTAL FUEL CONSUMPTION FOR ALL YEARS
C
 75   DO 85 J=1,JJ
      SUM=0.
      DO 80 I=1,II
 80   SUM=SUM+F(I,J)
 85   F(II+1,J)=SUM
      DO 95 I=1,II
      SUM=0.
      DO 90 J=1,JJ
 90   SUM=SUM+F(I,J)
 95   F(I,JJ+1)=SUM
      SUM=0.
      DO 97 I=1,II
 97   SUM=SUM+F(I,JJ+1)
      IP=II+1
      F(IP,JJ+1)=SUM
C
C     WRITE TABULAR OUTPUT
C
      CALL PRNTAB
C
C     GENERATE PLOTTED OUTPUT                                          139
C                                                                      141
      CALL PLTOUT
      GO TO 1
      END
```

09

FUEL 06/22/69 PAGE 3

$IBFTC TOTVX DECK

FUEL 06/22/69 PAGE 4

TOTVX - EFN SOURCE STATEMENT - IFN(S) -

```
      SUBROUTINE TOTVEH(I,IOLD)
      DIMENSION AC(20),NJ(20)
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1           M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,IOPTOT
      GO TO (10,25,40),IOPTCT
C
C     IOPTCT=1, I.E. JQ(I),M(I,K) INPUT AND VM(I) COMPUTED
C
```

```
C
C       COMPUTE NUMBER OF NEW CARS IN THE YEAR
C
 10     NEW=JQ(I)-ICLD
C
C       COMPUTE TOTAL VEHICLE-MILES FOR THE YEAR
C
        SUM=0.
        DO 20 K=2,KK
        ISUM=0
        DO 15 J=1,JJ
 15     ISUM=ISUM+A(I,J,K)
 20     SUM=SUM+FLOAT(ISUM)*FLOAT(M(I,K))
        VM(I)=SUM+FLOAT(NEW)*FLOAT(M(I,1))
        RETURN
C
C       IOPTCT=2, I.E. VM(I),M(I,K) INPUT AND JQ(I) COMPUTED
C
C
C       COMPUTE VEHICLE-MILES FOR OLD VEHICLES
C
 25     SUM=0.
        DO 35 K=2,KK
        ISUM=0
        DO 30 J=1,JJ
 30     ISUM=ISUM+A(I,J,K)
 35     SUM=SUM+FLOAT(ISUM)*FLOAT(M(I,K))
C
C       COMPUTE NEW VEHICLE-MILES NEEDED
C
        ANEW=VM(I)-SUM
C
C       COMPUTE NUMBER OF NEW VEHICLES NEEDED
C
        NEW=ANEW/FLOAT(M(I,1))
        JQ(I)=ICLD+NEW
        RETURN
C
C       IOPTCT=3, I.E. JQ(I), VM(I) INPUT AND M(I,K) COMPUTED
C
C
C       THE M(I,K) CURVE FOR THE BASE YEAR HAS BEEN INPUT
C
 40     IF(I.GT.1) GO TO 42
        DO 41 K=1,KK
 41     AC(K)=M(1,K)-M(1,1)
        RETURN
```

```
C
C     COMPUTE CONSTANT BY WHICH M(I,K) CURVE IS SHIFTED FOR THIS YEAR
C
 42   DO 44 K=1,KK
      ISUM=0
      DO 43 J=1,JJ
 43   ISUM=ISUM+N(I,J,K)
 44   NJ(K)=ISUM
      SUM=0.
      DO 45 K=1,KK
 45   SUM=SUM+AC(K)*FLOAT(NJ(K))
      CONST=(VM(I)-SUM)/FLOAT(JQ(I))-FLOAT(M(1,1))
C
C     SHIFT THE BASE YEAR CURVE BY THE CONSTANT
C
      DO 50 K=1,KK
 50   M(I,K)=FLOAT(M(1,K))+CONST
      RETURN
      END
```



```
$IBFTC NSUMX   DECK
```



```
      SUBROUTINE NSUM(I)
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1            M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,IOPTOT
C
C     SET CONSTANTS
C
      IP=II+1
      JP=JJ+1
      KP=KK+1
C
C     FOR EACH FUEL CATEGORY SUM N ACROSS ALL AGES FOR ONE YEAR
C
```

```
      DO 10 J=1,JJ
      ISUM=0
      DO 5 K=1,KK
 5    ISUM=ISUM+N(I,J,K)
 10   N(I,J,KP)=ISUM
C
C     FOR EACH AGE SUM N ACROSS ALL FUEL CATEGORIES FOR ONE YEAR
C
      DO 20 K=1,KK
      ISUM=0
      DO 15 J=1,JJ
 15   ISUM=ISUM+N(I,J,K)
 20   N(I,JP,K)=ISUM
      ISUM=0
C
C     SUM OVER ALL AGES AND FUEL CATEGORIES FOR ONE YEAR
C
      DO 21 J=1,JJ
 21   ISUM=ISUM+N(I,J,KP)
      N(I,JP,KP)=ISUM
      IF(I.NE.II) RETURN
C
C     THE FOLLOWING OCCUR AFTER THE LAST PREDICTED YEAR ONLY
C     FOR EACH AGE AND FUEL CATEGORY SUM N ACROSS ALL YEARS
C
      DO 30 J=1,JJ
      DO 30 K=1,KK
      ISUM=0
      DO 25 INDEX=1,II
 25   ISUM=ISUM+N(INDEX,J,K)
 30   N(IP,J,K)=ISUM
C
C     FOR EACH FUEL CATEGORY SUM TOTAL AGES ACROSS ALL YEARS
C
      DO 40 J=1,JJ
      ISUM=0
      DO 35 K=1,KK
 35   ISUM=ISUM+N(IP,J,K)
 40   N(IP,J,KP)=ISUM
C
C     FOR EACH AGE SUM TOTAL FUEL CATEGORIES ACROSS ALL YEARS
C
      DO 50 K=1,KK
```

NSUMX - EFN SOURCE STATEMENT - IFN(S) -

```
      ISUM=0
      DO 45 J=1,JJ
   45 ISUM=ISUM+N(IP,J,K)
   50 N(IP,JP,K)=ISUM
      ISUM=0
C
C     COMPLTE SUM CVER ALL AGES, YEARS AND FUEL CATEGORIES
C
      DO 55 J=1,JJ
   55 ISUM=ISUM+N(IP,J,KP)
      N(IP,JP,KP)=ISUM
      RETURN
      END
```

STORAGE MAP

MAIN PROGRAM

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JQ	00000	I	N	00062	I	NC	27067	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	IOPTOT	34763	I			

COMMON BLOCK SCRAP ORIGIN 34765 LENGTH 00061

ISCR	00000	I

COMMON BLOCK IC ORIGIN 35046 LENGTH 00002

IBASE	00000	I	RDR	00001	L			

COMMON BLOCK CPLT ORIGIN 35050 LENGTH 00373

NPLT	00000	I	IPLT	00001	I	MINX	00063	I
MAXX	00145	I	MINY	00227	I	MAXY	00311	I

COMMON BLOCK TITL ORIGIN 35443 LENGTH 00016

TITLE	00000	R

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
I	35461	I	IOLD	35462	I	J	35463	I
K	35464	I	I1	35465	I	R	35466	R
NEW	35467	I	ANEW	35470	R	FQ	35471	R
CEE	35472	R	SUM	35473	R	IP	35474	I

ENTRY POINTS

..... SECTION 7

SUBROUTINES CALLED

INPUT	SECTION	8	NSUM	SECTION	9	TOTVEH	SECTION	10
.FRDB.	SECTION	11	PRNTAB	SECTION	12	PLTOUT	SECTION	13
.UNDB.	SECTION	14	.FRLR.	SECTION	15	.FBLT.	SECTION	16
.FBDT.	SECTION	17	E.1	SECTION	18	E.2	SECTION	19
E.3	SECTION	20	E.4	SECTION	21	CC.1	SECTION	22
CC.2	SECTION	23	CC.3	SECTION	24	CC.4	SECTION	25
SYSLOC	SECTION	26						

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION

FUEL 06/22/69 PAGE 10
MAINX STORAGE MAP

1	1A	35511	20	11A	35540	50	80A	36053
25	21A	35562	75	105A	36221	30	32A	35630
35	46A	35712	40	58A	35760	45	74A	36035
60	85A	36103	70	100A	36213	65	96A	36156
85	114A	36252	80	111A	36245	95	126A	36311
90	123A	36303	97	133A	36327			

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 36403.

FUEL 06/22/69 PAGE 11
TOTVX STORAGE MAP

SUBROUTINE TOTVEH

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JQ	00000	I	N	00062	I	NC	27067	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	IOPTOT	34763	I			

DIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
AC	34765	R	NJ	35011	I			

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
NEW	35035	I	SUM	35036	R	K	35037	I
ISUM	35040	I	ANEW	35041	R	CONST	35042	R

ENTRY POINTS

TOTVEH SECTION 3

SUBROUTINES CALLED

.FXEM.	SECTION	4	E.1	SECTION	5	E.2	SECTION	6
E.3	SECTION	7	E.4	SECTION	8	CC.1	SECTION	9
CC.2	SECTION	10	CC.3	SECTION	11	CC.4	SECTION	12
SYSLOC	SECTION	13						

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION
10	3A	35066	25	22A	35206	40	41A	35324
20	16A	35127	15	12A	35121	35	33A	35243
30	29A	35235	42	52A	35353	41	47A	35336
44	63A	35403	43	59A	35375	45	70A	35414
50	80A	35476						

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 35571.

STORAGE MAP

SUBROUTINE NSUM

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JC	CCCCC	I	N	00062	I	NC	27067	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	ICPTCT	34763	I			

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
IP	34765	I	JP	34766	I	KP	34767	I
J	34770	I	ISUM	34771	I	K	34772	I

ENTRY POINTS

NSUM SECTION 3

SUBROUTINES CALLED

SYSLOC SECTION 4

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION
10	15A	35054	5	11A	35046	20	29A	35120
15	25A	35112	21	37A	35141	30	57A	35233
25	53A	35226	40	72A	35301	35	68A	35273
50	86A	35345	45	82A	35337	55	94A	35366

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 35444.

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$IBMAP TAPE09 DECK

FUEL TAPE09 06/22/69 PAGE 14
7094 RELMOD ASSEMBLY.

```
        $IBLDR TAPE09                                   06/22/69    TAPE0000
        $FILE  TAPE09  'UNIT09',UT5,800,BLK=3,MCUNT,SCRATCH,OUTPUT,BIN          TAPE0001
```

FUEL TAPE09 06/22/69 PAGE 15
FILE DICTIONARY.

```
        $FDICT TAPE09                                                           TAPE0002
```

```
BINARY CARD ID. TAPE0003
              2050C2000003  UNIT09 FILE   'UNIT09              '          BIN,OUTPUT,NOHCVN,BLK=3
              CCCCC0000000
              644533163C011
              6C6C6C6C6C6C
              6C6C60606060


       FUEL   TAPEC9                                                06/22/69                    PAGE  16
           ASSEMBLED TEXT.

                   $TEXT  TAPEC9                                                    TAPE0004

                        0C000              ENTRY .UN09.

BINARY CARD ID. TAPE0005
       C00CC  C CCC00 0 04C01  10010  .LNC9. PZE UNIT09
                                      UNIT09 FILE ,UT5,800,BLK=3,MCUNT,SCRATCH,OUTPUT,BIN
                        C0C30  01111        END


       FUEL   TAPEC9                                                06/22/69                    PAGE  17
           CONTROL DICTIONARY

                   $CDICT TAPEC9                                                    TAPE0006

BINARY CARD ID. TAPE0007
              CCCCC1000000              PREFACE     START=0,LENGTH=1,TYPE=7094,CMPLX=5
              CCCCC4000005
              632147250011       TAPEC9 CECK
              CCCCC1000000
              33644503C1133      .UN09. REAL        SECT. 2,LOC=0,LENGTH=0
              000C00C00000

                   $DKEND TAPEC9                                                    TAPE0008


NO MESSAGES FOR THIS ASSEMBLY
```

```
       FUEL   TAPEC9                                                    06/22/69                        PAGE  18
           SYMBOL REFERENCE DATA

REFERENCES TO DEFINED SYMBOLS.

  CLASS  SYMBOL    VALUE   REFERENCES

         .UNC9.    CCCCC   C
  LCTR    BLCTR
  CLAL    UNCS
  LCTR   //
  FILE   UNITC9        1   0



       FUEL                                                             06/22/69                        PAGE  19

$CRIGIN        ALPHA
$IBFTC INPUX   DECK



       FUEL                                                             06/22/69                        PAGE  20
           INPUX      -  EFN   SOURCE STATEMENT  -  IFN(S)  -

      SUBROUTINE INPUT
      LOGICAL ECF,NGEN,RDR
      DIMENSION BUF(20)
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1            M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,ICPTOT
      COMMON/IC/IBASE,RDR
      COMMON/CPLT/ NPLT,IPLT(50),MINX(50),MAXX(50),MINY(50),MAXY(50)
      COMMON /TITL/TITLE(14)
      DATA IR,IXN,INC,IG,IVM,IC,IN,IMM,IPCT,IS/6HR     ,6HXN    ,
     16HNC    ,6HG     ,6HVM    ,6HC     ,6HN     ,6HM     ,6HPLOT  ,
     26HS     /
      DATA NEND/6HEND   /
      DATA ITL/6HTITLE /
      IF(EOF(5)) GO TO 10010                                                    2
      WRITE (6,111)                                                             5
  111 FORMAT(1H1)
C
C     INITIALIZE  PARAMETERS
C
      RDR=.FALSE.
      NPLT=0
      MPLT=50
```

```
      JREC=0
      NCD=0
      NGEN=.TRUE.
      DO 3 I=1,50
C
C     SET  ALL  INPUT  ARRAYS  EQUAL  TC  -1
C
      VM(I)=-1.
      JQ(I)=-1
      DO 3 J=1,10
      IF(I.EQ.50) GO TO 1
      XN(I,J)=-1.
 1    CONTINUE
      DO 3 K=1,20
      M(I,K)=-1
      IF(K.EQ.20) GO TO 2
      S(J,K)=-1.
      NC(J,K)=-1
 2    CONTINUE
      C(K)=-1.
      N(I,J,K)=-1
 3    CONTINUE
C
C     READ  INITIAL  DATA  CARD
C
 5    READ (5,100) IBASE,II,JJ,KK,IOPTCT                              38
 100  FORMAT(5I4)
      NCD=NCD+1
C
C     TEST  RANGES  OF  INPUT  PARAMETERS
C
      IF(IBASE.LT.1900.OR.IBASE.GT.3000) GO TO 9001
      IF(II.LT.1.OR.II.GT.50) GO TO 9002
```



```
      IF(JJ.LT.1.OR.JJ.GT.10) GO TO 9003
      IF(KK.LT.1.OR.KK.GT.20) GO TO 9004
      IF(IOPTOT.LT.0.OR.IOPTCT.GT.3) GO TO 9005
      REWIND 9
C
C     WRITE  A  DUMMY  R  ARRAY  ON  TAPE
C
      DO 8 I=1,II                                                     59
      DO 8 J=1,JJ
      DO 8 K=2,KK
      R=1.
 8    WRITE (9) R                                                     67
```

```
      REWIND 9
C
C     READ  THE  TYPE  OF  DATA  CARD  INPUT                          71
C                                                                     72
 10   READ (5,200) ITYPE
 200  FORMAT(A6)
C
C     BACKSPACE  INPUT  TAPE  SO  CARD  MAY  BE  READ  AGAIN
C
      IF(ITYPE.EQ.NEND) GO TO 9500
      BACKSPACE 5
C
C     BRANCH  TO  THE  CORRECT  READ  STATEMENT  FOR  EACH  TYPE    76
C
      IF(ITYPE.EQ.IR  ) GO TO 1000
      IF(ITYPE.EQ.IXN) GO TO 1100
      IF(ITYPE.EQ.INC) GO TO 1200
      IF(ITYPE.EQ.IC  ) GO TO 1300
      IF(ITYPE.EQ.IVM) GO TO 1400
      IF(ITYPE.EQ.IC  ) GO TO 1500
      IF(ITYPE.EQ.IN  ) GO TO 1600
      IF(ITYPE.EQ.IMP) GO TO 1700
      IF(ITYPE.EQ.IS  ) GO TO 1800
      IF(ITYPE.EQ.IPOT) GO TO 1900
      IF(ITYPE.EQ.ITL) GO TO 2100
      NCD=NCD+1
      GO TO 9000
C
C     READ AN R ARRAY VALUE FOR YEAR IY , FUEL CAT. IJ AND AGE IK
C                                                                     111
 1000 READ (5,201) IY,IJ,IK,FACT
 201  FORMAT(6X,I4,2(1X,I2),1X,F10.7)
      NCD=NCD+1
      I=IY-IBASE+1
C
C     CHECK  RANGES
C
      IF(I.LT.1.OR.I.GT.II-1) GO TO 9006
      IF(IJ.LT.1.OR.IJ.GT.JJ) GO TO 9007
      IF(IK.LT.1.OR.IK.GT.KK-1) GO TO 9008
C
C     COMPUTE  POSITION ON TAPE
C
      KM=KK-1
```

```
      IM=I-1
      MREC=(IM*JJ+(IJ-1))*KM+IK
      IF(MREC.LE.JREC) GO TO 9009
      IF(MREC.EQ.JREC+1) GO TO 1010
      NI=MREC-JREC-1
      RR=1.
C
C     SPACE OUT TO CORRECT RECORD AND WRITE R FACTOR
C
      DO 1005 I=1,NI
 1005 WRITE (9) RR                                                    139
 1010 WRITE (9) FACT                                                  142
      RDR=.TRUE.
      IREC=MREC
      JREC=MREC
      GO TO 10
C
C     READ NEW CAR MIX FOR YEAR IY
C
 1100 READ (5,300) IY,(BUF(J),J=1,JJ)                                145
  300 FORMAT(6X,I4,10F7.4)
      NCD=NCD+1
      IF(IY.EQ.0) GO TO 1110
      I=IY-IBASE
C
C     CHECK RANGES
C
      IF(I.LT.1.OR.I.GT.II-1) GO TO 9010
      DO 1105 J=1,JJ
 1105 XN(I,J)=BUF(J)
      GO TO 10
 1110 IM=II-1
C
C     IF IY IS BASE YEAR SET ALL YEARS EQUAL TO IT
C
      DO 1115 I=1,IM
      DO 1115 J=1,JJ
 1115 XN(I,J)=BUF(J)
      GO TO 10
C
C     READ THE NUMBER OF CARS VS. AGE CURVE FOR FUEL CATEGORY IJ
C
 1200 READ (5,300) IJ                                                 184
      NCD=NCD+1
      IF(IJ.EQ.0) GO TO 1205
      IF(IJ.LT.0.OR.IJ.GT.JJ) GO TO 9011
      READ (5,400) (NC(IJ,K),K=1,KK)                                  192
  400 FORMAT(10I8)
      NCD=NCD+KK/10
      IF(KK.GT.(KK/10)*10) NCD=NCD+1
```

```
      GO TO 10
 1205 IJ=1
C
C     IF FUEL CAT. BLANK SET ALL CAT. THE SAME
C
      READ (5,400) (NC(IJ,K),K=1,KK)                                    204
```



```
      NCD=NCD+KK/10
      IF(KK.GT.(KK/10)*10) NCD=NCD+1
      DO 1210 IJ=2,JJ
      DO 1210 K=1,KK
 1210 NC(IJ,K)=NC(1,K)
      GO TO 10
C
C     READ TOTAL VEHICLE POPULATION CURVE FOR ALL YEARS
C
 1300 READ (5,300) IY                                                    226
      NCD=NCD+1
C
C     IY MUST EQUAL BASE YEAR
C
      IF(IY.NE.IBASE) GO TO 9012
      READ (5,500) (JQ(I),I=1,II)                                        231
  500 FORMAT(8I10)
      NCD=NCD+II/8
      IF(II.GT.(II/ 8)* 8) NCD=NCD+1
      GO TO 10
C
C     READ TOTAL VEHICLE-MILEAGE CURVE FOR ALL YEARS
C
 1400 READ (5,300) IY                                                    242
      NCD=NCD+1
C
C     IY MUST EQUAL BASE YEAR
C
      IF(IY.NE.IBASE) GO TO 9013
      READ (5,600) (VM(I),I=1,II)                                        247
  600 FORMAT(8E10.5)
      NCD=NCD+II/8
      IF(II.GT.(II/ 8)* 8) NCD=NCD+1
      GO TO 10
C
C     READ FUEL CONSUMPTION CURVES IN MILES/GAL.
C
 1500 READ (5,700) (C(J),J=1,JJ)                                         258
```

```
 700  FORMAT(10X,10F7.3)
      NCD=NCD+1
      DO 1505 J=1,JJ
C
C     CHECK FOR BLANK OR ZERO INPUT
C
      IF(C(J).GT..001) GO TO 1505
      C(J)=.001
      WRITE (6,800) J                                                  274
 800  FORMAT(//30H FUEL CONSUMPTION RATE FOR AGE,I2,
     1 40H WAS NOT INPUT -- SET TO .001 MILES/GAL.)
C
C     CONVERT TO GAL./MILE
C
 1505 C(J)=1./C(J)
      GO TO 10
C
C     READ IN N ARRAY FOR PAST YEARS IF BASE YEAR IS TO BE GENERATED
```



```
C
 1600 READ (5,300) IY                                                  281
      NCD=NCD+1
      IF(IY.EQ.IBASE) GO TO 1605
      KM=KK-1
      IF(IY.LT.IBASE-KM.OR.IY.GT.IBASE) GO TO 9014
      I=IY-IBASE+KK
      READ (5,801) (N(I,J,1),J=1,JJ)                                   291
 801  FORMAT(10I8)
      NCD=NCD+JJ/10
      IF(JJ.GT.(JJ/10)*10) NCD=NCD+1
      NGEN=.TRUE.
      GO TO 10
C
C     READ IN BASE YEAR N ARRAY FOR NC GENERATION
C
 1605 DO 1610 K=1,KK
      READ (5,801) (N(1,J,K),J=1,JJ)                                   305
      NCD=NCD+JJ/10
      IF(JJ.GT.(JJ/10)*10) NCD=NCD+1
 1610 CONTINUE
      NGEN=.FALSE.
      GO TO 10
C
C     READ MILAGE DRIVEN VS. AGE FOR BASE YEAR
C
```

```
 1700 READ (5,300) IY                                                    317
      NCD=NCD+1
      IF(IY.NE.IBASE) GO TO 9015
      READ (5,801) (M(1,K),K=1,KK)                                       322
      NCD=NCD+KK/10
      IF(KK.GT.(KK/10)*10) NCD=NCD+1
      GO TO 10
C
C     READ IN SURVIVAL FACTOR CURVE VS. AGE FOR GIVEN FUEL CAT. IJ
C
 1800 READ (5,300) IJ                                                    333
      NCD=NCD+1
      KM=KK-1
C
C     CHECK RANGES
C
      IF(IJ.LT.0.OR.IJ.GT.JJ) GO TO 9015
      IF(IJ.EQ.0) GO TO 1805
      READ (5,950) (S(IJ,K),K=1,KM)                                      342
  950 FORMAT(10F8.5)
      NCD=NCD+KM/10
      IF(KM.GT.(KM/10)*10) NCD=NCD+1
      GO TO 10
 1805 IJ=1
C
C     IF CAT. IJ BLANK OR ZERO SET CURVE FOR ALL CAT. THE SAME
C
      READ (5,950) (S(IJ,K),K=1,KM)                                      354
      NCD=NCD+KM/10
      IF(KM.GT.(KM/10)*10) NCD=NCD+1
```



```
      DO 1810 IJ=2,JJ
      DO 1810 K=1,KM
 1810 S(IJ,K)=S(1,K)
      GO TO 10
C
C     READ IN A PLOT CARD
C
 1900 NPLT=NPLT+1
      IF(NPLT.GT.50) GO TO 974
      READ (5,970) IPLT(NPLT),MINX(NPLT),MAXX(NPLT),MINY(NPLT),          380
     1MAXY(NPLT)
  970 FORMAT(10X,5I10)
      NCD=NCD+1
      IF(IPLT(NPLT).GE.1.AND.IPLT(NPLT).LE.MPLT) GO TO 10
```

```
      WRITE (6,971) IPLT(NPLT)
  971 FORMAT(//32H PLOT TYPE INCORRECTLY INPUT AS ,I10,                    391
     128H. OUTSIDE PERMISSIBLE RANGE.)
      NPLT=NPLT-1
      WRITE (6,10001) NCD
      WRITE (6,972)                                                       393
  972 FORMAT(//10X,23HEXECUTION CONTINUES...    )                         394
      GO TO 10
  974 WRITE (6,976)
  976 FORMAT(//31H MAXIMUM NO. OF PLOTS EXCEEDED.)                        396
      WRITE (6,972)
      GO TO 10                                                            397
C
C     BEGIN CHECKS FOR ALL NEEDED INPUT DATA
C
 2100 READ (5,980) TITLE
  980 FORMAT(10X,14A5)                                                    399
      NCD=NCD+1
      GO TO 10
 9500 IF(JQ(1).GT.0) GO TO 9515
      IF(M(1,1).GT.0) GO TO 9510
      IF(VM(1).GT.0.) GO TO 9505
      GO TO 9016
 9505 GO TO 9017
 9510 IF(VM(1).LT.0.) GO TO 9018
C
C     ALSO VERIFY IO OPTION
C
      IF(IOPTOT.EQ.2) GO TO 9530
      IOPTOT=2
      WRITE (6,900) IOPTOT
  900 FORMAT(//45H IOPTOT INCORRECTLY INPUT. RESET TO IOPTOT = ,I1//      419
     110X,23HEXECUTION CONTINUES...    )
      GO TO 9530
 9515 IF(M(1,1).GT.0) GO TO 9520
      IF(VM(1).GT.0.) GO TO 9525
      GO TO 9026
 9520 IF(VM(1).GT.0.) GO TO 9530
      IF(IOPTOT.EQ.1) GO TO 9530
      IOPTOT=1
      WRITE (6,900) IOPTOT
      GO TO 9530                                                          434

      FUEL
          INPUX      - EFN   SOURCE STATEMENT  -  IFN(S)  -    06/22/69          PAGE  26

 9525 IF(M(1,1).GT.0) GO TO 9530
      IF(IOPTOT.EQ.3) GO TO 9530
```

```
      IOPTCT=3
      WRITE (6,900) IOPTCT
C
C     CHECK FOR SURVIVAL CURVE                                          442
C
 9530 IF(S(1,1).GT.0.) GO TO 9535
      IF(NC(1,1).GT.0) GO TO 9540
      GO TO 9020
 9535 IF(NC(1,1).GT.0) GO TO 9021
      GO TO 9550
 9540 KM=KK-1
C
C     IF NC WAS INPUT, COMPUTE S FROM IT
C
      DO 9545 J=1,JJ
      DO 9545 K=1,KM
 9545 S(J,K)=FLOAT(NC(J,K+1))/FLOAT(NC(J,K))
 9550 DO 9560 I=2,II
      IM=I-1
      IY=IBASE+IM
C
C     CHECK FOR NEW CAR MIX
C
      IF(XN(IM,1).LT.0.) GO TO 9022
 9560 CONTINUE
      DO 9565 J=1,JJ
C
C     CHECK FOR FUEL CONSUMPTION CATEGORY
C
      IF(C(J).LT.0.) GO TO 9023
 9565 CONTINUE
      IF(M(2,1).GT.0) GO TO 9567
C
C     CHECK FOR MILEAGE VS. AGE CURVE
C
      DO 9566 I=2,II
      DO 9566 K=1,KK
 9566 M(I,K)=M(1,K)
 9567 CONTINUE
C
C     CHECK FOR N ARRAY
C
      IF(NGEN) GO TO 9570
      IF(N(1,1,1).LT.0) GO TO 9024
      GO TO 9580
 9570 KM=KK-1
      DO 9575 I=1,KM
      IY=IBASE-20+I
      IF(N(I,1,1).LT.0) GO TO 9025
 9575 CONTINUE
```

```
C
C      GENERATE N ARRAY IF NECESSARY
C
       CALL CENER


        FUEL
            INPLX       -  EFN    SOURCE STATEMENT  -  IFN(S)  -          06/22/69                    PAGE  27
C
C      FINISH OUT R TAPE IF VALUES WERE INPUT
C
 9580 IF(.NOT.RDR) GO TO 9590                                                526
      MREC=(II-1)*JJ*(KK-1)
      R=1.
      DO 9585 I=JREC,MREC
 9585 WRITE (9) R
      END FILE 9                                                             534
      REWIND 9                                                               536
 9590 RETURN                                                                 537
C
C      FOLLOWING ERROR MESSAGES ARE SELF EXPLANATORY
C
 9000 WRITE (6,9100) ITYPE
 9100 FORMAT(//36H UNKNOWN TYPE OF DATA CARD INPUT AS ,A6,                    539
     138H. ALL TYPES MUST START IN CARD COL. 1./36X,6H123456/35X,
     29HCARD COL.)
      GO TO 9999
 9001 WRITE (6,9101) IBASE
 9101 FORMAT(//20H BASE YEAR INPUT AS ,I10,                                   541
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9002 WRITE (6,9102) II
 9102 FORMAT(//23H NO. OF YEARS INPUT AS ,I10,                                543
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9003 WRITE (6,9103) JJ
 9103 FORMAT(//33H NO. OF FUEL CATEGORIES INPUT AS ,I10,                      545
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9004 WRITE (6,9104) KK
 9104 FORMAT(//22H NO. OF AGES INPUT AS ,I10,                                 547
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9005 WRITE (6,9105) IOPTOT
 9105 FORMAT(//20H IO OPTION INPUT AS ,I10,                                   549
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9006 WRITE (6,9106) IY
 9106 FORMAT(//37H YEAR FOR RETIREMENT FACTOR INPUT AS ,I10,                  551
     128H. OUTSIDE PERMISSIBLE RANGE.)
```

```
      GO TO 9999
 9007 WRITE (6,9107) IJ                                                  553
 9107 FORMAT(//46H FUEL CATEGORY FOR RETIREMENT FACTOR INPUT AS ,I10,
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9008 WRITE (6,9108) IK                                                  555
 9108 FORMAT(//36H AGE FOR RETIREMENT FACTOR INPUT AS ,I10,
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9009 WRITE (6,9109) IY,IJ,IK                                            557
 9109 FORMAT(//20H RETIREMENT FACTOR (,I4,2(1H,,I2),
     121H) IS OUT OF SEQUENCE.)
      GO TO 9999
 901C WRITE (6,9110) IJ                                                  559


      FUEL
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 9110 FORMAT(//31H YEAR FOR NEW CAR MIX INPUT AS ,I10,
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9011 WRITE (6,9111) IJ                                                  561
 9111 FORMAT(//43H FUEL CATEGORY FOR SURVIVAL CURVE INPUT AS ,I10,
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9012 WRITE (6,9112) IY                                                  563
 9112 FORMAT(//39H INCORRECT BASE YEAR INPUT FOR Q ARRAY.,I10)
      GO TO 9999
 9013 WRITE (6,9113) IY                                                  565
 9113 FORMAT(//40H INCORRECT BASE YEAR INPUT FOR VM ARRAY.,I10)
      GO TO 9999
 9014 WRITE (6,9114) IY                                                  567
 9114 FORMAT(//54H YEAR FOR N ARRAY NEW CARS (TO BE GENERATED) INPUT AS,
     11H ,I10,
     228H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9015 WRITE (6,9115) IY                                                  569
 9115 FORMAT(//39H INCORRECT BASE YEAR INPUT FOR M ARRAY.,I10)
      GO TO 9999
 9016 WRITE (6,9116)                                                     571
 9116 FORMAT(//33H NO INPUT FOR Q, VM, OR M ARRAYS.)
      GO TO 9999
 9017 WRITE (6,9117)                                                     573
 9117 FORMAT(//28H NO INPUT FOR Q OR M ARRAYS.)
      GO TO 9999
 9018 WRITE (6,9118)                                                     575
 9118 FORMAT(//29H NO INPUT FOR Q OR VM ARRAYS.)
      GO TO 9999
 9019 WRITE (6,9119) IJ                                                  577
 9119 FORMAT(//46H FUEL CATEGORY FOR RETIREMENT FACTOR INPUT AS ,I10,
```

```
     128H. OUTSIDE PERMISSIBLE RANGE.)
      GO TO 9999
 9020 WRITE (6,9120)
 9120 FORMAT(//29H NO INPUT FOR S OR NC ARRAYS.)                    579
      GO TO 9999
 9021 WRITE (6,9121)
 9121 FORMAT(//28H BOTH S AND NC ARRAYS INPUT.)                     581
      GO TO 9999
 9022 WRITE (6,9122) IY
 9122 FORMAT(//22H NEW CAR MIX FOR YEAR ,I4,11H NOT INPUT.)         583
      GO TO 9999
 9023 WRITE (6,9123) J
 9123 FORMAT(//31H FUEL CONSUMPTION FOR CATEGORY ,I2,11H NOT INPUT.) 585
      GO TO 9999
 9024 WRITE (6,9124)
 9124 FORMAT(//33H N CURVE FOR BASE YEAR NOT INPUT.)                587
      GO TO 9999
 9025 WRITE (6,9125) IY
 9125 FORMAT(//26H NEW CAR CURVE N FOR YEAR ,I4,11H NOT INPUT.)     589
      GO TO 9999
 9026 WRITE (6,9126)
 9126 FORMAT(//29H NO INPUT FOR M OR VM ARRAYS.)                    591
 9999 WRITE (6,10000)
10000 FORMAT(//10X,21HEXECUTION TERMINATED.   )                    592
```



```
      WRITE (6,10001) NCD
10001 FORMAT(//5X,29HERROR ON INPUT DATA CARD NO. ,I3)              593
10010 CONTINUE
      STOP
      END
```



```
$IBFTC GENEX   DECK
```

```
      SUBROUTINE GENER
C
C     THIS RCUTINE WILL BE USED IN A FUTURE VERSION OF THE PROGRAM
C     TO ALLOW THE USER TO GENERATE THE BASE YEAR N DISTRIBUTION
C
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1       M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,IOPTOT
      RETURN
      END
```


STORAGE MAP

SUBROUTINE INPUT

COMMON VARIABLES

ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
N	00062	I	NC	27067	I
S	27461	R	C	27757	R
XN	31741	R	F	32713	R
II	34760	I	JJ	34761	I
IOPTOT	34763	I			

COMMON BLOCK //

SYMBOL	LOCATION	TYPE
JQ	00000	I
VM	27377	R
M	27771	I
X	33774	R
KK	34762	I

COMMON BLOCK IO

ORIGIN 34765 LENGTH 00002

SYMBOL	LOCATION	TYPE
IBASE	00000	I
RDR	00001	L

COMMON BLOCK CPLT

ORIGIN 34767 LENGTH 00373

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
NPLT	00000	I	IPLT	00001	I
MAXX	00145	I	MINY	00227	I
			MINX	00063	I
			MAXY	00311	I

COMMON BLOCK TITL

ORIGIN 35362 LENGTH 00016

SYMBOL	LOCATION	TYPE
TITLE	00000	R

DIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE
BUF	35400	R

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
NGEN	35424	L	MPLT	35425	I
NCD	35427	I	I	35430	I
			JREC	35426	I
			J	35431	I

K	35432	I
NEND	35435	I
INC	35440	I
IC	35443	I
IS	35446	I
IY	35451	I
FACT	35454	R
MREC	35457	I
IREC	35462	I

R	35433	R
IR	35436	I
IQ	35441	I
IN	35444	I
IPCT	35447	I
IJ	35452	I
KM	35455	I
NI	35460	I
NREC	35463	I

ITYPE	35434	I
IXN	35437	I
IVM	35442	I
IMM	35445	I
ITL	35450	I
IK	35453	I
IM	35456	I
RR	35461	R

ENTRY POINTS

INPUT	SECTION	6

SUBROUTINES CALLED

EOF	SECTION	7
.FRWT.	SECTION	10
.FWRD.	SECTION	8
.FWRB.	SECTION	11
.FRDD.	SECTION	9
.FBST.	SECTION	12

FUEL
INPUX

.FSLI.	SECTION	13
.EXIT.	SECTION	16
.FCNV.	SECTION	19
.UN09.	SECTION	22
.FBDT.	SECTION	25
E.3	SECTION	28
CC.2	SECTION	31
SYSLOC	SECTION	34

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GENER	SECTION	14
.UN06.	SECTION	17
.UN05.	SECTION	20
.FWLR.	SECTION	23
E.1	SECTION	26
E.4	SECTION	29
CC.3	SECTION	32
.FEFT.	SECTION	15
.FFIL.	SECTION	18
.FRTN.	SECTION	21
.FBLT.	SECTION	24
E.2	SECTION	27
CC.1	SECTION	30
CC.4	SECTION	33

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION
10010	594A	41541
1	21A	36456
100	FORMAT	35515
9003	545A	41206
8	67A	36657
9500	402A	40517
1200	184A	37272
1500	258A	37631
1800	333A	40163
9000	539A	41153
9007	553A	41252

EFN	IFN	LOCATION
111	FORMAT	35514
2	30A	36512
9001	541A	41164
9004	547A	41217
10	72A	36700
1000	111A	37000
1300	226A	37467
1600	281A	37705
1900	376A	40363
201	FORMAT	35517
9008	555A	41263

EFN	IFN	LOCATION
3	33A	36516
5	38A	36531
9002	543A	41175
9005	549A	41230
200	FORMAT	35516
1100	145A	37157
1400	242A	37550
1700	317A	40100
2100	399A	40500
9006	551A	41241
9009	557A	41274

1010	142A	37141	1005	139A	37130	300	FORMAT	35524
1110	176A	37241	9010	559A	41311	1105	164A	37233
1115	177A	37262	1205	203A	37371	9011	561A	41322
400	FORMAT	35527	1210	219A	37457	9012	563A	41333
500	FORMAT	35530	9013	565A	41344	600	FORMAT	35531
700	FORMAT	35533	1505	275A	37677	800	FORMAT	35535
1605	302A	40016	9014	567A	41355	801	FORMAT	35557
1610	313A	40074	9015	569A	41366	9019	577A	41424
1805	353A	40265	950	FORMAT	35560	1810	369A	40353
974	356A	40463	970	FORMAT	35562	971	FORMAT	35564
10001	FORMAT	36374	972	FORMAT	35604	976	FORMAT	35612
980	FORMAT	35621	9515	421A	40564	9510	413A	40540
9505	412A	40537	9016	571A	41377	9017	573A	41406
9018	575A	41415	9530	443A	40646	900	FORMAT	35623
9520	428A	40577	9525	436A	40623	9026	591A	41515
9535	450A	40661	9540	454A	40667	9020	579A	41435
9021	581A	41444	9550	468A	40751	9545	461A	40715
9560	478A	40775	9022	583A	41453	9565	488A	41012
9023	585A	41464	9567	505A	41046	9566	499A	41037
9570	513A	41057	9024	587A	41475	9580	527A	41106
9575	523A	41101	9025	589A	41504	9590	538A	41152
9585	534A	41131	9100	FORMAT	35643	9999	592A	41523
9101	FORMAT	35672	9102	FORMAT	35712	9103	FORMAT	35732
9104	FORMAT	35752	9105	FORMAT	35772	9106	FORMAT	36012
9107	FORMAT	36032	9108	FORMAT	36052	9109	FORMAT	36072
9110	FORMAT	36111	9111	FORMAT	36131	9112	FORMAT	36151
9113	FORMAT	36162	9114	FORMAT	36173	9115	FORMAT	36226
9116	FORMAT	36237	9117	FORMAT	36246	9118	FORMAT	36254
9119	FORMAT	36262	9120	FORMAT	36302	9121	FORMAT	36310
9122	FORMAT	36316	9123	FORMAT	36326	9124	FORMAT	36340
9125	FORMAT	36347	9126	FORMAT	36360	10000	FORMAT	36366

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 41576.

SUBROUTINE GENER

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JC	00000	I	N	00062	I	NC	27967	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	IOPTOT	34763	I			

ENTRY POINTS

GENER SECTION 3

SUBROUTINES CALLED

SYSLOC SECTION 4

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 35006.


```
$ORIGIN        ALPHA
$IBFTC PRNTX   DECK
```


PRNTX - EFN SOURCE STATEMENT - IFN(S) -

```
      SUBROUTINE PRNTAB
      LOGICAL RDR
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1       M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,IOPTOT
      COMMON /SCRAP/ISCR(49)
      COMMON /IO/ IBASE,RDR
      COMMON /TITL/TITLE(14)
C
C     THIS ROUTINE CAUSES OUTPUT TO BE PRINTED AT THE END OF THE PROGRAM
C
```

```
      WRITE (6,100)                                                      1
  100 FORMAT(1H1)
C
C     PRINT BASE INFORMATION
C
      WRITE (6,200) IBASE,II,JJ,KK,IOPTCT,TITLE                          2
  200 FORMAT(//48X,36(1H*)/48X,1H*,34X,1H*/48X,
     136H* PREDICTED FUEL CONSUMPTION MODEL */48X,1H*,34X,1H*/48X,
     236(1H*)////10X,9HBASE YEAR,10X,12HNO. OF YEARS,10X,
     316HNO. OF FUEL CAT.,10X,11HNO. OF AGES,10X,6HOPTION/10X,I7,12X,
     4I8,14X,I5,17X,I6,15X,I3////3CX,14A5////)
C
C     CONVERT FUEL RATES BACK TO MILES/GAL.
C
      DO 10 J=1,JJ
   10 C(J)=1./C(J)+.0001
C
C     PRINT FUEL CATEGORY RATES
C
      WRITE (6,300)                                                      11
  300 FORMAT(///10X,39HRATE OF FUEL CONSUMPTION (MILES/GALLON))
      WRITE (6,302) (J,J=1,JJ)                                           12
  302 FORMAT(/5X,9HFUEL CAT.,10I10)
  303 FORMAT(/1H+,4X,9HFUEL CAT.,10I10)
      WRITE (6,301) (C(J),J=1,JJ)                                        18
  301 FORMAT(16X,10F10.3)
      WRITE (6,400)
C
C     PRINT SURVIVAL CURVE
C                                                                        25
  400 FORMAT(///10X,46HSURVIVAL CURVE BY AGE AND FUEL CATEGORY (CARS))
      WRITE (6,302) (J,J=1,JJ)                                           26
      WRITE (6,401)                                                      32
  401 FORMAT(8X,3HAGE)
      DO 15 K=1,KK
   15 WRITE (6,402) K,(NC(J,K),J=1,JJ)                                   36
  402 FORMAT(I10,6X,10I10)
C
C     PRINT SURVIVAL FACTORS
C
      WRITE (6,500)                                                      42
  500 FORMAT(///10X,56HSURVIVAL FACTOR BY AGE AND FUEL CATEGORY (DIMENSI
     1ONLESS))
      WRITE (6,302) (J,J=1,JJ)                                           43
      WRITE (6,401)                                                      49
```

```
      KM=KK-1
      DO 20 K=1,KM
   20 WRITE (6,501) K,(S(J,K),J=1,JJ)                                    54
  501 FORMAT(I10,6X,10F10.4)
C
C     PRINT TOTAL VEHICLE POPULATION
C
      WRITE (6,600)                                                      60
  600 FORMAT(///10X,39HTOTAL VEHICLE POPULATION BY YEAR (CARS))
      NL=II/10
      MIN=IBASE
      IMIN=1
      DO 25 L=1,NL
      IMAX=IMIN+9
      MAX=MIN+9
      WRITE (6,601) (IY,IY=MIN,MAX)                                      68
  601 FORMAT(/I10,9I13)
      WRITE (6,602) (JQ(IM),IM=IMIN,IMAX)                                72
  602 FORMAT(10I13)
      IMIN=IMIN+10
   25 MIN=MIN+10
      IL=II-NL*10
      IF(IL.EQ.0) GO TO 30
      MAX=MIN+IL-1
      IMAX=IMIN+IL-1
      WRITE (6,601) (IY,IY=MIN,MAX)                                      86
      WRITE (6,602) (JQ(IM),IM=IMIN,IMAX)
C
C     PRINT TOTAL VEHICLE-MILE CURVE
C                                                                        92
   30 WRITE (6,700)                                                      99
  700 FORMAT(///10X,42HTOTAL MILES DRIVEN BY YEAR (VEHICLE-MILES))
      MIN=IBASE
      IMIN=1
      DO 35 L=1,NL
      IMAX=IMIN+9
      MAX=MIN+9
      WRITE (6,601) (IY,IY=MIN,MAX)                                     106
      WRITE (6,701) (VM(IM),IM=IMIN,IMAX)                               110
  701 FORMAT(10E13.5)
      IMIN=IMIN+10
   35 MIN=MIN+10
      IF(IL.EQ.0) GO TO 40
      MAX=MIN+IL-1
      IMAX=IMIN+IL-1
      WRITE (6,601) (IY,IY=MIN,MAX)                                     123
      WRITE (6,701) (VM(IM),IM=IMIN,IMAX)
C
C     PRINT MILEAGE CURVE
C                                                                       129
   40 WRITE (6,800)                                                     136
  800 FORMAT(///10X,37HMILEAGE CURVE BY YEAR AND AGE (MILES))
```

```
      WRITE (6,801)                                                    137
  801 FORMAT(/17X,3HAGE)
      DO 50 I=1,II
      IY=IBASE+I-1
```



```
      IF(KK.GT.10) GO TO 45
      WRITE (6,802) (K,K=1,KK)                                         144
  802 FORMAT(119,9I12)
      WRITE (6,803) IY,(M(I,K),K=1,KK)                                 148
  803 FORMAT(I6,2X,10I12/)
      GO TO 50
   45 WRITE (6,802) (K,K=1,10)                                         154
      WRITE (6,804) IY,(M(I,K),K=1,10)                                 158
  804 FORMAT(I6,1X,10I12/)
      WRITE (6,802) (K,K=11,KK)                                        163
      WRITE (6,805) (M(I,K),K=11,KK)                                   167
  805 FORMAT(   7X,10I12/)
   50 CONTINUE
C
C     PRINT NEW CAR MIXES
C
      WRITE (6,900)                                                    174
  900 FORMAT(///10X,44HNEW CAR MIX BY FUEL CATEGORY (DIMENSIONLESS))
      WRITE (6,303) (J,J=1,JJ)                                         175
      WRITE (6,1201)                                                   181
      DO 60 I=2,II
      IY=IBASE+I-1
      SUM=0.
      DO 58 J=1,JJ
   58 SUM=SUM+XN(I-1,J)
      WRITE (6,901) IY,(XN(I-1,J),J=1,JJ)                              190
  901 FORMAT(/1H+,7X,I6,2X,10F10.4)
   60 WRITE (6,902) SUM
C
C     PRINT TOTAL CAR MIX (COMPUTED)
C
  902 FORMAT(124X,F8.4)                                                195
      WRITE (6,1000)                                                   197
 1000 FORMAT(///10X,46HTOTAL CAR MIX BY FUEL CATEGORY (DIMENSIONLESS))
      WRITE (6,303) (J,J=1,JJ)                                         198
      WRITE (6,1201)                                                   204
      DO 65 I=1,II
      IY=IBASE+I-1
      SUM=0.
      DO 63 J=1,JJ
   63 SUM=SUM+X(I,J)
C
```

```
C      PRINT SCRAPPED VEHICLES (COMPUTED)                                  213
C
       WRITE (6,901) IY,(X(I,J),J=1,JJ)                                    218
 65    WRITE (6,902) SUM                                                   220
       WRITE (6,1100)
 1100  FORMAT(///10X,45HTOTAL NO. OF VEHICLES SCRAPPED BY YEAR (CARS))
       NL=(II-1)/10
       MIN=IBASE
       IMIN=1
       DO 70 L=1,NL
       IMAX=IMIN+9
       MAX=MIN+9
       WRITE (6,601) (IY,IY=MIN,MAX)                                       228
       WRITE (6,602) (ISCR(IM),IM=IMIN,IMAX)                               232
```



```
       IMIN=IMIN+10
 70    MIN=MIN+10
       IL=(II-1)-NL*10
       IF (IL.EQ.0) GO TO 75
       MAX=MIN+IL-1
       IMAX=IMIN+IL-1
       WRITE (6,601) (IY,IY=MIN,MAX)                                       246
       WRITE (6,602) (ISCR(IM),IM=IMIN,IMAX)                               252
 75    DO 85 I=1,II
       IY=IBASE+I-1
C
C      PRINT N ARRAY FOR ALL YEARS
C
       WRITE (6,100)                                                       263
       WRITE (6,1200) IY                                                   264
 1200  FORMAT(///10X,23HNUMBER OF CARS IN YEAR ,I4,
     132H BY AGE AND FUEL CATEGORY (CARS))
       WRITE (6,303) (J,J=1,JJ)                                            265
       WRITE (6,1201)                                                      269
 1201  FORMAT(     127X,5HTOTAL)
       WRITE (6,401)                                                       270
       JP=JJ+1
       KP=KK+1
       DO 80 K=1,KK
       WRITE (6,1202) K,(N(I,J,K),J=1,JJ)                                  274
 1202  FORMAT(1H+,I9,4X,10I10)
 80    WRITE (6,1203) N(I,JP,K)                                            279
 1203  FORMAT(     114X,I18)
       WRITE (6,1204) (N(I,J,KP),J=1,JJ)                                   281
 1204  FORMAT(///1H+,4X,5HTOTAL,4X,10I10)
 85    WRITE (6,1203) N(I,JP,KP)                                           286
       WRITE (6,100)                                                       289
```

```
      WRITE (6,1205)                                                    290
 1205 FORMAT(///10X,73HTOTAL NO. OF NEW CARS ADDED SUMMED OVER ALL YEARS
     1 BY FUEL CATEGORY (CARS))
      WRITE (6,303) (J,J=1,JJ)                                          291
      WRITE (6,1201)                                                    297
      WRITE (6,401)                                                     298
      IP=II+1
      K=1
      WRITE (6,1202) K,(N(IP,J,K),J=1,JJ)                               300
   87 WRITE (6,1203) N(IP,JP,K)
C
C     PRINT INPUT VALUES FOR RETIREMENT ARRAY ( IF ANY )
C                                                                       307
      IF(.NOT.RDR) GO TO 140
      WRITE (6,120)                                                     311
  120 FORMAT(///10X,40HRETIREMENT FACTORS SPECIFIED BY THE USER/5X,
     14HYEAR,5X,9HFUEL CAT.,5X,3HAGE,5X,6HFACTOR/)
      REWIND 9                                                          312
      IM=II-1
      DO 110 I=1,IM
      DO 110 J=1,JJ
      DO 110 K=2,KK
      READ (9) R                                                        320
      IF(R.GT..9999) GO TO 110
```

06

```
 FUEL                                                  06/22/69                    PAGE  41
      PRNTX      - EFN   SOURCE STATEMENT  -  IFN(S)  -

      IY=I+IBASE-1
      KM=K-1
      WRITE (6,130) IY,J,KM,R                                           325
  130 FORMAT(/I9,I10,I11,F13.7/)
  110 CONTINUE
  140 CONTINUE
C
C     PRINT FUEL CONSUMPTION (COMPUTED)
C
      WRITE (6,100)                                                     331
      WRITE (6,1300)                                                    332
 1300 FORMAT(///10X,52HFUEL CONSUMPTION BY YEAR AND FUEL CATEGORY (GALLO
     1NS))
      WRITE (6,303) (J,J=1,JJ)                                          333
      WRITE (6,1201)                                                    339
      DO 90 I=1,II
      IY=IBASE+I-1
      WRITE (6,1301) IY,(F(I,J),J=1,JJ)                                 343
 1301 FORMAT(1H+,3X,I4,4X,10E10.3)
   90 WRITE (6,1302) F(I,JP)                                            348
 1302 FORMAT(    114X,E18.5)
      WRITE (6,1303) (F(IP,J),J=1,JJ)                                   351
```

```
 1303 FORMAT(//1H+,4X,5HTOTAL,4X,10E10.3)                                358
      WRITE (6,1302) F(IP,JP)                                            360
      WRITE (6,100)
      RETURN
      END
```


PRNTX

STORAGE MAP

SUBROUTINE PRNTAB

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JQ	CCCOO	I	N	00062	I	NC	27067	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	ICPTOT	34763	I			

COMMON BLOCK SCRAP ORIGIN 34765 LENGTH 00061

ISCR	JCCCO	I

COMMON BLOCK IC ORIGIN 35046 LENGTH 00002

IBASE	OCCCO	I	RDR	00001	L

COMMON BLOCK TITL ORIGIN 35050 LENGTH 00016

TITLE	CJCCO	R

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
J	35066	I	K	35067	I	KM	35070	I
NL	35071	I	MIN	35072	I	IMIN	35073	I
L	35074	I	IMAX	35075	I	MAX	35076	I
IY	35077	I	IM	35100	I	IL	35101	I
I	35102	I	SUM	35103	R	JP	35104	I
KP	35105	I	IP	35106	I	R	35107	R

ENTRY POINTS

PRNTAB SECTION 6

SUBROUTINES CALLED

.FWRD.	SECTION	7	.FSLO.	SECTION	8	.FRWT.	SECTION	9
.FRDB.	SECTION	10	.UN06.	SECTION	11	.FFIL.	SECTION	12
.FCNV.	SECTION	13	.UNC9.	SECTION	14	.FRLR.	SECTION	15
.FBLT.	SECTION	16	.FBDT.	SECTION	17	SYSLOC	SECTION	18

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION
100	FORMAT	35131	200	FORMAT	35132	10	7A	35612
300	FORMAT	35214	302	FORMAT	35225	303	FORMAT	35231
301	FORMAT	35236	400	FORMAT	35241	401	FORMAT	35253
15	36A	35732	402	FORMAT	35255	500	FORMAT	35260
20	54A	36026	501	FORMAT	35274	600	FORMAT	35277

PRNTX STORAGE MAP

25	77A	36146	601	FORMAT	35310	602	FORMAT	35312
30	99A	36233	700	FORMAT	35314	35	115A	36322
701	FORMAT	35325	40	136A	36401	800	FORMAT	35327
801	FORMAT	35340	50	172A	36604	45	154A	36510
802	FORMAT	35342	803	FORMAT	35344	804	FORMAT	35347
805	FORMAT	35352	900	FORMAT	35355	1201	FORMAT	35441
60	195A	36720	58	188A	36670	901	FORMAT	35367
902	FORMAT	35373	1000	FORMAT	35375	65	218A	37044
63	211A	37014	1100	FORMAT	35407	70	237A	37154
75	259A	37244	85	286A	37444	1200	FORMAT	35421
80	279A	37406	1202	FORMAT	35444	1203	FORMAT	35447
1204	FORMAT	35452	1205	FORMAT	35457	87	307A	37604
140	331A	37725	120	FORMAT	35476	110	326A	37717
130	FORMAT	35520	1300	FORMAT	35524	90	348A	40033
1301	FORMAT	35537	1302	FORMAT	35543	1303	FORMAT	35546

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 40142.

$ORIGIN ALPHA
$IBFTC PLTOX DECK

```
      SUBROUTINE PLTOUT
      LOGICAL IFST
      LOGICAL INT
      DIMENSION BUF(500)
      DIMENSION DUMMY(50),IDUMMY(50)
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1            M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,IOPTOT
      COMMON /IC/ IBASE
      COMMON /SCRAP/ISCR(49)
      COMMON/CPLT/ NPLT,IPLT(50),MINX(50),MAXX(50),MINY(50),MAXY(50)
      COMMON /TITL/TITLE(14)
      DATA IFST/.TRUE./
      IF(NPLT.EQ.0) RETURN
      IF(IFST) CALL PLOTS(BUF,500)                                      5
      IF(IFST) CALL PLOT(0.,5.,-3)                                      8
      IFST=.FALSE.
C     CALL FACTOR(.95)
      DO 999 L=1,NPLT
C     CALL PLOT(0.,-11.,-3)
C     CALL PLOT(0.,.51,-3)
      Z=.5
      DO 50 I=1,14
      CALL SYMBOL(Z,10.,.2,TITLE(I),0.,5)                               16
 50   Z=Z+1.
      INT=.FALSE.
      IDUM=IPLT(L)
      GO TO (100,200,300,400,500,600,700),IDUM
 90   GO TO 999
C
C     TYPE 1 PLOT -- TOTAL VEHICLE POPULATION VS. YEAR
C
 100  ID=II
      CALL MAXMIN(JQ,DUM,ID,1,10.,FIRSTY,DELTAY)                        24
      CALL AXIS(0.,0.,24HTOTAL VEHICLE POPULATION,24,10.,90.,FIRSTY,
     1DELTAY)                                                           26
      DO 150 I=1,ID
 150  IDUMMY(I)=JQ(I)
      INT=.TRUE.
      GO TO 305
C
C     TYPE 2 PLOT -- TOTAL VEHICLE-MILES VS. YEAR
C
 200  ID=II
      CALL MAXMIN(IDUM,VM,ID,2,10.,FIRSTY,DELTAY)                       37
      CALL AXIS(0.,0.,19HTOTAL VEHICLE-MILES,19,10.,90.,FIRSTY,DELTAY)  39
      DO 250 I=1,ID
 250  DUMMY(I)=VM(I)
      GO TO 305
```

```
C
C     TYPE 3 PLOT -- TOTAL VEHICLES SCRAPPED VS. YEAR
C
  300  ID=II-1
       CALL MAXMIN(ISCR,DUM,ID,1,10.,FIRSTY,DELTAY)                          50
       CALL AXIS(0.,0.,23HTOTAL VEHICLES SCRAPPED,23,10.,90.,FIRSTY,
      1DELTAY)                                                               52
```



```
       DO 350 I=1,IC
  350  IDUMMY(I)=ISCR(I)
       INT=.TRUE.
       GO TO 305
C
C     TYPE 4 PLOT -- TOTAL FUEL CONSUMPTION VS. YEAR
C
  400  ID=II
       ICAT=JJ+1
       DO 405 I=1,II
  405  DUMMY(I)=F(I,ICAT)
       CALL MAXMIN(IDUM,DUMMY,ID,2,10.,FIRSTY,DELTAY)                        70
       CALL AXIS(0.,0.,29HTOTAL FUEL CONSUMPTION (GAL.),29,10.,90.,
      1FIRSTY,DELTAY)                                                        72
       GO TO 305
C
C     TYPE 5 PLOT -- TOTAL FUEL CONSUMPTION FOR A GIVEN FUEL
C                    CATEGORY VS. YEAR
C
  500  ID=II
       ICAT=MINX(L)
       IF(ICAT.GT.0.AND.ICAT.LE.JJ) GO TO 501
       WRITE (6,1000) L,ICAT                                                 80
 1000  FORMAT(1H1//31H FUEL CATEGORY FOR PLOT NUMBER ,I10,8H EQUALS ,I10)
       GO TO 999
  501  DO 505 I=1,II
  505  DUMMY(I)=F(I,ICAT)
       CALL MAXMIN(IDUM,DUMMY,ID,2,10.,FIRSTY,DELTAY)                        89
       CALL AXIS(0.,0.,35HFUEL CONSUMPTION FOR CAT.    (GAL.),35,10.,
      190.,FIRSTY,DELTAY)                                                    91
       FICAT=ICAT
       CALL NUMBER(-.2316,5.58,.14,FICAT,90.,-1)                             93
       GO TO 305
C
C     TYPE 6 PLOT -- NEW CAR MIX FOR A GIVEN FUEL CATEGORY VS. YEAR
C
  600  ID=II
       ICAT=MINX(L)
```

```
      IF(ICAT.GT.0.AND.ICAT.LE.JJ) GO TO 601
      WRITE (6,1000) L,ICAT                                              101
      GO TO 999
  601 DO 605 I=2,IC
      J=I-1
  605 DUMMY(I)=XN(J,ICAT)
      DUMMY(1)=FLOAT(N(1,ICAT,1))/FLOAT(N(1,JJ+1,1))
      FIRSTY=0.
      DELTAY=.1
      CALL AXIS(0.,0.,24HNEW CAR MIX FOR CAT.    ,24,10.,90.,FIRSTY,
     1DELTAY)                                                            112
      FICAT=ICAT
      CALL NUMBER(-.2316,6.15,.14,FICAT,90.,-1)                          114
      GO TO 305
C
C     TYPE 7 PLOT -- TOTAL CAR MIX FOR A GIVEN FUEL CATEGORY VS. YEAR
C
  700 ID=II


      FUEL                                          06/22/69                    PAGE  47
          PLTGX      -  EFN   SOURCE STATEMENT  -  IFN(S)  -

      ICAT=MINX(L)
      IF(ICAT.GT.0.AND.ICAT.LE.JJ) GO TO 701
      WRITE (6,1000) L,ICAT                                              122
      GO TO 999
  701 DO 705 I=1,II
  705 DUMMY(I)=X(I,ICAT)
      FIRSTY=0.
      DELTAY=.1
      CALL AXIS(0.,0.,26HTOTAL CAR MIX FOR CAT.    ,26,10.,90.,FIRSTY,
     1DELTAY)                                                            131
      FICAT=ICAT
      CALL NUMBER(-.2316,6.27,.14,FICAT,90.,-1)                          133
  305 IB=IBASE
      ITYPE=1
      CALL AXIX(1,ID,IB,10.,DELTAX,ITYPE)                                137
      INDEX=L
      DO 310 I=1,IC
      Z=FLOAT(I-1)/DELTAX
      IF(INT) Y=(FLOAT(IDUMMY(I))-FIRSTY)/DELTAY
      IF(.NOT.INT) Y=(DUMMY(I)-FIRSTY)/DELTAY
      IF(I.EQ.1) CALL PLOT(Z,Y,3)                                        149
  310 CALL PLOT(Z,Y,2)                                                   152
      SPACE=2.
      GO TO 998
  998 CALL PLOT(SPACE+6.,0.,-3)                                          157
  999 CONTINUE
      RETURN
      END
```

```
$IBFTC AXIXX   DECK
```



```
      AXIXX      -  EFN   SOURCE STATEMENT  -  IFN(S)  -

      SUBROUTINE AXIX(IMIN,IMAX,IBASE,AXLEN,DELTAX,ITYPE)
      COMMON JQ(50),N(51,11,21),NC(10,20),VM(50),S(10,19),C(10),
     1            M(50,20),XN(49,10),F(51,11),X(50,10),II,JJ,KK,IOPTOT
C
C     ITYPE = 1 FOR YEAR AXIS
C
C     ITYPE = 2 FOR FUEL CATEGORY AXIS
C
C     ITYPE = 3 FOR AGE AXIS
C
      IF(ITYPE.NE.2) GO TO 5
      AXL=JJ-1
      DELTAX=1.
      GO TO 20
 5    IF(ITYPE.NE.3) GO TO 8
      AXL=KK-1
      DELTAX=1.
      IF(KK.LE.15) GO TO 20
      AXL=AXL/2.
      IF(KK.GT.(KK/2)*2) AXL=AXL+1.
      DELTAX=2.
      GO TO 20
 8    AXL=AXLEN
      IF(FLOAT(IMAX-IMIN).GT.(AXL+.01)) GO TO 10
      AXL=IMAX-IMIN
      DELTAX=1.
      INUM=IMAX-IMIN+1
      GO TO 20
 10   DELTAX=5.
      II=II-1
      INUM=II/5+1
      IF(II.GT.(II/5)*5) INUM=INUM+1
      II=II+1
      AXL=INUM-1
 20   CALL PLOT(0.,0.,3)                                        27
      CALL PLOT(AXL,0.,2)                                       29
```

```
      CALL PLOT(0.,0.,3)                                                    31
      YR=IBASE
      FN=0.
      OFF=-.0525
      Z=0.
      Y=0.
      DO 30 I=1,INUM
      CALL PLOT(Z,Y+.1,3)                                                   36
      CALL PLOT(Z,Y-.1,2)                                                   38
      IF(FN.GT.9.9) OFF=-.105
      IF(ITYPE.EQ.1) CALL NUMBER(Z-.21,-.30,.105,YR,0.,-1)                  43
      IF(ITYPE.NE.1) CALL NUMBER(Z+OFF,-.30,.105,FN,0.,-1)                  46
      FN=FN+DELTAX
      YR=YR+DELTAX
30    Z=Z+1.
      IF(ITYPE.GT.1) GO TO 35
      Z=AXL/2.-.28
      CALL SYMBOL(Z,-.50,.14,4HYEAR,0.,4)                                   54
      GO TO 50
```

97


```
      AXIXX      -  EFN   SOURCE STATEMENT  -  IFN(S)  -

35    IF(ITYPE.GT.2) GO TO 40
      Z=AXL/2.-.91
      CALL SYMBOL(Z,.50,.14,13HFUEL CATEGORY,0.,13)                         59
      GO TO 50
40    Z=AXL/2.-.21
      CALL SYMBOL(Z,.50,.14,3HAGE,0.,3)                                     62
50    CALL PLOT(0.,0.,3)                                                    64
      RETURN
      END
```



```
$IBFTC MAXXX   DECK
```

```
      SUBROUTINE MAXMIN(IA,A,ID,ITYPE,AXLEN,FIRST,DELTA)
      DIMENSION IA(ID),A(ID)
      IF(ITYPE.EQ.2) GO TO 20
C
C     FIND MAXIMUM AND MINIMUM VALUES OF AN INTEGER ARRAY
C
      MAX=0                                                          6     7
      MIN=2**34+(2**34-1)
      DO 10 I=1,IC
      IF(IA(I).GE.MAX) MAX=IA(I)
      IF(IA(I).LE.MIN) MIN=IA(I)
   10 CONTINUE
      FIRST=MIN
      DELTA=FLOAT(MAX-MIN)/AXLEN                                    23
      IN=ALOG10(FLOAT(MIN))                                         25
      IFACT=FLOAT(MIN)/(10.**IN)+.01                                27
      FIRST=(10.**IN)*FLOAT(IFACT)                                  28
      IN=ALOG10(DELTA)                                              30
      DELTA=10.**(IN+1)
      RETURN
C
C     FIND MAXIMUM AND MINIMUM VALUES OF A FLOATING POINT ARRAY
C
   20 AMAX=0.
      AMIN=1.E37
      DO 30 I=1,IC
      IF(A(I).GE.AMAX) AMAX=A(I)
      IF(A(I).LE.AMIN) AMIN=A(I)
   30 CONTINUE
      FIRST=AMIN
      DELTA=(AMAX-AMIN)/AXLEN                                       46
      IN=ALOG10(AMIN)                                               48
      IFACT=AMIN/(10.**IN)+.01                                      50
      FIRST=(10.**IN)*FLOAT(IFACT)                                  51
      IN=ALOG10(DELTA)                                              53
      DELTA=10.**(IN+1)
      RETURN
      END
```

SUBROUTINE PLTOUT

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JQ	00000	I	N	00062	I	NC	27067	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	ICPTCT	34763	I			

COMMON BLOCK IO ORIGIN 34765 LENGTH 00001

IBASE	00000	I

COMMON BLOCK SCRAP ORIGIN 34766 LENGTH 00061

ISCR	00000	I

COMMON BLOCK CPLT ORIGIN 35047 LENGTH 00373

NPLT	00000	I	IPLT	00001	I	MINX	00063	I
MAXX	00145	I	MINY	00227	I	MAXY	00311	I

COMMON BLOCK TITL ORIGIN 35442 LENGTH 00016

TITLE	00000	R

DIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
BUF	35460	R	DUMMY	36444	R	IDUMMY	36526	I

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
IFST	36610	L	INT	36611	L	L	36612	I
Z	36613	R	I	36614	I	IDUM	36615	I
ID	36616	I	DUM	36617	R	FIRSTY	36620	R
DELTAY	36621	R	ICAT	36622	I	FICAT	36623	R
J	36624	I	IB	36625	I	ITYPE	36626	I
DELTAX	36627	R	INDEX	36630	I	Y	36631	R
SPACE	36632	R						

ENTRY POINTS

PLTOLT SECTION 7

SUBROUTINES CALLED

PLOTS	SECTION	8	PLOT	SECTION	9	SYMBOL	SECTION	10
MAXMIN	SECTION	11	AXIS	SECTION	12	.FWRD.	SECTION	13
NUMBER	SECTION	14	AXIX	SECTION	15	.FXEM.	SECTION	16

STORAGE MAP

.UNC6.	SECTION	17	.FFIL.	SECTION	18	.FCNV.	SECTION	19
E.1	SECTION	20	E.2	SECTION	21	E.3	SECTION	22
E.4	SECTION	23	CC.1	SECTION	24	CC.2	SECTION	25
CC.3	SECTION	26	CC.4	SECTION	27	SYSLOC	SECTION	28

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION
995	158A	40034	50	17A	37036	100	22A	37063
200	35A	37125	300	48A	37165	400	61A	37230
500	74A	37300	600	95A	37420	700	116A	37600
90	21A	37062	150	30A	37116	305	134A	37710
250	43A	37160	350	56A	37221	405	66A	37246
501	82A	37330	1000	FORMAT	36751	505	85A	37341
601	103A	37450	605	106A	37461	701	124A	37630
705	127A	37641	310	151A	40006	998	156A	40021

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 40064.

STORAGE MAP

SUBROUTINE AXIX

COMMON VARIABLES

COMMON BLOCK // ORIGIN 00001 LENGTH 34764

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
JQ	00000	I	N	00062	I	NC	27067	I
VM	27377	R	S	27461	R	C	27757	R
M	27771	I	XN	31741	R	F	32713	R
X	33774	R	II	34760	I	JJ	34761	I
KK	34762	I	IOPTOT	34763	I			

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
AXL	34765	R	INUM	34766	I	YR	34767	R
FN	34770	R	OFF	34771	R	Z	34772	R
Y	34773	R						

ENTRY POINTS

AXIX SECTION 3

SUBROUTINES CALLED

PLOT	SECTION	4	NUMBER	SECTION	5	SYMBOL	SECTION	6
E.1	SECTION	7	E.2	SECTION	8	E.3	SECTION	9
E.4	SECTION	10	CC.1	SECTION	11	CC.2	SECTION	12
CC.3	SECTION	13	CC.4	SECTION	14	SYSLOC	SECTION	15

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION
5	6A	35057	20	26A	35234	8	15A	35125
10	20A	35170	30	48A	35403	35	56A	35436
50	63A	35500	40	61A	35462			

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 3556C.

FUEL
MAXXX

STORAGE MAP

SUBROUTINE MAXMIN

UNDIMENSIONED PROGRAM VARIABLES

SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE	SYMBOL	LOCATION	TYPE
MAX	00001	I	MIN	00002	I	IN	00003	I
IFACT	00004	I	AMAX	00005	R	AMIN	00006	R

ENTRY POINTS

MAXMIN	SECTION	2

SUBROUTINES CALLED

.XP1.	SECTION	3	ALOG10	SECTION	4	.XP2.	SECTION	5
E.1	SECTION	6	E.2	SECTION	7	E.3	SECTION	8
E.4	SECTION	9	CC.1	SECTION	10	CC.2	SECTION	11
CC.3	SECTION	12	CC.4	SECTION	13	SYSLOC	SECTION	14

EFN IFN CORRESPONDENCE

EFN	IFN	LOCATION	EFN	IFN	LOCATION	EFN	IFN	LOCATION
20	31A	00224	10	20A	00066	30	43A	00247

THE FIRST LOCATION NOT USED BY THIS PROGRAM IS 00427.

APPENDIX C

SAMPLE RUN

HIGHWAY FUEL CONSUMPTION

COMPUTER MODEL

****
* *
* PREDICTED FUEL CONSUMPTION MODEL *
* *
****

BASE YEAR	NO. OF YEARS	NO. OF FUEL CAT.	NO. OF AGES	OPTION
1972	29	9	20	1

RUN NUMBER 1

RATE OF FUEL CONSUMPTION (MILES/GALLON)

FUEL CAT.	1	2	3	4	5	6	7	8	9
	10.000	12.000	13.000	14.000	17.000	20.000	24.000	28.000	34.000

SURVIVAL CURVE BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9
1	1000	1000	1000	1000	1000	1000	1000	1000	1000
2	995	995	995	995	995	995	995	995	995
3	990	990	990	990	990	990	990	990	990
4	985	985	985	985	985	985	985	985	985
5	977	977	977	977	977	977	977	977	977
6	948	948	948	948	948	948	948	948	948
7	889	889	889	889	889	889	889	889	889
8	797	797	797	797	797	797	797	797	797
9	672	672	672	672	672	672	672	672	672
10	529	529	529	529	529	529	529	529	529
11	395	395	395	395	395	395	395	395	395
12	285	285	285	285	285	285	285	285	285
13	202	202	202	202	202	202	202	202	202
14	137	137	137	137	137	137	137	137	137
15	85	85	85	85	85	85	85	85	85
16	50	50	50	50	50	50	50	50	50
17	20	20	20	20	20	20	20	20	20
18	15	15	15	15	15	15	15	15	15
19	7	7	7	7	7	7	7	7	7
20	2	2	2	2	2	2	2	2	2

SURVIVAL FACTOR BY AGE AND FUEL CATEGORY (DIMENSIONLESS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9
1	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950
2	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950	0.9950
3	0.9949	0.9949	0.9949	0.9949	0.9949	0.9949	0.9949	0.9949	0.9949
4	0.9919	0.9919	0.9919	0.9919	0.9919	0.9919	0.9919	0.9919	0.9919
5	0.9703	0.9703	0.9703	0.9703	0.9703	0.9703	0.9703	0.9703	0.9703
6	0.9378	0.9378	0.9378	0.9378	0.9378	0.9378	0.9378	0.9378	0.9378
7	0.8965	0.8965	0.8965	0.8965	0.8965	0.8965	0.8965	0.8965	0.8965
8	0.8432	0.8432	0.8432	0.8432	0.8432	0.8432	0.8432	0.8432	0.8432
9	0.7872	0.7872	0.7872	0.7872	0.7872	0.7872	0.7872	0.7872	0.7872
10	0.7467	0.7467	0.7467	0.7467	0.7467	0.7467	0.7467	0.7467	0.7467
11	0.7215	0.7215	0.7215	0.7215	0.7215	0.7215	0.7215	0.7215	0.7215
12	0.7088	0.7088	0.7088	0.7088	0.7088	0.7088	0.7088	0.7088	0.7088
13	0.6782	0.6782	0.6782	0.6782	0.6782	0.6782	0.6782	0.6782	0.6782
14	0.6204	0.6204	0.6204	0.6204	0.6204	0.6204	0.6204	0.6204	0.6204
15	0.5882	0.5882	0.5882	0.5882	0.5882	0.5882	0.5882	0.5882	0.5882
16	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
17	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500	0.7500
18	0.4667	0.4667	0.4667	0.4667	0.4667	0.4667	0.4667	0.4667	0.4667
19	0.2857	0.2857	0.2857	0.2857	0.2857	0.2857	0.2857	0.2857	0.2857

TOTAL VEHICLE POPULATION BY YEAR (CARS)

1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
94600000	97000000	99500000	102000000	104400000	106600000	108700000	110700000	112800000	114900000
1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
116900000	118900000	121000000	123100000	125100000	127100000	129000000	130800000	132600000	134300000
1992	1993	1994	1995	1996	1997	1998	1999	2000	
136000000	137800000	139500000	141200000	142900000	144700000	146300000	148100000	149800000	

TOTAL MILES DRIVEN BY YEAR (VEHICLE-MILES)

1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
0.10330E 13	0.10800E 13	0.11218E 13	0.11544E 13	0.11799E 13	0.12027E 13	0.12224E 13	0.12422E 13	0.12630E 13	0.12849E 13
1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
0.13059E 13	0.13278E 13	0.13525E 13	0.13768E 13	0.13986E 13	0.14203E 13	0.14403E 13	0.14590E 13	0.14777E 13	0.14950E 13
1992	1993	1994	1995	1996	1997	1998	1999	2000	
0.15129E 13	0.15332E 13	0.15519E 13	0.15706E 13	0.15894E 13	0.16099E 13	0.16267E 13	0.16470E 13	0.16656E 13	

MILEAGE CURVE BY YEAR AND AGE (MILES)

	AGE									
	1	2	3	4	5	6	7	8	9	10
1972	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1973	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1974	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1975	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1976	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1977	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1978	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1979	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1980	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1981	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1982	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1983	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1984	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10

1985	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1986	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1987	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1988	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1989	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1990	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1991	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1992	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1993	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1994	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1995	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1996	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1997	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
1998	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10

1999	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500
	1	2	3	4	5	6	7	8	9	10
2000	17500	16100	13200	11400	11000	10000	9600	8600	8000	7200
	11	12	13	14	15	16	17	18	19	20
	6500	6000	5500	5100	5000	4700	4400	4100	3800	3500

NEW CAR MIX BY FUEL CATEGORY (DIMENSIONLESS)

FUEL CAT.	1	2	3	4	5	6	7	8	9	TOTAL
1973	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1974	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1975	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1976	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1977	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1978	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1979	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1980	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1981	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1982	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1983	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1984	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1985	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1986	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1987	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1988	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1989	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1990	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1991	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1992	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1993	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000

1994	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1995	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1996	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1997	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1998	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1999	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
2000	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000

TOTAL CAR MIX BY FUEL CATEGORY (DIMENSIONLESS)

FUEL CAT.	1	2	3	4	5	6	7	8	9	TOTAL
1972	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
1973	0.0315	0.0630	0.8740	0.0126	0.0126	0.0000	0.0063	0.0000	0.0000	1.0000
1974	0.0606	0.1212	0.7577	0.0242	0.0242	0.0000	0.0121	0.0000	0.0000	1.0000
1975	0.0881	0.1761	0.6478	0.0352	0.0352	0.0000	0.0176	0.0000	0.0000	1.0000
1976	0.1140	0.2281	0.5439	0.0456	0.0456	0.0000	0.0228	0.0000	0.0000	1.0000
1977	0.1385	0.2771	0.4459	0.0554	0.0554	0.0000	0.0277	0.0000	0.0000	1.0000
1978	0.1615	0.3229	0.3542	0.0646	0.0646	0.0000	0.0323	0.0000	0.0000	1.0000
1979	0.1822	0.3644	0.2712	0.0729	0.0729	0.0000	0.0364	0.0000	0.0000	1.0000
1980	0.2002	0.4005	0.1991	0.0801	0.0801	0.0000	0.0400	0.0000	0.0000	1.0000
1981	0.2149	0.4299	0.1403	0.0860	0.0860	0.0000	0.0430	0.0000	0.0000	1.0000
1982	0.2261	0.4523	0.0954	0.0905	0.0905	0.0000	0.0452	0.0000	0.0000	1.0000
1983	0.2343	0.4686	0.0627	0.0937	0.0937	0.0000	0.0469	0.0000	0.0000	1.0000
1984	0.2401	0.4802	0.0395	0.0960	0.0960	0.0000	0.0480	0.0000	0.0000	1.0000
1985	0.2441	0.4882	0.0235	0.0976	0.0976	0.0000	0.0488	0.0000	0.0000	1.0000
1986	0.2467	0.4935	0.0131	0.0987	0.0987	0.0000	0.0493	0.0000	0.0000	1.0000
1987	0.2483	0.4966	0.0067	0.0993	0.0993	0.0000	0.0497	0.0000	0.0000	1.0000
1988	0.2492	0.4984	0.0031	0.0997	0.0997	0.0000	0.0498	0.0000	0.0000	1.0000
1989	0.2496	0.4992	0.0016	0.0998	0.0998	0.0000	0.0499	0.0000	0.0000	1.0000

1990	0.2499	0.4997	0.0006	0.0999	0.0999	0.0000	0.0500	0.0000	0.0000	1.0000
1991	0.2500	0.4999	0.0001	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1992	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1993	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1994	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1995	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1996	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1997	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1998	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
1999	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000
2000	0.2500	0.5000	0.0000	0.1000	0.1000	0.0000	0.0500	0.0000	0.0000	1.0000

TOTAL NO. OF VEHICLES SCRAPPED BY YEAR (CARS)

1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
9820659	9453941	9435583	9473821	9522265	9664263	9819032	10008503	10288301	10618820
1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
10936940	11215374	11403356	11560591	11738019	11899287	12121449	12283519	12495377	12714913
1992	1993	1994	1995	1996	1997	1998	1999		
12929125	13130549	13315708	13488167	13649956	13810441	13971793	14137895		

NUMBER OF CARS IN YEAR 1972 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	0	0	8400000	0	0	0	0	0	0	8400000
2	0	0	9700000	0	0	0	0	0	0	9700000
3	0	0	9700000	0	0	0	0	0	0	9700000
4	0	0	10000000	0	0	0	0	0	0	10000000
5	0	0	9400000	0	0	0	0	0	0	9400000
6	0	0	8200000	0	0	0	0	0	0	8200000
7	0	0	8700000	0	0	0	0	0	0	8700000
8	0	0	8200000	0	0	0	0	0	0	8200000
9	0	0	6400000	0	0	0	0	0	0	6400000
10	0	0	5200000	0	0	0	0	0	0	5200000
11	0	0	3600000	0	0	0	0	0	0	3600000
12	0	0	2000000	0	0	0	0	0	0	2000000
13	0	0	1500000	0	0	0	0	0	0	1500000
14	0	0	800000	0	0	0	0	0	0	800000
15	0	0	400000	0	0	0	0	0	0	400000

16	0	0	600000	0	0	0	0	0	0	600000
17	0	0	500000	0	0	0	0	0	0	500000
18	0	0	500000	0	0	0	0	0	0	500000
19	0	0	500000	0	0	0	0	0	0	500000
20	0	0	300000	0	0	0	0	0	0	300000
TOTAL	0	0	94600000	0	0	0	0	0	0	94600000

NUMBER OF CARS IN YEAR 1973 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3055164	6110329	0	1222065	1222065	0	611032	0	0	12220655
2	0	0	8357999	0	0	0	0	0	0	8357999
3	0	0	9651256	0	0	0	0	0	0	9651256
4	0	0	9651010	0	0	0	0	0	0	9651010
5	0	0	9918781	0	0	0	0	0	0	9918781
6	0	0	9120982	0	0	0	0	0	0	9120982
7	0	0	7689662	0	0	0	0	0	0	7689662
8	0	0	7799662	0	0	0	0	0	0	7799662
9	0	0	6913927	0	0	0	0	0	0	6913927
10	0	0	5038095	0	0	0	0	0	0	5038095
11	0	0	3882797	0	0	0	0	0	0	3882797
12	0	0	2597468	0	0	0	0	0	0	2597468
13	0	0	1417543	0	0	0	0	0	0	1417543
14	0	0	1017326	0	0	0	0	0	0	1017326
15	0	0	496350	0	0	0	0	0	0	496350
16	0	0	235294	0	0	0	0	0	0	235294
17	0	0	239999	0	0	0	0	0	0	239999
18	0	0	375000	0	0	0	0	0	0	375000
19	0	0	233333	0	0	0	0	0	0	233333
20	0	0	142857	0	0	0	0	0	0	142857
TOTAL	3055164	6110329	84779341	1222065	1222065	0	611032	0	0	96999996

NUMBER OF CARS IN YEAR 1974 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	2988485	5976970	0	1195394	1195394	0	597697	0	0	11953940
2	3039888	6079777	0	1215954	1215954	0	607976	0	0	12159549
3	0	0	8315999	0	0	0	0	0	0	8315999
4	0	0	9602512	0	0	0	0	0	0	9602512
5	0	0	9572626	0	0	0	0	0	0	9572626
6	0	0	9624364	0	0	0	0	0	0	9624364
7	0	0	8553325	0	0	0	0	0	0	8553325

8	0	0	6853881	C	0	0	0	0	0	6893881
9	0	0	6576377	0	0	0	0	0	0	6576377
10	0	0	5442659	0	0	0	0	0	0	5442659
11	0	0	3761904	0	0	0	0	0	0	3761904
12	0	0	2801511	C	0	0	0	0	0	2801511
13	0	0	1841012	C	0	0	0	0	0	1841012
14	0	0	961402	C	0	0	0	0	0	961402
15	0	0	631187	C	0	0	0	0	0	631187
16	0	0	291970	0	0	0	0	0	0	291970
17	0	0	94117	0	0	0	0	0	0	94117
18	0	0	179999	0	0	0	0	0	0	179999
19	0	0	174999	0	0	0	0	0	0	174999
20	0	0	66666	0	0	0	0	0	0	66666
TOTAL	6028373	12056747	75386510	2411348	2411348	0	1205673	0	0	99499999

NUMBER OF CARS IN YEAR 1975 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. / AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	2983895	5967791	0	1193558	1193558	0	596779	0	0	11935581
2	2973542	5947085	0	1189417	1189417	0	594708	0	0	11894169
3	3024612	6049225	0	1209843	1209843	0	604920	0	0	12098443
4	0	0	8273598	0	0	0	0	0	0	8273998
5	0	0	9524521	0	0	0	0	0	0	9524521
6	0	0	9288464	0	0	0	0	0	0	9288484
7	0	0	9025379	C	0	0	0	0	0	9025379
8	0	0	7668166	C	0	0	0	0	0	7668166
9	0	0	5812657	C	0	0	0	0	0	5812657
10	0	0	5176939	0	0	0	0	0	0	5176939
11	0	0	4063589	0	0	0	0	0	0	4063989
12	0	0	2714285	0	0	0	0	0	0	2714285
13	0	C	1985632	C	0	0	0	0	0	1985632
14	0	0	1248607	0	0	0	0	0	0	1248607
15	0	0	596490	0	0	0	0	0	0	596490
16	0	0	371286	0	0	0	0	0	0	371286
17	0	0	116787	0	0	0	0	0	0	116787
18	0	0	70587	0	0	0	0	0	0	70587
19	0	0	83999	C	0	0	0	0	0	83999
20	C	0	49999	0	0	0	0	0	0	49999
TOTAL	8982049	17964101	66071805	3592818	3592818	0	1796407	0	0	101999998

NUMBER OF CARS IN YEAR 1976 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. / AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	2968455	5936910	0	1187382	1187382	0	593691	0	0	11873820
2	2968975	5937952	0	1187590	1187590	0	593795	0	0	11875902
3	2958599	5917200	0	1183440	1183440	0	591719	0	0	11834398
4	3009336	6018673	0	1203732	1203732	0	601864	0	0	12037337
5	0	0	8206797	0	0	0	0	0	0	8206797
6	0	0	9241807	0	0	0	0	0	0	9241807
7	0	0	8710403	0	0	0	0	0	0	8710403
8	0	0	8091368	0	0	0	0	0	0	8091368
9	0	0	6465505	0	0	0	0	0	0	6465505
10	0	0	4575737	0	0	0	0	0	0	4575737
11	0	0	3865578	0	0	0	0	0	0	3865578
12	0	0	2932245	0	0	0	0	0	0	2932245
13	0	0	1923809	0	0	0	0	0	0	1923809
14	0	0	1346691	0	0	0	0	0	0	1346691
15	0	0	774683	0	0	0	0	0	0	774683
16	0	0	350876	0	0	0	0	0	0	350876
17	0	0	148514	0	0	0	0	0	0	148514
18	0	0	87590	0	0	0	0	0	0	87590
19	0	0	32940	0	0	0	0	0	0	32940
20	0	0	23999	0	0	0	0	0	0	23999
TOTAL	11905365	23810735	56778542	4762144	4762144	0	2381069	0	0	104399999

NUMBER OF CARS IN YEAR 1977 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. / AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	2930566	5861132	0	1172226	1172226	0	586113	0	0	11722263
2	2953612	5907225	0	1181445	1181445	0	590722	0	0	11814449
3	2954055	5908113	0	1181622	1181622	0	590811	0	0	11816223
4	2943656	5887315	0	1177463	1177463	0	588730	0	0	11774627
5	2984894	5969790	0	1193955	1193955	0	596975	0	0	11939569
6	0	0	7963197	0	0	0	0	0	0	7963197
7	0	0	8666631	0	0	0	0	0	0	8666631
8	0	0	7808588	0	0	0	0	0	0	7808988
9	0	0	6822332	0	0	0	0	0	0	6822332
10	0	0	5089660	0	0	0	0	0	0	5089660
11	0	0	3416665	0	0	0	0	0	0	3416665
12	0	0	2789087	0	0	0	0	0	0	2789087
13	0	0	2078292	0	0	0	0	0	0	2078292
14	0	0	1304761	0	0	0	0	0	0	1304761
15	0	0	835538	0	0	0	0	0	0	835538
16	0	0	455695	0	0	0	0	0	0	455695
17	0	0	140350	0	0	0	0	0	0	140350
18	0	0	111385	0	0	0	0	0	0	111385
19	0	0	40875	0	0	0	0	0	0	40875
20	0	0	9411	0	0	0	0	0	0	9411

TOTAL	14766783	29533575	47532867	5906711	5906711	0	2953351	0	0	106599998

NUMBER OF CARS IN YEAR 1978 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	2941065	5882131	0	1176426	1176426	0	588213	0	0	11764261
2	2915913	5831826	0	1166364	1166364	0	583182	0	0	11663649
3	2938769	5877540	0	1175508	1175508	0	587753	0	0	11755078
4	2939135	5878274	0	1175654	1175654	0	587827	0	0	11756544
5	2919748	5839499	0	1167899	1167899	0	583948	0	0	11678993
6	2896294	5792590	0	1158515	1158515	0	579255	0	0	11585169
7	0	0	7467597	0	0	0	0	0	0	7467597
8	0	0	7769746	0	0	0	0	0	0	7769746
9	0	0	6584240	0	0	0	0	0	0	6584240
10	0	0	5370555	0	0	0	0	0	0	5370555
11	0	0	3800407	0	0	0	0	0	0	3800407
12	0	0	2465188	0	0	0	0	0	0	2465188
13	0	0	1976826	0	0	0	0	0	0	1976826
14	0	0	1409534	0	0	0	0	0	0	1409534
15	0	0	809523	0	0	0	0	0	0	809523
16	0	0	491492	0	0	0	0	0	0	491492
17	0	0	182277	0	0	0	0	0	0	182277
18	0	0	105262	0	0	0	0	0	0	105262
19	0	0	51979	0	0	0	0	0	0	51979
20	0	0	11678	0	0	0	0	0	0	11678

TOTAL	17550924	35101860	38496304	7020366	7020366	0	3510178	0	0	108699998

NUMBER OF CARS IN YEAR 1979 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	2954758	5909516	0	1181903	1181903	0	590951	0	0	11819031
2	2926359	5852720	0	1170543	1170543	0	585271	0	0	11705436
3	2901260	5802520	0	1160502	1160502	0	580251	0	0	11605035
4	2923926	5847855	0	1169571	1169571	0	584784	0	0	11695707
5	2915263	5830531	0	1166105	1166105	0	583052	0	0	11661056
6	2833081	5666166	0	1133232	1133232	0	566614	0	0	11332325
7	2716039	5432080	0	1086413	1086413	0	543204	0	0	10864149
8	0	0	6694797	0	0	0	0	0	0	6694797
9	0	0	6551153	0	0	0	0	0	0	6551153
10	0	0	5183129	0	0	0	0	0	0	5183129
11	0	0	4010149	0	0	0	0	0	0	4010149
12	0	0	2742065	0	0	0	0	0	0	2742065
13	0	0	1747256	0	0	0	0	0	0	1747256

14	0	0	1340718	0	0	0	0	0	0	1340718
15	0	0	874528	0	0	0	0	0	0	874528
16	0	0	476189	0	0	0	0	0	0	476189
17	0	0	196596	0	0	0	0	0	0	196596
18	0	0	136707	0	0	0	0	0	0	136707
19	0	0	49122	0	0	0	0	0	0	49122
20	0	0	14851	0	0	0	0	0	0	14851
TOTAL	20170686	40341388	30017260	8068269	8068269	0	4034127	0	0	110699999

NUMBER OF CARS IN YEAR 1980 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3027125	6054251	0	1210850	1210850	0	605425	0	0	12108501
2	2939984	5879968	0	1175993	1175993	0	587996	0	0	11759934
3	2911653	5823309	0	1164660	1164660	0	582329	0	0	11646611
4	2886607	5773214	0	1154640	1154640	0	577320	0	0	11546421
5	2900178	5800359	0	1160071	1160071	0	580034	0	0	11600713
6	2828730	5657465	0	1131491	1131491	0	565745	0	0	11314922
7	2656760	5313524	0	1062703	1062703	0	531350	0	0	10627040
8	2434964	4869929	0	973983	973983	0	486989	0	0	9739848
9	0	0	5644797	0	0	0	0	0	0	5644797
10	0	0	5157083	0	0	0	0	0	0	5157083
11	0	0	3870200	0	0	0	0	0	0	3870200
12	0	0	2893398	0	0	0	0	0	0	2893398
13	0	0	1943498	0	0	0	0	0	0	1943498
14	0	0	1185020	0	0	0	0	0	0	1185020
15	0	0	831832	0	0	0	0	0	0	831832
16	0	0	514428	0	0	0	0	0	0	514428
17	0	0	190475	0	0	0	0	0	0	190475
18	0	0	147447	0	0	0	0	0	0	147447
19	0	0	63796	0	0	0	0	0	0	63796
20	0	0	14034	0	0	0	0	0	0	14034
TOTAL	22566001	45172019	22456008	9034391	9034391	0	4517188	0	0	112799998

NUMBER OF CARS IN YEAR 1981 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3097075	6194150	0	1238830	1238830	0	619415	0	0	12388300
2	3011989	6023979	0	1204795	1204795	0	602397	0	0	12047955
3	2925210	5850420	0	1170083	1170083	0	585041	0	0	11700837
4	2896947	5793898	0	1158777	1158777	0	579387	0	0	11587786
5	2863162	5726324	0	1145262	1145262	0	572631	0	0	11452641

6	2814092	5628188	0	1125636	1125636	0	562817	0	0	11256369
7	2652680	5305365	0	1061071	1061071	0	530535	0	0	10610722
8	2381819	4763642	0	952726	952726	0	476362	0	0	9527275
9	2053068	4106138	0	821225	821225	0	410610	0	0	8212266
10	0	0	4443597	0	0	0	0	0	0	4443597
11	0	0	3850751	0	0	0	0	0	0	3850751
12	0	0	2792422	0	0	0	0	0	0	2792422
13	0	0	2050759	0	0	0	0	0	0	2050759
14	0	0	1318114	0	0	0	0	0	0	1318114
15	0	0	735231	0	0	0	0	0	0	735231
16	0	0	489312	0	0	0	0	0	0	489312
17	0	0	205771	0	0	0	0	0	0	205771
18	0	0	142856	0	0	0	0	0	0	142856
19	0	0	68808	0	0	0	0	0	0	68808
20	0	0	18227	0	0	0	0	0	0	18227
TOTAL	24696042	49392104	16115848	9878405	9878405	0	4939195	0	0	114899999

NUMBER OF CARS IN YEAR 1982 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3154705	6309410	0	1261881	1261881	0	630940	0	0	12618817
2	3081589	6163179	0	1232635	1232635	0	616317	0	0	12326355
3	2996853	5993707	0	1198740	1198740	0	599369	0	0	11987409
4	2910436	5820872	0	1164173	1164173	0	582086	0	0	11641740
5	2873418	5746840	0	1149365	1149365	0	574681	0	0	11493669
6	2778175	5556351	0	1111267	1111267	0	555633	0	0	11112693
7	2638953	5277910	0	1055580	1055580	0	527789	0	0	10555812
8	2378161	4756328	0	951263	951263	0	475631	0	0	9512646
9	2008258	4016521	0	803302	803302	0	401650	0	0	8033033
10	1616180	3232361	0	646470	646470	0	323233	0	0	6464714
11	0	0	3317997	0	0	0	0	0	0	3317997
12	0	0	2778389	0	0	0	0	0	0	2778389
13	0	0	1979190	0	0	0	0	0	0	1979190
14	0	0	1390861	0	0	0	0	0	0	1390861
15	0	0	817807	0	0	0	0	0	0	817807
16	0	0	432488	0	0	0	0	0	0	432488
17	0	0	195724	0	0	0	0	0	0	195724
18	0	0	154328	0	0	0	0	0	0	154328
19	0	0	66666	0	0	0	0	0	0	66666
20	0	0	19659	0	0	0	0	0	0	19659
TOTAL	26436728	52873479	11153109	10574676	10574676	0	5287329	0	0	116899997

NUMBER OF CARS IN YEAR 1983 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3234235	6468470	0	1293693	1293693	0	646846	0	0	12936937
2	3138931	6277862	0	1255571	1255571	0	627785	0	0	12555720
3	3066103	6132208	0	1226440	1226440	0	613219	0	0	12264410
4	2981717	5963435	0	1192685	1192685	0	596341	0	0	11926863
5	2886797	5773595	0	1154717	1154717	0	577358	0	0	11547184
6	2788127	5576258	0	1115248	1115248	0	557622	0	0	11152503
7	2605271	5210544	0	1042105	1042105	0	521052	0	0	10421077
8	2365855	4731714	0	946341	946341	0	473169	0	0	9463420
9	2005174	4010354	0	802068	802068	0	401033	0	0	8020697
10	1580905	3161814	0	632361	632361	0	316179	0	0	6323620
11	1206788	2413577	0	482713	482713	0	241355	0	0	4827146
12	0	0	2393557	0	0	0	0	0	0	2393997
13	0	0	1969244	0	0	0	0	0	0	1969244
14	0	0	1342321	0	0	0	0	0	0	1342321
15	0	0	862942	0	0	0	0	0	0	862942
16	0	0	481062	0	0	0	0	0	0	481062
17	0	0	172995	0	0	0	0	0	0	172995
18	0	0	146793	0	0	0	0	0	0	146793
19	0	0	72019	0	0	0	0	0	0	72019
20	0	0	19047	0	0	0	0	0	0	19047
TOTAL	27859903	55715831	7460420	11143942	11143942	0	5571959	0	0	118899997

NUMBER OF CARS IN YEAR 1984 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3328843	6657687	0	1331537	1331537	0	665768	0	0	13315372
2	3218063	6436127	0	1287224	1287224	0	643611	0	0	12872249
3	3123157	6246314	0	1249261	1249261	0	624630	0	0	12492623
4	3050617	6101237	0	1220245	1220245	0	610121	0	0	12202465
5	2957499	5915000	0	1182998	1182998	0	591497	0	0	11829992
6	2801109	5602219	0	1120441	1120441	0	560220	0	0	11204430
7	2614604	5229212	0	1045839	1045839	0	522917	0	0	10458411
8	2335659	4671320	0	934260	934260	0	467129	0	0	9342628
9	1994798	3989600	0	797918	797918	0	398958	0	0	7979192
10	1578477	3156960	0	631389	631389	0	315694	0	0	6313909
11	1180448	2360900	0	472178	472178	0	236088	0	0	4721792
12	870720	1741441	0	348286	348286	0	174142	0	0	3482875
13	0	0	1696797	0	0	0	0	0	0	1696797
14	0	0	1335576	0	0	0	0	0	0	1335576
15	0	0	832826	0	0	0	0	0	0	832826
16	0	0	507612	0	0	0	0	0	0	507612
17	0	0	192424	0	0	0	0	0	0	192424
18	0	0	129746	0	0	0	0	0	0	129746
19	0	0	68503	0	0	0	0	0	0	68503
20	0	0	20576	0	0	0	0	0	0	20576

TOTAL	29053994	58108017	4784060	11621576	11621576	0	5810775	0	0	120999998

NUMBER OF CARS IN YEAR 1985 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3375839	6751678	0	1350335	1350335	0	675167	0	0	13503354
2	3312198	6624398	0	1324879	1324879	0	662439	0	0	13248793
3	3201891	6403784	0	1280755	1280755	0	640376	0	0	12807561
4	3107383	6214766	0	1242951	1242951	0	621475	0	0	12429526
5	3025840	6051683	0	1210334	1210334	0	605165	0	0	12103356
6	2869712	5739426	0	1147883	1147883	0	573939	0	0	11478843
7	2626778	5253557	0	1050708	1050708	0	525353	0	0	10507104
8	2344026	4688056	0	937608	937608	0	468801	0	0	9376099
9	1969338	3938678	0	787732	787732	0	393865	0	0	7877345
10	1570309	3140622	0	628122	628122	0	314060	0	0	6281235
11	1178635	2357276	0	471453	471453	0	235726	0	0	4714543
12	851715	1703434	0	340685	340685	0	170341	0	0	3406860
13	617141	1234284	0	246855	246855	0	123426	0	0	2468561
14	0	0	1150797	0	0	0	0	0	0	1150797
15	0	0	828642	0	0	0	0	0	0	828642
16	0	0	489897	0	0	0	0	0	0	489897
17	0	0	203044	0	0	0	0	0	0	203044
18	0	0	144318	0	0	0	0	0	0	144318
19	0	0	60548	0	0	0	0	0	0	60548
20	0	0	19572	0	0	0	0	0	0	19572

TOTAL	30050805	60101642	2856818	12020300	12020300	0	6010133	0	0	123099998

NUMBER OF CARS IN YEAR 1986 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3390147	6780295	0	1356059	1356059	0	678029	0	0	13560589
2	3358959	6717919	0	1343583	1343583	0	671791	0	0	13435835
3	3295553	6591109	0	1318221	1318221	0	659110	0	0	13182214
4	3185719	6371441	0	1274286	1274286	0	637141	0	0	12742873
5	3082145	6164290	0	1232855	1232855	0	616427	0	0	12328572
6	2936024	5872052	0	1174408	1174408	0	587202	0	0	11744094
7	2691111	5382225	0	1076443	1076443	0	538219	0	0	10764441
8	2354940	4709881	0	941973	941973	0	470985	0	0	9419752
9	1976393	3952789	0	790555	790555	0	395275	0	0	7905567
10	1550267	3100536	0	620104	620104	0	310051	0	0	6201062
11	1172536	2345076	0	469013	469013	0	234506	0	0	4690144
12	850407	1700819	0	340162	340162	0	170080	0	0	3401630
13	603671	1207346	0	241467	241467	0	120732	0	0	2414683

14	418556	837113	0	167421	167421	0	83709	0	0	1674220
15	0	0	713998	0	0	0	0	0	0	713998
16	0	0	487436	0	0	0	0	0	0	487436
17	0	0	195958	0	0	0	0	0	0	195958
18	0	0	152283	0	0	0	0	0	0	152283
19	0	0	67348	0	0	0	0	0	0	67348
20	0	0	17299	0	0	0	0	0	0	17299
TOTAL	30866428	61732891	1634322	12346550	12346550	0	6173257	0	0	125099998

NUMBER OF CARS IN YEAR 1987 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3434504	6869009	0	1373801	1373801	0	686900	0	0	13738015
2	3373196	6746393	0	1349278	1349278	0	674638	0	0	13492783
3	3342079	6684160	0	1336831	1336831	0	668415	0	0	13368316
4	3278908	6557820	0	1311563	1311563	0	655781	0	0	13115635
5	3159845	6319693	0	1263936	1263936	0	631966	0	0	12639376
6	2990658	5981317	0	1196260	1196260	0	598129	0	0	11962624
7	2753296	5506597	0	1101317	1101317	0	550656	0	0	11013183
8	2412615	4825234	0	965045	965045	0	482520	0	0	9650459
9	1985595	3971191	0	794235	794235	0	397116	0	0	7942372
10	1555821	3111644	0	622326	622326	0	311161	0	0	6223278
11	1157571	2315145	0	463026	463026	0	231512	0	0	4630280
12	846006	1692016	0	338401	338401	0	169200	0	0	3384024
13	602744	1205492	0	241097	241097	0	120547	0	0	2410977
14	409420	818843	0	163767	163767	0	81882	0	0	1637679
15	259688	519376	0	103874	103874	0	51936	0	0	1038748
16	0	0	419998	0	0	0	0	0	0	419998
17	0	0	194974	0	0	0	0	0	0	194974
18	0	0	146968	0	0	0	0	0	0	146968
19	0	0	71065	0	0	0	0	0	0	71065
20	0	0	19242	0	0	0	0	0	0	19242
TOTAL	31561946	63123930	852247	12624757	12624757	0	6312359	0	0	127099996

NUMBER OF CARS IN YEAR 1988 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3449821	6899643	0	1379928	1379928	0	689964	0	0	13799284
2	3417331	6834663	0	1366931	1366931	0	683465	0	0	13669321
3	3356245	6712491	0	1342497	1342497	0	671247	0	0	13424977
4	3325199	6650401	0	1330079	1330079	0	665039	0	0	13300797
5	3252277	6504558	0	1300910	1300910	0	650454	0	0	13009109

6	3066052	6132107	0	1226418	1226418	0	613207	0	0	12264202
7	2804530	5609061	0	1121809	1121809	0	560903	0	0	11218112
8	2468365	4936735	0	987344	987344	0	493670	0	0	9873458
9	2034224	4068453	0	813689	813689	0	406842	0	0	8136897
10	1563065	3126131	0	625223	625223	0	312610	0	0	6252252
11	1161718	2323439	0	464685	464685	0	232341	0	0	4646868
12	835209	1670421	0	334082	334082	0	167040	0	0	3340834
13	599625	1199253	0	239849	239849	0	119924	0	0	2398500
14	408791	817586	0	163516	163516	0	81757	0	0	1635166
15	254019	508041	0	101607	101607	0	50802	0	0	1016076
16	152757	305515	0	61102	61102	0	30550	0	0	611026
17	0	0	167999	0	0	0	0	0	0	167999
18	0	0	146230	0	0	0	0	0	0	146230
19	0	0	68585	0	0	0	0	0	0	68585
20	0	0	20304	0	0	0	0	0	0	20304
TOTAL	32149228	64298498	403118	12859669	12859669	0	6429815	0	0	128999997

NUMBER OF CARS IN YEAR 1989 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3480362	6960724	0	1392144	1392144	0	696072	0	0	13921446
2	3432571	6865144	0	1373028	1373028	0	686514	0	0	13730285
3	3400158	6800317	0	1360061	1360061	0	680030	0	0	13600627
4	3339294	6678589	0	1335716	1335716	0	667856	0	0	13357171
5	3298192	6596387	0	1319276	1319276	0	659637	0	0	13192768
6	3155740	6311485	0	1262295	1262295	0	631146	0	0	12622961
7	2875232	5750467	0	1150090	1150090	0	575043	0	0	11500922
8	2514297	5028595	0	1005716	1005716	0	502856	0	0	10057180
9	2081231	4162466	0	832490	832490	0	416243	0	0	8324920
10	1601345	3202695	0	640537	640537	0	320266	0	0	6405380
11	1167127	2334256	0	466848	466848	0	233423	0	0	4668502
12	838201	1676405	0	335279	335279	0	167638	0	0	3352802
13	591972	1183947	0	236787	236787	0	118393	0	0	2367886
14	406676	813354	0	162669	162669	0	81334	0	0	1626702
15	253629	507261	0	101451	101451	0	50725	0	0	1014517
16	149422	298847	0	59768	59768	0	29883	0	0	597688
17	61102	122205	0	24440	24440	0	12219	0	0	244406
18	0	0	125999	0	0	0	0	0	0	125999
19	0	0	68240	0	0	0	0	0	0	68240
20	0	0	19595	0	0	0	0	0	0	19595
TOTAL	32646551	65293144	213834	13058595	13058595	0	6529278	0	0	130799997

NUMBER OF CARS IN YEAR 1990 BY AGE AND FUEL CATEGORY (CARS)

FLEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3520879	7041759	0	1408351	1408351	0	704175	0	0	14083515
2	3462960	6925920	0	1385183	1385183	0	692591	0	0	13851837
3	3415321	6830645	0	1366128	1366128	0	683064	0	0	13661286
4	3382985	6765971	0	1353191	1353191	0	676595	0	0	13531933
5	3312172	6624346	0	1324867	1324867	0	662431	0	0	13248683
6	3200292	6400588	0	1280116	1280116	0	640057	0	0	12801169
7	2959338	5918681	0	1183734	1183734	0	591865	0	0	11837352
8	2577682	5155368	0	1031070	1031070	0	515533	0	0	10310723
9	2119959	4239919	0	847981	847981	0	423988	0	0	8479828
10	1638349	3276703	0	655338	655338	0	327667	0	0	6553395
11	1195711	2391426	0	478283	478283	0	239140	0	0	4782843
12	842104	1684210	0	336839	336839	0	168419	0	0	3368411
13	594093	1188188	0	237636	237636	0	118817	0	0	2376370
14	401485	802973	0	160593	160593	0	80296	0	0	1605940
15	252317	504635	0	100926	100926	0	50462	0	0	1009266
16	149193	298388	0	59677	59677	0	29838	0	0	596773
17	59768	119538	0	23907	23907	0	11953	0	0	239073
18	45826	91653	0	18330	18330	0	9164	0	0	183303
19	0	0	58799	0	0	0	0	0	0	58799
20	0	0	19497	0	0	0	0	0	0	19497
TOTAL	33130434	66260911	78296	13252150	13252150	0	6626055	0	0	132599996

NUMBER OF CARS IN YEAR 1991 BY AGE AND FUEL CATEGORY (CARS)

FLEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3548844	7097688	0	1419537	1419537	0	709768	0	0	14195374
2	3503274	7006550	0	1401309	1401309	0	700654	0	0	14013096
3	3445558	6891116	0	1378222	1378222	0	689110	0	0	13782228
4	3398071	6796146	0	1359228	1359228	0	679614	0	0	13592287
5	3355508	6711018	0	1342200	1342200	0	671099	0	0	13422025
6	3213857	6427717	0	1285541	1285541	0	642768	0	0	12855424
7	3001117	6002239	0	1200446	1200446	0	600222	0	0	12004470
8	2653084	5306174	0	1061232	1061232	0	530614	0	0	10612336
9	2173403	4346809	0	869358	869358	0	434677	0	0	8693605
10	1668836	3337674	0	667532	667532	0	333764	0	0	6675338
11	1223341	2446687	0	489335	489335	0	244666	0	0	4893364
12	862728	1725459	0	345090	345090	0	172544	0	0	3450911
13	596859	1193720	0	238742	238742	0	119370	0	0	2387433
14	402924	805850	0	161168	161168	0	80583	0	0	1611693
15	249096	498194	0	99637	99637	0	49818	0	0	996382
16	148421	296844	0	59368	59368	0	29683	0	0	593684
17	59677	119355	0	23870	23870	0	11935	0	0	238707
18	44826	89653	0	17930	17930	0	8964	0	0	179303
19	21385	42771	0	8553	8553	0	4276	0	0	85538
20	0	0	16799	0	0	0	0	0	0	16799

TOTAL	33570809	67141664	16799	13428298	13428298	0	6714129	0	0	134299997

NUMBER OF CARS IN YEAR 1992 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3603728	7207456	0	1441491	1441491	0	720745	0	0	14414911
2	3531095	7062199	0	1412439	1412439	0	706219	0	0	14124395
3	3485669	6971341	0	1394267	1394267	0	697133	0	0	13942677
4	3428156	6856312	0	1371261	1371261	0	685629	0	0	13712619
5	3370472	6740948	0	1348188	1348188	0	674094	0	0	13481890
6	3255507	6511816	0	1302359	1302359	0	651178	0	0	13023619
7	3013838	6027679	0	1205533	1205533	0	602764	0	0	12055347
8	2690540	5381084	0	1076215	1076215	0	538106	0	0	10762160
9	2236979	4473963	0	894790	894790	0	447393	0	0	8947915
10	1710998	3421818	0	684360	684360	0	342178	0	0	6843624
11	1246106	2492214	0	498440	498440	0	249218	0	0	4984418
12	882663	1765331	0	353064	353064	0	176531	0	0	3530653
13	611477	1222956	0	244590	244590	0	122294	0	0	2445907
14	404800	809602	0	161919	161919	0	80958	0	0	1619198
15	249989	499979	0	99994	99994	0	49996	0	0	999952
16	146527	293055	0	58609	58609	0	29304	0	0	586104
17	59368	118737	0	23747	23747	0	11873	0	0	237472
18	44757	89516	0	17902	17902	0	8951	0	0	179028
19	20918	41838	0	8367	8367	0	4183	0	0	83673
20	6109	12220	0	2443	2443	0	1221	0	0	24436

TOTAL	34000010	68000064	0	13599978	13599978	0	6799968	0	0	135999998

NUMBER OF CARS IN YEAR 1993 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3682281	7364562	0	1472912	1472912	0	736456	0	0	14729123
2	3585709	7171418	0	1434283	1434283	0	717141	0	0	14342834
3	3513354	7026710	0	1405341	1405341	0	702670	0	0	14053416
4	3468064	6936132	0	1387225	1387225	0	693612	0	0	13872258
5	3400313	6800626	0	1360123	1360123	0	680060	0	0	13601245
6	3270427	6540858	0	1308170	1308170	0	654085	0	0	13081710
7	3053271	6106544	0	1221305	1221305	0	610651	0	0	12213076
8	2701944	5403892	0	1080775	1080775	0	540385	0	0	10807771
9	2268560	4537124	0	907423	907423	0	453710	0	0	9074240
10	1760955	3521914	0	704380	704380	0	352188	0	0	7043817
11	1277521	2555043	0	511006	511006	0	255501	0	0	5110077
12	899089	1798179	0	359633	359633	0	179815	0	0	3596349
13	625606	1251217	0	250241	250241	0	125120	0	0	2502425

14	414714	829430	0	165885	165885	0	82941	0	0	1658855
15	251153	502307	0	100460	100460	0	50229	0	0	1004609
16	147052	294105	0	58819	58819	0	29409	0	0	588274
17	58610	117221	0	23443	23443	0	11721	0	0	234438
18	44526	89052	0	17810	17810	0	8904	0	0	178102
19	20886	41774	0	8354	8354	0	4177	0	0	83545
20	5976	11953	0	2390	2390	0	1195	0	0	23904
TOTAL	34459011	68900061	0	13779978	13779978	0	6889970	0	0	137799998

NUMBER OF CARS IN YEAR 1994 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3707637	7415274	0	1483054	1483054	0	741527	0	0	14830546
2	3663869	7327739	0	1465547	1465547	0	732773	0	0	14655475
3	3567690	7135380	0	1427075	1427075	0	713537	0	0	14270757
4	3495609	6991221	0	1398243	1398243	0	699121	0	0	13982437
5	3439896	6879797	0	1375958	1375958	0	687978	0	0	13759587
6	3299382	6598765	0	1319750	1319750	0	659873	0	0	13197520
7	3066887	6133779	0	1226754	1226754	0	613377	0	0	12267551
8	2737296	5474595	0	1094915	1094915	0	547456	0	0	10949177
9	2278176	4556355	0	911268	911268	0	455632	0	0	9112699
10	1785815	3571634	0	714325	714325	0	357161	0	0	7143260
11	1314890	2629784	0	525954	525954	0	262975	0	0	5259557
12	921755	1843512	0	368700	368700	0	184348	0	0	3687015
13	637249	1274498	0	254897	254897	0	127447	0	0	2548988
14	424297	848597	0	169717	169717	0	84858	0	0	1697186
15	257304	514609	0	102921	102921	0	51459	0	0	1029214
16	147737	295474	0	59094	59094	0	29546	0	0	590945
17	58820	117641	0	23527	23527	0	11763	0	0	235278
18	43957	87915	0	17582	17582	0	8790	0	0	175826
19	20778	41557	0	8311	8311	0	4155	0	0	83112
20	5967	11935	0	2386	2386	0	1193	0	0	23867
TOTAL	34875011	69750061	0	13949978	13949978	0	6974969	0	0	139499997

NUMBER OF CARS IN YEAR 1995 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3753927	7507854	0	1501570	1501570	0	750785	0	0	15015706
2	3688098	7378197	0	1475638	1475638	0	737819	0	0	14756390
3	3645457	7290916	0	1458182	1458182	0	729090	0	0	14581827
4	3549671	7099342	0	1419867	1419867	0	709933	0	0	14198680
5	3467218	6934439	0	1386886	1386886	0	693442	0	0	13868871

6	3337790	6675586	0	1335115	1335115	0	667556	0	0	13351162
7	3094040	6188082	0	1237613	1237613	0	618804	0	0	12376152
8	2749503	5499012	0	1099800	1099800	0	549900	0	0	10998015
9	2307983	4615969	0	923190	923190	0	461594	0	0	9231926
10	1793385	3586773	0	717352	717352	0	358674	0	0	7173536
11	1333453	2666910	0	533380	533380	0	266689	0	0	5333812
12	948718	1897439	0	379485	379485	0	189741	0	0	3794868
13	653314	1306629	0	261324	261324	0	130660	0	0	2613251
14	432193	864387	0	172875	172875	0	86436	0	0	1728766
15	263249	526501	0	105298	105298	0	52649	0	0	1052995
16	151355	302711	0	60541	60541	0	30269	0	0	605417
17	59094	118189	0	23637	23637	0	11818	0	0	236375
18	44115	88230	0	17645	17645	0	8822	0	0	176457
19	20513	41026	0	8204	8204	0	4101	0	0	82048
20	5936	11873	0	2374	2374	0	1187	0	0	23744
TOTAL	35300012	70600065	0	14119976	14119976	0	7059969	0	0	141199998

NUMBER OF CARS IN YEAR 1996 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3797041	7594083	0	1518816	1518816	0	759408	0	0	15188164
2	3735157	7470314	0	1494062	1494062	0	747031	0	0	14940626
3	3670559	7341120	0	1468222	1468222	0	734111	0	0	14682234
4	3627045	7254093	0	1450817	1450817	0	725407	0	0	14508179
5	3520841	7041682	0	1408335	1408335	0	704167	0	0	14083360
6	3364301	6728606	0	1345719	1345719	0	672858	0	0	13457203
7	3130058	6260122	0	1252022	1252022	0	626009	0	0	12520233
8	2773846	5547695	0	1109536	1109536	0	554765	0	0	11095378
9	2318276	4636557	0	927309	927309	0	463654	0	0	9273105
10	1816849	3633701	0	726737	726737	0	363367	0	0	7267391
11	1339105	2678214	0	535640	535640	0	267818	0	0	5356417
12	962111	1924226	0	384843	384843	0	192421	0	0	3848444
13	672424	1344851	0	268968	268968	0	134483	0	0	2689694
14	443089	886179	0	177234	177234	0	88615	0	0	1772351
15	268148	536298	0	107258	107258	0	53628	0	0	1072590
16	154852	309706	0	61939	61939	0	30969	0	0	619405
17	60541	121184	0	24216	24216	0	12107	0	0	242164
18	44320	88641	0	17727	17727	0	8863	0	0	177278
19	20586	41173	0	8234	8234	0	4116	0	0	82343
20	5860	11721	0	2343	2343	0	1171	0	0	23438
TOTAL	35725009	71450066	0	14289977	14289977	0	7144968	0	0	142899997

NUMBER OF CARS IN YEAR 1997 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. / AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3662489	7724978	0	1544995	1544995	0	772497	0	0	15449954
2	3778055	7556112	0	1511221	1511221	0	755610	0	0	15112219
3	3716387	7432774	0	1486554	1486554	0	743277	0	0	14865546
4	3652020	7304043	0	1460806	1460806	0	730403	0	0	14608078
5	3597586	7195176	0	1439033	1439033	0	719515	0	0	14390343
6	3416332	6832665	0	1366531	1366531	0	683265	0	0	13665324
7	3154919	6309842	0	1261966	1261966	0	630981	0	0	12619674
8	2806137	5612280	0	1122453	1122453	0	561225	0	0	11224548
9	2338801	4677604	0	935518	935518	0	467756	0	0	9355197
10	1824952	3649908	0	729979	729979	0	364989	0	0	7299807
11	1356626	2713254	0	542648	542648	0	271323	0	0	5426499
12	966189	1932382	0	386474	386474	0	193235	0	0	3864754
13	681917	1363837	0	272765	272765	0	136382	0	0	2727666
14	456049	912101	0	182418	182418	0	91208	0	0	1824194
15	274909	549819	0	109962	109962	0	54980	0	0	1099632
16	157734	315469	0	63092	63092	0	31545	0	0	630932
17	61940	123882	0	24775	24775	0	12387	0	0	247759
18	45405	90813	0	18162	18162	0	9080	0	0	181622
19	20682	41365	0	8272	8272	0	4136	0	0	82727
20	5881	11763	0	2352	2352	0	1175	0	0	23523
TOTAL	36175010	72350067	0	14469976	14469976	0	7234969	0	0	144699998

NUMBER OF CARS IN YEAR 1998 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. / AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3852610	7705220	0	1541044	1541044	0	770522	0	0	15410440
2	3843176	7686353	0	1537270	1537270	0	768634	0	0	15372703
3	3759069	7518141	0	1503626	1503626	0	751812	0	0	15036274
4	3697617	7395234	0	1479046	1479046	0	739523	0	0	14790466
5	3622358	7244720	0	1448941	1448941	0	724470	0	0	14489430
6	3490799	6981603	0	1396318	1396318	0	698157	0	0	13963195
7	3203712	6407425	0	1281483	1281483	0	640741	0	0	12814844
8	2828425	5656854	0	1131368	1131368	0	565682	0	0	11313697
9	2366027	4732060	0	946409	946409	0	473203	0	0	9464108
10	1841109	3682221	0	736441	736441	0	368218	0	0	7364430
11	1362676	2725356	0	545069	545069	0	272534	0	0	5450704
12	978831	1957664	0	391530	391530	0	195764	0	0	3915319
13	684807	1369618	0	273921	273921	0	136959	0	0	2739226
14	462488	924978	0	184994	184994	0	92496	0	0	1849950
15	282950	565902	0	113179	113179	0	56588	0	0	1131798
16	161711	323422	0	64683	64683	0	32341	0	0	646840
17	63093	126187	0	25236	25236	0	12617	0	0	252369
18	46455	92911	0	18581	18581	0	9290	0	0	185818
19	21188	42379	0	8475	8475	0	4237	0	0	84754
20	5909	11818	0	2363	2363	0	1181	0	0	23634

TOTAL	36575010	73150066	0	14629977	14629977	0	7314969	0	0	146299999

NUMBER OF CARS IN YEAR 1999 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3542948	7885896	0	1577179	1577179	0	788589	0	0	15771791
2	3833346	7666693	0	1533338	1533338	0	766669	0	0	15333384
3	3823863	7647728	0	1529545	1529545	0	764771	0	0	15295452
4	3740083	7480170	0	1496031	1496031	0	748014	0	0	14960329
5	3667585	7335171	0	1467033	1467033	0	733516	0	0	14670338
6	3514836	7029677	0	1405932	1405932	0	702965	0	0	14059342
7	3273544	6547093	0	1309416	1309416	0	654706	0	0	13094175
8	2872169	5744339	0	1148866	1148866	0	574432	0	0	11488672
9	2384820	4769643	0	953926	953926	0	476961	0	0	9539276
10	1862542	3725088	0	745015	745015	0	372506	0	0	7450166
11	1374741	2749484	0	549894	549894	0	274945	0	0	5498958
12	983196	1966396	0	393277	393277	0	196638	0	0	3932784
13	693767	1387537	0	277505	277505	0	138752	0	0	2775066
14	464448	928899	0	185778	185778	0	92888	0	0	1857791
15	286945	573891	0	114777	114777	0	57388	0	0	1147778
16	166441	332883	0	66575	66575	0	33287	0	0	665761
17	64684	129368	0	25873	25873	0	12936	0	0	258734
18	47319	94640	0	18927	18927	0	9462	0	0	189275
19	21678	43358	0	8671	8671	0	4335	0	0	86713
20	6053	12108	0	2421	2421	0	1210	0	0	24213

TOTAL	37025008	74050062	0	14809979	14809979	0	7404970	0	0	148099998

NUMBER OF CARS IN YEAR 2000 BY AGE AND FUEL CATEGORY (CARS)

FUEL CAT. AGE	1	2	3	4	5	6	7	8	9	TOTAL
1	3959473	7918947	0	1583789	1583789	0	791894	0	0	15837892
2	3923233	7846466	0	1569293	1569293	0	784646	0	0	15692931
3	3814082	7628166	0	1525632	1525632	0	762816	0	0	15256328
4	3804550	7609103	0	1521820	1521820	0	760908	0	0	15218201
5	3709706	7419417	0	1483880	1483880	0	741938	0	0	14838821
6	3558721	7117443	0	1423487	1423487	0	711743	0	0	14234881
7	3296085	6592175	0	1318432	1318432	0	659215	0	0	13184339
8	2934774	5869553	0	1173908	1173908	0	586952	0	0	11739095
9	2421703	4843407	0	968679	968679	0	484339	0	0	9686807
10	1877335	3754674	0	750932	750932	0	375464	0	0	7509337
11	1390744	2781492	0	556296	556296	0	278147	0	0	5562975
12	991901	1983804	0	396758	396758	0	198378	0	0	3967599
13	696861	1393726	0	278743	278743	0	139371	0	0	2787444