The R-1 Railroad Database: An Application in Transportation Research A Technical Report

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AN APPLICATION IN TRANSPORTATION RESEARCH

A Technical Report

by

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INTRODUCTION

Each year, all Class I railroads in America are required by law to file a detailed report with the Interstate Commerce Commission. This report (called the R-1 report) is primarily used by the ICC during regulatory oversight. The R-1 reports are the basis for the development of the Uniform Rail Costing System (URCS). URCS is used by the ICC to assess the maximum reasonableness of railroad rates and to compute off-branch costs in abandonment cases.

The R-1 reports contain a wealth of information that can be used in transportation research. The purpose of this report is to describe the R-1 data base and a series of programs written to manipulate the data files. These programs were used in a recent research project to generate a time-series data base of railroad expense, investment, and operating data. The time-series data base was used to estimate a railroad cost function. The programs used to create the data base were written in SAS. Thus, they can be replicated by other transportation researchers desiring to create similar time-series data files from R-1 reports.

OVERVIEW OF R-1 REPORTS

The R-1 data base contains select reporting schedules from U.S. Class I carriers' annual reports to the Interstate Commerce Commission. The data files are created and stored on magnetic tape by the ICC, using machine readable files submitted by carriers and hard copies of their annual reports.

The R-1 data base contains five major types of data:

1. Railway operating expenses
2. Annual operating (output) statistics
3. Size of plant
4. Investment and property data
5. Commodity activity levels

Railway operating expenses are contained primarily in Schedule 410. The expenses are reported by functional activity (e.g. maintenance of way), sub-activity (e.g. repair and maintenance), and type of activity (running, switching, or other). Each account is separated into freight and passenger expenses. In addition, the freight expenses are reported by "natural account" groups: (1) salaries and wages, (2) materials and supplies, (3) purchased services, and (4) general freight.

The fringe benefits for each activity and sub-activity are shown separately (that is, they are not included in the salaries and wages). For example, fringe benefits for repair of way and structures are listed in lines 112-114 of Schedule 410.

More specific equipment costs are contained in Schedules 414 and 415. Schedule 414 lists the time and mileage per diem receivable and payable. Schedule 415 shows repairs, depreciation, and investment data by time of locomotive, freight car, and trailer or container. By subtracting accumulated depreciation from the gross investment base, the net original investment in each type of equipment can be computed from Schedule 415.

Output or production statistics are contained in Schedule 755. Included in the schedule are: (1) car-miles, (2) gross ton-miles, (3) net ton-miles, (4) road locomotive miles, (5) locomotive switching-hours, (6) train-hours, and (7) train-miles. The car-miles are distinguished between types of cars, and the gross-ton mile and train-mile data are broken down by type of train service (e.g. way train, through train, etc.).

Commodity output levels are shown in Form QCS. The QCS schedule shows the number of tons and carloads of each commodity handled by the carrier during the year.

The miles of track in each type of service and category are given in Schedule 710. This schedule gives the miles of road, the miles of way and yard switching track, and the miles of main track, crossovers and turnouts.

The original investment or book value of railroad property is shown in Schedule 352B. Accumulated depreciation is shown is Schedule 335. So, the depreciated book value can be estimated using the two schedules.

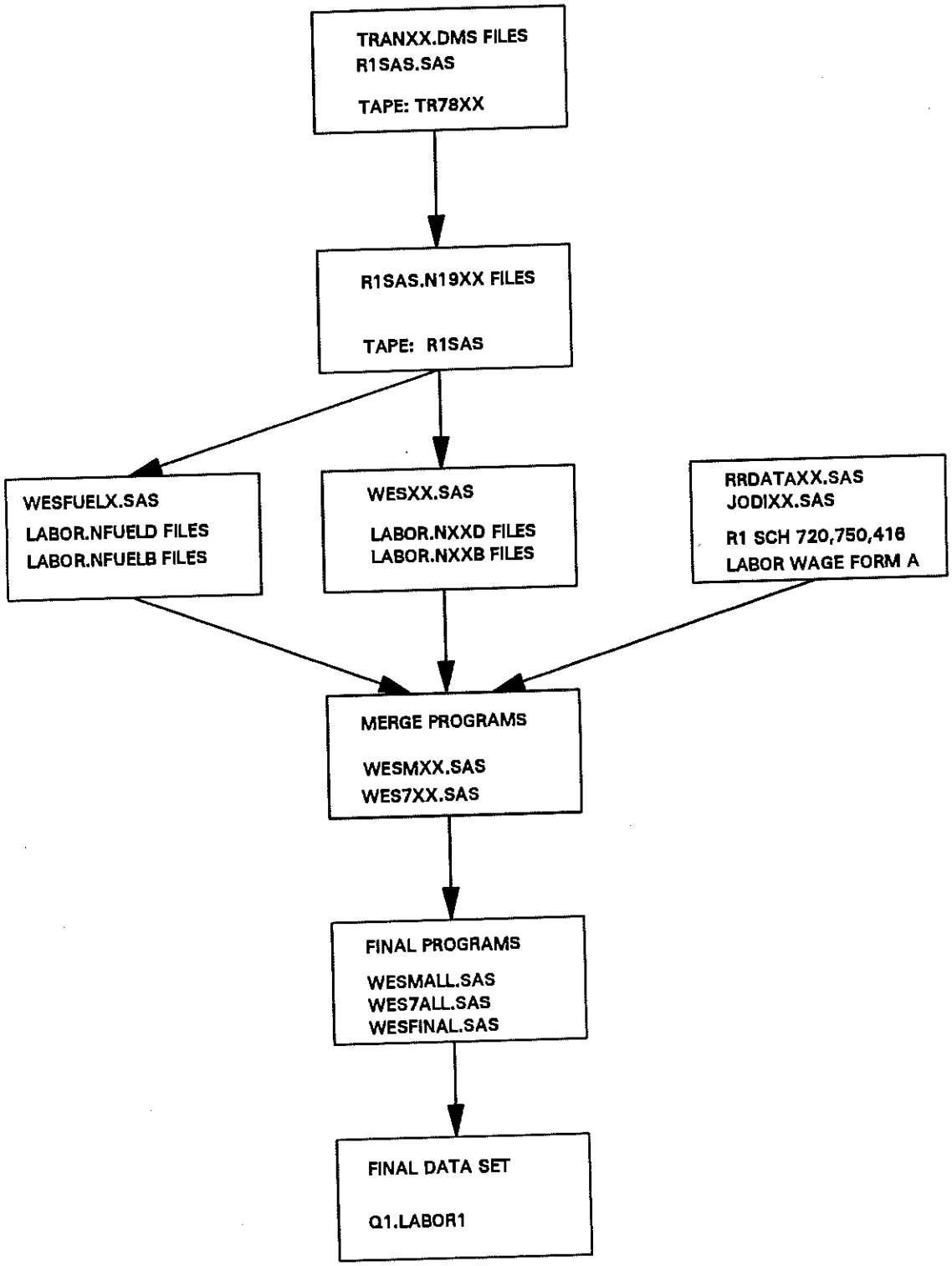
All of the above data are contained in the current R-1 data base. In addition, there are other data available at the ICC, particularly concerning labor, that could be obtained and coded. Wage Forms A and B show the average number of employees by classification, the number of hours worked, the compensation, overtime, and the amount of hours paid for but not worked. From Wage Forms A and B and Schedule 755, it is possible to estimate the average size of crew for the carrier.

R-1 APPLICATION

This section details and describes an application of the R-1 Tranxx.dms files used in a research project. The Post-Staggers Rail Productivity For Class I Railroads was a study based upon the information available in the R-1 Tranxx.dms database. The study proposed to estimate productivity gains and cost savings experienced in the railroad industry since the regulatory climate changed with the Staggers Act. As such, the study made extensive use of the operating and financial data available in the R-1 Tranxx.dms database.

The R-1 data management process of the Post-Staggers Rail Productivity study involved a series of computer programs to capture and process the relevant data and data structures. A graph first illustrates the process and provides a framework for representing the refinement of the R-1 data. Secondly, the record format of the R-1 Tranxx.dms files is shown to furnish a detailed examination of the actual R-1 schedules in the Tranxx.dms files. The series of computer programs used in the study are then denoted and followed by selected program examples. Finally, to portray the scope of the database, a listing of the railroads and the years they appear in the Post-Staggers Study is included.

DATA MANAGEMENT PROCESS



THE INTERSTATE COMMERCE COMMISSION'S DESCRIPTION OF THE R-1 TRANSXX.DMS RECORD FORMAT

The authors would like to acknowledge the assistance of Bill Rogers and the staff of the Bureau of Accounts of the Interstate Commerce Commission.

This file is the documentation file for the TRANXX.DMS files. It describes the various data elements in the files:

TRAN78.DMS
TRAN79.DMS
.....
.....
.....
.....
TRAN90.DMS

The files have the following data elements.

(1) RRICC - Owner identification number (i.e. Who reported the data)

6 digit numeric field - integer

Individual carriers are indicated by 6 digit report number (110700 - 139700) See URCSCF.DMS for complete carrier list

Regional data is indicated by 900001 to 900007 - last digit being region

National data is indicated by 900099

Other RRICC codes may appear in various files for special purposes - (i.e. when carrier reports must be consolidated or divided into other carriers). The original reports are stored on the file for reference. This is accomplished by changing the lead digit to a 4 or 5.

Examples:

Southern system reports OSA as a system level they all break this report into the 4 component carriers for URCS. The original report is stored in the data base as 421600. Period reports must be combined - same procedure intra year mergers - same procedure these are usually specific cases - but all reported data is retained.

When a carrier files two period reports for one year (P&LE and WP in 1979) or if a carrier is merged into another at a time other than December 31 (SLSF-BN in 1980), schedules will be used from the 2 reports on the following basis: (If merged on December 31, consider 2 carriers for year.) R-1 all schedules numbered less than 400 (except 210) and schedule 700, use the schedule of the report dated December 31 only. All schedules numbered 210, 410 through 451 (except 415 columns for depreciation and reserve) and 75 (OSA), add the data from the two reports. Reports QCS and CS-54 should be added together. The carrier RRICC numbers of both period reports have the first digit changed from 1 to 4. Also, the fourth digit of the second period report is raised one digit.

In some instances, the schedules that are not added will not appear for the second period carrier with the first digit of 4 as it will appear for the carrier with the first digit of 1.

As an example:

P&LE period reports are numbered 1/1/79-5/14/79 418200, 5/15/79-12/31/79 418300 (balance sheet schedule omitted as included in 118200) Data used for 1979 118200. If a carrier discontinues operation during the year, the data is not used.

(2) SCH - schedule identification code

Schedule identification is an artificial number - user must either be familiar or have access to this file or file(s) R1TB80.DAT, R1TB79.DAT, R1TB78.DAT., etc

R1TB80,DAT consists of 17 data elements
1 - Is a print graphic of the source of the data (4 char) - (i.e. 200, CS54, Wage, WB, etc.)
2 - Is this schedule code
3 - Thru 17 are 15, 2 char codes that indicates the columns of data from the source that are available and the position in the data record (i.e. entry 330 03B C D E F G H indicates that schedule 03 comes from R1 sch 330 and that amount fields 1-7 contain data and amt fld 1 is col b, amt fld 2 is col c, etc.)

The additional information below is based on 1980 data as far as line etc. - they could change.

The following is a brief decode:

SCH-CODE	DESCRIPTION
2	R1 - Schedule 200 - balance sheet lines 1-57 column b only
3	R1 - Schedule 330 - lines 1-48 Cols B C D E F G H
4	R1 - Schedule 330A - lines 1-48 Cols B C D E F G H
5	R1 - Schedule 335 (in 1978 Schedule was 332) The reported amortization of property and road is omitted from URCS WTA4 cols 9 & 12 and the system generates new totals for the table. The annual amortization expense is included in the depreciation expense of R1 schedules 410, 412, and 415. The annual equipment amortization expense is included in R1 schedule 415 cols for depreciation expense and adjustment. Therefore, the adjustment column is not used URCS.
6	R1 - Schedule 339 - lines 1-37 Col B C D E F G (in 1978 Schedule 355)
7	R1 - Schedule 351 - lines 1-36 Col B C D E F G (in 1978 Schedule 342)
8	R1 - Schedule 352B - lines 1-49 Col B C D E
9	R1 - Schedule 210 - income statement - all lines Col B D E
10	R1 - Schedule 220 - all lines Col B C

12	R1 - Schedule 410 - all lines Col B C D E F G H
13	R1 - Schedule 412 - lines 1-35 Col B C D
18	R1 - Schedule 451 - all lines Col B
19	R1 - Schedule 414 - lines 1-25 Col B C D E F G H I. Line for auto racks has appeared in various places on this schedule. For uniformity in 1978-1980 the line is moved to the freight car group and the system computes new totals for related groups.
20	R1 - Schedule 415 - lines 1-43 Col B C D E F G H I J K. The columns have changed each year. The dictionary identifies the correct column. In 1980 the depreciation expense column was split between owned and capitalized lease. To avoid a problem with other columns in this schedule, the two depreciation expense columns are added and entered into the data base as col 12.
21	R1 - Schedule 417 - lines 1-11 Col B C D E F G H I J
22	R1 - Schedule 710 - lines 1-40 Col B C D E F G H I J K L
23	R1 - Schedule 710 - lines 1-75 Col B C D E F G H I J K L M N
24	R1 - Schedule 715 - lines 1 -23 Col B C D E F G H I J
25	R1 - Schedule 760 - all lines Col B C D E F G H I J K L M N O
26	R1 - Schedule 761 - all lines Col B C D
29	R1 - Schedule 352A - all lines Col C D E (in 1978 Schedule 335A)
30	R1 - Schedule 702 - all lines Col B C I J
31	R1 - Schedule 419 - all lines Col B
32	R1 - Schedule 240 - all lines Col B
33	R1 - Schedule 700 - line 57 Col D E F G H I J * * *
34	R1 - Schedule 342 - lines 36 Col B C D E F G (in 1978 Schedule was 352)
38	S & T Investment Data - data entered by region only
39	R4 - lessor data - no data after 1979
41	Switching study factors - same data use each year
42	TOFC study factors - same data used each year
43	TCU - was reported in PTR-R for 1978 and 1979, OSA line 139 for 1979 and 1980, and R1 Sch 755 line L39 for 1981. Total TOFC/COFC handled by railroad was reported in PTR R for 1978 and 1979, OSA line 137 for 1979 and 1980 and R1 Sch 755 line 137 for 1981. To develop consistent OSA/755 reporting, data was ratioed in 1979 and applied to 1978 data.
44	S & T expense and loco miles data - data entered by region only
45	Working capital data by railroad, region and U.S.
46	QCS report - all lines and columns with three additional columns to compute total originations, terminations and interchange
51	Waybill file data
52	CBS quarterly report data
54	CS 54 data
56	OS A data - all lines year end freight only. Data for years 1978-1980. 1981 data in R1 Sch 755 and in URCS Sch 37. All lines changed after 1978.
60	QCS data input by STICC code. First number of schedule always 1 and next 2 numbers the first 2 digits of STICC code. The line number is the 3-5 digits of STICC code. As example: Cotton in bales, STICC code 01121 is in Sch 101 L 121

PROGRAM SERIES USED IN THE DATA MANAGEMENT PROCESS AND SELECTED PROGRAM EXAMPLES

PROGRAM FILES

R1 DATA PROGRAMS		
WES78	SAS	40125
WES78DAT	SAS	7179
WES79	SAS	41708
WES7940	SAS	41730
WES7ALL	SAS	13919
WES7FUEL	SAS	20572
WES7M720	SAS	6651
WES7M750	SAS	600
WES7MLBR	SAS	1066
WES7MRGB	SAS	1000
WES80	SAS	40622
WES8040	SAS	40644
WES81	SAS	40589
WES8140	SAS	40531
WES82	SAS	40190
WES8240	SAS	40228
WES83	SAS	39999
WES8340	SAS	40075
WES84	SAS	39889
WES8440	SAS	40024
WES85	SAS	39674
WES8540	SAS	40059
WES86	SAS	39496
WES8640	SAS	39650
WES87	SAS	39499
WES8740	SAS	39630
WES88	SAS	39413
WES8840	SAS	39663
WES89	SAS	39369
WES8940	SAS	39618

SCHEDULE 720,750,416 PROGRAMS		
RRDATA78	SAS	19902
RRDATA79	SAS	20019
RRDATA80	SAS	19747
RRDATA81	SAS	19536
RRDATA82	SAS	19039
RRDATA83	SAS	34585
RRDATA84	SAS	34987
RRDATA85	SAS	30150
RRDATA86	SAS	26097
RRDATA87	SAS	26011
RRDATA88	SAS	25087
RRDATA89	SAS	24673

LABOR-WAGE FORM A PROGRAMS

JODI78	SAS	4285
JODI79	SAS	4196
JODI80	SAS	4086
JODI81	SAS	4395
JODI82	SAS	3952
JODI83	SAS	3534
JODI84	SAS	3432
JODI85	SAS	2902
JODI86	SAS	2365
JODI87	SAS	2361
JODI88	SAS	2237
JODI89	SAS	2093

MERGE - FINAL PROCESS PROGRAMS

WES7720	SAS	7824
WES7750	SAS	600
WESDATA	SAS	10571
WESEX	SAS	54066
WESFIN78	SAS	2253
WESFINAL	SAS	6832
WESFIX1	SAS	2650
WESFIX2	SAS	1735
WESFUELB	SAS	21981
WESFUELD	SAS	21995
WESM416	SAS	32023
WESM700	SAS	896
WESM720	SAS	15057
WESM750	SAS	808
WESMALL	OLD	19869
WESMALL	SAS	21175
WESMERGB	SAS	3481
WESMERGD	SAS	1147
WESMLABR	SAS	2747

UTILITY PROGRAMS

ALHG	SAS	1051
BN82700	SAS	8320
CHECK	SAS	7612
CHECKFJD	SAS	5900
CHECKRR	SAS	146
FWDFIX	SAS	1577
GTMM	SAS	444
GTMTAPE	SAS	18118
K1K2	SAS	470
K1K2FEC	SAS	343

Utility Programs Cont'd.

K2	SAS	576
LABOR1	SAS	19593
LABORALL	SAS	159
LABORFJD	SAS	17147
MEANDAT2	SAS	2908
MEANDAT3	SAS	1847
MOR	SAS	367
MOTMOR	SAS	465
MTMOR	SAS	261
Q1XCOPY	SAS	111
R1RRS	SAS	947
R1RRSUB	SAS	3555
R1SAS	SAS	2898
R1SCHALL	SAS	4090
R1SCHDRR	SAS	997
R1SCHED	SAS	1319
RRDELETE	SAS	1397
TCOPYX	SAS	110
TCOPYXIN	SAS	113
TRACK	SAS	6576
UPFIX	SAS	744
UPMT84	SAS	188
UPTEST	SAS	173
V5TOV6	SAS	83
V6SET	SAS	230
WES	SAS	4466
WESTEST	SAS	446

```
   *-------------------------------------------------------*
   |  THIS PROGRAM READS IN THE R1 TRANXX.DMS FILES AND OUT-  |
   |  PUTS SELECTED SCHEDULES TO A SAS DATASET. THE R1 FILES  |
   |  ARE FOUND ON CARTRIDGE TR78XX.                          |
   |     THE COMMAND TO MOUNT THE READ CART IS                |
   |           VMTAPE MOUNT TR78XX 181 (DEN 38K LAB SL        |
   |  WHILE THE WRITE CARTRIDE IS ACCESSED BY THE COMMAND     |
   |           VMTAPE MOUNT R1SAS  182 (DEN 38K LAB SL WRITE  |
   |  1978 = SL 1, 1979 = SL 2,.... 1989 = SL 12 ON TR78XX.   |
   *-------------------------------------------------------*;
CMS FILEDEF TAPEFL1 TAP1 SL 12 (LRECL 192 BLKSIZE 9600 RECFM FB;
CMS FILEDEF TAPER1 TAP2 SL 12;
CMS LABELDEF TAPER1 FID ?   FSEQ 12;
*-------------------------------------------------------------*
|  READ IN THE FILE ON TR78XX AND SUBSET THE APPROPIATE SCHEDULES. |
|                                                             |
*-------------------------------------------------------------*;
DATA READR1;
   ARRAY VARS (V) VAR1-VAR15;
   INFILE TAPEFL1;
   INPUT RRCODE $ 1-6 @;
   IF RRCODE ^= '******' OR RRCODE ^= '      ';
   INPUT SCHED 7-9 @;
   IF SCHED = 5 OR SCHED = 6  OR SCHED = 7  OR SCHED = 8
                OR SCHED = 12 OR SCHED = 13 OR SCHED = 19
                OR SCHED = 20 OR SCHED = 23 OR SCHED = 33
                OR SCHED = 34 OR SCHED = 45 OR SCHED = 54
                OR SCHED = 56 OR SCHED = 146  OR SCHED = 37
                OR SCHED = 405 OR SCHED = 406  OR SCHED = 407
                OR SCHED = 408 OR SCHED = 434
                OR SCHED = 412
                OR SCHED = 3
                OR SCHED = 13 OR SCHED = 420  OR SCHED = 22;
   INPUT LINE 10-12 (VAR1-VAR15) (12.0);
       *  keep only QCS total lines;
   IF SCHED = 146 AND LINE ^= 900 THEN DELETE;
*-------------------------------------------------------------*
| THE POST 1985 (1986 IS THE FIRST ONE) TRANXX.DMS FILES DO NOT  |
| HAVE SCHEDULE 410 VALUES IN 1000'S.  THE FOLLOWING CODE CONVERTS |
| THE 410 VALUES TO 1000'S.  410 SCHEDULES = 12 AND 412.      |
| IF PROCESSING 1985 OR EARLIER DATA REMOVE THE SCHED=12 AND  |
| SCHED = 412 CONDITIONS ON THE IF STATEMENT.                 |
|    also r1412 and r1415  -use 412 for 83-85 also 420-       |
*-------------------------------------------------------------*;
*  IF SCHED <= 20 OR SCHED = 34 THEN;
*  IF SCHED <= 20 OR SCHED = 34 OR SCHED = 412;
   IF SCHED <= 20 OR SCHED = 34 OR SCHED = 12 OR SCHED = 412
                  OR SCHED = 13 OR SCHED = 413 OR SCHED = 420 THEN
         DO OVER VARS;
           VARS = VARS * 1000;
         END;
       OUTPUT;
PROC SORT DATA = READR1;
   BY RRCODE SCHED LINE;
DATA TAPER1.N1989 (GEN = 0 LABEL = '1989 R1 SAS DATASET');
  SET READR1;
```

```
*-------------------------------------------------------*
|                                                       |
|                    WES8940 SAS A                      |
|                                                       |
*-------------------------------------------------------*;
*-------------------------------------------------------*
|                                                       |
|  THIS PROGRAM READS IN THE R1 SAS DATASETS ON CARTRIDGE|
|  R1SAS AND CREATES A DATA SET CONTAINING VALUES FROM  |
|  VARIOUS R1 SCHEDULES.  INCLUDED IN THE DATA SET ARE  |
|  CALCULATED VALUES.  A SELECTED SUBSET OF POSSIBLE TAPE|
|  R1 RAILROADS ARE USED.                               |
|  THIS IS ONE OF A SERIES OF PROGRAMS COVERING THE YEARS|
|  1978-1989.  THESE PROGRAMS ARE TEMPLATES OF ONE ANOTHER|
|  CHANGING ONLY AS THE UNDERLYING DATA FORMATS OF THE R1|
|  SCHEDULES CHANGE. EACH YEAR ALSO HAS A UNIQUE SUBSET OF|
|  RAILROADS.                                           |
|      THE COMMAND TO MOUNT THE CARTRIDGE IS:           |
|         VMTAPE MOUNT R1SAS 181 (DEN 38K LAB SL        |
*-------------------------------------------------------*;
CMS FILEDEF TAPEFL1 TAP1 SL 12;
*MS FILEDEF N88D  TAP2 SL 21;
*MS LABELDEF N88D  FSEQ 21;
      ************************************************************;
      *  THIS MACRO CHECKS R1 INPUT RECORDS FOR MISSING LINES   *;
      *  AS WELL AS MISSING SCHEDULES.  IF LINE NUMBERS ARE     *;
      *  MISSING, THE VALUES ARE LEGITIMATE ZERO VALUES.  THE   *;
      *  PROCEDURE CREATES THE MISSING INPUT LINES WITH ZEROS   *;
      *  FOR COLUMN VALUES AND OUTPUTS THE RECORDS.  IF THE     *;
      *  ENTIRE SCHEDULE IS MISSING, ALL LINES IN THE SCHEDULE  *;
      *  ARE CREATED WITH ZERO VALUES AND ARE OUTPUT.           *;
      ************************************************************;
      ************************************************************/*;
      *//////////////////////////////////////////////////////////*;
      ************************************************************;
      *  DEFINE ARRAYS WITH DIMENSION EQ. TO MAX. NUMBER OF     *;
      *        VARIABLES IN A GIVEN INPUT DATA LINE             *;
      ************************************************************;
%MACRO LINECHK;
ARRAY VARS  (A) VAR1-VAR15;
ARRAY TEMPV (A) TEMPV1-TEMPV15;
      ************************************************************;
      *  DEFINE LAG VAR. WHICH STORES THE PREVIOUS LINE NUMBER  *;
      ************************************************************;
LINELAG = LAG(LINE);
IF FIRST.SCHED THEN
  PLINE = 0;
ELSE
  PLINE = LINELAG;
      ************************************************************;
      * COMPUTE DIFFERENCE BETWEEN PREVIOUS & CURRENT LINE NO. *;
      * ALLOW FOR GAP IN LINE NUMBERS IN SCHEDULE 410.         *;
      ************************************************************;
IF SCHED = 412 AND (PLINE <= 30 AND LINE >= 101) THEN
  LINEDIF = LINE - 70 - PLINE;
ELSE
  LINEDIF = LINE - PLINE;
      ************************************************************;
      *  DEFINE MISSING LINE "FLAG" AND SET TO "OFF" POSITION   *;
      ************************************************************;
```

```
FLAG = '0';
     ************************************************************;
     * IF THE DIFFERENCE BETWEEN CURRENT & PREVIOUS LINES IS    *;
     * GT. 1 SOME LINES ARE MISSING. SO TAKE FOLLOWING ACTION   *;
     ************************************************************;
IF LINEDIF > 1 THEN
  DO;
          ************************************************;
          *  STORE CURRENT VARIABLE VALUES AND LINE NO.    *;
          *  IN TEMPORARY ARRAY AND MEMORY VARIABLE        *;
          ************************************************;
     TEMPLINE = LINE;
     DO OVER TEMPV;
        TEMPV = VARS;
     END;
        ************************************************;
        *   FOR ALL MISSING LINE NO., DO THE FOLLOWING  *;
        ************************************************;
     DO I = 1 TO LINEDIF - 1;
          ************************************************;
          *  SET ALL POSSIBLE INPUT VARIABLES TO ZERO    *;
          ************************************************;
       DO OVER VARS;
          VARS = 0;
       END;
          ************************************************;
          *  COMPUTE LINE NUMBER BASED ON THE VALUE OF   *;
          *  THE CURRENT INPUT LINE NO. & THE LINE DIFF.*;
          ************************************************;
       IF SCHED = 412 & (TEMPLINE >= 101 AND PLINE <= 30)
       THEN
         DO;
            LINE = TEMPLINE - 70 - LINEDIF + 1;
            IF 30 < LINE < 101 THEN
              LINE = LINE + 70;
         END;
       ELSE
         LINE = TEMPLINE - LINEDIF + I;
          ************************************************;
          *  RESET MISSING LINE FLAG TO "ON" POISTION    *;
          ************************************************;
        FLAG = '1';
          ************************************************;
          * LINK PROC. IN DATA STEP WHICH ASSIGNS INPUT  *;
          *    VALUES IN SCHEDULE TO MEMORY VARIABLES    *;
          ************************************************;
        LINK ASSIGN;
      END;
          ************************************************;
          *   RESET MISSING LINE FLAG TO "OFF" POSITION  *;
          ************************************************;
```

```
    FLAG = '0';
          ************************************************;
          *  RETRIEVE CURRENT INPUT LINE VALUES AND LINE  *;
          *  NUMBER FROM TEMPORARY ARRAY AND MEMORY VAR.  *;
          ************************************************;
    DO OVER VARS;
       VARS = TEMPV;
    END;
    LINE = TEMPLINE;
  END;
    ********************************************************;
     *  LINK VARIABLE NAME ASSIGNMENT PROC. IN DATA STEP   *;
     ********************************************************;
  LINK ASSIGN;
  IF EOF THEN STOP;
  ELSE RETURN;
%MEND LINECHK;

 ************************************************************;
 *   PREPROCESS OSA DATA TO ELIMINATE LINES > 153            *;
 *   AND CREATE SCHEDULES FOR THOSE RR NOT REPORTING AN OSA  *;
 ************************************************************;
DATA PREOSA1;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  RETAIN S37 0;
  ARRAY VARS  (A) VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
       ****************************************************;
       *  CREATE SCHEDULES FOR THOSE RRCODES NOT REPORTING *;
       *  A SCHEDULE 37.                                   *;
       ****************************************************;
  IF FIRST.RRCODE THEN
     S37 = 0;
  IF SCHED = 37 THEN
     S37 = 1;
  IF LAST.RRCODE THEN DO;
     IF S37 = 0 THEN
        DO I = 1 TO 153;
           SCHED = 37;
           LINE = I;
           DO OVER VARS;
              VARS = 0;
           END;
           OUTPUT;
        END;
    END;


DATA PREOSA2;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
       ****************************************************;
       *  SUBSET SCHEDULE 755- ANNUAL OPERATING STATISTICS *;
       ****************************************************;
```

```
  IF SCHED = 37;
  IF LINE < 154;   * ELIMINATE UNNECESSARY LINES;

DATA PREOSA3;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET PREOSA2 PREOSA1;

PROC SORT DATA=PREOSA3;
    BY RRCODE SCHED LINE;

 ************************************************************;
 *  THE PURPOSE OF THIS MACRO IS TO READ RAW OPERATING AND   *;
 *  SIZE DATA FROM SCHEDULES 755 AND 700 OF THE R1 DATA SET, *;
 *  ASSIGN VALUES TO MEEMORY VARIABLES AND COMPUTE OPERATING *;
 *  AND COMPUTE SYSTEM TRACK RATIOS AND PERCENTAGES.         *;
 ************************************************************;
 *//////////////////////////////////////////////////////////*;
 ************************************************************;
 *   A)  READ OPERATING STATISTICS FROM SCHEDULE 755         *;
 ************************************************************;
DATA PREOSA4(GEN = 0);
  DROP SCHED      VAR1-VAR15
         TEMPV1-TEMPV15          ;
       ************************************************;
       * INITIALIZE & RETAIN VARS. COMPUTED IN DATA STEP. *;
       ************************************************;
  RETAIN  MOR UTM WTM  TTM TM
    RTONS UTCM WTCM TTCM CM GTM RTM MVULU
    TCULU TCUPD  FCMLRR FCMERR FCMLPR FCMEPR 0;
       ************************************************;
       *  SET R1 DATA SAS SET CREATING FIRST AND LAST "BY" *;
       *  VARIABLES TO ALLOW FOR CHECKING OF INPUT RECORDS *;
       ************************************************;
  SET PREOSA3;
    BY RRCODE SCHED LINE;
       ************************************************************;
       *                                                          *;
       ************************************************************;
  IF FIRST.SCHED THEN DO;
      MOR = 0;
      UTM = 0;
      WTM = 0;
      TTM = 0;
      TM = 0;
      UTCM = 0;
      WTCM = 0;
      TTCM = 0;
      CM = 0;
      GTM = 0;
      RTM = 0;
      RTONS = 0;
      MVULU = 0;
      TCULU = 0;
      TCUPD = 0;
      FCMLRR = 0;
      FCMERR = 0;
```

```
    FCMLPR = 0;
    FCMEPR = 0;
  END;
%LINECHK

     ************************************************************;
     *   ASSIGN VALUES IN SCHEDULE 755 TO MEMORY VARIABLES      *;
     * !!!!!!!!!!!   1988 VERSION    !!!!!!!!!!!!               *;
     ************************************************************;
ASSIGN:
  IF LINE = 1 THEN     /*********************************/
     MOR  = VAR1;      /* MILES OF ROAD                 */
  IF LINE = 2 THEN     /*********************************/
     UTM  = VAR1;      /* UNIT TRAIN MILES              */
  IF LINE = 3 THEN     /*********************************/
     WTM  = VAR1;      /* WAY  TRAIN MILES              */
  IF LINE = 4 THEN     /*********************************/
     TTM  = VAR1;      /* THRU TRAIN MILES              */
  IF LINE = 5  THEN    /*********************************/
     TM   = VAR1;      /* TOTAL TRAIN MILES             */
  IF LINE = 30 THEN          /*************************************/
     FCMLRR = VAR1 * 1000;   /* FREIGHT CAR MILES  LOADED  RR  */
  IF LINE = 46 THEN          /*************************************/
     FCMERR = VAR1 * 1000;   /* FREIGHT CAR MILES  EMPTY   RR  */
  IF LINE = 64 THEN          /*************************************/
     FCMLPR = VAR1 * 1000;   /* FREIGHT CAR MILES  LOADED  PR  */
  IF LINE = 82 THEN          /*************************************/
     FCMEPR = VAR1 * 1000;   /* FREIGHT CAR MILES  EMPTY   PR  */
  IF LINE = 85 THEN         /*****************************/
    UTCM = VAR1 * 1000;     /*  UNIT TRAIN CAR MILES     */
  IF LINE = 86  THEN        /*****************************/
    WTCM = VAR1 * 1000;     /*  WAY TRAIN CAR MILES      */
  IF LINE = 87  THEN        /*****************************/
    TTCM = VAR1 * 1000;     /*  THRU TRAIN CAR MILES     */
  IF LINE = 88  THEN        /*****************************/
    CM = VAR1 * 1000;       /*  TOTAL CAR MILES          */
  IF LINE = 104 THEN        /*****************************/
    GTM = VAR1 * 1000;      /*    GROSS TON MILES        */
  IF LINE = 105 THEN        /*****************************/
    RTONS = VAR1 * 1000;    /* TONS OF REVENUE FREIGHT   */
  IF LINE = 110 THEN        /*****************************/
    RTM = VAR1 * 1000;     /* REVENUE TON-MILES          */
  IF LINE = 123 THEN        /*****************************/
    TCULU = VAR1;           /* TOFC/COFC UNITS LOAD./UNL*/
  IF LINE = 124 THEN        /*****************************/
    MVULU = VAR1;           /* MOTOR VEHICLES LOADED/UNL*/
  IF LINE = 125 THEN        /*****************************/
    TCUPD = VAR1;           /* TOFC/COFC UNITS PICK/DELV*/
                            /*****************************/
  IF LAST.SCHED THEN OUTPUT;

RETURN;
```

```
 ************************************************************;
 *   THE FOLLOWING CODE IS INSERTED TO ELIMINATE EXTRA RR     *;
 * OBSERVATIONS CREATED BY THE MACRO LINECHK WHEN THE DIF-    *;
 * FIRENCE BETWEEN THE LAST TWO LINES IN A RR'S RECORD IS     *;
 * GREATER THAN ONE.  IN THIS CASE (LINE-LINELAG>0), EXTRA    *;
 * IDENTICAL OBSERVATIONS OF THE RAILROAD ARE CREATED AND,    *;
 * CONSEQUENTLY, ARE ELIMINATED WITH A SORT AND LAST.RRCODE   *;
 * COMBINATION.                                               *;
 *                                                            *;
 ************************************************************;
PROC SORT;
   BY RRCODE;

DATA  OSA;
  SET PREOSA4;
    BY RRCODE;
    IF LAST.RRCODE;


 ************************************************************;
 *   PREPROCESS SCHED 33 DATA TO                              *;
 *   CREATE SCHEDULES FOR THOSE RR NOT REPORTING TRACK DATA   *;
 ************************************************************;
DATA PRETRAK1;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  RETAIN S33 0;
  ARRAY VARS  (A) VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
       ******************************************************;
       *  CREATE SCHEDULES FOR THOSE RRCODES NOT REPORTING  *;
       *  A SCHEDULE 33.                                    *;
       ******************************************************;
  IF FIRST.RRCODE THEN
     S33 = 0;
  IF SCHED = 33 AND LINE = 57 THEN
     S33 = 1;
  IF LAST.RRCODE THEN DO;
     IF S33 = 0 THEN DO;
           SCHED = 33;
           LINE = 57;
           DO OVER VARS;
              VARS = 0;
           END;
           OUTPUT;
        END;
    END;

DATA PRETRAK2;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
       ******************************************************;
       *  SUBSET SCHEDULE 33 - ANNUAL OPERATING STATISTICS  *;
       ******************************************************;
```

```
  IF SCHED = 33 AND LINE = 57;

DATA PRETRAK3;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET PRETRAK2 PRETRAK1;

PROC SORT DATA=PRETRAK3;
    BY RRCODE SCHED LINE;

*************************************************************;
* B)  COMPUTE MILES OF TRACK AND TRACK RATIOS FROM S700    *;
*************************************************************;

DATA TRACK;
  DROP SCHED VAR1-VAR15;
       ********************************************************;
       *  1)   INPUT TRACK DATA FROM SCHEDULE 700             *;
       ********************************************************;
  SET PRETRAK3;
  IF SCHED = 33 AND LINE = 57;



       ********************************************************;
       *  2)   ASSIGN VALUES TO MEMORY VARIABLES              *;
       ********************************************************;
  MR    = VAR1;                 /* MILES OF FIRST MAIN       */
  MSM   = VAR2;                 /* MILES OF SECOND MAIN      */
  MPT   = VAR3;                 /* MILES OF PASSING TRACK    */
  MCT   = VAR4;                 /* MILES OF CROSSOVERS, ETC. */
  MWST = VAR5;                  /* MILES OF WAY SWITCHING TK.*/
  MYST = VAR6;                  /* MILES OF YARD SWITCH. TK. */
  ST = MWST + MYST;             /* MILES OF SWITCHING TRACK  */
  RT = MR + MSM + MPT + MCT;    /* MILES OF RUNNING TRACK    */
  MT = VAR7;                    /* TOTAL MILES OF TRACK      */
  PCTRT = RT / MT;              /* PERCENTAGE RUNNING TRACK  */
  PCTWT = MWST / ST;            /* PERCENTAGE WAY SWTCH. TRK.*/
  SMRATIO= (MSM + MPT + MCT)    /* RATIO OF 2ND MAIN & SIDE  */
           / MR;                /*  TRACK TO MILES OF ROAD   */
  WSRATIO= MWST                 /* RATIO OF WAY SWTCH. TRACK */
           / MR;                /*    TO MILES OF ROAD       */


*************************************************************;
*  C)  COMPUTE TRAIN PERFORMANCE FACTORS BY TRAIN TYPE     *;
*************************************************************;
```

```
*************************************************************;
*    THIS MACRO COMPUTES NET ROADWAY INVESTMENT COSTS.       *;
*    THE SEQUENCE OF PROGRAM FUNCTIONS PERFORMED ARE:        *;
*      (1) COMPUTE ALLOCATION RATIOS FOR DISTRIBUTING        *;
*        ROADWAY INVESTMENT BETWEEN RUNNING & SWITCHING      *;
*        AND BETWEEN FREIGHT AND PASSENGER SERVICE           *;
*      (2) COMPUTE GROSS INVESTMENT AND ACC. DEPRECIATION    *;
*        THE FROM R-1 SCHEDULES                              *;
*      (3) CALCULATE THE NET INVESTMENT BASE                 *;
*      (4) CALCULATE VARIABLE ROADWAY INVESTMENT PER         *;
*        GROSS TON-MILE AND LOCOMOTIVE-HOUR (SWITCHING)      *;
*        AND COMPUTE FIXED ROADWAY CAPACITY UNITS COSTS      *;
*        PER MILE OF RUNNING AND SWITCHING TRACK             *;
*************************************************************;


*B) READ ROAD INVESTMENT, ACCUMULATED DEPRECIATION, AND DEPRECIATION
    LEASES AND RENTALS FROM THE MASTER DATA FILE.  CLASSIFY EXPENSES
    ACCORDING TO SUBGROUP OR TYPE AND OUTPUT;

DATA TEMP;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED;
  RETAIN S405-S408 S434 0;
  ARRAY VARS (V) VAR1-VAR15;

   IF FIRST.RRCODE THEN
     DO;
        S405 = 0;
        S406 = 0;
        S407 = 0;
        S408 = 0;
        S434 = 0;
     END;

   IF SCHED = 405 THEN
     S405 = 1;
   IF SCHED = 406 THEN
     S406 = 1;
   IF SCHED = 407 THEN
     S407 = 1;
   IF SCHED = 408 THEN
     S408 = 1;
   IF SCHED = 434 THEN
     S434 = 1;
   OUTPUT;
   IF LAST.RRCODE THEN
     DO;
        IF S408 = 0 THEN
          DO I = 1 TO 40;
            SCHED = 408;
            LINE = I;
            DO OVER VARS;
              VARS = 0;
            END;
```

```
            OUTPUT;
          END;
        IF S405 = 0 THEN
          DO I = 1 TO 40;
            SCHED = 405;
            LINE = I;
            DO OVER VARS;
              VARS = 0;
            END;
            OUTPUT;
          END;
        IF S406 = 0 THEN
          DO I = 1 TO 40;
            SCHED = 406;
            LINE = I;
            DO OVER VARS;
              VARS = 0;
            END;
            OUTPUT ;
          END;
        IF S407 = 0 THEN
          DO I = 1 TO 38;
            SCHED = 407;
            LINE = I;
            DO OVER VARS;
              VARS = 0;
            END;
            OUTPUT;
          END;
        IF S434 = 0 THEN
          DO I = 1 TO 38;
            SCHED = 434;
            LINE = I;
            DO OVER VARS;
              VARS = 0;
            END;
            OUTPUT;
          END;
      END;
    IF EOF = 1 THEN
      STOP;

DATA TEMP;
  SET TEMP;
    IF (405 <= SCHED <= 408) OR SCHED = 434;

DATA XTEMP;
  SET TEMP;
    IF  SCHED = 406;
PROC SORT DATA = TEMP;
  BY RRCODE SCHED LINE;
```

```
DATA ROAD1(KEEP = RRCODE LINE TYPE BASE)
     ROAD2(KEEP = RRCODE LINE TYPE ACDEP1)
     ROAD3(KEEP = RRCODE LINE TYPE ACDEP2)
     ROAD4(KEEP = RRCODE LINE TYPE ACDEP3)
     ROAD5(KEEP = RRCODE LINE TYPE ACDEP4)
     EQUIP1(KEEP = RRCODE  TOTROAD1  TOTEQUP1)
     EQUIP2(KEEP = RRCODE  TOTROAD2  TOTEQUP2)
     EQUIP3(KEEP = RRCODE  TOTROAD3  TOTEQUP3)
     EQUIP4(KEEP = RRCODE  TOTROAD4  TOTEQUP4)
     EQUIP5(KEEP = RRCODE  TOTROAD5  TOTEQUP5);
   SET TEMP END = EOF;
     BY RRCODE SCHED;

   RETAIN TOTROAD1 TOTROAD2 TOTROAD3 TOTROAD4 TOTROAD5
          TOTEQUP1 TOTEQUP2 TOTEQUP3 TOTEQUP4 TOTEQUP5 0;
   LENGTH TYPE $ 8;
   BUG = 0;
   %LINECHK
   ASSIGN:
   IF SCHED = 408 AND LINE <= 33 THEN
     DO;
        BASE = SUM(OF VAR1-VAR4);
        LINK TYPE;
        OUTPUT ROAD1;
     END;
   IF SCHED = 405 AND LINE <= 27 THEN
     DO;
        ACDEP1 = VAR6;
        LINK TYPE;
        OUTPUT ROAD2;
     END;
   IF SCHED = 406 AND LINE <= 27 THEN
     DO;
        ACDEP2 = VAR6;
        LINK TYPE;
        OUTPUT ROAD3;
     END;
   IF SCHED = 407 AND LINE <= 26 THEN
     DO;
        ACDEP3 = VAR6;
        LINK TYPE;
        OUTPUT ROAD4;
        IF LINE = 26 THEN
          DO;
             LINE = 27;
             ACDEP3 = 0;
             LINK TYPE;
             OUTPUT ROAD4;
          END;
     END;
   IF SCHED = 434 AND LINE <= 26 THEN
     DO;
        ACDEP4 = VAR6;
        LINK TYPE;
        OUTPUT ROAD5;
        IF LINE = 26 THEN
```

```
        DO;
           LINE = 27;
           ACDEP4 = 0;
           LINK TYPE;
           OUTPUT ROAD5;
        END;
  END;
IF SCHED = 405 AND LINE = 30 THEN
     TOTROAD1 = VAR6*1000;
IF SCHED = 405 AND LINE = 40 THEN
  DO;
     TOTEQUP1 = VAR6*1000;
     OUTPUT EQUIP1;
  END;
IF SCHED = 406 AND LINE = 30 THEN
     TOTROAD2 = VAR6*1000;
IF SCHED = 406 AND LINE = 40 THEN
  DO;
     TOTEQUP2 = VAR6*1000;
     OUTPUT EQUIP2;
  END;
IF SCHED = 407 AND LINE = 29 THEN
     TOTROAD3 = VAR6*1000;
IF SCHED = 407 AND LINE = 38 THEN
  DO;
     TOTEQUP3 = VAR6*1000;
     OUTPUT EQUIP3;
  END;
IF SCHED = 408 AND LINE = 31 THEN
     TOTROAD4 = (VAR1 + VAR4)*1000;
IF SCHED = 408 AND LINE = 40 THEN
  DO;
     TOTEQUP4 = (VAR1 + VAR4)*1000;
     OUTPUT EQUIP4;
  END;
IF SCHED = 434 AND LINE = 29 THEN
     TOTROAD5 = VAR6*1000;
IF SCHED = 434 AND LINE = 38 THEN
  DO;
     TOTEQUP5 = VAR6*1000;
     OUTPUT EQUIP5;
  END;
  RETURN;


TYPE:
 IF SCHED = 408  THEN
   IF LINE = 2 THEN
     TYPE = 'LAND';
   ELSE IF 20 <= LINE <= 21 THEN
     TYPE = 'LAKE';
   ELSE IF LINE = 22 THEN
     TYPE = 'TOFC';
   ELSE IF LINE = 14 THEN
     TYPE = 'STATION';
   ELSE IF (3 <= LINE <= 12) OR LINE = 24 OR LINE = 29 THEN
```

```
      TYPE = 'ROADWAY';
     ELSE
       TYPE = 'OTHER';
   ELSE
     DO;
        IF 14 <= LINE <= 15 THEN
          TYPE = 'LAKE';
        ELSE IF LINE = 16 THEN
          TYPE = 'TOFC';
        ELSE IF LINE = 18 THEN
          TYPE = 'STATION';
        ELSE IF (2 <= LINE <= 6) OR LINE = 18 OR LINE = 23 THEN
          TYPE = 'ROADWAY';
        ELSE
          TYPE = 'OTHER';
     END;
     RETURN;
*
*
DATA _NULL_
  FILE ROAD2
   SET ROAD2
    PUT _ALL_
*
;

*ATA TEST;
*  MERGE EQUIP1 EQUIP2 EQUIP3 EQUIP4 EQUIP5;
*     BY RRCODE;
*ROC PRINT DATA = TEST;


*C) CALCULATE THE TOTAL OF ACCUMULATED DEPRECIATION AND
    DISTRIBUTE BETWEEN RUNNING AND SWITCHING AND BETWEEN
    FREIGHT AND PASSENGER;

DATA ROAD6;
   MERGE EQUIP1 EQUIP2 EQUIP3 EQUIP4 EQUIP5;
     BY RRCODE;
   KEEP NETEQUIP NETROAD RRCODE;
   ACDEPE = TOTEQUP1 + TOTEQUP2 + TOTEQUP3 + TOTEQUP5;
   NETEQUIP = TOTEQUP4 - ACDEPE;
   ACDEPR = TOTROAD1 + TOTROAD2 + TOTROAD3 + TOTROAD5;
   NETROAD = TOTROAD4 - ACDEPR;


*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
;
```

```
      ************************************************************;
      *  SCHEDULE 410 DATA SET                                    *;
      *                                                           *;
      ************************************************************;

 ************************************************************;
 *   PREPROCESS SCHED 412 DATA TO    SCHEDULE 410 STUFF       *;
 *   CREATE SCHEDULES FOR THOSE RR NOT REPORTING AN OSA  *;
 ************************************************************;
DATA PRES4101;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  RETAIN S412 0;
  ARRAY VARS  (A) VAR1-VAR15;
  SET TAPEFL1.N1978 END = EOF;
    BY RRCODE SCHED LINE;
      ******************************************************;
      *  CREATE SCHEDULES FOR THOSE RRCODES NOT REPORTING *;
      *  A SCHEDULE 412.    SCHEDULE 410 STUFF             *;
      ******************************************************;
  IF FIRST.RRCODE THEN
     S412 = 0;
  IF SCHED = 412 THEN
     S412 = 1;
  IF LAST.RRCODE THEN DO;
     IF S412 = 0 THEN DO I = 1 TO 16;
           SCHED = 412;
           IF I = 1 THEN LINE = 112;
           ELSE IF I = 2 THEN LINE = 113;
           ELSE IF I = 3 THEN LINE = 114;
           ELSE IF I = 4 THEN LINE = 151;
           ELSE IF I = 5 THEN LINE = 205;
           ELSE IF I = 6 THEN LINE = 219;
           ELSE IF I = 7 THEN LINE = 224;
           ELSE IF I = 8 THEN LINE = 238;
           ELSE IF I = 9 THEN LINE = 309;
           ELSE IF I = 10 THEN LINE = 414;
           ELSE IF I = 11 THEN LINE = 430;
           ELSE IF I = 12 THEN LINE = 505;
           ELSE IF I = 13 THEN LINE = 512;
           ELSE IF I = 14 THEN LINE = 522;
           ELSE IF I = 15 THEN LINE = 611;
           ELSE IF I = 16 THEN LINE = 620;
           DO OVER VARS;
              VARS = 0;
           END;
           OUTPUT;
        END;
    END;

DATA PRES4102;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET TAPEFL1.N1978 END = EOF;
    BY RRCODE SCHED LINE;
```

```
      ****************************************************;
      *  SUBSET SCHEDULE 412 - SCHEDULE 410     STATISTICS *;
      ****************************************************;
  IF SCHED = 412;


DATA PRES4103;
  KEEP RRCODE SCHED LINE VAR1-VAR15;
  SET PRES4102 PRES4101;

PROC SORT DATA=PRES4103;
    BY RRCODE SCHED LINE;

      ********************************************************;
      *  SCHEDULE 410 DATA SET                               *;
      *                                                      *;
      ********************************************************;

DATA S410;
  RETAIN MWS1-MWS7 LOC1-LOC7 FC1-FC7 TC1-TC7
         FRNGWR FRNGWS FRNGWO FRNGLC FRNGFC FRNGOE FRNGTO
         FRNGYO FRNGTY FRNGSS FRNGAS FRNGGA 0;
  KEEP MWS1-MWS7 LOC1-LOC7 FC1-FC7 TC1-TC7 RRCODE SCHED LINE
       MOWFRING FRINGE;
      ********************************************************;
      *  DEFINE ARRAYS FOR HOLDING SCHEDULE 410 VALUES       *;
      *                                                      *;
      ********************************************************;
  ARRAY MWSG (M) MWS1 - MWS7;
  ARRAY LOC (L) LOC1 - LOC7;
  ARRAY FC (F) FC1 - FC7;
  ARRAY TC (T) TC1 - TC7;
      ********************************************************;
      *     READ-IN SCHEDULE 410 (412) FROM R1 DATA BASE     *;
      ********************************************************;
  SET PRES4103;
    BY RRCODE SCHED;
  IF SCHED = 412;
  %LINECHK;
  ASSIGN:
  IF LINE = 112 THEN FRNGWR = VAR4;
  IF LINE = 113 THEN FRNGWS = VAR4;
  IF LINE = 114 THEN FRNGWO = VAR4;
  IF LINE = 205 THEN FRNGLC = VAR4;
  IF LINE = 224 THEN FRNGFC = VAR4;
  IF LINE = 309 THEN FRNGOE = VAR4;
  IF LINE = 414 THEN FRNGTO = VAR4;
  IF LINE = 430 THEN FRNGYO = VAR4;
  IF LINE = 505 THEN FRNGTY = VAR4;
  IF LINE = 512 THEN FRNGSS = VAR4;
  IF LINE = 522 THEN FRNGAS = VAR4;
  IF LINE = 611 THEN FRNGGA = VAR4;
  IF LINE = 151 THEN
```

```
   DO;
      MWS1 = VAR1;
      MWS2 = VAR2;
      MWS3 = VAR3;
      MWS4 = VAR4;
      MWS5 = VAR5;
      MWS6 = VAR6;
      MWS7 = VAR7;
   END;
IF LINE = 219 THEN
   DO;
      LOC1 = VAR1;
      LOC2 = VAR2;
      LOC3 = VAR3;
      LOC4 = VAR4;
      LOC5 = VAR5;
      LOC6 = VAR6;
      LOC7 = VAR7;
   END;
IF LINE = 238 THEN
   DO;
      FC1 = VAR1;
      FC2 = VAR2;
      FC3 = VAR3;
      FC4 = VAR4;
      FC5 = VAR5;
      FC6 = VAR6;
      FC7 = VAR7;
   END;
IF LINE = 620 THEN
   DO;
      TC1 = VAR1;
      TC2 = VAR2;
      TC3 = VAR3;
      TC4 = VAR4;
      TC5 = VAR5;
      TC6 = VAR6;
      TC7 = VAR7;
  MOWFRING = FRNGWR+FRNGWS+FRNGWO;
  FRINGE = FRNGLC+FRNGFC+FRNGOE+FRNGTO+
           FRNGYO+FRNGTY+FRNGSS+FRNGAS+FRNGGA;
     OUTPUT;
   END;
*****************************************************************;
*   PREPROCESS SCHED 45 DATA  WORKING CAPITAL DATA              *;
*   CREATE SCHEDULES FOR THOSE RR NOT REPORTING                 *;
*****************************************************************;
DATA PREWCAP1;
  KEEP RRCODE WCAP;
  RETAIN S45 0;
  ARRAY VARS  (A) VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
```

```
      ********************************************************;
      *  CREATE SCHEDULES FOR THOSE RRCODES NOT REPORTING    *;
      *  A SCHEDULE 45.    WORKING CAPITAL DATA               *;
      ********************************************************;
 IF FIRST.RRCODE THEN
    S45 = 0;
 IF SCHED = 45 THEN
    S45 = 1;
 IF LAST.RRCODE THEN DO;
    IF S45 = 0 THEN DO;
          SCHED = 45;
          WCAP = 0;
          OUTPUT;
       END;
   END;


DATA PREWCAP2;
  KEEP RRCODE WCAP;
  RETAIN WCAP CCEQUIP CCPROP CCTTL 0;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
      ********************************************************;
      *  SUBSET SCHEDULE 45 - WORKING CAPITAL  STATISTICS    *;
      ********************************************************;
  IF SCHED = 45;
  IF LINE = 201 THEN DO;
     WCAP = VAR1 * 1000;
     OUTPUT;
    END;

DATA WCAP;
  KEEP RRCODE WCAP;
  SET PREWCAP2 PREWCAP1;

PROC SORT DATA=WCAP;
    BY RRCODE;

 ************************************************************;
 *                                                          *;
 *   PREPROCESS QCS   12 DATA TO                            *;
 *   CREATE SCHEDULES FOR THOSE RR NOT REPORTING AN QCS     *;
 ************************************************************;
DATA PREQCS1;
  KEEP RRCODE VAR1-VAR15;
  RETAIN S146 0;
  ARRAY VARS  (A) VAR1-VAR15;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED LINE;
      ********************************************************;
      *  CREATE SCHEDULES FOR THOSE RRCODES NOT REPORTING    *;
      *  QCS.   QCS TOTAL LINES = 146 SCHED.                 *;
      ********************************************************;
   IF FIRST.RRCODE THEN
      S146 = 0;
```

```
  IF SCHED = 146 THEN
     S146 = 1;
  IF LAST.RRCODE THEN DO;
     IF S146 = 0 THEN DO;
           SCHED = 146;
           LINE = 900;
           DO OVER VARS;
              VARS = 0;
           END;
           OUTPUT;
        END;
    END;


DATA PREQCS2;
  SET TAPEFL1.N1989 END = EOF;
    BY RRCODE SCHED;
  IF SCHED = 146 AND LINE = 900;

       ************************************************************;
       *  QCS DATA SET                                            *;
       *                                                          *;
       ************************************************************;
DATA QCS;
  SET PREQCS2 PREQCS1;
    BY RRCODE;
  KEEP CLOR CLOT CLRATIO RRCODE;
  CLOR = VAR1 + VAR3 + VAR5 + VAR7;     * CARLOADS HANDLED;
  CLOT = (VAR1*2) + VAR3 + VAR5;        * CARLOADS ORGIN/TERM;
  IF CLOR ^= 0 THEN
    CLRATIO = CLOT/CLOR;                  * RATIO;
  ELSE  CLRATIO = 0;


PROC SORT DATA=QCS;
    BY RRCODE;

       ************************************************************;
       *  OUTPUT1    DATA SET                                     *;
       *                                                          *;
       ************************************************************;
DATA OUTPUT1;
  SET OSA;
    BY RRCODE;
  KEEP RTM GTM FCMLRR FCMERR FCMLPR FCMEPR ELRRR ELRPR RRCODE;
  TOTRR = FCMLRR + FCMERR;
  TOTPR = FCMLPR + FCMEPR;
  IF TOTRR ^= 0 THEN
    ELRRR = TOTRR/FCMLRR;
  ELSE ELRRR = 0;
  IF TOTPR ^= 0 THEN
    ELRPR = TOTPR/FCMLPR;
  ELSE ELRPR = 0;
```

```
      ************************************************************;
      *                                                           *;
      *  NETWORK DATA SET                                         *;
      *                                                           *;
      ************************************************************;
DATA NETWORK;
  MERGE  OSA TRACK;
    BY RRCODE;
  KEEP MOR MT MYST MWST RT SMR STF GTM CM RTM
       GTMDEN CMDEN RTMDEN RRCODE;
  RETAIN SMR STF GTMDEN CMDEN RTMDEN;
  IF MT ^= 0 THEN
     SMR = MOR/MT;                    * second main ratio;
                                      * second main ratio;
  ELSE SMR = 0;
  IF MOR ^= 0 THEN DO;
       STF = (MYST + MWST)/MOR;       * switching track factor;
       GTMDEN = GTM/MOR;              * system density by GTM;
       CMDEN = CM/MOR;                * system density by CM;
       RTMDEN = RTM/MOR;              * system density by RTM;
     END;
   ELSE DO
       STF = 0;                       * switching track factor;
       GTMDEN = 0;                    * system density by GTM;
       CMDEN = 0;                     * system density by CM;
       RTMDEN = 0;                    * system density by RTM;
     END;
      ************************************************************;
      *                                                           *;
      *  TECHNOLOGY DATA SET                                      *;
      *                                                           *;
      ************************************************************;
DATA TECH;
  SET OSA;
    BY RRCODE;
  KEEP MOR UTM WTM TTM TM UTF WTF RRCODE;
  IF TM  ^= 0 THEN DO;
       UTF = UTM/TM;                  * unit train factor;
       WTF = WTM/TM;                  * way train factor;
     END;
   ELSE DO
       UTF = 0;                       * unit train factor;
       WTF = 0;                       * way train factor;
     END;

DATA ALLMERGE;
 MERGE OSA ROAD6 S410 WCAP QCS OUTPUT1 NETWORK TECH;
   BY RRCODE;
 DROP LINE A LINELAG PLINE LINEDIF FLAG TEMPLINE I EOF SCHED
      MWST MYST RT MT;
 LENGTH YEAR $ 4;
 YEAR = "1989";
 LENGTH ACCOUNT $ 8;
 ACCOUNT = "DEPREC";
 LABEL MOR  = 'MILES OF ROAD';
 LABEL UTM  = 'UNIT TRAIN MILES';
 LABEL WTM = 'WAY TRAIN MILES';
 LABEL TTM = 'THRU TRAIN MILES';
```

```
LABEL TM    = 'TOTAL TRAIN MILES';
LABEL UTCM  = 'UNIT TRAIN CAR MILES';
LABEL WTCM  = 'WAY TRAIN CAR MILES';
LABEL TTCM  = 'THRU TRAIN CAR MILES';
LABEL CM    = 'TOTAL CAR MILES';
LABEL GTM   = 'GROSS TON MILES';
LABEL RTM   = 'REVENUE TON MILES';
LABEL RTONS  = 'TONS OF REVENUE FREIGHT';
LABEL MVULU ='MOTOR VEHICLES UNLOADED/LOADED';
LABEL TCULU ='TOFC/COFC UNLOADED/LOADED';
LABEL TCUPD ='TOFC/COFC PICKED UP AND DELIVERED';
LABEL FCMLRR='FREIGHT CAR MILES LOADED RR OWNED';
LABEL FCMERR='FREIGHT CAR MILES EMPTY RR OWNED';
LABEL FCMLPR='FREIGHT CAR MILES LOADED PRIVATE';
LABEL FCMEPR='FREIGHT CAR MILES EMPTY PRIVATE';
LABEL RRCODE='RAILROAD ID CODE ';
LABEL NETEQUIP= 'NET DEPRECIATION EQUIPMENT';
LABEL NETROAD= 'NET DEPRECIATION ROAD';
LABEL MWS1 = 'MAINTENANCE OF WAY  SALARY & WAGES';
LABEL MWS2 = 'MAINTENANCE OF WAY  MATERIALS,ETC.';
LABEL MWS3 = 'MAINTENANCE OF WAY  PURCHASED SERVICES';
LABEL MWS4 = 'MAINTENANCE OF WAY  GENERAL';
LABEL MWS5 = 'MAINTENANCE OF WAY  TOTAL FREIGHT EXP.';
LABEL MWS6 = 'MAINTENANCE OF WAY  PASSENGER';
LABEL MWS7 = 'MAINTENANCE OF WAY  TOTAL';
LABEL LOC1 = 'LOCOMOTIVE  SALARY & WAGES';
LABEL LOC2 = 'LOCOMOTIVE  MATERIALS,ETC.';
LABEL LOC3 = 'LOCOMOTIVE  PURCHASED SERVICES';
LABEL LOC4 = 'LOCOMOTIVE  GENERAL';
LABEL LOC5 = 'LOCOMOTIVE  TOTAL FREIGHT EXPENSE';
LABEL LOC6 = 'LOCOMOTIVE  PASSENGER';
LABEL LOC7 = 'LOCOMOTIVE  TOTAL';
LABEL FC1 = 'FREIGHT CAR  SALARY & WAGES';
LABEL FC2 = 'FREIGHT CAR  MATERIALS,ETC.';
LABEL FC3 = 'FREIGHT CAR  PURCHASED SERVICES';
LABEL FC4 = 'FREIGHT CAR  GENERAL';
LABEL FC5 = 'FREIGHT CAR  TOTAL FREIGHT EXPENSE';
LABEL FC6 = 'FREIGHT CAR  PASSENGER';
LABEL FC7 = 'FREIGHT CAR  TOTAL';
LABEL TC1 = 'TOTAL CARRIER  SALARY & WAGES';
LABEL TC2 = 'TOTAL CARRIER  MATERIALS,ETC.';
LABEL TC3 = 'TOTAL CARRIER  PURCHASED SERVICES';
LABEL TC4 = 'TOTAL CARRIER  GENERAL';
LABEL TC5 = 'TOTAL CARRIER  TOTAL FREIGHT EXPENSE';
LABEL TC6 = 'TOTAL CARRIER  PASSENGER';
LABEL TC7 = 'TOTAL CARRIER  TOTAL';
LABEL WCAP= 'WORKING CAPITAL';
LABEL CLOR= 'CARLOADS HANDLED';
LABEL CLOT= 'CARLOADS ORIGINATED/TERMINATED';
LABEL CLRATIO = 'CLOT/CLOR RATIO';
LABEL ELRRR  = 'EMPTY-LOADED RATIO RR OWNED ';
LABEL ELRPR  = 'EMPTY-LOADED RATIO PRIVATE ';
LABEL SMR  = 'SECOND MAIN RATIO';
LABEL STF  = 'SWITCHING TRACK FACTOR';
LABEL GTMDEN='SYSTEM DENSITY BY GROSS TON MILES';
LABEL CMDEN='SYSTEM DENSITY BY CAR MILES';
```

```
 LABEL RTMDEN='SYSTEM DENSITY BY REVENUE TON MILES';
 LABEL UTF   ='UNIT TRAIN FACTOR';
 LABEL WTF  = 'WAY TRAIN FACTOR';

DATA FINAL;
  SET ALLMERGE;
    BY RRCODE;
  LENGTH RR $ 8;
  IF SUBSTR(RRCODE,2,3) = "107" THEN RR = "BO";
    ELSE IF SUBSTR(RRCODE,2,3) = "113" THEN RR = "BLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "116" THEN RR = "BM";
    ELSE IF SUBSTR(RRCODE,2,3) = "128" THEN RR = "CO";
    ELSE IF SUBSTR(RRCODE,2,3) = "133" THEN RR = "CR";
    ELSE IF SUBSTR(RRCODE,2,3) = "134" THEN RR = "DH";
    ELSE IF SUBSTR(RRCODE,2,3) = "140" THEN RR = "DTI";
    ELSE IF SUBSTR(RRCODE,2,3) = "143" THEN RR = "EJE";
    ELSE IF SUBSTR(RRCODE,2,3) = "149" THEN RR = "GTW";
    ELSE IF SUBSTR(RRCODE,2,3) = "158" THEN RR = "LI";
    ELSE IF SUBSTR(RRCODE,2,3) = "170" THEN RR = "NS";
    ELSE IF SUBSTR(RRCODE,2,3) = "182" THEN RR = "PLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "194" THEN RR = "WM";
    ELSE IF SUBSTR(RRCODE,2,3) = "201" THEN RR = "AGS";
    ELSE IF SUBSTR(RRCODE,2,3) = "211" THEN RR = "CGA";
    ELSE IF SUBSTR(RRCODE,2,3) = "216" THEN RR = "CNTP";
    ELSE IF SUBSTR(RRCODE,2,3) = "221" THEN RR = "CCO";
    ELSE IF SUBSTR(RRCODE,2,3) = "226" THEN RR = "FEC";
    ELSE IF SUBSTR(RRCODE,2,3) = "241" THEN RR = "ICG";
    ELSE IF SUBSTR(RRCODE,2,3) = "246" THEN RR = "LN";
    ELSE IF SUBSTR(RRCODE,2,3) = "256" THEN RR = "CSX";
    ELSE IF SUBSTR(RRCODE,2,3) = "261" THEN RR = "SOU";
    ELSE IF SUBSTR(RRCODE,2,3) = "301" THEN RR = "ATSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "305" THEN RR = "BN";
    ELSE IF SUBSTR(RRCODE,2,3) = "309" THEN RR = "CNW";
    ELSE IF SUBSTR(RRCODE,2,3) = "313" THEN RR = "MILW";
    ELSE IF SUBSTR(RRCODE,2,3) = "317" THEN RR = "RI";
    ELSE IF SUBSTR(RRCODE,2,3) = "321" THEN RR = "CS";
    ELSE IF SUBSTR(RRCODE,2,3) = "325" THEN RR = "DRGW";
    ELSE IF SUBSTR(RRCODE,2,3) = "329" THEN RR = "DMIR";
    ELSE IF SUBSTR(RRCODE,2,3) = "337" THEN RR = "FWD";
    ELSE IF SUBSTR(RRCODE,2,3) = "345" THEN RR = "KCS";
    ELSE IF SUBSTR(RRCODE,2,3) = "353" THEN RR = "MKT";
    ELSE IF SUBSTR(RRCODE,2,3) = "357" THEN RR = "MP";
    ELSE IF SUBSTR(RRCODE,2,3) = "369" THEN RR = "SLSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "373" THEN RR = "SSW";
    ELSE IF SUBSTR(RRCODE,2,3) = "377" THEN RR = "SOO";
    ELSE IF SUBSTR(RRCODE,2,3) = "381" THEN RR = "SP";
    ELSE IF SUBSTR(RRCODE,2,3) = "393" THEN RR = "UP";
    ELSE IF SUBSTR(RRCODE,2,3) = "397" THEN RR = "WP";
    ELSE IF SUBSTR(RRCODE,4,3) = "001" THEN RR = "REG1";
    ELSE IF SUBSTR(RRCODE,4,3) = "002" THEN RR = "REG2";
    ELSE IF SUBSTR(RRCODE,4,3) = "003" THEN RR = "REG3";
    ELSE IF SUBSTR(RRCODE,4,3) = "004" THEN RR = "REG4";
    ELSE IF SUBSTR(RRCODE,4,3) = "005" THEN RR = "REG5";
    ELSE IF SUBSTR(RRCODE,4,3) = "006" THEN RR = "REG6";
    ELSE IF SUBSTR(RRCODE,4,3) = "007" THEN RR = "REG7";
    ELSE IF SUBSTR(RRCODE,4,3) = "008" THEN RR = "REG8";
```

```
    ELSE IF SUBSTR(RRCODE,4,3) = "099" THEN RR = "NATIONAL";
    ELSE RR = "OTHER";
 IF  RRCODE = "130100"  OR     /*  ATSF */
     RRCODE = "130500"  OR     /*  BN   */
     RRCODE = "130900"  OR     /*  CNW  */
     RRCODE = "113300"  OR     /*  CR   */
     RRCODE = "132500"  OR     /*  DRGW */
     RRCODE = "122600"  OR     /*  FEC  */
     RRCODE = "114900"  OR     /*  GTW  */
     RRCODE = "124100"  OR     /*  ICG  */
     RRCODE = "134500"  OR     /*  KCS  */
     RRCODE = "117000"  OR     /*  NS   */
     RRCODE = "125600"  OR     /*  CSX  */
     RRCODE = "137700"  OR     /*  SOO  */
     RRCODE = "138100"  OR     /*  SP   */
     RRCODE = "137300"  OR     /*  SSW  */
     RRCODE = "139300";        /*  UP   */

PROC SORT;
  BY  RR RRCODE;

DATA TEST;
   MERGE EQUIP1 EQUIP2 EQUIP3 EQUIP4 EQUIP5;
     BY RRCODE;


DATA LABOR.N89D(GEN = 0  LABEL = '1989 RAIL LABOR SAS
DATASET/DEP.ACC.');
  SET FINAL;

*ROC COPY IN=N89   OUT=N89D;

PROC PRINT DATA = FINAL LABEL;
PROC PRINT DATA = NETWORK;
PROC PRINT DATA = TEST;
PROC CONTENTS  DATA = FINAL;
```

```
*-------------------------------------------------------------*
|                                                             |
|                    RRDATA89 SAS A                           |
*-------------------------------------------------------------*;
*-------------------------------------------------------------*
|  THIS PROGRAM AND THE RRDATA SERIES OF PROGRAMS ARE DATA    |
|  ENTRY FILES CONTAINING SCHEDULES 720, 750 AND 416.         |
*-------------------------------------------------------------*;

*MS FILEDEF N89S720  TAP1 SL 50;
*MS LABELDEF N89S720  FSEQ 50;
*MS FILEDEF N89S750  TAP1 SL 51;
*MS LABELDEF N89S750  FSEQ 51;
*MS FILEDEF N89S416  TAP1 SL 52;
*MS LABELDEF N89S416  FSEQ 52;

*****************************************************************
*   CREATE DATA SET OF THE 1989 RR.  THE RRCODE USED IS NOT THE *
*   THE ONE USED IN THE MASTER 1989 RR FILE.  THE LEADING DIGIT *
*   IN SEVERAL CASES HAS BEEN CHANGED TO A 1 FOR PROCESSING IN  *
*   THIS PROGRAM.                                               *
*****************************************************************;

DATA RR89;
  INPUT RRCODE $ RR $;
  CARDS;

130100   ATSF
130500   BN
130900   CNW
113300   CR
132500   DRGW
122600   FEC
114900   GTW
124100   ICG
134500   KCS
117000   NS
125600   CSX
137700   SOO
138100   SP
137300   SSW
139300   UP

DATA S4161989;
  INPUT RRCODE $ CAT  ACCOUNT $ BASE ACDEP;
  CARDS;

139300 1 3 173923 42689
139300 1 8 302012 67009
139300 1 9 1043334 314899
139300 1 11 215792 333532
139300 2 3 151346 36353
139300 2 8 446969 92851
139300 2 9 907898 268158
139300 2 11 250998 44378
139300 3 3 9002 0
```

```
139300 3 8 38068 0
139300 3 9 43602 0
139300 3 11 20360 0
139300 4 3 67350 20566
139300 4 8 228893 59668
139300 4 9 404019 151706
139300 4 11 125710 17527
139300 5 3 4724 1494
139300 5 8 15457 2842
139300 5 9 28338 11020
139300 5 11 9002 2103
113300 1 3 47359 3861
113300 1 8 690795 116433
113300 1 9 1083101 101644
113300 1 11 472064 25234
113300 2 3 96801 13200
113300 2 8 435525 70650
113300 2 9 862895 96270
113300 2 11 296185 12907
113300 3 3 3197 0
113300 3 8 5052 0
113300 3 9 8402 0
113300 3 11 2819 0
113300 4 3 53261 8513
113300 4 8 9536 -560
113300 4 9 156435 26696
113300 4 11 5388 -2012
113300 5 3 7823 1249
113300 5 8 1401 -83
113300 5 9 22976 3920
113300 5 11 791 -296
130100 1 3 102455 32725
130100 1 8 270807 50886
130100 1 9 625836 123618
130100 1 11 286768 17290
130100 2 3 60393 28535
130100 2 8 273518 121183
130100 2 9 217895 18722
130100 2 11 161686 32464
130100 3 3 40 0
130100 3 8 0 0
130100 3 9 8 0
130100 3 11 -1 0
130100 4 3 25362 8283
130100 4 8 129107 61331
130100 4 9 151964 90362
130100 4 11 55594 19465
130100 5 3 1325 522
130100 5 8 4036 1829
130100 5 9 8634 4515
130100 5 11 2368 1203
130500 1 3 168059 61576
130500 1 8 440019 159341
130500 1 9 1459592 642160
130500 1 11 272611 92743
130500 2 3 182269 96984
```

```
130500 2 8 487262 220825
130500 2 9 825468 302631
130500 2 11 302594 113940
130500 3 3 0 0
130500 3 8 0 0
130500 3 9 0 0
130500 3 11 0 0
130500 4 3 93079 39920
130500 4 8 142090 11196
130500 4 9 169662 36957
130500 4 11 81008 37778
130500 5 3 9942 1693
130500 5 8 10855 7342
130500 5 9 21974 5473
130500 5 11 6426 2866
125600 1 3 155743 72595
125600 1 8 474575 110134
125600 1 9 939352 193318
125600 1 11 284789 43868
125600 2 3 232275 108235
125600 2 8 680827 158013
125600 2 9 636163 130925
125600 2 11 426423 65703
125600 3 3 49157 0
125600 3 8 266549 0
125600 3 9 310969 0
125600 3 11 154223 0
125600 4 3 122894 57286
125600 4 8 330039 76628
125600 4 9 287852 59207
125600 4 11 140618 21662
125600 5 3 22365 10413
125600 5 8 21459 4966
125600 5 9 48457 9953
125600 5 11 9239 1420
130900 1 3 2658 15
130900 1 8 49175 1213
130900 1 9 125530 1576
130900 1 11 15849 334
130900 2 3 19097 90
130900 2 8 148399 3079
130900 2 9 147582 1827
130900 2 11 44386 889
130900 3 3 480 0
130900 3 8 2210 0
130900 3 9 1574 0
130900 3 11 816 0
130900 4 3 1476 7
130900 4 8 10605 216
130900 4 9 25003 283
130900 4 11 5034 89
130900 5 3 98 0
130900 5 8 581 12
130900 5 9 1117 14
130900 5 11 267 5
132500 1 3 33605 5292
```

132500 1 8 54500 19549
132500 1 9 111320 30648
132500 1 11 22925 4483
132500 2 3 20565 3360
132500 2 8 37393 17207
132500 2 9 30790 13229
132500 2 11 17323 4279
132500 3 3 0 0
132500 3 8 0 0
132500 3 9 0 0
132500 3 11 0 0
132500 4 3 8688 2438
132500 4 8 16312 10606
132500 4 9 27148 12446
132500 4 11 5334 2137
132500 5 3 0 0
132500 5 8 0 0
132500 5 9 0 0
132500 5 11 0 0
122600 1 3 0 0
122600 1 8 0 0
122600 1 9 0 0
122600 1 11 0 0
122600 2 3 8958 -670
122600 2 8 61306 15348
122600 2 9 69143 16406
122600 2 11 41185 7354
122600 3 3 0 0
122600 3 8 0 0
122600 3 9 0 0
122600 3 11 0 0
122600 4 3 0 0
122600 4 8 0 0
122600 4 9 0 0
122600 4 11 0 0
122600 5 3 0 0
122600 5 8 0 0
122600 5 9 0 0
122600 5 11 0 0
114900 1 3 439 206
114900 1 8 2093 651
114900 1 9 2517 1380
114900 1 11 554 184
114900 2 3 13366 4642
114900 2 8 46671 9425
114900 2 9 50440 25323
114900 2 11 12466 2863
114900 3 3 0 0
114900 3 8 0 0
114900 3 9 0 0
114900 3 11 0 0
114900 4 3 11133 3802
114900 4 8 33271 7926
114900 4 9 21957 11011
114900 4 11 8604 2524
114900 5 3 0 0

```
114900 5 8 0 0
114900 5 9 0 0
114900 5 11 0 0
134500 1 3 22545 9507
134500 1 8 41007 16745
134500 1 9 92612 21528
134500 1 11 20657 10723
134500 2 3 9947 4157
134500 2 8 65134 33199
134500 2 9 89506 33914
134500 2 11 24734 13098
134500 3 3 0 0
134500 3 8 0 0
134500 3 9 0 0
134500 3 11 0 0
134500 4 3 29 29
134500 4 8 25036 11051
134500 4 9 20043 11233
134500 4 11 6117 3462
134500 5 3 0 0
134500 5 8 0 0
134500 5 9 0 0
134500 5 11 0 0
124100 1 3 20204 -19
124100 1 8 26903 32
124100 1 9 47728 327
124100 1 11 22592 -251
124100 2 3 39887 -37
124100 2 8 53113 62
124100 2 9 94229 645
124100 2 11 44602 -495
124100 3 3 716 0
124100 3 8 953 0
124100 3 9 1691 0
124100 3 11 802 0
124100 4 3 22546 -21
124100 4 8 30022 36
124100 4 9 53260 365
124100 4 11 25211 -280
124100 5 3 0 0
124100 5 8 0 0
124100 5 9 0 0
124100 5 11 0 0
117000 1 3 198934 52918
117000 1 8 365389 40437
117000 1 9 933773 130899
117000 1 11 223293 21708
117000 2 3 54402 23181
117000 2 8 462420 55587
117000 2 9 507485 82235
117000 2 11 117736 12552
117000 3 3 61887 0
117000 3 8 102596 0
117000 3 9 85212 0
117000 3 11 37085 0
117000 4 3 146155 40976
```

```
117000 4 8 207053 23260
117000 4 9 686119 94869
117000 4 11 157122 14964
117000 5 3 0 0
117000 5 8 0 0
117000 5 9 0 0
117000 5 11 0 0
137700 1 3 6287 2811
137700 1 8 15283 8682
137700 1 9 37096 10328
137700 1 11 22295 1792
137700 2 3 26687 11932
137700 2 8 73387 41693
137700 2 9 157470 43843
137700 2 11 82485 6631
137700 3 3 0 0
137700 3 8 0 0
137700 3 9 0 0
137700 3 11 0 0
137700 4 3 2468 1103
137700 4 8 13255 7531
137700 4 9 14563 4054
137700 4 11 5773 464
137700 5 3 215 96
137700 5 8 1153 655
137700 5 9 1266 353
137700 5 11 502 41
138100 1 3 113136 32432
138100 1 8 407110 160109
138100 1 9 762620 247088
138100 1 11 180567 38223
138100 2 3 92490 30587
138100 2 8 284293 130415
138100 2 9 561678 85793
138100 2 11 133518 27206
138100 3 3 1991 0
138100 3 8 13107 0
138100 3 9 23326 0
138100 3 11 7728 0
138100 4 3 102183 41334
138100 4 8 184035 134529
138100 4 9 226864 95815
138100 4 11 55280 25550
138100 5 3 5187 1632
138100 5 8 6422 6741
138100 5 9 16669 3275
138100 5 11 2901 1111
137300 1 3 7776 1744
137300 1 8 56409 13253
137300 1 9 104495 29133
137300 1 11 31365 6961
137300 2 3 15787 3671
137300 2 8 67020 18715
137300 2 9 100523 8225
137300 2 11 55163 10418
137300 3 3 226 0
```

```
137300 3 8 4059 0
137300 3 9 5511 0
137300 3 11 2033 0
137300 4 3 12192 2648
137300 4 8 41028 25206
137300 4 9 45506 20789
137300 4 11 16955 11286
137300 5 3 1167 268
137300 5 8 3104 921
137300 5 9 4975 1908
137300 5 11 1074 305

DATA S416;
  SET S4161989;
  LENGTH RR $ 8;
  IF SUBSTR(RRCODE,2,3) = "107" THEN RR = "BO";
    ELSE IF SUBSTR(RRCODE,2,3) = "113" THEN RR = "BLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "116" THEN RR = "BM";
    ELSE IF SUBSTR(RRCODE,2,3) = "128" THEN RR = "CO";
    ELSE IF SUBSTR(RRCODE,2,3) = "133" THEN RR = "CR";
    ELSE IF SUBSTR(RRCODE,2,3) = "134" THEN RR = "DH";
    ELSE IF SUBSTR(RRCODE,2,3) = "140" THEN RR = "DTI";
    ELSE IF SUBSTR(RRCODE,2,3) = "143" THEN RR = "EJE";
    ELSE IF SUBSTR(RRCODE,2,3) = "149" THEN RR = "GTW";
    ELSE IF SUBSTR(RRCODE,2,3) = "158" THEN RR = "LI";
    ELSE IF SUBSTR(RRCODE,2,3) = "170" THEN RR = "NS";
    ELSE IF SUBSTR(RRCODE,2,3) = "182" THEN RR = "PLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "194" THEN RR = "WM";
    ELSE IF SUBSTR(RRCODE,2,3) = "201" THEN RR = "AGS";
    ELSE IF SUBSTR(RRCODE,2,3) = "211" THEN RR = "CGA";
    ELSE IF SUBSTR(RRCODE,2,3) = "216" THEN RR = "CNTP";
    ELSE IF SUBSTR(RRCODE,2,3) = "221" THEN RR = "CCO";
    ELSE IF SUBSTR(RRCODE,2,3) = "226" THEN RR = "FEC";
    ELSE IF SUBSTR(RRCODE,2,3) = "241" THEN RR = "ICG";
    ELSE IF SUBSTR(RRCODE,2,3) = "246" THEN RR = "LN";
    ELSE IF SUBSTR(RRCODE,2,3) = "256" THEN RR = "CSX";
    ELSE IF SUBSTR(RRCODE,2,3) = "261" THEN RR = "SOU";
    ELSE IF SUBSTR(RRCODE,2,3) = "301" THEN RR = "ATSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "305" THEN RR = "BN";
    ELSE IF SUBSTR(RRCODE,2,3) = "309" THEN RR = "CNW";
    ELSE IF SUBSTR(RRCODE,2,3) = "313" THEN RR = "MILW";
    ELSE IF SUBSTR(RRCODE,2,3) = "317" THEN RR = "RI";
    ELSE IF SUBSTR(RRCODE,2,3) = "321" THEN RR = "CS";
    ELSE IF SUBSTR(RRCODE,2,3) = "325" THEN RR = "DRGW";
    ELSE IF SUBSTR(RRCODE,2,3) = "329" THEN RR = "DMIR";
    ELSE IF SUBSTR(RRCODE,2,3) = "337" THEN RR = "FWD";
    ELSE IF SUBSTR(RRCODE,2,3) = "345" THEN RR = "KCS";
    ELSE IF SUBSTR(RRCODE,2,3) = "353" THEN RR = "MKT";
    ELSE IF SUBSTR(RRCODE,2,3) = "357" THEN RR = "MP";
    ELSE IF SUBSTR(RRCODE,2,3) = "369" THEN RR = "SLSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "373" THEN RR = "SSW";
    ELSE IF SUBSTR(RRCODE,2,3) = "377" THEN RR = "SOO";
    ELSE IF SUBSTR(RRCODE,2,3) = "381" THEN RR = "SP";
    ELSE IF SUBSTR(RRCODE,2,3) = "393" THEN RR = "UP";
    ELSE IF SUBSTR(RRCODE,2,3) = "397" THEN RR = "WP";
    ELSE IF SUBSTR(RRCODE,4,3) = "001" THEN RR = "REG1";
```

```
    ELSE IF SUBSTR(RRCODE,4,3) = "002" THEN RR = "REG2";
    ELSE IF SUBSTR(RRCODE,4,3) = "003" THEN RR = "REG3";
    ELSE IF SUBSTR(RRCODE,4,3) = "004" THEN RR = "REG4";
    ELSE IF SUBSTR(RRCODE,4,3) = "005" THEN RR = "REG5";
    ELSE IF SUBSTR(RRCODE,4,3) = "006" THEN RR = "REG6";
    ELSE IF SUBSTR(RRCODE,4,3) = "007" THEN RR = "REG7";
    ELSE IF SUBSTR(RRCODE,4,3) = "008" THEN RR = "REG8";
    ELSE IF SUBSTR(RRCODE,4,3) = "099" THEN RR = "NATIONAL";
    ELSE RR = "OTHER";


PROC SORT DATA=RR89;
    BY RRCODE;

PROC SORT DATA=S416;
    BY RRCODE;


*****************************************************************
*   ISOLATE RRCODES NOT REPORTING A SCHEDULE 416.               *
*****************************************************************;
DATA CHECKRRS;
    MERGE RR89(IN=A) S416(IN=B);
       BY RRCODE;
    IF A AND ^B;
    KEEP RRCODE RR;

*****************************************************************
*   CREATE SCHEDULE 416 FOR NONREPORTING RRCODES.               *
*****************************************************************;
DATA S416ADD;
    SET CHECKRRS;
       BY RRCODE;
    KEEP RRCODE RR CAT ACCOUNT  BASE ACDEP;
    LENGTH  ACCOUNT  $2;
    DO I = 1 TO 5;
       CAT = I;
         DO J = 1 TO 4;
            IF J = 1 THEN ACCOUNT = "3";
            IF J = 2 THEN ACCOUNT = "8";
            IF J = 3 THEN ACCOUNT = "9";
            IF J = 4 THEN ACCOUNT = "11";
            BASE = 0;
            ACDEP = 0;
            OUTPUT;
         END;
     END;

 DATA S416;
    SET S416  S416ADD;
       BY RRCODE;

 PROC SORT DATA=S416;
    BY RR;
```

```
DATA S416;
   SET S416;
     BY RR;
 IF  RRCODE = "130100"  OR     /*  ATSF */
     RRCODE = "130500"  OR     /*  BN   */
     RRCODE = "130900"  OR     /*  CNW  */
     RRCODE = "113300"  OR     /*  CR   */
     RRCODE = "132500"  OR     /*  DRGW */
     RRCODE = "122600"  OR     /*  FEC  */
     RRCODE = "114900"  OR     /*  GTW  */
     RRCODE = "124100"  OR     /*  ICG  */
     RRCODE = "134500"  OR     /*  KCS  */
     RRCODE = "117000"  OR     /*  NS   */
     RRCODE = "125600"  OR     /*  CSX  */
     RRCODE = "137700"  OR     /*  SOO  */
     RRCODE = "138100"  OR     /*  SP   */
     RRCODE = "137300"  OR     /*  SSW  */
     RRCODE = "139300";        /*  UP   */

PROC PRINT;


DATA S7201989;
  INPUT RRCODE $ CAT  MT GTMM SPEED SLOW;
  CARDS;

113300 1 4220 33.91 47.69 1
113300 2 3834 10.79 40.31 74
113300 3 3601 2.45 28.70 128
113300 4 4010 0.17 17.25 31
113300 5 7236 0 0 0
111700 1 304 0 0 0
111700 2 88 0 0 0
111700 3 356 0 0 0
111700 4 700 0 0 0
111700 5 1448 0 0 0
435300 1 0 0 0 0
435300 2 692 11.98 42.61 0
435300 3 970 2.25 30.51 150
435300 4 763 0.93 19.67 4
435300 5 710 0 0 0
130100 1 4862 39.57 64.97 12
130100 2 2792 9.86 55.89 70
130100 3 1470 2.80 46.38 316
130100 4 3247 .33 33.04 626
130100 5 5665 0 0 0
139300 1 8965 33.96 56.62 0
139300 2 6971 9.93 48.75 0
139300 3 4302 2.53 28.39 0
139300 4 4671 0.36 18.73 0
139300 5 6529 0 0 0
130500 1 10000 34.56 53.55 38.5
130500 2 5134 11.17 51.15 15.9
130500 3 2952 2.07 37.65 63.5
130500 4 6760 5.70 26.90 38.6
130500 5 7631 0 0 0
```

```
125600 1 8794 33.36 46.59 109
125600 2 8816 11.97 45.25 278
125600 3 5704 3.56 33.96 263
125600 4 4565 .47 21.87 385
125600 5 4835 0 0 0
130900 1 1299 33.63 52.85 235
130900 2 1981 9.67 35.72 799
130900 3 1418 2.33 26.23 669
130900 4 1335 .38 15.08 75
130900 5 1919 0 0 300
132500 1 920 32.21 45.00 0
132500 2 438 11.81 30.00 0
132500 3 362 1.62 25.00 0
132500 4 212 0.17 25.00 0
132500 5 626 0 0 0
122600 1 476 15.89 0 1.0
122600 2 0 0 0 0
122600 3 0 0 0 0
122600 4 98 0.12 0 8.0
122600 5 211 0 0 0
114900 1 530 16.90 47.36 0.5
114900 2 458 10.80 43.60 0.0
114900 3 78 .91 19.67 0.0
114900 4 94 0.08 38.21 0.0
114900 5 718 0 0 0.0
134500 1 529 22.26 37.98 60
134500 2 930 13.05 36.55 113
134500 3 0 0 0 0
134500 4 331 .32 23.56 38
134500 5 600 0 0 0
124100 1 1242 17.56 48.05 24.46
124100 2 1388 10.04 41.56 106.64
124100 3 696 2.05 27.42 104.53
124100 4 412 0.22 18.87 52.35
124100 5 1386 0 0 20.21
117000 1 5006 28.53 49.04 1
117000 2 5846 11.54 45.94 139
117000 3 2923 2.61 32.33 285
117000 4 4495 0.19 22.25 234
117000 5 7433 0 0 0
137700 1 880 19.21 43.97 98.9
137700 2 1881 9.60 37.24 40.5
137700 3 469 1.58 26.34 21.5
137700 4 1786 .24 23.79 0
137700 5 1226 0 0 0
138100 1 4992 23.45 47.80 108
138100 2 2303 9.65 45.00 143
138100 3 1267 2.45 0 0
138100 4 2907 0.12 0 0
138100 5 3205 0 0 0
137300 1 1199 25.87 48.80 37
137300 2 455 12.18 29.20 10
137300 3 182 1.97 0 0
137300 4 394 0.10 0 0
137300 5 720 0 0 0
```

```
DATA S720;
  SET S7201989;
  LENGTH RR $ 8;
  IF SUBSTR(RRCODE,2,3) = "107" THEN RR = "BO";
    ELSE IF SUBSTR(RRCODE,2,3) = "113" THEN RR = "BLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "116" THEN RR = "BM";
    ELSE IF SUBSTR(RRCODE,2,3) = "128" THEN RR = "CO";
    ELSE IF SUBSTR(RRCODE,2,3) = "133" THEN RR = "CR";
    ELSE IF SUBSTR(RRCODE,2,3) = "134" THEN RR = "DH";
    ELSE IF SUBSTR(RRCODE,2,3) = "140" THEN RR = "DTI";
    ELSE IF SUBSTR(RRCODE,2,3) = "143" THEN RR = "EJE";
    ELSE IF SUBSTR(RRCODE,2,3) = "149" THEN RR = "GTW";
    ELSE IF SUBSTR(RRCODE,2,3) = "158" THEN RR = "LI";
    ELSE IF SUBSTR(RRCODE,2,3) = "170" THEN RR = "NS";
    ELSE IF SUBSTR(RRCODE,2,3) = "182" THEN RR = "PLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "194" THEN RR = "WM";
    ELSE IF SUBSTR(RRCODE,2,3) = "201" THEN RR = "AGS";
    ELSE IF SUBSTR(RRCODE,2,3) = "211" THEN RR = "CGA";
    ELSE IF SUBSTR(RRCODE,2,3) = "216" THEN RR = "CNTP";
    ELSE IF SUBSTR(RRCODE,2,3) = "221" THEN RR = "CCO";
    ELSE IF SUBSTR(RRCODE,2,3) = "226" THEN RR = "FEC";
    ELSE IF SUBSTR(RRCODE,2,3) = "241" THEN RR = "ICG";
    ELSE IF SUBSTR(RRCODE,2,3) = "246" THEN RR = "LN";
    ELSE IF SUBSTR(RRCODE,2,3) = "256" THEN RR = "CSX";
    ELSE IF SUBSTR(RRCODE,2,3) = "261" THEN RR = "SOU";
    ELSE IF SUBSTR(RRCODE,2,3) = "301" THEN RR = "ATSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "305" THEN RR = "BN";
    ELSE IF SUBSTR(RRCODE,2,3) = "309" THEN RR = "CNW";
    ELSE IF SUBSTR(RRCODE,2,3) = "313" THEN RR = "MILW";
    ELSE IF SUBSTR(RRCODE,2,3) = "317" THEN RR = "RI";
    ELSE IF SUBSTR(RRCODE,2,3) = "321" THEN RR = "CS";
    ELSE IF SUBSTR(RRCODE,2,3) = "325" THEN RR = "DRGW";
    ELSE IF SUBSTR(RRCODE,2,3) = "329" THEN RR = "DMIR";
    ELSE IF SUBSTR(RRCODE,2,3) = "337" THEN RR = "FWD";
    ELSE IF SUBSTR(RRCODE,2,3) = "345" THEN RR = "KCS";
    ELSE IF SUBSTR(RRCODE,2,3) = "353" THEN RR = "MKT";
    ELSE IF SUBSTR(RRCODE,2,3) = "357" THEN RR = "MP";
    ELSE IF SUBSTR(RRCODE,2,3) = "369" THEN RR = "SLSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "373" THEN RR = "SSW";
    ELSE IF SUBSTR(RRCODE,2,3) = "377" THEN RR = "SOO";
    ELSE IF SUBSTR(RRCODE,2,3) = "381" THEN RR = "SP";
    ELSE IF SUBSTR(RRCODE,2,3) = "393" THEN RR = "UP";
    ELSE IF SUBSTR(RRCODE,2,3) = "397" THEN RR = "WP";
    ELSE IF SUBSTR(RRCODE,4,3) = "001" THEN RR = "REG1";
    ELSE IF SUBSTR(RRCODE,4,3) = "002" THEN RR = "REG2";
    ELSE IF SUBSTR(RRCODE,4,3) = "003" THEN RR = "REG3";
    ELSE IF SUBSTR(RRCODE,4,3) = "004" THEN RR = "REG4";
    ELSE IF SUBSTR(RRCODE,4,3) = "005" THEN RR = "REG5";
    ELSE IF SUBSTR(RRCODE,4,3) = "006" THEN RR = "REG6";
    ELSE IF SUBSTR(RRCODE,4,3) = "007" THEN RR = "REG7";
    ELSE IF SUBSTR(RRCODE,4,3) = "008" THEN RR = "REG8";
    ELSE IF SUBSTR(RRCODE,4,3) = "099" THEN RR = "NATIONAL";
    ELSE RR = "OTHER";

PROC SORT DATA=RR89;
    BY RRCODE;
```

```
PROC SORT DATA=S720;
    BY RRCODE;

*****************************************************************
*   ISOLATE RRCODES NOT REPORTING A SCHEDULE 720.               *
*****************************************************************;
DATA CHECKRRS;
    MERGE RR89(IN=A) S720(IN=B);
       BY RRCODE;
    IF A AND ^B;
    KEEP RRCODE RR;

*****************************************************************
*   CREATE SCHEDULE 720 FOR NONREPORTING RRCODES.               *
*****************************************************************;
DATA S720ADD;
    SET CHECKRRS;
       BY RRCODE;
    KEEP RRCODE RR CAT MT GTMM SPEED AVSPREDU SLOW;
    DO I = 1 TO 5;
       SCHED = 720;
       CAT = I;
       MT = 0;
       GTMM = 0;
       SPEED = 0;
       AVSPREDU= 0;
       SLOW = 0;
       OUTPUT;
     END;

 DATA S720;
    SET S720  S720ADD;
       BY RRCODE;

 PROC SORT DATA=S720;
    BY RR;

 DATA S720;
    SET S720;
       BY RR;
  IF  RRCODE = "130100"  OR     /*  ATSF */
      RRCODE = "130500"  OR     /*  BN   */
      RRCODE = "130900"  OR     /*  CNW  */
      RRCODE = "113300"  OR     /*  CR   */
      RRCODE = "132500"  OR     /*  DRGW */
      RRCODE = "122600"  OR     /*  FEC  */
      RRCODE = "114900"  OR     /*  GTW  */
      RRCODE = "124100"  OR     /*  ICG  */
      RRCODE = "134500"  OR     /*  KCS  */
      RRCODE = "117000"  OR     /*  NS   */
      RRCODE = "125600"  OR     /*  CSX  */
      RRCODE = "137700"  OR     /*  SOO  */
      RRCODE = "138100"  OR     /*  SP   */
      RRCODE = "137300"  OR     /*  SSW  */
      RRCODE = "139300";        /*  UP   */
```

```
PROC PRINT;


DATA S7501989;
  INPUT RRCODE $ FRGHT PASS YDSW TOTAL COST WTRAIN;
  CARDS;

113300 243694517 0 29391789 273086306 154065 1496431
130100 320271695 0 6446515 326718210 190568 167662
139300 515457197 0 41848642 557305839 320135 1017724
130500 559009676 38493 33153837 592202006 336680 464639
125600 396318714 0 46808720 443127434 242834 3010518
130900 75849361 8929415 5653712 90432488 49751 149256
132500 55850502 0 1125800 56976302 33056 730013
122600 14589156 0 839742 15428898 9165 87238
114900 25833998 0 3061150 28895148 15126 20240
134500 32559396 0 2046046 34605442 18223 0
124100 50694316 0 6381537 57075853 30998 416572
117000 279165094 0 37040230 316205324 175918 2155747
137700 48763992 0 5842942 54606934 31606 511155
138100 265585585 1608391 8852528 276046504 155507 854930
137300 55700639 0 1271456 56972095 31994 47700

proc print;

DATA S750;
  SET S7501989;
  LENGTH RR $ 8;
  IF SUBSTR(RRCODE,2,3) = "107" THEN RR = "BO";
    ELSE IF SUBSTR(RRCODE,2,3) = "113" THEN RR = "BLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "116" THEN RR = "BM";
    ELSE IF SUBSTR(RRCODE,2,3) = "128" THEN RR = "CO";
    ELSE IF SUBSTR(RRCODE,2,3) = "133" THEN RR = "CR";
    ELSE IF SUBSTR(RRCODE,2,3) = "134" THEN RR = "DH";
    ELSE IF SUBSTR(RRCODE,2,3) = "140" THEN RR = "DTI";
    ELSE IF SUBSTR(RRCODE,2,3) = "143" THEN RR = "EJE";
    ELSE IF SUBSTR(RRCODE,2,3) = "149" THEN RR = "GTW";
    ELSE IF SUBSTR(RRCODE,2,3) = "158" THEN RR = "LI";
    ELSE IF SUBSTR(RRCODE,2,3) = "170" THEN RR = "NS";
    ELSE IF SUBSTR(RRCODE,2,3) = "182" THEN RR = "PLE";
    ELSE IF SUBSTR(RRCODE,2,3) = "194" THEN RR = "WM";
    ELSE IF SUBSTR(RRCODE,2,3) = "201" THEN RR = "AGS";
    ELSE IF SUBSTR(RRCODE,2,3) = "211" THEN RR = "CGA";
    ELSE IF SUBSTR(RRCODE,2,3) = "216" THEN RR = "CNTP";
    ELSE IF SUBSTR(RRCODE,2,3) = "221" THEN RR = "CCO";
    ELSE IF SUBSTR(RRCODE,2,3) = "226" THEN RR = "FEC";
    ELSE IF SUBSTR(RRCODE,2,3) = "241" THEN RR = "ICG";
    ELSE IF SUBSTR(RRCODE,2,3) = "246" THEN RR = "LN";
    ELSE IF SUBSTR(RRCODE,2,3) = "256" THEN RR = "CSX";
    ELSE IF SUBSTR(RRCODE,2,3) = "261" THEN RR = "SOU";
    ELSE IF SUBSTR(RRCODE,2,3) = "301" THEN RR = "ATSF";
    ELSE IF SUBSTR(RRCODE,2,3) = "305" THEN RR = "BN";
    ELSE IF SUBSTR(RRCODE,2,3) = "309" THEN RR = "CNW";
    ELSE IF SUBSTR(RRCODE,2,3) = "313" THEN RR = "MILW";
    ELSE IF SUBSTR(RRCODE,2,3) = "317" THEN RR = "RI";
    ELSE IF SUBSTR(RRCODE,2,3) = "321" THEN RR = "CS";
```

```
   ELSE IF SUBSTR(RRCODE,2,3) = "325" THEN RR = "DRGW";
   ELSE IF SUBSTR(RRCODE,2,3) = "329" THEN RR = "DMIR";
   ELSE IF SUBSTR(RRCODE,2,3) = "337" THEN RR = "FWD";
   ELSE IF SUBSTR(RRCODE,2,3) = "345" THEN RR = "KCS";
   ELSE IF SUBSTR(RRCODE,2,3) = "353" THEN RR = "MKT";
   ELSE IF SUBSTR(RRCODE,2,3) = "357" THEN RR = "MP";
   ELSE IF SUBSTR(RRCODE,2,3) = "369" THEN RR = "SLSF";
   ELSE IF SUBSTR(RRCODE,2,3) = "373" THEN RR = "SSW";
   ELSE IF SUBSTR(RRCODE,2,3) = "377" THEN RR = "SOO";
   ELSE IF SUBSTR(RRCODE,2,3) = "381" THEN RR = "SP";
   ELSE IF SUBSTR(RRCODE,2,3) = "393" THEN RR = "UP";
   ELSE IF SUBSTR(RRCODE,2,3) = "397" THEN RR = "WP";
   ELSE IF SUBSTR(RRCODE,4,3) = "001" THEN RR = "REG1";
   ELSE IF SUBSTR(RRCODE,4,3) = "002" THEN RR = "REG2";
   ELSE IF SUBSTR(RRCODE,4,3) = "003" THEN RR = "REG3";
   ELSE IF SUBSTR(RRCODE,4,3) = "004" THEN RR = "REG4";
   ELSE IF SUBSTR(RRCODE,4,3) = "005" THEN RR = "REG5";
   ELSE IF SUBSTR(RRCODE,4,3) = "006" THEN RR = "REG6";
   ELSE IF SUBSTR(RRCODE,4,3) = "007" THEN RR = "REG7";
   ELSE IF SUBSTR(RRCODE,4,3) = "008" THEN RR = "REG8";
   ELSE IF SUBSTR(RRCODE,4,3) = "099" THEN RR = "NATIONAL";
   ELSE RR = "OTHER";

PROC SORT DATA=S750;
    BY RRCODE;

PROC PRINT;

*****************************************************************
*   ISOLATE RRCODES NOT REPORTING A SCHEDULE 750.               *
*****************************************************************;
DATA CHECKRRS;
    MERGE RR89(IN=A) S750(IN=B);
       BY RRCODE;
    IF A AND ^B;
    KEEP RRCODE RR;

*****************************************************************
*   CREATE SCHEDULE 750 FOR NONREPORTING RRCODES.               *
*****************************************************************;
DATA S750ADD;
    SET CHECKRRS;
       BY RRCODE;
    KEEP RRCODE RR FRGHT PASS YDSW TOTAL COST WTRAIN;
    FRGHT =0;
    PASS = 0;
    YDSW = 0;
    TOTAL =0;
    COST = 0;
    WTRAIN  = 0;

PROC PRINT;

DATA S750;
   SET S750  S750ADD;
      BY RRCODE;
```

```
PROC SORT DATA=S750;
   BY RR;

DATA S750;
   SET S750;
      BY RR;
 IF   RRCODE = "130100"   OR     /*  ATSF */
      RRCODE = "130500"   OR     /*  BN   */
      RRCODE = "130900"   OR     /*  CNW  */
      RRCODE = "113300"   OR     /*  CR   */
      RRCODE = "132500"   OR     /*  DRGW */
      RRCODE = "122600"   OR     /*  FEC  */
      RRCODE = "114900"   OR     /*  GTW  */
      RRCODE = "124100"   OR     /*  ICG  */
      RRCODE = "134500"   OR     /*  KCS  */
      RRCODE = "117000"   OR     /*  NS   */
      RRCODE = "125600"   OR     /*  CSX  */
      RRCODE = "137700"   OR     /*  SOO  */
      RRCODE = "138100"   OR     /*  SP   */
      RRCODE = "137300"   OR     /*  SSW  */
      RRCODE = "139300";         /*  UP   */

PROC PRINT;

DATA LABOR.N89S720;
  SET S720;
  YEAR = "1989";

DATA LABOR.N89S750;
  SET S750;
  YEAR = "1989";

DATA LABOR.N89S416;
  SET S416;
  YEAR = "1989";

*ROC COPY IN=N89    OUT=N89S720;
*  SELECT S720;
*ROC COPY IN=N89    OUT=N89S750;
*  SELECT S750;
*ROC COPY IN=N89    OUT=N89S416;
*  SELECT S416;
```

```
   *-------------------------------------------------------------*
   |                    JODI89 SAS A                             |
   *-------------------------------------------------------------*;
   *-------------------------------------------------------------*
   |  THIS PROGRAM AND THE JODI SERIES OF PROGRAMS ARE DATA      |
   |  ENTRY FILES CONTAINING WAGE FORM A LABOR STATISTICS.       |
   *-------------------------------------------------------------*;

*****************************************************************
*   CREATE DATA SET OF THE 1989 RR.  THE RRCODE USED IS NOT THE *
*   THE ONE USED IN THE MASTER 1989 RR FILE.  THE LEADING DIGIT *
*   IN SEVERAL CASES HAS BEEN CHANGED TO A 1 FOR PROCESSING IN  *
*   THIS PROGRAM.                                               *
*****************************************************************;

DATA RR89;
  INPUT RRCODE $ RR $;
  CARDS;

130100   ATSF
130500   BN
130900   CNW
113300   CR
132500   DRGW
122600   FEC
114900   GTW
124100   ICG
134500   KCS
117000   NS
125600   CSX
137700   SOO
138100   SP
137300   SSW
139300   UP

DATA JODI1989;
  INPUT RRCODE $ RR $ LABRHRSG   LABRCSTG   LABRHRSC   LABRCSTC;
  CARDS;

130100   ATSF 48367 799264 34992 963851
130500   BN 83924 1276238 62966 1193106
130900   CNW 21441 340013 16349 276506
113300   CR 71194 1118487 56244 1022640
132500   DRGW 6136 101317 4561 92671
122600   FEC 2484 35541 2360 31929
114900   GTW 8894 146170 7113 128318
124100   ICG 9464 149495 7332 156884
134500   KCS 5465 84397 4197 82996
117000   NS 68312 1095826 56188 1076539
125600   CSX 97547 1494576 74038 1395097
137700   SOO 11315 178390 8868 168568
138100   SP 47851 784540 36261 647588
137300   SSW 7371 116232 4909 102914
139300   UP 83972 1322735 62048 1224090

PROC PRINT;
```

```
DATA _NULL_;
/*F   RRCODE = "130100"  OR     /*  ATSF */
/*    RRCODE = "130500"  OR     /*  BN   */
/*    RRCODE = "130900"  OR     /*  CNW  */
/*    RRCODE = "113300"  OR     /*  CR   */
/*    RRCODE = "132500"  OR     /*  DRGW */
/*    RRCODE = "122600"  OR     /*  FEC  */
/*    RRCODE = "114900"  OR     /*  GTW  */
/*    RRCODE = "124100"  OR     /*  ICG  */
/*    RRCODE = "134500"  OR     /*  KCS  */
/*    RRCODE = "117000"  OR     /*  NS   */
/*    RRCODE = "125600"  OR     /*  CSX  */
/*    RRCODE = "137700"  OR     /*  SOO  */
/*    RRCODE = "138100"  OR     /*  SP   */
/*    RRCODE = "137300"  OR     /*  SSW  */
/*    RRCODE = "139300";        /*  UP   */


DATA LABOR.N89JODI;
  SET JODI1989;
  YEAR = "1989";
```

```
*-------------------------------------------------------*
|                    WESMALL SAS A                      |
*-------------------------------------------------------*;
*-------------------------------------------------------*
|  THIS PROGRAM CONSOLIDATES MOST OF THE NALL FILES (LABOR,|
|  R1 TAPE DATA FILE,S720, S750) BY RAILROAD AND YEAR.  THE|
|  PROGRAM ALSO DEFINES AND CALCULATES MANY OF THE FINAL  |
|  VARIABLES USED IN DEVELOPING THE SPECIFICATIONS OF THE |
|  MODEL.                                                 |
|  THIS PROGRAM CREATES THE 1983-87 BETTERMENT AND THE    |
|  1983-89 DEPRECIATION DATA SETS.  A COMPANION FILE,     |
|  WES7ALL SAS A, CREATES THE 1978-82 BETTERMENT DATA SET.|
*-------------------------------------------------------*;

          /*  FILEDEFS FOR POTENTIAL ASCII DIST FILE */
CMS FILEDEF TODISKB DISK LABORB DAT A (LRECL 80 BLKSIZE 4080 RECFM FB;
CMS FILEDEF TODISKD DISK LABORD DAT A (LRECL 80 BLKSIZE 4080 RECFM FB;

          /*  READ IN BETTERMENT R1 TAPE DATA SET  */
DATA B;
 SET LABOR.NALLB;
 BY RR YEAR;

PROC SORT;
 BY RR YEAR;

          /*  READ IN DEPRECIATION R1 TAPE DATA SET  */
DATA D;
 SET LABOR.NALLD;
 BY RR YEAR;
          /*  SUSPECT DATA VALUES S720,ETC.  */
 IF YEAR = "1988" AND RR = "BM" THEN DELETE;
 IF YEAR = "1987" AND RR = "BM" THEN DELETE;

PROC SORT;
 BY RR YEAR;

          /*  READ IN SCHEDULE 720 DATA SET  */
DATA S720;
 SET LABOR.NALLS720;

PROC SORT;
 BY RR YEAR;

          /*  POTENTIAL USE OF SCHEDULE 416  */
/*
DATA S416;
 SET LABOR.NALLS416;
PROC SORT;
 BY RR YEAR;
*/
```

```
            /*  READ IN SCHEDULE 750 DATA SET  */
DATA S750;
 SET LABOR.NALLS750;

PROC SORT;
 BY RR YEAR;


            /*  READ IN LABOR DATA SET  */
DATA LABR;
  SET LABOR.NALLL;

PROC SORT;
 BY RR YEAR;


            /*  MERGE 1983-87 BETTERMENT AND ASSOCIATED SCHEDULES  */
DATA BS700L;
  MERGE B S720  S750 LABR;  BY RR YEAR;
  IF YEAR > 1982 AND YEAR < 1988;

PROC SORT;
 BY RR YEAR;

            /*  READ IN FUEL DATA SET  */
DATA NFUELB;
  SET LABOR.NFUELB;  BY RR YEAR;

PROC SORT; BY RR YEAR;

            /*  MERGE 1983-87 BETTERMENT DATA SET AND FUEL SET  */
DATA LABOR.BFINAL;
  MERGE BS700L NFUELB;  BY RR YEAR;
            /*  SUSPECT DATA VALUES S720,ETC.  */
IF YEAR = "1988" AND RR = "BM" THEN DELETE;
IF YEAR = "1987" AND RR = "BM" THEN DELETE;
IF YEAR = "1985" AND RR = "BM" THEN DELETE;
IF YEAR = "1984" AND RR = "BLE" THEN DELETE;
IF RR = "PLE" THEN DELETE;

PROC SORT; BY YEAR;

            /*  MERGE 1983-89 DEPRECIATION AND ASSOCIATED SCHEDULES  */
DATA DS700L;
  MERGE D S720  S750 LABR;  BY RR YEAR;
  IF YEAR > 1982;
PROC SORT; BY RR YEAR;

            /*  READ IN FUEL DATA SET  */
DATA NFUELD;
  SET LABOR.NFUELD;  BY RR YEAR;
PROC SORT; BY RR YEAR;
```

```
          /*  MERGE 1983-87 BETTERMENT DATA SET AND FUEL SET  */
DATA LABOR.DFINAL;
  MERGE DS700L NFUELD;  BY RR YEAR;
          /*  SUSPECT DATA VALUES S720,ETC.  */
IF YEAR = "1988" AND RR = "BM" THEN DELETE;
IF YEAR = "1987" AND RR = "BM" THEN DELETE;
IF YEAR = "1985" AND RR = "BM" THEN DELETE;
IF YEAR = "1984" AND RR = "BLE" THEN DELETE;
IF RR = "PLE" THEN DELETE;
PROC SORT; BY YEAR;


          /*  THIS IS THE FINAL WESMALL DATA SET.  THIS DATA  */
          /*  SET INCLUDES THE ASSIGNMENTS AND CALCULATIONS   */
          /*  OF THE VARIABLES CONSTITUTING THE DATA BASE OF  */
          /*  MODEL SPECIFICATIONS.                           */
*-----------------------------------------------------------------*
|
|
|    THE FOLLOWING IS A VARIABLE DESCRIPTION AND SOURCE LOCATION OF
THE|
|    VARIABLES USED OR CREATED IN THE FINALB AND FINALD DATA SETS.
|
|    SOME VARIABLES ARE COMING IN FROM OUTSIDE DATA SETS.
|
|-----------------------------------------------------------------|
| OPERCOST     TOTAL OPERATING COST
|
|              SCH 410, LINE 620, COL F
|
|
|
| LABOR        TOTAL COST OF SALARY AND WAGES
|
|              SCH 410, LINE 620, COL B
|
|
|
| MOWLABOR     MAINTENANCE OF WAY (MWS) LABOR COSTS IN SCH 410 FOR
|
|              CAPITALIZED ACTIVITIES
|
|              SCH 410, LINES 6, 8-30, 101-6, 109, 111, COL B
|
|
|
| MOWFRING     ASSOCIATED MWS FRINGE BENEFITS
|
|              SCH 410, LINES 112-114, COL E
|
|
|
```

ROICARS	ROI ON OWNED CARS = NETOCARS*COSTKEQP (SEE EQUIPMENT COST BELOW)
ROILOCO	ROI ON OWNED LOCOMOTIVES = NETOLOCO*COSTKEQP (SEE EQUIPMENT COST BELOW)
TC (TVC)	TOTAL FREIGHT COST ADJUSTED FOR CAPITALIZED MWS LABOR/FRINGES AND EQUIPMENT OPPORTUNITY COST = OPERCOST MOWLABOR - MOWFRING + ROILOCO + ROICARS
FRINGE	FRINGE BENEFITS, (EXCLUDING FRINGE BENEFITS FOR MWS) SCH 410, LINES 205, 224, 309, 414, 430, 505, 512, 522, 611, COL E
LABORADJ	TOTAL LABOR COST LESS MWS LABOR PLUS FRINGE BENEFITS = LABOR - MOWLABOR + FRINGE
FUEL	SUBTRACT THE LABOR COST FROM FUEL (SCH 410,LINE 409 COL F - COL B) + (SCH 410, LINE 425, COL F - COL B)
EQUIP	TOTAL EQUIPMENT COST = CSTOLOCO + CSTLLOCO + CSTOCARS + CSTLCARS, SEE EQUIPMENT COST BELOW
MATSUP	MATERIAL/SUPPLIES COST = TC (TVC) - LABORADJ - FUEL - EQUIP

FSLABOR	FACTOR SHARE FOR LABOR = LABORAJD/TC(TVC)
FSFUEL	FACTOR SHARE FOR FUEL = FUEL/TC(TVC)
FSEQUIP	FACTOR SHARE FOR EQUIPMENT = EQUIP/TC(TVC)
FSMATSUP	FACTOR SHARE FOR MATERIALS = MATSUP/TC(TVC)
COSTKEQP	URCS COST OF CAPITAL FOR EQUIPMENT
IBOLOCO	INVESTMENT BASE IN OWNED LOCOMOTIVES SCH 415, LINE 5, COL G
ACDOLOCO	TOTAL ACCUMULATED DEPRECIATION IN OWNED LOCOMOTIVES SCH 415, LINE 5, COL I
NETOLOCO	NET INVESTMENT BASE IN OWNED LOCOMOTIVES IBOLOCO - ACDOLOCO
ANDOLOCO	ANNUAL DEPRECIATION FOR OWNED LOCOMOTIVES SCH 415, LINE 5, COL C
CSTOLOCO	EQUIPMENT COST FOR OWNED LOCOMOTIVES = ROILOCO + ANDOLOCO

IBOCARS	INVESTMENT BASE IN OWNED CARS SCH 415, LINE 24, COL G
ACDOCARS	TOTAL ACCUMULATED DEPRECIATION IN OWNED CARS SCH 415, LINE 24, COL I
NETOCARS	NET INVESTMENT BASE IN OWNED CARS = IBOCARS - ACDOCARS
ANDOCARS	ANNUAL DEPRECIATION FOR OWNED CARS SCH 415, LINE 24, COL C
CSTOCARS	EQUIPMENT COST FOR OWNED CARS = ROICARS + ANDOCARS
RENTLOCO	LEASE/RENTAL PAYMENTS FOR LOCOMOTIVES SCH 415, LINE 5, COL F
ANDLLOCO	ANNUAL DEPRECIATION FOR LEASED LOCOMOTIVES SCH 415, LINE 5, COL D
CSTLCARS	EQUIPMENT COST FOR LEASED CARS = RENTCARS + ANDLCARS
RENTCARS	LEASE/RENTAL PAYMENTS FOR CARS SCH 415, LINE 24, COL F

CSTLLOCO	EQUIPMENT COST FOR LEASED LOCOMOTIVES
	= RENTLOCO + ANDLLOCO
ANDLCARS	ANNUAL DEPRECIATION FOR LEASED CARS
	SCH 415, LINE 24, COL D
FUELGAL	FUEL GALLONS
	SCH 750, LINE 1, COL B
FUELPRCE	PRICE OF FUEL
	FUEL/FUELGAL
LABRHRSC	LABOR HOURS ALA CAVES
	WAGE FORM A, LINE 700, COL 4 + 6
PLADJC	ADJUSTED PRICE OF LABOR, CAVES
	LABORADJ/LABRHRSC
PEQUIP	A WEIGHTED EQUIPMENT PRICE
	= POLOCO*(CSTOLOCO/EQUIP) + PLLOCO*(CSTLLOCO/EQUIP) +
	POCARS*(CSTOCARS/EQUIP) + PLCARS*(CSTLCARS/EQUIP)
PLLOCO	PER UNIT PRICE FOR LEASED LOCOS
	= CSTLLOCO/LEASLOC
PLCARS	PER UNIT PRICE FOR LEASED CARS
	= CSTLCARS/LEASCARS

POLOCO	PER UNIT PRICE FOR OWNED LOCOMOTIVES,
	= CSTOLOCO/OWNLOCO
POCARS	PER UNIT PRICE FOR OWNED CARS
	= CSTOCARS/OWNCARS
LEASLOCO	NUMBER OF LOCOMOTIVES LEASED
	SCH 710, LINE 10, COL I
LEASCARS	NUMBER OF CARS LEASED
	SCH 710, LINE 53, COL I
OWNCARS	NUMBER OF CARS OWNED
	SCH 710, LINE 53, COL J
OWNLOCO	NUMBER OF LOCOMOTIVES OWNED
	SCH 710, LINE 10,COL H
PMATSUP	PRICE OF OTHER MATERIALS/SUPPLIES
AARINDEX	PRICE OF OTHER MATERIALS/SUPPLIES
EAST/WESTARR	RAILROAD MATERIALS AND SUPPLIES INDEX,
	INDEXED FOR EASTERN AND WESTERN ROADS
MT(I)	MILES OF TRACK BY DENSITY LEVEL
	SCH 720 LINES 1-4, COL B

DENSITY(I)	MILLIONS OF GTM PER TRACK MILE SCH 720 LINE 1-4, COL C
ALHG GRIMM,LEE	AVERAGE LENGTH OF HAUL THAT IS CONSISTENT WITH AND CAVES = RTM/RTONS
RTM	REVENUE TON-MILES (USE TO CALC ALHG) SCH 755, LINE 110, COL B
RTONS	REVENUE TONS (USE TO CALC ALHG) SCH 755 LINE 105, COL B
UTF	UNIT TRAIN FACTOR (% UNIT TRAIN CARMILES) = UTCM/CM
UNITCM/UTCM	UNIT TRAIN CARMILES (USE TO CALC UNIT TRAIN FACTOR) SCH 755, LINE 85, COL B
CM	TOTAL CARMILES (SHOULD BE SAME AS CARMILES) SCH 755, LINE 88, COL B
INTERLNE	PERCENT OF TRAFFIC INTERLINED = 1 - CLOT/CLOR
CLOR	CARLOADS HANDLED QCS DATA

```
| CLOT          CARLOADS ORGINATED/TERMINATED
|
|               QCS DATA
|
|
|
| MR            MILES OF ROAD
|
|
|
| GTM           GROSS TON MILES
|
|
|
*-------------------------------------------------------------------*;

DATA FINALB;
  SET LABOR.BFINAL;
*EEP OPERCOST CAPCOST TC MATSUP RESID
     LABOR MOW FUEL EQUIP
     INVROAD INVEQUIP OTHINPUT
     LABRCOST MOWCOST FUELCOST EQUPCOST MATRCOST RESCOST
     ALHG ALHD  ACCOUNT    YEAR  RR RRCODE
     RTONS  RTM
     MT1 MT2 MT3 MT4 SPEED1 SPEED2 SPEED3 SPEED4
         DENSITY1 DENSITY2 DENSITY3 DENSITY4
     AARINDEX
     PLABORC PLABORG LABRCSTC LABRCSTG LABRHRSC LABRHRSG
     UTF WTF  UNITCM WAYCM  CARLOADS
     FUELGAL  TOTLFUEL FUELPRCE;

*F YEAR = "1987" AND RR = "BM" THEN DO;
*   FUEL = 4081000;
*   TOTLFUEL = 4081000;
* END;
          /*  CREATE MOR FOR ZEROED RR. .937 = AVERAGE % MOR OF MTALL
*/
MTALL = MT1 + MT2 + MT3 + MT4;
IF MOR = 0 THEN MOR = .937*MTALL;

OPERCOST = TC5;

LABOR = TC1;
MOW = MWS5 - MWS1;
EQUIP = (FC5 - FC1) + (LOC5 - LOC1);
MATRLSUP = OPERCOST - LABOR - FUEL;
RESID = OPERCOST - LABOR - FUEL - MOW - EQUIP;

INVROAD = NETROAD;
INVEQUIP = NETEQUIP;

CAPCOST = INVROAD + INVEQUIP;
TCOLD = OPERCOST + CAPCOST;
```

```
LABRCSTC = LABOR;
PLABORC = LABRCSTC/LABRHRSC;
PLABORG = LABRCSTG/LABRHRSG;

LABRCOST = LABOR/OPERCOST;
MOWCOST = MOW/OPERCOST;
FUELCOST = FUEL/OPERCOST;
EQUPCOST = EQUIP/OPERCOST;
MATRCOST = MATRLSUP/OPERCOST;
RESCOST = RESID/OPERCOST;

FUELGAL = GALLONS;
FUELPRCE = FUEL/FUELGAL;
IF YEAR = "1983" AND RR = "UP" THEN FUELPRCE = 204458000/FUELGAL;
IF YEAR = "1984" AND RR = "AGS" THEN FUELPRCE = 11310000/FUELGAL;
IF YEAR = "1984" AND RR = "CGA" THEN FUELPRCE = 12536000/FUELGAL;
IF YEAR = "1984" AND RR = "UP" THEN FUELPRCE = 222092000/FUELGAL;
IF YEAR = "1985" AND RR = "UP" THEN FUELPRCE = 201880000/FUELGAL;
IF YEAR = "1987" AND RR = "DH" THEN DO;
    FUELPRCE = .585860;
    FUELGAL = 12992865;
  END;
IF YEAR = "1987" AND RR = "BM" THEN DO;
    FUELPRCE = .555770;
    FUELGAL = 7342966;
  END;

CARLOADS = CLOR;
IF CARLOADS = 0 THEN ALHD = 0;
  ELSE ALHD = (FCMLRR + FCMLPR)/CARLOADS;

ALHG = RTM/RTONS;
CARMILES = FCMLRR + FCMLPR;
UNITCM = UTCM;
WAYCM = WTCM;
DENSITY1 = GTMM1;
DENSITY2 = GTMM2;
DENSITY3 = GTMM3;
DENSITY4 = GTMM4;

IF YEAR = "1978" THEN DO;
     EASTAAR = 105.7;
     WESTAAR = 106.4;
  END;

ELSE IF YEAR = "1979" THEN DO;
     EASTAAR = 116.2;
     WESTAAR = 116.2;
  END;
ELSE IF YEAR = "1980" THEN DO;
     EASTAAR = 131.6;
     WESTAAR = 136.2;
  END;
ELSE IF YEAR = "1981" THEN DO;
     EASTAAR = 139.9;
     WESTAAR = 148.5;
```

```
  END;
ELSE IF YEAR = "1982" THEN DO;
     EASTAAR = 141.0;
     WESTAAR = 149.5;
  END;
ELSE IF YEAR = "1983" THEN DO;
     EASTAAR = 135.7;
     WESTAAR = 142.4;
  END;
ELSE IF YEAR = "1984" THEN DO;
     EASTAAR = 134.6;
     WESTAAR = 142.1;
  END;
ELSE IF YEAR = "1985" THEN DO;
     EASTAAR = 139.1;
     WESTAAR = 147.4;
  END;
ELSE IF YEAR = "1986" THEN DO;
     EASTAAR = 139.5;
     WESTAAR = 143.5;
  END;
ELSE IF YEAR = "1987" THEN DO;
     EASTAAR = 132.3;
     WESTAAR = 136.1;
  END;
ELSE IF YEAR = "1988" THEN DO;
     EASTAAR = 139.3;
     WESTAAR = 141.2;
  END;
ELSE IF YEAR = "1989" THEN DO;
     EASTAAR = 147.1;
     WESTAAR = 148.8;
  END;

  IF RR = "BO" THEN AARINDEX = EASTAAR;
    ELSE IF RR = "BLE"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "BM"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CO"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CR"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CSX"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "DH"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "DTI"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "EJE"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "GTW"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "LI"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "NW"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "NS"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "PLE"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "WM"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "AGS"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CGA"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CNTP" THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CCO"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "FEC"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "ICG"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "LN"   THEN AARINDEX = EASTAAR;
```

```
    ELSE IF RR = "SCL"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "SOU"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "ATSF" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "BN"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "CNW"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "MILW" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "RI"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CS"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "DRGW" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "DMIR" THEN AARINDEX = EASTAAR;
    ELSE IF RR = "FWD"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "KCS"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "MKT"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "MP"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SLSF" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SSW"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SOO"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SP"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "UP"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "WP"   THEN AARINDEX = WESTAAR;
    ELSE AARINDEX = 999999;
OTHINPUT = MATRLSUP/AARINDEX;

IF YEAR = "1978" THEN COSTKEQP = .184;
ELSE IF YEAR = "1979" THEN COSTKEQP = .186;
ELSE IF YEAR = "1980" THEN COSTKEQP = .190;
ELSE IF YEAR = "1981" THEN COSTKEQP = .258;
ELSE IF YEAR = "1982" THEN COSTKEQP = .283;
ELSE IF YEAR = "1983" THEN COSTKEQP = .254;
ELSE IF YEAR = "1984" THEN COSTKEQP = .255;
ELSE IF YEAR = "1985" THEN COSTKEQP = .224;
ELSE IF YEAR = "1986" THEN COSTKEQP = .191;
ELSE IF YEAR = "1987" THEN COSTKEQP = .174;
ELSE IF YEAR = "1988" THEN COSTKEQP = .162;
ELSE IF YEAR = "1989" THEN COSTKEQP = .159;
NLOCO =  OWNLOCO + LEASLOCO;
NCARS =  OWNCARS + LEASCARS;
ALLEQUIP = NLOCO + NCARS;

IBLOCO = IBOLOCO + IBLLOCO;
IBCARS = IBOCARS + IBLCARS;
IBOALL = IBLOCO + IBCARS;

ACCDLOCO = ACDOLOCO + ACDLLOCO;
ACCDCARS = ACDOCARS + ACDLCARS;
ACCDALL  = ACCDLOCO + ACCDCARS;

ANNDLOCO = ANDOLOCO + ANDLLOCO;
ANNDCARS = ANDOCARS + ANDLCARS;
ANNDALL  = ANNDLOCO + ANNDCARS;
```

```
**********  NEW STUFF  **************************;
NETOLOCO = (IBOLOCO - ACDOLOCO);
ROILOCO = NETOLOCO*COSTKEQP;
CSTOLOCO = ROILOCO + ANDOLOCO;
POLOCO = CSTOLOCO/OWNLOCO;

NETOCARS = (IBOCARS - ACDOCARS);
ROICARS = NETOCARS*COSTKEQP;
CSTOCARS = ROICARS + ANDOCARS;
POCARS = CSTOCARS/OWNCARS;

NETLLOCO = (IBLLOCO - ACDLLOCO);
CSTLLOCO = RENTLOCO + ANDLLOCO;
IF LEASLOCO ^= 0 THEN
  PLLOCO = CSTLLOCO/LEASLOCO;
ELSE PLLOCO = 0;

NETLCARS = (IBLCARS - ACDLCARS);
CSTLCARS = RENTCARS + ANDLCARS;
IF LEASCARS ^= 0 THEN
  PLCARS = CSTLCARS/LEASCARS;
ELSE PLCARS = 0;

EQUIPEXP = CSTOLOCO + CSTLLOCO +  CSTOCARS + CSTLCARS;

PEQUIP = POLOCO*(CSTOLOCO/EQUIPEXP) + PLLOCO*(CSTLLOCO/EQUIPEXP) +
         POCARS*(CSTOCARS/EQUIPEXP) + PLCARS*(CSTLCARS/EQUIPEXP);

/*
NETLCARS = (IBLCARS - ACDLCARS)/LEASCARS;
NETLOCO = ((NETOLOCO*OWNLOCO) +
(NETLLOCO*LEASLOCO))/(OWNLOCO+LEASLOCO);
NETCARS = ((NETOCARS*OWNCARS) +
(NETLCARS*LEASCARS))/(OWNCARS+LEASCARS);
NETINVEQ = NETLOCO + NETCARS;

ROICARS = NETOCARS*COSTKEQP;
ROIALL = ROILOCO + ROICARS;

DEPRLOCO = ANNDLOCO/NLOCO;
DEPRCARS = ANNDCARS/NCARS;
DEPRALL = DEPRLOCO + DEPRCARS;

IF LEASLOCO ^= 0 THEN
  CLESLOCO = RENTLOCO/LEASLOCO;
ELSE CLESLOCO = 0;
CLESCARS = RENTCARS/LEASCARS;
COSTLEAS = CLESLOCO + CLESCARS;
*/

LABORADJ = TC1 - MOWLABOR + FRINGE;
TC = TC5 - MOWLABOR - MOWFRING + ROILOCO + ROICARS;
MATSUP = TC - LABORADJ - FUEL - EQUIPEXP;
```

```
FSLABOR = LABORADJ/TC;
FSFUEL = FUEL/TC;
FSEQUIP = EQUIPEXP/TC;
FSMATSUP = MATSUP/TC;
PMATSUP = AARINDEX;


PROC PRINT;

DATA FINALD;
  SET LABOR.DFINAL;
*EEP OPERCOST CAPCOST TC MATSUP RESID
 LABOR MOW FUEL EQUIP
      INVROAD INVEQUIP OTHINPUT
      LABRCOST MOWCOST FUELCOST EQUPCOST MATRCOST RESCOST
      ALHG ALHD  ACCOUNT     YEAR  RR RRCODE
      RTONS  RTM
      MT1 MT2 MT3 MT4 SPEED1 SPEED2 SPEED3 SPEED4
          DENSITY1 DENSITY2 DENSITY3 DENSITY4
      AARINDEX
      PLABORC PLABORG LABRCSTC LABRCSTG LABRHRSC LABRHRSG
      UTF WTF  UNITCM WAYCM CARLOADS
      FUELGAL  TOTLFUEL FUELPRCE;

MTALL = MT1 + MT2 + MT3 + MT4;
IF MOR = 0 THEN MOR = .937*MTALL;

OPERCOST = TC5;

LABOR = TC1;
MOW = MWS5 - MWS1;
EQUIP = (FC5 - FC1) + (LOC5 - LOC1);
IF YEAR < 1986 THEN DO;
    FUEL = FUEL*1000;
    TOTLFUEL = TOTLFUEL*1000;
  END;
*   OPERCOST = OPERCOST*1000;
*   LABOR = LABOR*1000;
*   MOW = MOW*1000;
*   EQUIP = EQUIP*1000;

MATRLSUP = OPERCOST - LABOR - FUEL;
RESID = OPERCOST - LABOR - FUEL - MOW - EQUIP;

INVROAD = NETROAD;
INVEQUIP = NETEQUIP;

CAPCOST = INVROAD + INVEQUIP;
TCOLD = OPERCOST + CAPCOST;

LABRCSTC = LABOR;
PLABORC = LABRCSTC/LABRHRSC;
PLABORG = LABRCSTG/LABRHRSG;
```

```
LABRCOST = LABOR/OPERCOST;
MOWCOST = MOW/OPERCOST;
FUELCOST = FUEL/OPERCOST;
EQUPCOST = EQUIP/OPERCOST;
MATRCOST = MATRLSUP/OPERCOST;
RESCOST = RESID/OPERCOST;

FUELGAL = GALLONS;
FUELPRCE = FUEL/FUELGAL;
IF YEAR = "1983" AND RR = "UP" THEN FUELPRCE = 204458000/FUELGAL;
IF YEAR = "1984" AND RR = "AGS" THEN FUELPRCE = 11310000/FUELGAL;
IF YEAR = "1984" AND RR = "CGA" THEN FUELPRCE = 12536000/FUELGAL;
IF YEAR = "1984" AND RR = "UP" THEN FUELPRCE = 222092000/FUELGAL;
IF YEAR = "1985" AND RR = "UP" THEN FUELPRCE = 201880000/FUELGAL;

CARLOADS = CLOR;
IF CARLOADS = 0 THEN ALHD = 0;
  ELSE ALHD = (FCMLRR + FCMLPR)/CARLOADS;

ALHG = RTM/RTONS;
CARMILES = FCMLRR + FCMLPR;
UNITCM = UTCM;
WAYCM = WTCM;
DENSITY1 = GTMM1;
DENSITY2 = GTMM2;
DENSITY3 = GTMM3;
DENSITY4 = GTMM4;
IF YEAR = "1978" THEN DO;
     EASTAAR = 105.7;
     WESTAAR = 106.4;
  END;
ELSE IF YEAR = "1979" THEN DO;
     EASTAAR = 116.2;
     WESTAAR = 116.2;
  END;
ELSE IF YEAR = "1980" THEN DO;
     EASTAAR = 131.6;
     WESTAAR = 136.2;
  END;
ELSE IF YEAR = "1981" THEN DO;
     EASTAAR = 139.9;
     WESTAAR = 148.5;
  END;
ELSE IF YEAR = "1982" THEN DO;
     EASTAAR = 141.0;
     WESTAAR = 149.5;
  END;
ELSE IF YEAR = "1983" THEN DO;
     EASTAAR = 135.7;
     WESTAAR = 142.4;
  END;
ELSE IF YEAR = "1984" THEN DO;
     EASTAAR = 134.6;
     WESTAAR = 142.1;
  END;
```

```
ELSE IF YEAR = "1985" THEN DO;
     EASTAAR = 139.1;
     WESTAAR = 147.4;
  END;
ELSE IF YEAR = "1986" THEN DO;
     EASTAAR = 139.5;
     WESTAAR = 143.5;
  END;
ELSE IF YEAR = "1987" THEN DO;
     EASTAAR = 132.3;
     WESTAAR = 136.1;
  END;
ELSE IF YEAR = "1988" THEN DO;
     EASTAAR = 139.3;
     WESTAAR = 141.2;
  END;
ELSE IF YEAR = "1989" THEN DO;
     EASTAAR = 147.1;
     WESTAAR = 148.8;
  END;

  IF RR = "BO" THEN AARINDEX = EASTAAR;
    ELSE IF RR = "BLE"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "BM"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CO"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CR"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CSX"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "DH"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "DTI"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "EJE"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "GTW"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "LI"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "NW"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "NS"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "PLE"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "WM"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "AGS"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CGA"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CNTP" THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CCO"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "FEC"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "ICG"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "LN"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "SCL"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "SOU"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "ATSF" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "BN"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "CNW"  THEN AARINDEX = EASTAAR;
    ELSE IF RR = "MILW" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "RI"   THEN AARINDEX = EASTAAR;
    ELSE IF RR = "CS"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "DRGW" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "DMIR" THEN AARINDEX = EASTAAR;
    ELSE IF RR = "FWD"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "KCS"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "MKT"  THEN AARINDEX = WESTAAR;
```

```
    ELSE IF RR = "MP"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SLSF" THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SSW"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SOO"  THEN AARINDEX = WESTAAR;
    ELSE IF RR = "SP"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "UP"   THEN AARINDEX = WESTAAR;
    ELSE IF RR = "WP"   THEN AARINDEX = WESTAAR;
    ELSE AARINDEX = 999999;
OTHINPUT = MATRLSUP/AARINDEX;

IF YEAR = "1978" THEN COSTKEQP = .184;
ELSE IF YEAR = "1979" THEN COSTKEQP = .186;
ELSE IF YEAR = "1980" THEN COSTKEQP = .190;
ELSE IF YEAR = "1981" THEN COSTKEQP = .258;
ELSE IF YEAR = "1982" THEN COSTKEQP = .283;
ELSE IF YEAR = "1983" THEN COSTKEQP = .254;
ELSE IF YEAR = "1984" THEN COSTKEQP = .255;
ELSE IF YEAR = "1985" THEN COSTKEQP = .224;
ELSE IF YEAR = "1986" THEN COSTKEQP = .191;
ELSE IF YEAR = "1987" THEN COSTKEQP = .174;
ELSE IF YEAR = "1988" THEN COSTKEQP = .162;
ELSE IF YEAR = "1989" THEN COSTKEQP = .159;
NLOCO =  OWNLOCO + LEASLOCO;
NCARS =  OWNCARS + LEASCARS;
ALLEQUIP = NLOCO + NCARS;

IBLOCO = IBOLOCO + IBLLOCO;
IBCARS = IBOCARS + IBLCARS;
IBOALL = IBLOCO + IBCARS;

ACCDLOCO = ACDOLOCO + ACDLLOCO;
ACCDCARS = ACDOCARS + ACDLCARS;
ACCDALL  = ACCDLOCO + ACCDCARS;

ANNDLOCO = ANDOLOCO + ANDLLOCO;
ANNDCARS = ANDOCARS + ANDLCARS;
ANNDALL  = ANNDLOCO + ANNDCARS;

**********  NEW STUFF  **************************;
NETOLOCO = (IBOLOCO - ACDOLOCO);
ROILOCO = NETOLOCO*COSTKEQP;
CSTOLOCO = ROILOCO + ANDOLOCO;
POLOCO = CSTOLOCO/OWNLOCO;

NETOCARS = (IBOCARS - ACDOCARS);
ROICARS = NETOCARS*COSTKEQP;
CSTOCARS = ROICARS + ANDOCARS;
POCARS = CSTOCARS/OWNCARS;

NETLLOCO = (IBLLOCO - ACDLLOCO);
CSTLLOCO = RENTLOCO + ANDLLOCO;
IF LEASLOCO ^= 0 THEN
  PLLOCO = CSTLLOCO/LEASLOCO;
ELSE PLLOCO = 0;
```

```
NETLCARS = (IBLCARS - ACDLCARS);
CSTLCARS = RENTCARS + ANDLCARS;
IF LEASCARS ^= 0 THEN
  PLCARS = CSTLCARS/LEASCARS;
ELSE PLCARS = 0;

EQUIPEXP = CSTOLOCO + CSTLLOCO +  CSTOCARS + CSTLCARS;

PEQUIP = POLOCO*(CSTOLOCO/EQUIPEXP) + PLLOCO*(CSTLLOCO/EQUIPEXP) +
         POCARS*(CSTOCARS/EQUIPEXP) + PLCARS*(CSTLCARS/EQUIPEXP);

/*
NETLCARS = (IBLCARS - ACDLCARS)/LEASCARS;
NETLOCO = ((NETOLOCO*OWNLOCO) +
(NETLLOCO*LEASLOCO))/(OWNLOCO+LEASLOCO);
NETCARS = ((NETOCARS*OWNCARS) +
(NETLCARS*LEASCARS))/(OWNCARS+LEASCARS);
NETINVEQ = NETLOCO + NETCARS;

ROICARS = NETOCARS*COSTKEQP;
ROIALL = ROILOCO + ROICARS;

DEPRLOCO = ANNDLOCO/NLOCO;
DEPRCARS = ANNDCARS/NCARS;
DEPRALL = DEPRLOCO + DEPRCARS;

IF LEASLOCO ^= 0 THEN
  CLESLOCO = RENTLOCO/LEASLOCO;
ELSE CLESLOCO = 0;
CLESCARS = RENTCARS/LEASCARS;
COSTLEAS = CLESLOCO + CLESCARS;
*/


LABORADJ = TC1 - MOWLABOR + FRINGE;
TC = TC5 - MOWLABOR - MOWFRING + ROILOCO + ROICARS;
MATSUP = TC - LABORADJ - FUEL - EQUIPEXP;

FSLABOR = LABORADJ/TC;
FSFUEL = FUEL/TC;
FSEQUIP = EQUIPEXP/TC;
FSMATSUP = MATSUP/TC;
PMATSUP = AARINDEX;

**ELPRCE = GALLONS/(TOTLFUEL*1000);

PROC PRINT;

DATA TESTB;
   SET FINALB;
IF LABOR = 0   OR
   MOW   = 0   OR
   FUEL  = 0   OR
   EQUIP = 0   OR
   MATSUP = 0 OR
   INVROAD = 0 OR
```

```
   INVEQUIP = 0 OR
   OTHINPUT = 0 OR
   LABRCOST = 0 OR
   MOWCOST = 0 OR
   FUELCOST = 0 OR
   EQUPCOST = 0 OR
   MATRCOST = 0 OR
   ALHD = 0 OR
   ALHG = 0 OR
   RTONS  = 0 OR
   RTM = 0 OR
   MT1 = 0 OR
   MT2 = 0 OR
   MT3 = 0 OR
   MT4 = 0 OR
   DENSITY1 = 0 OR
   DENSITY2 = 0 OR
   DENSITY3 = 0 OR
   DENSITY4 = 0 OR
   SPEED1 = 0 OR
   SPEED2 = 0 OR
   SPEED3 = 0 OR
   SPEED4 = 0 OR
   AARINDEX = 0 OR
   UTF  = 0 OR
   WTF = 0;

PROC PRINT;


DATA TESTD;
   SET FINALD;
IF LABOR = 0   OR
   MOW  = 0   OR
   FUEL  = 0   OR
   EQUIP = 0   OR
   MATSUP = 0 OR
   INVROAD = 0 OR
   INVEQUIP = 0 OR
   OTHINPUT = 0 OR
   LABRCOST = 0 OR
   MOWCOST = 0 OR
   FUELCOST = 0 OR
   EQUPCOST = 0 OR
   MATRCOST = 0 OR
   ALHD = 0 OR
   ALHG = 0 OR
   RTONS  = 0 OR
   RTM = 0 OR
   MT1 = 0 OR
   MT2 = 0 OR
   MT3 = 0 OR
   MT4 = 0 OR
   DENSITY1 = 0 OR
   DENSITY2 = 0 OR
   DENSITY3 = 0 OR
```

```
   DENSITY4 = 0 OR
   SPEED1 = 0 OR
   SPEED2 = 0 OR
   SPEED3 = 0 OR
   SPEED4 = 0 OR
   AARINDEX = 0 OR
   UTF  = 0 OR
   WTF = 0;

PROC PRINT;


DATA TESTBFL;
   SET FINALB;
IF FUEL  = 0
   OR TOTLFUEL  = 0
   OR FUELPRCE = 0;

PROC PRINT;


DATA TESTDFL;
   SET FINALD;
IF FUEL  = 0
   OR TOTLFUEL  = 0
   OR FUELPRCE = 0;

PROC PRINT;


DATA TESTB720;
   SET FINALB;
IF MT1 = 0 AND
   MT2 = 0 AND
   MT3 = 0 AND
   MT4 = 0 AND
   DENSITY1 = 0 AND
   DENSITY2 = 0 AND
   DENSITY3 = 0 AND
   DENSITY4 = 0 AND
   SPEED1 = 0 AND
   SPEED2 = 0 AND
   SPEED3 = 0 AND
   SPEED4 = 0;

PROC PRINT;


DATA TESTD720;
   SET FINALD;
IF MT1 = 0 AND
   MT2 = 0 AND
   MT3 = 0 AND
   MT4 = 0 AND
   DENSITY1 = 0 AND
```

```
   DENSITY2 = 0 AND
   DENSITY3 = 0 AND
   DENSITY4 = 0 AND
   SPEED1 = 0 AND
   SPEED2 = 0 AND
   SPEED3 = 0 AND
   SPEED4 = 0;

PROC PRINT;

DATA TESTBOTH;
   SET FINALB;
IF LABOR = 0    OR
   MOW  = 0    OR
   EQUIP = 0    OR
   MATSUP = 0 OR
   INVROAD = 0 OR
   INVEQUIP = 0 OR
   OTHINPUT = 0 OR
   LABRCOST = 0 OR
   MOWCOST = 0 OR
   EQUPCOST = 0 OR
   MATRCOST = 0 OR
   ALHD = 0 OR
   ALHG = 0 OR
   RTONS  = 0 OR
   RTM = 0;

PROC PRINT;


DATA TESTDOTH;
   SET FINALD;
IF LABOR = 0    OR
   MOW  = 0    OR
   EQUIP = 0    OR
   MATSUP = 0 OR
   INVROAD = 0 OR
   INVEQUIP = 0 OR
   OTHINPUT = 0 OR
   LABRCOST = 0 OR
   MOWCOST = 0 OR
   EQUPCOST = 0 OR
   MATRCOST = 0 OR
   ALHD = 0 OR
   ALHG = 0 OR
   RTONS  = 0 OR
   RTM = 0;

DATA BINTELNE;
   SET FINALB;
IF INTERLNE = 0 OR INTERLNE >= 1.0;

PROC PRINT;
```

```
DATA DINTELNE;
   SET FINALD;
IF INTERLNE = 0 OR INTERLNE >= 1.0;

PROC PRINT;

/*
DATA _NULL_;
   SET FINALB;
   FILE TODISKB;
   PUT  YEAR RR ACCOUNT RRCODE RTONS RTM UTF WTF MT1 /
        SPEED1 DENSITY1 MT2 SPEED2 DENSITY2 MT3 SPEED3 DENSITY3 MT4
            SPEED4 DENSITY4 /
        LABRHRSG LABRCSTG LABRHRSC LABRCSTC PLABORC PLABORG OPERCOST
            FUEL  /
        LABOR MOW EQUIP MATSUP RESID INVROAD INVEQUIP /
        CAPCOST TC LABRCOST MOWCOST FUELCOST EQUPCOST MATRCOST  /
        RESCOST FUELGAL FUELPRCE CARLOADS ALHD ALHG   /
        UNITCM WAYCM AARINDEX OTHINPUT;


PROC PRINT;

DATA _NULL_;
   SET FINALD;
   FILE TODISKD;
   PUT  YEAR RR ACCOUNT RRCODE RTONS RTM UTF WTF MT1 /
        SPEED1 DENSITY1 MT2 SPEED2 DENSITY2 MT3 SPEED3 DENSITY3 MT4
            SPEED4 DENSITY4 /
        LABRHRSG LABRCSTG LABRHRSC LABRCSTC PLABORC PLABORG OPERCOST
            FUEL  /
        LABOR MOW EQUIP MATSUP RESID INVROAD INVEQUIP /
        CAPCOST TC LABRCOST MOWCOST FUELCOST EQUPCOST MATRCOST  /
        RESCOST FUELGAL FUELPRCE CARLOADS ALHD ALHG   /
        UNITCM WAYCM AARINDEX OTHINPUT;

PROC PRINT;
*/

DATA CONTB;
  SET FINALB;

PROC CONTENTS;


DATA CONTD;
  SET FINALD;

PROC CONTENTS;
DATA LABOR.BETTER83;
  SET FINALB;
DATA LABOR.DEPREC;
  SET FINALD;
```

```
*------------------------------------------------------------*
|                    WESFIXES SAS A                          |
*------------------------------------------------------------*;
*------------------------------------------------------------*
|     THIS FILE CONTAINS THE DATA FIXES FOUND IN THE POST-   |
|  STAGGERS CLASS I RAIL PRODUCTIVITY STUDY.  THE FIXES ARE  |
|  NOT IN ANY ORDER IN THIS FILE. ALSO, THE FIXES IN THE     |
|  PROCESS STREAM MAY BE REPETITIVE AND/OR COUNTERMAND ONE   |
|  ANOTHER.  THEY WERE LEFT THIS WAY TO INDICATE A CERTAIN   |
|  DECISION ABOUT DATA DURING THE EVOLUTION OF THE MODEL.    |
*------------------------------------------------------------*;

*------------------------------------------------------------*
|     THE LOCATION GIVEN FOR EACH PORTION OF THIS FILE IS    |
|  WHERE THE CODE WAS FIRST CONSTRUCTED. FOR MANY OF THESE   |
|  FIXES THE CODE BECAME OPERATIVE IN ANOTHER FILE. THE      |
|  PROGRAM LABOR1 CONTAINED MANY OF THE FIXES DEVELOPED IN   |
|  OTHER FILES.                                              |
|                                                            |
*------------------------------------------------------------*;

*------------------------------------------------------------*
|  LOCATION:          WESFIX1  SAS A                         |
*------------------------------------------------------------*;

  /*   CORRECTION OF DATA ENTRY ERRORS IN SCHEDULE 720          */
IF RR = "GTW" AND YEAR = "1987" THEN GTMM4 = 440000;
IF RR = "FEC" AND YEAR = "1987" THEN GTMM3 = 0;
IF RR = "FEC" AND YEAR = "1987" THEN MT3 = 0;
IF RR = "FEC" AND YEAR = "1987" THEN GTMM4 = 888000;
IF RR = "FEC" AND YEAR = "1987" THEN MT4 = 96;

  /*   ASSIGNMENT OF DATA VALUES TO MISSING OR INCORRECT VALUES  */
  /*   IN SCHEDULE 720.  THIS IS AN UPDATE TO AN ALMOST IDENTICAL*/
  /*   CORRECTION DONE DECEMBER 1990.                            */
IF RR = "BN" AND YEAR = "1986" THEN SPEED1 = 54.1;
IF RR = "BN" AND YEAR = "1987" THEN SPEED1 = 54.1;
IF RR = "DMIR" AND YEAR = "1982" THEN SPEED1 = 20.0;
IF RR = "FEC" AND YEAR = "1989" THEN SPEED1 = 53;
IF RR = "SP" AND YEAR = "1987" THEN SPEED2 = 40;


  /*   SANTA FE'S 1980 GTM VALUE COMING FROM THE TAPE AND FROM   */
  /*   THE URCS MASTER DATA FILE IS INCORRECT. THE VALUE BELOW   */
  /*   IS FROM A DIRECT CALCULATION IDENTICAL TO THE CALCULATION */
  /*   OF GTM ON SCHEDULE 755/OSA.  GTM IS A TOTAL OF OTHER      */
  /*   VALUES AND THIS IS THE CALCULATION DONE TO ARRIVE AT THIS */
  /*   NUMBER.  THIS WAS NOTED TO THE ICC 22 OCT 1991. THIS      */
  /*   FILE WAS SENT BEFORE THE ICC COMMENTED ON ANY CORRECTION  */
  /*   TO THE URCS MASTER DATA FILE OR THE TRANS FILES.          */
  /*   ICC CONFIRMATION OF 186322746: 25 OCT 91  BILL ROGERS.    */
IF RR = "ATSF" AND YEAR = "1980" THEN GTM = 186322746000;
```

```
    /*    THE Q1/Q2 CALCULATION IS NOT CAPTURING THE DESIRED EFFECT */
    /*    DUE TO DATA REPORTING QUESTIONS. (RTM <>  GTMM1*MT1 + ...)*/
    /*    FRANK CODED THIS TO DEVISE A WAY TO FACTOR GTM IN RELATION*/
    /*    TO Q1 + Q2.  THIS FACTOR IS THEN USED AGAINST Q1 AND Q2   */
    /*    TO CREATE GTMM-MT BASED VARIABLES (HDQ AND LDQ) THAT      */
    /*    EQUAL RTM.                                                */
  GTMFAC = GTM/(Q1 + Q2);
  HDQ = GTMFAC * Q1;
  LDQ = GTMFAC * Q2;


    /*    THE ATTEMPT TO CAPTURE NETWORK EFFECTS WAS USING THE      */
    /*    VARIABLE MOR INSTEAD OF MR.  MR IS THE MORE ACCURATE      */
    /*    VARIABLE COMING FROM SCHEDULE 700 VERSUS SCHEDULE 755. MR,*/
    /*    FROM SCHEDULE 700, IS THE URCS MILES OF ROAD VARIABLE.    */

  (MOT - MR)/MOT

*************************************************************************
REPLACE ALL USEAGES OF MOR WITH MR.
   K1 = MR;

   *-------------------------------------------------------*
   |  LOCATION:          WESFIX2  SAS A                    |
   *-------------------------------------------------------*;
/*   THIS IS A DATA UPDATE FILE.  23 OCT 1991.  F. DOOLEY, D.BENSON  */
/*   IT MUST BE USED TO UPDATE THE Q1.LABOR, LABOR.BETTER78,         */
/*   LABOR.BETTER83, AND LABOR.DEPREC FILES */

    /*  REFINEMENT OF PREVIOUS BN FIX.  THE PREVIOUS FIX WAS        */
    /*  BEING DONE TWICE.  THIS CODE MUST BE PLACED AFTER THE       */
    /*  THE PREVIOUS FIX.                                           */
  IF RR = "BN" AND YEAR = "1988" THEN GTMM4 = 100000;
  IF RR = "BN" AND YEAR = "1989" THEN GTMM4 = 570000;


    /*    CORRECTION OF DATA ENTRY ERRORS TO LABOR FILES.           */
  IF RR = "NS" AND YEAR = "1985" THEN DO;
     LABRHRSG = 82208000;
     LABRCSTG = 1175555000;
     LABRHRSC = 68180000;
     LABRCSTC = 540854000;
  END;


    /*    NS FUEL COST IS TAKEN FROM SCHEDULE 750 INSTEAD OF        */
    /*    SCHEDULE 410 BECAUSE OF A SUSPICION OF REPORTING CRITERION*/
    /*    DIFFERENCES DURING THAT FIRST NS YEAR. (410 AND 7500 WERE */
    /*    REPORTED UNDER DIFFERENT MERGER ASSUMPTIONS - ONE INCLUDES*/
    /*    SOU AND ONE DOESN'T.)                                     */
    /*                          FUELPRCE CALCULATION INCLUDED.      */
  IF RR = "NS" AND YEAR = "1985" THEN FUEL = 111752000;
  IF RR = "NS" AND YEAR = "1985" THEN FUELPRCE = 111752000/147029873;
```

```
    /*    SOU SCHEDULE 750 VALUE WAS THOUGHT NOT TO INCLUDE AGS,CGA,*/
    /*    AND CNTP VALUES FOR 1983 WHEREAS THE 410 DID.  THE VALUE  */
    /*    GIVEN IS SOU + AGS + CGA + CNTP.                          */
    /*                          FUELPRCE CALCULATION INCLUDED.      */
  IF RR = "SOU" AND YEAR = "1983" THEN GALLONS = 145826460;
  IF RR = "SOU" AND YEAR = "1983" THEN FUELPRCE = 136176000/145826460;

   *-------------------------------------------------------------*
   |  LOCATION:          FWDFIX   SAS A                         |
   *-------------------------------------------------------------*;
/*    THIS IS A DATA UPDATE FILE.  30 SEP 1991.  F. DOOLEY, D.BENSON  */
/*    IT MUST BE USED TO UPDATE THE Q1.LABOR, LABOR.BETTER78,         */
/*    AND LABOR.DEPREC FILES */

    /*    RI IS ELIMINATED BECAUSE OF SUSPECT S720 VALUES FOR 1978  */
IF YEAR = "1978" AND RR = "RI" THEN DELETE;

    /*    WM IS ELIMINATED BECAUSE OF SUSPECT S720 VALUES FOR 1982  */
IF YEAR = "1982" AND RR = "WM" THEN DELETE;

    /*    BM'S GTMM2,GTMM3,GTMM4 VALUES ARE CREATED USING MEAN VALUES */
    /*    OF 1979-86 EXCLUSIVE (1985 HAS BEEN ELIMINATED) NO TIME TREND
*/
IF YEAR = "1978" AND RR = "BM" THEN DO;
   GTMM2 = 9880000;
   GTMM3 = 2470000;
   GTMM4 = 240000;
END;

    /*    DH'S FUELPRCE AND FUELGAL ARE CREATED USING AAR FUEL EAST */
    /*    REGION INDICES ON 1985 REPORTED VALUES AND SCHEDULE 410   */
    /*    FUEL COST VALUES FOR 1986 AND 1987.                       */
IF YEAR = "1986" AND RR = "DH" THEN DO;
   FUELGAL = 11134065;
   FUELPRCE = .56152;
END;
IF YEAR = "1987" AND RR = "DH" THEN DO;
   FUELGAL = 12992865;
   FUELPRCE = .58586;
END;

    /*    FWD'S PEQUIP VALUES ARE QUESTIONABLE SO BN'S VALUES ARE    */
    /*    SUBSTITUTED.
IF YEAR = "1978" AND RR = "FWD" THEN PEQUIP = 6459.7;
IF YEAR = "1979" AND RR = "FWD" THEN PEQUIP = 8524.3;
IF YEAR = "1980" AND RR = "FWD" THEN PEQUIP = 7804.0;
IF YEAR = "1981" AND RR = "FWD" THEN PEQUIP = 11348.4;

    /*    BN'S GTMM4 VALUES ARE QUESTIONABLE IN TERMS OF FACTORS OF 10 */
IF YEAR = "1988" AND RR = "BN" THEN GTMM4 = GTMM4*10;
IF YEAR = "1989" AND RR = "BN" THEN GTMM4 = GTMM4/10;
```

```
   *-------------------------------------------------------------*
   |  LOCATION:          UPFIX SAS A                             |
   *-------------------------------------------------------------*;
/*    THIS IS A DATA UPDATE FILE.   1 OCT 1991.  F. DOOLEY, D.BENSON  */
/*    IT MUST BE USED TO UPDATE THE Q1.LABOR, LABOR.BETTER78,         */
/*    AND LABOR.DEPREC FILES */


     /*   UP'S MT1,MT2,MT3,MT4,GTMM1,GTMM2,GTMM3,GTMM4,SPEED1,SPEED2, */
     /*   SPEED3,AND SPEED4 VALUES ARE MISSING IN THE OREGON  DATASET.*/
     /*   THIS CODE WILL ADD THESE VALUES TO THE OREGON DATASET.      */
     /*   THE YEAR EQUALS 1984.                                       */
IF YEAR = "1984" AND RR = "UP" THEN DO;
   MT1    = 3341;
   MT2    = 1749;
   MT3    = 1399;
   MT4    = 3380;
   GTMM1  = 35550000;
   GTMM2  = 12530000;
   GTMM3  = 2500000;
   GTMM4  = 500000;
   SPEED1= 60;
   SPEED2= 50;
   SPEED3= 30;
   SPEED4= 20;
END;

   *-------------------------------------------------------------*
   |  LOCATION:       MEANDAT3 SAS A                             |
   *-------------------------------------------------------------*;
IF RR='CS' OR RR='CNTP' OR RR='AGS' OR RR='KCS' OR RR='GTW' OR
  RR='FEC' THEN DELETE;


   *-------------------------------------------------------------*
   |  LOCATION:       ALHG SAS A                                 |
   *-------------------------------------------------------------*;
 /*  THIS PATCH CODE WILL ELIMINATE ALHG ABNORMALITIES IN THE
    1978-1982 BETTERMENT ACCOUNTING DATA SET.  THE CODE ASSIGNS VALUES
    TO OBSERVATIONS WHOSE DATA VALUES USED IN THE ALHG CALCULATION ARE
    0 OR INCORRECT.
       THIS PATCH SHOULD BE USED WHENEVER A SET STATEMENT ASSIGNS THE
    OLD 1978-1982 BETTERMENT DATA SET TO A DATA STEP.  ALTERNATIVELY,
    A NEW, UPDATED DATA SET MAY BE CREATED USING THIS CODE TO CORRECT
    FOR THE OLD BAD VALUES.
 */

IF YEAR = "1978" AND RR = "DTI" THEN RTONS = RTONS*1000;
IF YEAR = "1978" AND RR = "AGS" THEN RTM = 18420000*280.471;
IF YEAR = "1978" AND RR = "CGA" THEN RTM = 37005000*127.580;
IF YEAR = "1978" AND RR = "CNTP" THEN RTM = 32687000*230.065;
IF YEAR = "1978" AND RR = "SOU" THEN RTM = 116913000*316.859;
IF YEAR = "1979" AND RR = "AGS" THEN RTM = 19441000*276.179;
IF YEAR = "1979" AND RR = "CGA" THEN RTM = 38989000*131.453;
IF YEAR = "1979" AND RR = "CNTP" THEN RTM = 33141000*225.633;
```

```
IF YEAR = "1979" AND RR = "SOU" THEN RTM = 127019000*312.060;
ALHG = RTM/RTONS;
if alhg<1 then alhg=alhg*1000;


   *-------------------------------------------------------------*
   |  LOCATION:    LABOR1 SAS A                                  |
   *-------------------------------------------------------------*;

   /*  instructed by frank to delete the following two I believe   the
   data are questionable not only from him, but also denver, the aar
  and other studies */

if rr= "DMIR" and year= "1983" then delete;
if rr= "DMIR" and year= "1984" then delete;
if rr = "CCO" then delete;

   *-------------------------------------------------------------*
   | LOCATION:          WESMLABR SAS A                           |
   *-------------------------------------------------------------*;
IF YEAR <> "1981" THEN DO;
  LABRHRSC = LABRHRSC*1000;
  LABRHRSG = LABRHRSG*1000;
    IF YEAR > "1986" THEN DO;
       LABRCSTC = LABRCSTC*1000;
    END;
  LABRCSTG = LABRCSTG*1000;
END;

IF YEAR = "1987" AND RR = "BM" THEN LABRCSTC = 24473000;
IF YEAR = "1987" AND RR = "DH" THEN LABRCSTC = 24891000;

IF YEAR = "1983" AND RR = "AGS" THEN DO;
     LABRCSTC = 30852000;
     SYSPART  = 30852000/465129000;
     LABRCSTG = 515637000*SYSPART;
     LABRHRSC = 31865000*SYSPART;
     LABRHRSG = 38845000*SYSPART;
  END;
IF YEAR = "1983" AND RR = "CGA" THEN DO;
     LABRCSTC = 56419000;
     SYSPART  = 56419000/465129000;
     LABRCSTG = 515637000*SYSPART;
     LABRHRSC = 31865000*SYSPART;
     LABRHRSG = 38845000*SYSPART;
  END;
IF YEAR = "1983" AND RR = "CNTP" THEN DO;
     LABRCSTC = 45175000;
     SYSPART  = 45175000/465129000;
     LABRCSTG = 515637000*SYSPART;
     LABRHRSC = 31865000*SYSPART;
     LABRHRSG = 38845000*SYSPART;
  END;
```

```
IF YEAR = "1984" AND RR = "AGS" THEN DO;
     LABRCSTC = 40821000;
     SYSPART  = 40821000/552834000;
     LABRCSTG = 573607000*SYSPART;
     LABRHRSC = 33742000*SYSPART;
     LABRHRSG = 40880000*SYSPART;
  END;


IF YEAR = "1984" AND RR = "CGA" THEN DO;
     LABRCSTC = 71767000;
     SYSPART  = 71767000/552834000;
     LABRCSTG = 573607000*SYSPART;
     LABRHRSC = 33742000*SYSPART;
     LABRHRSG = 40880000*SYSPART;
  END;
IF YEAR = "1984" AND RR = "CNTP" THEN DO;
     LABRCSTC = 50076000;
     SYSPART  = 50076000/552834000;
     LABRCSTG = 573607000*SYSPART;
     LABRHRSC = 33742000*SYSPART;
     LABRHRSG = 40880000*SYSPART;
  END;
PLABORC = LABRCSTC/LABRHRSC;
PLABORG = LABRCSTG/LABRHRSG;

IF YEAR = "1983" AND RR = "AGS" THEN DO;
    PLABORC = 15.4309;
    PLABORG = 13.2742;
  END;
IF YEAR = "1983" AND RR = "CGA" THEN DO;
    PLABORC = 15.4309;
    PLABORG = 13.2742;
  END;
IF YEAR = "1983" AND RR = "CNTP" THEN DO;
    PLABORC = 15.4309;
    PLABORG = 13.2742;
  END;
IF YEAR = "1984" AND RR = "AGS" THEN DO;
    PLABORC = 16.3790;
    PLABORG = 14.0315;
  END;
IF YEAR = "1984" AND RR = "CGA" THEN DO;
    PLABORC = 16.3790;
    PLABORG = 14.0315;
  END;
IF YEAR = "1984" AND RR = "CNTP" THEN DO;
    PLABORC = 16.3790;
    PLABORG = 14.0315;
  END;
```

```
   *-------------------------------------------------------------*
   | LOCATION:          WESMERGD SAS A                           |
   *-------------------------------------------------------------*;
DATA A83; SET LABOR.N83D;
  IF RR = "NS" AND YEAR = "1983" THEN DELETE;

DATA A84; SET LABOR.N84D;
  IF RR = "NS" AND YEAR = "1984" THEN DELETE;

DATA A85; SET LABOR.N85D;
  IF RR = "NS" AND YEAR = "1985" THEN DELETE;
IF RR = "AGS" AND YEAR = "1983" THEN CLOR = 228573;
IF RR = "AGS" AND YEAR = "1984" THEN CLOR = 208687;
IF RR = "CGA" AND YEAR = "1983" THEN CLOR = 440232;
IF RR = "CGA" AND YEAR = "1984" THEN CLOR = 400612;
IF RR = "CNTP" AND YEAR = "1983" THEN CLOR = 434359;
IF RR = "CNTP" AND YEAR = "1984" THEN CLOR = 403954;

   *-------------------------------------------------------------*
   | LOCATION:          WESMERGB SAS A                           |
   *-------------------------------------------------------------*;
DATA A83; SET LABOR.N83B;
  IF RR = "NS" AND YEAR = "1983" THEN DELETE;

DATA A84; SET LABOR.N84B;
  IF RR = "NS" AND YEAR = "1984" THEN DELETE;

DATA A85; SET LABOR.N85B;
  IF RR = "NS" AND YEAR = "1985" THEN DELETE;

IF CM = 0 THEN  CM = UTCM + WTCM + TTCM;
UTF = UTCM/CM;
WTF = WTCM/CM;
IF RR = "AGS" AND YEAR = "1983" THEN CLOR = 228573;
IF RR = "AGS" AND YEAR = "1984" THEN CLOR = 208687;
IF RR = "CGA" AND YEAR = "1983" THEN CLOR = 440232;
IF RR = "CGA" AND YEAR = "1984" THEN CLOR = 400612;
IF RR = "CNTP" AND YEAR = "1983" THEN CLOR = 434359;
IF RR = "CNTP" AND YEAR = "1984" THEN CLOR = 403954;

   *-------------------------------------------------------------*
   | LOCATION:          WESMALL SAS A                            |
   *-------------------------------------------------------------*;
          /*  SUSPECT DATA VALUES S720,ETC.  */
 IF YEAR = "1988" AND RR = "BM" THEN DELETE;
 IF YEAR = "1987" AND RR = "BM" THEN DELETE;

          /*  MERGE 1983-87 BETTERMENT DATA SET AND FUEL SET  */
DATA LABOR.BFINAL;
  MERGE BS700L NFUELB;  BY RR YEAR;
          /*  SUSPECT DATA VALUES S720,ETC.  */
IF YEAR = "1988" AND RR = "BM" THEN DELETE;
IF YEAR = "1987" AND RR = "BM" THEN DELETE;
IF YEAR = "1985" AND RR = "BM" THEN DELETE;
IF YEAR = "1984" AND RR = "BLE" THEN DELETE;
IF RR = "PLE" THEN DELETE;
```

```
            /*  MERGE 1983-87 BETTERMENT DATA SET AND FUEL SET  */
DATA LABOR.DFINAL;
  MERGE DS700L NFUELD;  BY RR YEAR;
            /*  SUSPECT DATA VALUES S720,ETC.  */
IF YEAR = "1988" AND RR = "BM" THEN DELETE;
IF YEAR = "1987" AND RR = "BM" THEN DELETE;
IF YEAR = "1985" AND RR = "BM" THEN DELETE;
IF YEAR = "1984" AND RR = "BLE" THEN DELETE;
IF RR = "PLE" THEN DELETE;
PROC SORT; BY YEAR;


*F YEAR = "1987" AND RR = "BM" THEN DO;
*   FUEL = 4081000;
*   TOTLFUEL = 4081000;
* END;
            /*  CREATE MOR FOR ZEROED RR. .937 = AVERAGE % MOR OF MTALL
*/
MTALL = MT1 + MT2 + MT3 + MT4;
IF MOR = 0 THEN MOR = .937*MTALL;

IF YEAR = "1983" AND RR = "UP" THEN FUELPRCE = 204458000/FUELGAL;
IF YEAR = "1984" AND RR = "AGS" THEN FUELPRCE = 11310000/FUELGAL;
IF YEAR = "1984" AND RR = "CGA" THEN FUELPRCE = 12536000/FUELGAL;
IF YEAR = "1984" AND RR = "UP" THEN FUELPRCE = 222092000/FUELGAL;
IF YEAR = "1985" AND RR = "UP" THEN FUELPRCE = 201880000/FUELGAL;
IF YEAR = "1987" AND RR = "DH" THEN DO;
    FUELPRCE = .585860;
    FUELGAL = 12992865;
  END;
IF YEAR = "1987" AND RR = "BM" THEN DO;
    FUELPRCE = .555770;
    FUELGAL = 7342966;
  END;

IF CARLOADS = 0 THEN ALHD = 0;
  ELSE ALHD = (FCMLRR + FCMLPR)/CARLOADS;


IF YEAR = "1978" THEN DO;
     EASTAAR = 105.7;
     WESTAAR = 106.4;
  END;
ELSE IF YEAR = "1979" THEN DO;
     EASTAAR = 116.2;
     WESTAAR = 116.2;
  END;
ELSE IF YEAR = "1980" THEN DO;
     EASTAAR = 131.6;
     WESTAAR = 136.2;
  END;
ELSE IF YEAR = "1981" THEN DO;
     EASTAAR = 139.9;
     WESTAAR = 148.5;
  END;
```

```
ELSE IF YEAR = "1982" THEN DO;
     EASTAAR = 141.0;
     WESTAAR = 149.5;
  END;
ELSE IF YEAR = "1983" THEN DO;
     EASTAAR = 135.7;
     WESTAAR = 142.4;
  END;
ELSE IF YEAR = "1984" THEN DO;
     EASTAAR = 134.6;
     WESTAAR = 142.1;
  END;
ELSE IF YEAR = "1985" THEN DO;
     EASTAAR = 139.1;
     WESTAAR = 147.4;
  END;
ELSE IF YEAR = "1986" THEN DO;
     EASTAAR = 139.5;
     WESTAAR = 143.5;
  END;
ELSE IF YEAR = "1987" THEN DO;
     EASTAAR = 132.3;
     WESTAAR = 136.1;
  END;
ELSE IF YEAR = "1988" THEN DO;
     EASTAAR = 139.3;
     WESTAAR = 141.2;
  END;
ELSE IF YEAR = "1989" THEN DO;
     EASTAAR = 147.1;
     WESTAAR = 148.8;
  END;

IF YEAR < 1986 THEN DO;
    FUEL = FUEL*1000;
    TOTLFUEL = TOTLFUEL*1000;
  END;
*   OPERCOST = OPERCOST*1000;
*   LABOR = LABOR*1000;
*   MOW = MOW*1000;
*   EQUIP = EQUIP*1000;

IF YEAR = "1983" AND RR = "UP" THEN FUELPRCE = 204458000/FUELGAL;
IF YEAR = "1984" AND RR = "AGS" THEN FUELPRCE = 11310000/FUELGAL;
IF YEAR = "1984" AND RR = "CGA" THEN FUELPRCE = 12536000/FUELGAL;
IF YEAR = "1984" AND RR = "UP" THEN FUELPRCE = 222092000/FUELGAL;
IF YEAR = "1985" AND RR = "UP" THEN FUELPRCE = 201880000/FUELGAL;

CARLOADS = CLOR;
IF CARLOADS = 0 THEN ALHD = 0;
  ELSE ALHD = (FCMLRR + FCMLPR)/CARLOADS;
```

```
   *-------------------------------------------------------------*
   | LOCATION:          WESM700 SAS A                            |
   *-------------------------------------------------------------*;
  IF YEAR > '1984' AND RRCODE = 117000 THEN RR = "NS";
  IF YEAR > '1985' AND RRCODE = 125600 THEN RR = "CSX";
  IF RR = "PLE" THEN DELETE;
  IF YEAR = '1984' AND RR = "BLE" THEN DELETE;
  IF YEAR = '1985' AND RR = "BM" THEN DELETE;
  IF YEAR > '1986' AND RR = "BM" THEN DELETE;


   *-------------------------------------------------------------*
   | LOCATION:          WESFINAL SAS A                           |
   *-------------------------------------------------------------*;

DATA LABOR1.BETTER83;
  SET BETTERFX;
  IF RR = "GTW" AND YEAR = "1987" THEN GTMM4 = 440000;
  IF RR = "FEC" AND YEAR = "1987" THEN GTMM3 = 0;
  IF RR = "FEC" AND YEAR = "1987" THEN MT3 = 0;
  IF RR = "FEC" AND YEAR = "1987" THEN GTMM4 = 888000;
  IF RR = "FEC" AND YEAR = "1987" THEN MT3 = 96;
  IF RR = "BN" AND YEAR = "1986" THEN SPEED1 = 54.1;
  IF RR = "BN" AND YEAR = "1987" THEN SPEED1 = 54.1;
  IF RR = "DMIR" AND YEAR = "1982" THEN SPEED1 = 20.0;
  IF RR = "FEC" AND YEAR = "1989" THEN SPEED1 = 53;
  IF RR = "SP" AND YEAR = "1987" THEN SPEED2 = 40;
  IF RR = "ATSF" AND YEAR = "1980" THEN GTM = 186322746000;
DATA LABOR1.DEPREC;
  SET DEPRECFX;
  IF RR = "GTW" AND YEAR = "1987" THEN GTMM4 = 440000;
  IF RR = "FEC" AND YEAR = "1987" THEN GTMM3 = 0;
  IF RR = "FEC" AND YEAR = "1987" THEN MT3 = 0;
  IF RR = "FEC" AND YEAR = "1987" THEN GTMM4 = 888000;
  IF RR = "FEC" AND YEAR = "1987" THEN MT3 = 96;
  IF RR = "BN" AND YEAR = "1986" THEN SPEED1 = 54.1;
  IF RR = "BN" AND YEAR = "1987" THEN SPEED1 = 54.1;
  IF RR = "DMIR" AND YEAR = "1982" THEN SPEED1 = 20.0;
  IF RR = "FEC" AND YEAR = "1989" THEN SPEED1 = 53;
  IF RR = "SP" AND YEAR = "1987" THEN SPEED2 = 40;
  IF RR = "ATSF" AND YEAR = "1980" THEN GTM = 186322746000;

   *-------------------------------------------------------------*
   | LOCATION:          WES7720  SAS A                           |
   *-------------------------------------------------------------*;
DATA  LABOR78.NALLS720;
  SET  A78 A79 A80 A81 A82;
*F YEAR = "1983" AND RR = "SP" THEN SPEED3 = 19.50;
*F YEAR = "1983" AND RR = "SP" THEN SPEED4 = 11.60;
*F YEAR = "1983" AND RR = "SSW" THEN SPEED3 = 24.30;
*F YEAR = "1983" AND RR = "SSW" THEN SPEED4 = 33.00;
*F YEAR = "1984" AND RR = "SSW" THEN SPEED4 = 33.00;
*F YEAR = "1985" AND RR = "SSW" THEN SPEED4 = 33.00;
*F YEAR = "1987" AND RR = "SSW" THEN SPEED4 = 33.00;
*F YEAR = "1988" AND RR = "SSW" THEN SPEED4 = 33.00;
*F YEAR = "1989" AND RR = "SSW" THEN SPEED4 = 33.00;
```

```
*F YEAR = "1985" AND RR = "BN" THEN SPEED1 = 54.00;
*F YEAR = "1985" AND RR = "BN" THEN SPEED2 = 50.80;
*F YEAR = "1985" AND RR = "BN" THEN SPEED3 = 37.10;
*F YEAR = "1985" AND RR = "BN" THEN SPEED4 = 25.70;
*F YEAR = "1986" AND RR = "BN" THEN SPEED1 = 30.35;
*F YEAR = "1986" AND RR = "BN" THEN SPEED2 = 51.00;
*F YEAR = "1986" AND RR = "BN" THEN SPEED3 = 37.40;
*F YEAR = "1986" AND RR = "BN" THEN SPEED4 = 27.40;
*F YEAR = "1987" AND RR = "SP" THEN SPEED4 = 22.00;
*F YEAR = "1988" AND RR = "SSW" THEN SPEED1 = 47.60;
*F YEAR = "1988" AND RR = "SSW" THEN SPEED3 = 20.00;
*F YEAR = "1988" AND RR = "SP" THEN SPEED3 = 30.00;
*F YEAR = "1988" AND RR = "SP" THEN SPEED4 = 22.00;
*F YEAR = "1989" AND RR = "FEC" THEN SPEED1 = 20.00;
*F YEAR = "1989" AND RR = "FEC" THEN SPEED4 = 33.47;
*F YEAR = "1989" AND RR = "SP" THEN SPEED3 = 30.00;
*F YEAR = "1989" AND RR = "SP" THEN SPEED4 = 22.00;
*F YEAR = "1989" AND RR = "SSW" THEN SPEED3 = 20.00;
```

DATA SET RAILROADS SORTED BY YEAR AND RAILROAD

RAILROAD	RRCODE	YEAR
AGS	420100	1978
AGS	420100	1979
AGS	420100	1980
AGS	420100	1981
AGS	420100	1982
ATSF	130100	1978
ATSF	130100	1979
ATSF	130100	1980
ATSF	130100	1981
ATSF	130100	1982
ATSF	130100	1983
ATSF	130100	1984
ATSF	130100	1985
ATSF	130100	1986
ATSF	130100	1987
ATSF	130100	1988
ATSF	130100	1989
BLE	411300	1978
BLE	411300	1979
BLE	411300	1980
BLE	411300	1981
BLE	411300	1982
BLE	411300	1983
BM	111600	1978
BM	111600	1979
BM	111600	1980
BM	111600	1981
BM	111600	1982
BM	111600	1983
BM	111600	1984
BM	111600	1986
BN	530500	1978
BN	530500	1979
BN	630500	1980
BN	630500	1981
BN	130500	1982
BN	130500	1983
BN	130500	1984
BN	130500	1985
BN	130500	1986
BN	130500	1987
BN	130500	1988
BN	130500	1989
BO	610700	1978

BO	610700	1979
BO	610700	1980
BO	610700	1981
BO	610700	1982
BO	710700	1983
BO	710700	1984
BO	710700	1985

RAILROAD	**RRCODE**	**YEAR**
CGA	421100	1978
CGA	421100	1979
CGA	421100	1980
CGA	421100	1981
CGA	421100	1982
CNTP	421600	1978
CNTP	421600	1979
CNTP	421600	1980
CNTP	421600	1981
CNTP	421600	1982
CNW	130900	1978
CNW	130900	1979
CNW	130900	1980
CNW	130900	1981
CNW	130900	1982
CNW	130900	1983
CNW	130900	1984
CNW	130900	1985
CNW	130900	1986
CNW	130900	1987
CNW	130900	1988
CNW	130900	1989
CO	712800	1978
CO	712800	1979
CO	712800	1980
CO	712800	1981
CO	712800	1982
CO	712800	1983
CO	712800	1984
CO	712800	1985
CR	113300	1978
CR	113300	1979
CR	113300	1980
CR	113300	1981
CR	113300	1982
CR	113300	1983
CR	113300	1984
CR	113300	1985
CR	113300	1986

CR	113300	1987
CR	113300	1988
CR	113300	1989
CS	532100	1978
CS	532100	1979
CS	532100	1980
CS	532100	1981
CSX	125600	1986
CSX	125600	1987
CSX	125600	1988
CSX	125600	1989

RAILROAD	RRCODE	YEAR
DH	113400	1978
DH	113400	1979
DH	113400	1980
DH	113400	1981
DH	113400	1982
DH	113400	1983
DH	113400	1984
DH	113400	1985
DH	113400	1986
DH	113400	1987
DMIR	432900	1978
DMIR	432900	1979
DMIR	432900	1980
DMIR	432900	1981
DMIR	432900	1982
DRGW	132500	1978
DRGW	132500	1979
DRGW	132500	1980
DRGW	132500	1981
DRGW	132500	1982
DRGW	132500	1983
DRGW	132500	1984
DRGW	132500	1985
DRGW	132500	1986
DRGW	132500	1987
DRGW	132500	1988
DRGW	132500	1989
DTI	514000	1978
DTI	514000	1979
DTI	514000	1980
DTI	514000	1981
DTI	514000	1982
DTI	514000	1983
FEC	122600	1978
FEC	122600	1979

FEC	122600	1980
FEC	122600	1981
FEC	122600	1982
FEC	122600	1983
FEC	122600	1984
FEC	122600	1985
FEC	122600	1986
FEC	122600	1987
FEC	122600	1988
FEC	122600	1989
FWD	533700	1978
FWD	533700	1979
FWD	533700	1980
FWD	533700	1981

RAILROAD	RRCODE	YEAR
GTW	614900	1978
GTW	614900	1979
GTW	614900	1980
GTW	614900	1981
GTW	614900	1982
GTW	614900	1983
GTW	114900	1984
GTW	114900	1985
GTW	114900	1986
GTW	114900	1987
GTW	114900	1988
GTW	114900	1989
ICG	124100	1978
ICG	124100	1979
ICG	124100	1980
ICG	124100	1981
ICG	124100	1982
ICG	124100	1983
ICG	124100	1984
ICG	124100	1985
ICG	124100	1986
ICG	124100	1987
ICG	124100	1988
ICG	124100	1989
KCS	134500	1978
KCS	134500	1979
KCS	134500	1980
KCS	134500	1981
KCS	134500	1982
KCS	134500	1983
KCS	134500	1984
KCS	134500	1985

KCS	134500	1986
KCS	134500	1987
KCS	134500	1988
KCS	134500	1989
LN	524600	1978
LN	524600	1979
LN	524600	1980
LN	524600	1981
LN	524600	1982
MILW	431300	1978
MILW	431300	1979
MILW	431300	1980
MILW	431300	1981
MILW	431300	1982
MILW	431300	1983
MILW	431300	1984

RAILROAD	RRCODE	YEAR
MKT	435300	1978
MKT	435300	1979
MKT	435300	1980
MKT	435300	1981
MKT	435300	1982
MKT	435300	1983
MKT	435300	1984
MKT	435300	1985
MKT	435300	1986
MKT	435300	1987
MP	735700	1978
MP	735700	1979
MP	735700	1980
MP	735700	1981
MP	735700	1982
MP	735700	1983
MP	735700	1984
MP	735700	1985
NS	117000	1985
NS	117000	1986
NS	117000	1987
NS	117000	1988
NS	117000	1989
NW	717000	1978
NW	717000	1979
NW	717000	1980
NW	717000	1981
NW	717000	1982
NW	717000	1983
NW	717000	1984

SCL	625600	1978
SCL	625600	1979
SCL	625600	1980
SCL	625600	1981
SCL	625600	1982
SCL	725600	1983
SCL	725600	1984
SCL	725600	1985
SLSF	536900	1978
SLSF	536900	1979
SOO	537700	1978
SOO	537700	1979
SOO	537700	1980
SOO	537700	1981
SOO	537700	1982
SOO	537700	1983
SOO	537700	1984
SOO	137700	1985
SOO	137700	1986
SOO	137700	1987
SOO	137700	1988
SOO	137700	1989

RAILROAD	RRCODE	YEAR
SOU	526100	1978
SOU	526100	1979
SOU	526100	1980
SOU	526100	1981
SOU	526100	1982
SOU	726100	1983
SOU	726100	1984
SP	138100	1978
SP	138100	1979
SP	138100	1980
SP	138100	1981
SP	138100	1982
SP	138100	1983
SP	138100	1984
SP	138100	1985
SP	138100	1986
SP	138100	1987
SP	138100	1988
SP	138100	1989
SSW	137300	1978
SSW	137300	1979
SSW	137300	1980
SSW	137300	1981
SSW	137300	1982

SSW	137300	1983
SSW	137300	1984
SSW	137300	1985
SSW	137300	1986
SSW	137300	1987
SSW	137300	1988
SSW	137300	1989
UP	739300	1978
UP	739300	1979
UP	739300	1980
UP	739300	1981
UP	739300	1982
UP	739300	1983
UP	739300	1984
UP	739300	1985
UP	839300	1986
UP	839300	1987
UP	139300	1988
UP	139300	1989
WM	519400	1978
WM	519400	1979
WM	519400	1980
WM	519400	1981

RAILROAD	**RRCODE**	**YEAR**
WP	739700	1978
WP	739700	1979
WP	739700	1980
WP	739700	1981
WP	739700	1982
WP	739700	1983
WP	739700	1984
WP	739700	1985