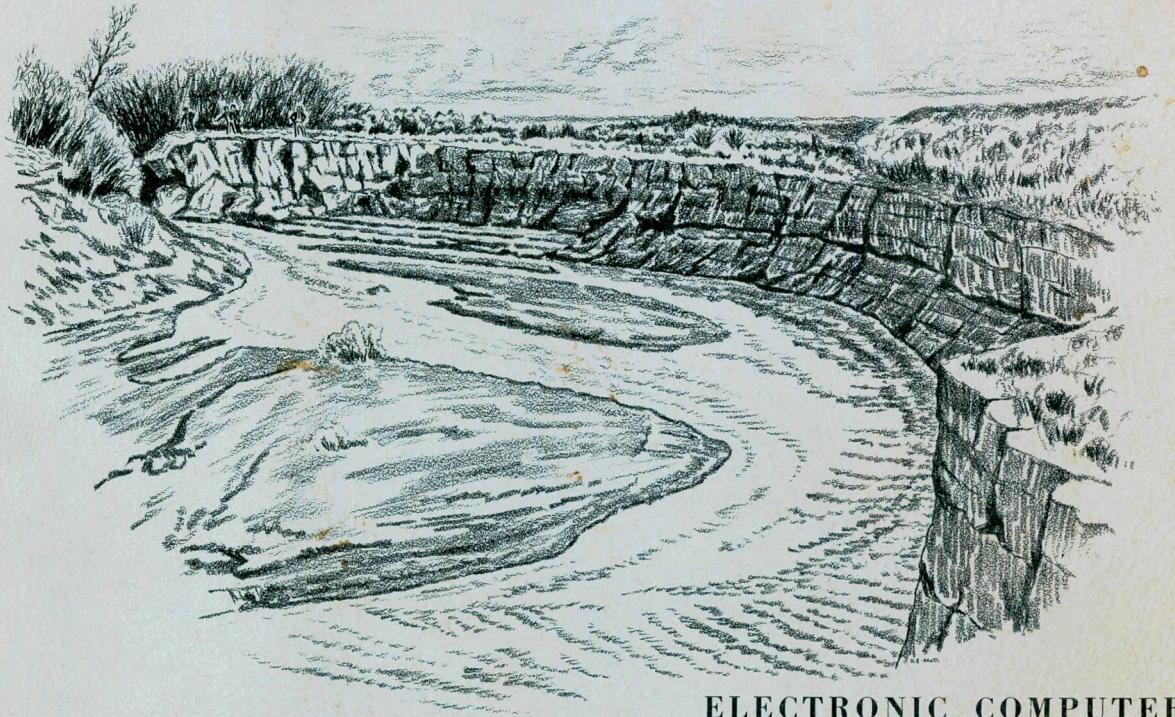
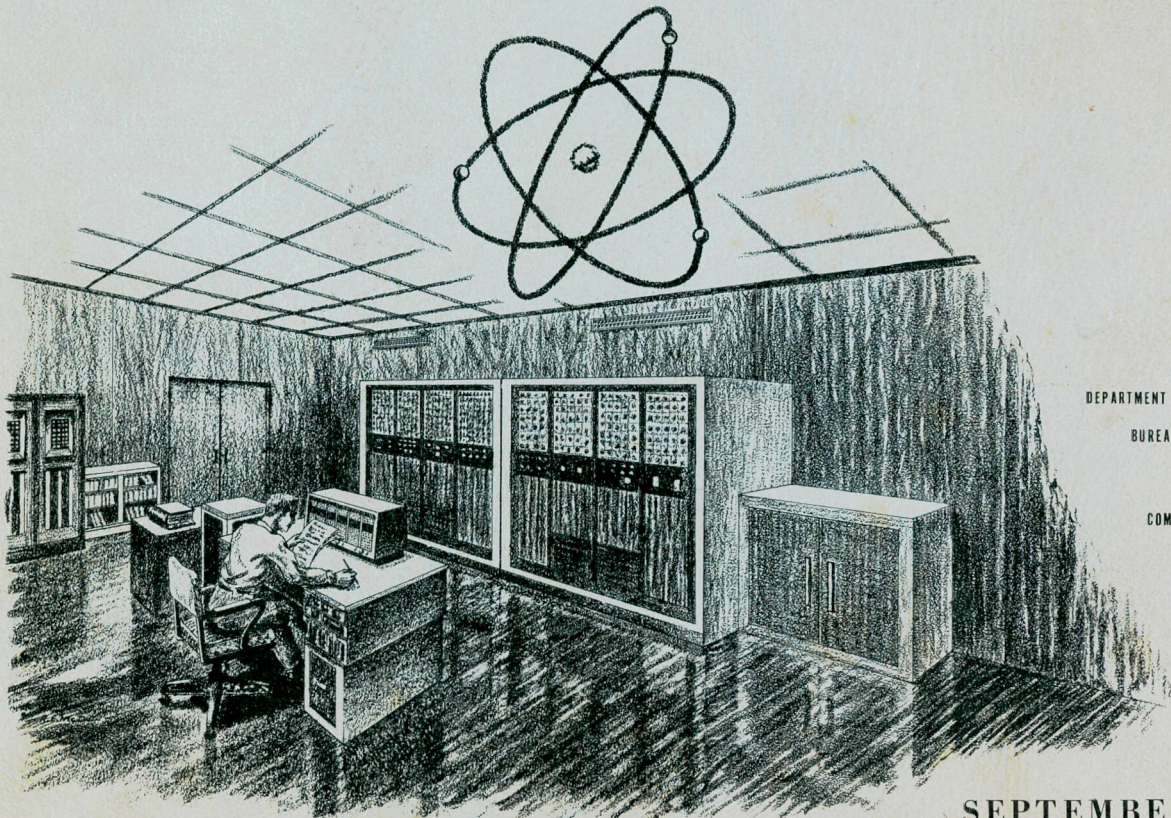


*Auth. Michelena*

# DETERMINATION OF TOTAL SEDIMENT LOAD IN A STREAM BY THE MODIFIED EINSTEIN PROCEDURE



ELECTRONIC COMPUTER  
PROGRAM DESCRIPTION No. HY-100



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION

COMMISSIONER'S OFFICE  
DENVER, COLORADO

SEPTEMBER 1959

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TOTAL SEDIMENT LOAD IN A STREAM  
BY THE MODIFIED EINSTEIN PROCEDURE

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ELECTRONIC DATA PROCESSING SECTION  
GENERAL ENGINEERING BRANCH  
COMMISSIONER'S OFFICE  
DENVER, COLORADO  
SEPTEMBER 1959

PROGRAM NO. HY-100

DETERMINATION OF  
TOTAL SEDIMENT LOAD IN A STREAM  
BY THE MODIFIED EINSTEIN PROCEDURE

General Description

With the development of the Modified Einstein Procedure<sup>1\*</sup> and publication of a step method for computing total sediment load by this procedure,<sup>2</sup> it was decided to investigate the possibilities of programming these calculations for an electronic digital computer.

In collaboration with Corps of Engineers' personnel at Omaha, Nebraska, preliminary computer flow charts of the Modified Procedure were developed. Final flow charts and coding of the program were completed by the Bureau of Reclamation. Details of the program, mathematics involved, procedures used, flow charts, and a listing of the program follow.

The program is a general one which can be used to calculate total sediment load for an alluvial stream transporting primarily a sand sediment load. A study has been made of the possible ranges of magnitude of input data and output results, and also of foreseeable changes which might be made in the fundamental computation procedures so that basic data for any alluvial stream carrying sand can be used to determine total sediment load.

In consideration of the large number of program steps necessary to compute the total sediment load, and also the desirability

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\*Numbers refer to publications in Bibliography.

of having a means of modifying certain computed values, the decision was made to break the program into two parts, which shall be referred to herein as Phases 1 and 2.

List of Symbols

Basically, the symbols defined in the Appendix of Technical Bulletin No. 1026, September 1950, United States Department of Agriculture,<sup>3</sup> and on pages 8, 9, and 10 of "Step Method for Computing Total Sediment Load"<sup>2</sup> have been used. Because of some differences which exist and to avoid many repetitious references, the symbols used are listed below:

A = Stream cross-sectional area, in square feet.

A\* = A constant, defined as  $\frac{1}{0.023} = 43.478261-$ .

A' = Distance of lower limit of integration above the sampling depth, as defined by the type sampler used, divided by  $d_s$ , or  $A' = \frac{d_n}{d_s}$ .

A'' = Distance of the lower limit of integration above streambed, divided by  $d$ , or  $A'' = \frac{2D}{d}$ .

$$B = \left( \frac{A'}{A''} \right) e^z \ln \left( \frac{\frac{A''}{A'} - A''}{1 - A''} \right)$$

B\* = A constant, defined as  $\frac{1}{7} = 0.14285714+$ .

C = Euler's constant = 0.5772157....

C<sub>s</sub> = Conc. = Concentration of suspended sediments, in parts per million by weight.

$D_1, D_2, \dots, D_{20}$  = Geometric mean diameter of a particle size range, in millimeters.

$D_{35}$  = Particle size at which 35 percent of the bed material by weight is finer, in millimeters.

$D_{65} = k_s$  = Particle size at which 65 percent of the bed material by weight is finer, in millimeters.

$d$  = Mean depth of cross section, obtained by dividing the area by the width ( $d$  assumed equal to  $R$  in wide shallow channels), in feet.

$d_n$  = The distance between the bottom of the sampled zone and the streambed, as defined by the sampler used, in feet.

$d_s$  = The average of the total depths recorded at the sampling verticals, in feet.

$g$  = Acceleration of gravity, 32.2 feet per second per second.

$i_{b_1}, i_{b_2}, \dots, i_{b_{20}}$  = Fraction of bed material in a given particle size range corresponding to  $D_1, D_2, \dots, D_{20}$ .

$i_{b_T}$  = Total of all  $i_b$  fractions in bed material.

$i'_{s_1}, i'_{s_2}, \dots, i'_{s_{20}}$  = Fraction of suspended material in a given particle size range corresponding to  $D_1, D_2, \dots, D_{20}$ .

$i'_{s_T}$  = Total of all  $i'_s$  fractions in suspended material.

$I'_1$  = Value of the integral defined as follows:

$$I'_1 = 0.216 \frac{A'^{z-1}}{(1 - A')^z} \int_{A'}^1 \left( \frac{1 - y}{y} \right)^z dy.$$

$I''_1$  = Value of the integral defined as follows:

$$I''_1 = 0.216 \frac{A''^{z-1}}{(1 - A'')^z} \int_{A''}^1 \left( \frac{1 - y}{y} \right)^z dy.$$

$I'_2$  = Value of the integral defined as follows:

$$I'_2 = 0.216 \frac{A'^{z-1}}{(1 - A')^z} \int_{A'}^1 \left( \frac{1 - y}{y} \right)^z \ln y dy.$$

$I''_2$  = Value of the integral defined as follows:

$$I''_2 = 0.216 \frac{A''^{z-1}}{(1 - A'')^z} \int_{A''}^1 \left( \frac{1 - y}{y} \right)^z \ln y dy.$$

$i_b q_b$  = Sediment discharge through the bed layer of particles of a size range, in pounds per second per foot of width.

$i_B Q_B$  = Sediment discharge through the bed layer of particles of a size range, in tons per day.

$L_{sz}$  = Total load in sampled zone, in tons per day.

$P$  = Value defined as follows:

$$P = \ln \left( \frac{30.2(d)(x)}{k_s} \right).$$

$p$  = Value of bedload equation expressing the probability of a grain to be eroded.

- (%q) = Percentage of total flow sampled.
- Q = Water discharge, in cubic feet per second.
- $Q'_S$  = Sediment discharge in sampling zone of a size range,  
in tons per day.
- $Q_{sm}$  = Sediment discharge measured by sampling, in tons per day.
- R = Hydraulic radius, in feet.
- $r_o$  = Quantity defined as  $r_o = \frac{Q'_S}{i_B Q_B}$ .
- $r_1, r_2, \dots, r_n$  = Quantity defined as:  $r_1 = B(\text{PI}'_1 + \text{I}'_2)$   
(Subscripts indicate order of refinement  
of r value).
- $(r_o)_1, (r_o)_2, \dots, (r_o)_n$  = Quantity defined as:  $(r_o)_1 = B(\text{PI}'_1 + \text{I}'_2)$   
which is calculated after  $(Z_o)_1$  is  
computed. Subscripts indicate order  
of refinement of  $(r_o)$  value.
- $(r_o)_f$  =  $(r_o)_n$ , or final value for  $(r_o)$ .
- S = Slope of energy gradient.
- T = Water temperature, in degrees Fahrenheit.
- $\bar{u}$  = Average velocity of flow, in feet per second.
- $u'_*$  = Shear velocity, equal to  $\sqrt{RSg}$ , in feet per second.
- $V_s$  = Fall velocity of the geometric mean diameter of a  
sediment particle size range, in feet per second.
- w = Width of stream channel, in feet.
- x = Dimensionless parameter.
- y = Distance above the streambed, in feet.

$Z_1, Z_2, \dots, Z_n$  = Exponent of suspended distribution. Subscripts indicate order of refinement of  $Z$  value.

$(Z_0)_1, (Z_0)_2, \dots, (Z_0)_n$  = Refined value for  $Z$  defined as:

$$(Z_0)_1 = Z_2 - (Z_2 - Z_1) \left( \frac{\ln r_2 - \ln r_0}{\ln r_2 - \ln r_1} \right)$$

Subscripts indicate order of refinement of  $(Z_0)$  value.

$\alpha$  = Lower limit of integral in bedload equation.

$\beta$  = Upper limit of integral in bedload equation.

$\delta$  = Thickness of laminar sublayer.

$\Delta r$  = Change in value of  $r$  between two successive refinements.

$\Delta Z$  = Change in value of  $Z$  between two successive refinements.

$e$  = 2.71828  $\dots$ , base of natural logarithms.

$\frac{1}{\eta_0}$  = A constant, defined as 2.0.

$\nu$  = Kinematic viscosity.

$\pi$  = 3.14159265  $\dots$ .

$\phi$  = Intensity of bedload transport.

$\psi_A$  =  $1.65 \left( \frac{D_{35}}{RS} \right)$ . Function of correlating effect of flow with intensity of sediment transport.

$\psi_B$  =  $0.66 \left( \frac{D}{RS} \right)$ . Function for correlating effect of flow with intensity of sediment transport.

$\Psi(Z)$  = Digamma function.

## Mathematical Relationships--Phase 1

In order to familiarize the reader with the mathematical calculations performed in the course of Phase 1 of the program, the various equations and processes used will be listed here in the order in which they are encountered by the computer. In some instances, the equations given here may be in a form different from that given in the reference material. In the form shown, they are more workable with the computer.

Since certain data are furnished in millimeter units and others in feet, it is necessary to convert the following values to feet: all values of  $D$  including  $D_{35}$  and  $D_{65}$ .

To insure that all values of  $i_b$  and  $i'_s$  are entered, a check is made against the sum of these values and  $i_{bT}$  or  $i'_{sT}$ .

The viscosity is determined by the following equation:

$$\nu = \frac{0.00001918}{0.4712 + 0.01435T + 0.0000682T^2} \quad (1)$$

Next,  $Q_{sm}$  is computed:

$$Q_{sm} = Q(C_s) 0.0027. \quad (2)$$

Using a knowledge of the subject and previous calculations which may have been made, an assumed value of  $x$  is selected. If no data are available, the program will accommodate the use of an average value for  $x$  of say 1.15. With this assumed value of  $x$ ,  $\sqrt{RS}$  and  $RS$  are calculated.

$$\sqrt{RS} = \frac{\bar{u}}{14.1712 \ln \left[ \frac{12.27(x)(d)}{k_s} \right]} \quad (3)$$

The following are then computed:

$$u_*^! = \sqrt{RSg}, \quad (4)$$

$$\delta = \frac{11.6v}{u_*^!}, \quad (5)$$

and

$$\frac{k_s}{\delta}.$$

A table of  $\frac{k_s}{\delta}$  values and corresponding values for  $x$  has been prepared and included in the program deck. By the computer table lookup operation, the  $x$  value corresponding to the above computed value for  $\frac{k_s}{\delta}$  is obtained. This value is compared with the assumed  $x$  value to determine if the absolute difference is 0.03 or less. Using the  $x$  value obtained from the table lookup operation, a looping operation is performed until the absolute difference of successive values is 0.03 or less. The practical limit of accuracy for the  $x$  value is considered to be 0.03.

Now compute:

$$P = \ln \left[ \frac{30.2(d)(x)}{k_s} \right], \quad (6)$$

$$A' = \frac{d_n}{d_s}, \quad (7)$$

$$(\%q) = 1 - A' \left[ \frac{P-1 + \ln A'}{P-1} \right], \quad (8)$$

and

$$L_{sz} = Q_{sm} (\%q). \quad (9)$$

By referring to the section on the Preparation of Input Data, the reader can learn how the particle diameters for which values of  $Z$  are to be computed in Phase 1 are selected. The remainder of the calculations in this section will be performed using one of the selected particle size ranges. The computations are, of course, repeated for all other particle size ranges selected.

Compute  $\psi_A$  and  $\psi_B$ :

$$\psi_A = 1.65 \left( \frac{D_{35}}{RS} \right), \quad (10)$$

and

$$\psi_B = 0.66 \left( \frac{D}{RS} \right). \quad (11)$$

Determine which of  $\psi_A$  or  $\psi_B$  is larger, and use the larger value in the following calculations of  $\alpha$  and  $\beta$ .

$$\alpha = -B_* \psi - \frac{1}{\eta_0}, \quad (12)$$

and

$$\beta = B_* \psi - \frac{1}{\eta_0} . \quad (13)$$

The bedload equation, as defined by Einstein,<sup>3</sup> is:

$$p = 1 - \frac{1}{\sqrt{\pi}} \int_{-B_* \psi - \frac{1}{\eta_0}}^{B_* \psi - \frac{1}{\eta_0}} e^{-t^2} dt . \quad (14)$$

The above relationship was evaluated using the following approximate expression given by Hastings,<sup>4</sup> page 186:

$$p = 1 - \frac{1}{2} [\pm f(\beta) \pm f(\alpha)] , \quad (15)$$

where

$$f(x) = 1 - \frac{1}{[1 + x (a_1 + x (a_2 + x (a_3 + x (a_4 + a_5 x)))]^8} . \quad (16)$$

In the above expression, the constants have the following values:

$$\begin{aligned} a_1 &= 0.14112821, \\ a_2 &= 0.08864027, \\ a_3 &= 0.02743349, \\ a_4 &= -0.00039446, \\ a_5 &= 0.00328975. \end{aligned}$$

Now compute  $\Phi$ :

$$\Phi = \frac{1}{A_*} \left( \frac{p}{1-p} \right) . \quad (17)$$

Compute the value of  $1200 D^{3/2}$ , which is written in the following form for computer use,  $1200 \epsilon^{1.5 \ln D}$ . It can be seen that for some values of  $D$  the exponent of  $\epsilon$  becomes quite large. In the subroutine included in the SOAP Interpretive Routine used in this program, the absolute value of the exponent must be less than 10.0. Therefore, in this program whenever  $\epsilon^x$  occurred, the following approximation given by Hastings,<sup>4</sup> page 184, was used:

$$\epsilon^{-x} = \frac{1}{[1 + x (a_1 + x (a_2 + x (a_3 + x (a_4 + x (a_5 + a_6 x)))))]^4} \cdot \quad (18)$$

In which

$$\begin{aligned} a_1 &= 0.24999868, \\ a_2 &= 0.031257583, \\ a_3 &= 0.0025913712, \\ a_4 &= 0.0001715620, \\ a_5 &= 0.0000054302, \\ a_6 &= 0.0000006906. \end{aligned}$$

Compute the following:

$$i_b q_b = \frac{\Phi}{2} (1200 D^{3/2}) i_b, \quad (19)$$

$$i_B Q_B = 43.2 w (i_b q_b), \quad (20)$$

$$Q'_s = i'_s (L_{sz}), \quad (21)$$

$$A'' = \frac{2D}{d}, \quad (22)$$

and

$$r_o = \frac{Q'_S}{i_B Q_B}. \quad (23)$$

Now assume  $Z_1 = 0.8$ , and compute B:

$$B = \left( \frac{A'}{A''} \right)^{\epsilon Z_1} \ln \left( \frac{\frac{A''}{A'} - A''}{1 - A''} \right) \quad (24)$$

The values of the following two integrals must now be determined:

$$I'_1 = 0.216 \frac{A'^{Z-1}}{(1 - A')^Z} \int_{A'}^1 \left( \frac{1-y}{y} \right)^Z dy \quad (25)$$

$$I'_2 = 0.216 \frac{A'^{Z-1}}{(1 - A')^Z} \int_{A'}^1 \left( \frac{1-y}{y} \right)^Z \ln y dy \quad (26)$$

The integrals for  $I'_1$  and  $I'_2$  above cannot be expressed in closed form in terms of elementary functions for most values of  $Z$ . Numerical integrating procedures, such as the use of Simpson's Rule with varying interval sizes, have been employed with electronic computers by other investigators to evaluate these integrals. These methods have, in general, proved to be time-consuming and somewhat

inefficient in nature. The storing of tabular values of the integrals and the use of a table lookup operation was considered for this program but was discarded in view of the large amount of storage which would be required for the tables.

Expressions involving infinite series have been obtained for the subject integrals by Mr. William T. Moody, Supervisor of the Photoelastic Analysis Unit, Technical Engineering Analysis Section, Bureau of Reclamation. These relationships, summarized in Figures 1 and 2, were used in the present program to evaluate the integrals each time a value was required. Sufficient terms of the infinite series were used to give the desired accuracy in the results for values of  $Z$  up to and including  $Z = 5.0$ . It will be noted from the program listing that for integral values of  $Z$  greater than 1, the general expressions for the integrals were used together with the limitation on  $Z$  noted above.

Having computed  $I'_1$  and  $I'_2$  for the assumed value of  $Z_1 = 0.8$ , compute  $(PI'_1 + I'_2)$  and  $r_1$ :

$$r_1 = B(PI'_1 + I'_2), \quad (27)$$

$$\Delta r = r_0 - r_1. \quad (28)$$

If  $\Delta r$  is zero, the assumed value of  $Z_1 = 0.8$  is correct; so proceed to compute  $V_g$ . If  $\Delta r$  is not zero, the assumed value of  $Z$  must be adjusted. Then, using the adjusted value of  $Z$ , or  $Z_2$ , again compute  $B$ ,  $I'_1$ ,  $I'_2$ ,  $(PI'_1 + I'_2)$ ,  $r_2$ , and  $\Delta r$  where

$$\Delta r = r_0 - r_2 .$$

If  $\Delta r$  is now zero, the adjusted value for  $Z_2$  is correct; so proceed to compute  $V_g$ . If  $\Delta r$  is not now zero, proceed as follows:

Compute  $(Z_0)_1$ :

$$(Z_0)_1 = Z_2 - (Z_2 - Z_1) \left( \frac{\ln r_2 - \ln r_0}{\ln r_2 - \ln r_1} \right) . \quad (29)$$

Provision has been made in the program to set  $(Z_0)_1$  equal to zero if it should come out negative as computed above. Using  $(Z_0)_1$ , now compute  $B$ ,  $I'_1$ ,  $I'_2$ ,  $(PI'_1 + I'_2)$ , and  $(r_0)_1$ , where

$$(r_0)_1 = B(PI'_1 + I'_2) .$$

Now compute  $\Delta Z$ :

$$\Delta Z = (Z_0)_1 - Z_2 . \quad (30)$$

Check the absolute value of  $\Delta Z$  to see if it is equal to or less than the allowable value of 0.01. If the answer is yes, proceed to compute product (31). If the answer is no, compute  $(Z_0)_2$ . A provision for a program stop has been made if  $(Z_0)_1$  and  $(Z_0)_2$  are both negative. Proceed as before in a looping operation until  $|\Delta Z|$  is equal to or less than 0.01.

Now compute the product:

$$[r_o - (r_o)_n][r_o - (r_o)_{n-1}] \quad (31)$$

Check this product to see if it is equal to or less than zero. If the answer is yes, the last value of  $(Z_o)_n$  is the correct value for Z; so proceed to compute  $V_s$ . If the answer is no, adjust the value of  $(Z_o)_n$  and proceed as before in a looping operation until product (31) is equal to or less than zero.

Now  $V_s$  is computed, where the equation for  $V_s$  is of the form:

$$V_s = a + (T - 32) b, \quad (32)$$

and where  $a$  and  $b$  are variables dependent on the particle size range for which  $V_s$  is computed. A table of  $D$  values and corresponding values of  $a$  and  $b$  has been prepared and included in the program. By a table lookup operation, the  $a$  and  $b$  values for the  $D$  value under consideration are obtained and  $V_s$  is computed.

#### Preparation of Input Data--Phase 1

The preparation of the input data is basically as indicated and noted on Figure 3; however, a few comments are necessary.

The 11/x-punch in Column 71 of Word 8 of Card 1, is an indicator that the first and second words of this card are alphanumeric. The 533 control board used is wired accordingly.

Word 3 of Card 1 indicates the data and time of measurement, as follows: 0724560705 indicates the 7th month or July, the 24th day, and the year 1956, at 7:05 a.m. Measurements taken in the p.m. should be indicated by use of the 24-hour clock notation.

The problem number is placed on each card to serve as a means of identification in case several sets of data cards become mixed. Any 8 digit system of problem numbers may be used.

The 11/x-punch in Column 10 of Card 14 is used in the program to indicate that this card is the last data card to be read in.

A decision must be made as to the particle size ranges for which a value of  $Z$  is to be computed in Phase 1. Each value of  $D$  for which a value of  $Z$  is to be computed must have a negative sign, or 11/x-punch, over the last column of the word (20, 30, 40, 50, 60, or 70), as an indicator. A value for  $Z$  can be computed for each particle size range containing an appreciable amount in both bed and suspended material.

In the section "Mathematical Relationships--Phase 1" it was stated that a table of  $D$  values and corresponding values of the variables  $a$  and  $b$  (used in computing  $V_g$ ) has been included in the program deck. This table was based on the following breakdown of particle size ranges, which at this time is considered standard:

$$\begin{aligned}
D_1 &= 0.011 \text{ mm (0.002 - 0.0625)} \\
D_2 &= 0.0884 \text{ mm (0.0625 - 0.125)} \\
D_3 &= 0.177 \text{ mm (0.125 - 0.250)} \\
D_4 &= 0.354 \text{ mm (0.250 - 0.500)} \\
D_5 &= 0.707 \text{ mm (0.500 - 1.000)} \\
D_6 &= 1.41 \text{ mm (1.000 - 2.000)} \\
D_7 &= 2.83 \text{ mm (2.000 - 4.000)} \\
D_8 &= 5.66 \text{ mm (4.000 - 8.000)} \\
D_9 &= 11.32 \text{ mm (8.000 - 16.000)}
\end{aligned}$$

Allowance has been made in the program for changing this subdivision to a maximum of 20 D values. If it is desired to make a change, the aforementioned table must be revised, and the program deck changed accordingly.

A form which may be utilized in preparation of Input Data, provided the standard breakdown of particle size ranges is used, is included as Figure 4.

#### Output Format--Phase 1

The output format is basically as indicated and noted on Figure 5, with the following comments.

To obtain the proper decimal point location for  $v$ , the value on Figure 5 must be multiplied by  $10^{-5}$ . This was necessary to obtain the desired significance in this value. The values from Figure 5 for  $\delta$  and for RS must be multiplied by  $10^{-2}$  to give the correct decimal location.

It should be noted that the value for ( $\%q$ ) is in percentage rather than decimal form.

Where a value was not computed in a given problem, the program assigns zero to this location in the output.

Comments concerning the date and time of measurement and problem number in the section, "Preparation of Input Data--Phase 1," are also applicable here.

### Mathematical Relationships--Phase 2

By reference to the flow chart for Phase 2, it will be noted that the first part of Phase 2 is similar to Phase 1. It involves calculation of the following values:

$$\psi_B, \alpha, \beta, f(\alpha), f(\beta), p, \phi, i_b Q_b, i_B Q_B,$$

$$Q'_S, A'', B, \text{ and } (PI'_1 + I'_2).$$

Equations and operations used in calculating the above values are as described under "Mathematical Relationships--Phase 1."

Using the input values and those calculated, as described above, the following computations are made:

$$I''_1 = 0.216 \frac{A''^{z-1}}{(1 - A'')^z} \int_{A''}^1 \left( \frac{1-y}{y} \right)^z dy, \quad (33)$$

$$I''_2 = 0.216 \frac{A''^{z-1}}{(1 - A'')^z} \int_{A''}^1 \left( \frac{1-y}{y} \right)^z \ln y dy. \quad (34)$$

Refer to "Mathematical Relationships--Phase 1" where a means of evaluating the above integrals is described.

Finally the value of  $(PI_1'' + I_2'')$  and the following values are calculated:

$$\text{Suspended Load} = \frac{1}{B} \left( \frac{PI_1'' + I_2''}{PI_1' + I_2'} \right) Q_s', \quad (35)$$

and

$$\text{Computed Total Load} = [PI_1'' + I_2'' + 1] i_B Q_B. \quad (36)$$

The above calculations of Phase 2 are, of course, repeated for each particle size range.

#### Preparation of Input Data--Phase 2

The preparation of the input data for this phase is basically as indicated and noted on Figure 6, with the following comments.

Comments with regard to 11/x-punch in Column 71, Date and Time of Measurement, Problem Number, and the 11/x-punch in Column 10 of the last card given under "Preparation of Input Data--Phase 1" are also applicable here.

At the completion of Phase 1, the trial and error values of  $Z$  and corresponding values of  $V_s$  which were computed, should be analyzed. As input to Phase 2,  $Z$  values for each particle size range ( $D$  values) must be determined. Various methods for the

determination of  $Z$  are described in WSP 1357,<sup>1</sup> and the use of multipliers based on the 0.7 power of the fall velocity is employed in "Step Method for Computing Total Sediment Load."<sup>2</sup> In computations for the Lower Colorado River, methods of determining  $Z$  values for each size range were limited, and the results of using multipliers based on the 0.7 power of  $V_s$  gave obvious errors.<sup>5</sup> As a result, the following method is now being used in this office for the Lower Colorado River studies. Values of  $Z$  and corresponding values of  $V_s$  obtained from Phase 1 are plotted on log-log paper. A straight line is drawn for these plotted points, giving most weight to those points which were determined from particle size ranges containing at least 10 percent in both bed and suspended materials. The  $Z$  values for other particle size ranges are then taken from the extension of this line and used as input for Phase 2.

All other values as shown in Figure 6 were Input or Output values from Phase 1. It should be noted that the value of  $RS$  is entered here in the same decimal form it has in the output from Phase 1.

A form which may be utilized in "Preparation of Input Data--Phase 2," provided the standard breakdown of particle size ranges is used, is included as Figure 7.

#### Output Format--Phase 2

The Output Format is basically as indicated and noted on Figure 8.

Where a value is not computed in a given problem, the program assigns zero to this location in the output.

Comments concerning the date and time of measurements, and problem number in the section, "Preparation of Input Data--Phase 1," are also applicable here.

The quantities, which are referred to as Coefficient of Total Load and Coefficient of Suspended Load, are defined as follows:

$$\text{Coefficient of Total Load} = (PI''_1 + I''_2 + 1),$$

and

$$\text{Coefficient of Suspended Load} = \frac{1}{B} \left( \frac{PI''_1 + I''_2}{PI'_1 + I'_2} \right).$$

#### Computer Required and Running Time

On the basic IBM 650, 4-5 minutes are required to run each problem through each phase.

#### 533 Control Board

Use a control board wired for SIR (SOAP Interpretive Routine) with 10 digits per word input into the first 8 locations of the Read Area, and 10 digits per word output from the first 8 locations of the Punch Area. Load cards are normally designated by a 12/y-punch in Column 1. The board must be so wired that an 11/x-punch in Column 71 of an Input Card indicates that the first two words of this card are alphanumeric.

The program is written so that an 8 in the low order position of P0010 (the tenth word in the punch region) indicates to the 533 that the first 4 words of output storage or the first 2 words punched in the card are alphanumeric; consequently, the 533 control board must be wired accordingly.

#### Operating Procedure

The operating procedure is the same for both Phase 1 and Phase 2, and is as outlined below:

1. Prepare Input Data Cards and Header Card as described above.
2. The 533 control board should be so wired that a 12/y-punch in Card Column 1 does not indicate the card is a load card.
3. Set 70 1951 1951 on the storage-entry switches of the console.
4. Assemble the card deck as follows:
  - a. Card to zero the Drum
  - b. Phase 1 Program Deck (Note: No Main SIR or Functions are required as these have been incorporated in the program deck)
  - c. Transfer card to Location 1950
  - d. Header Card for first problem
  - e. Data Cards for first problem
  - f. Header and Data Cards for each additional problem to be run at one time

The program is self-initializing and returns to Location 1950 for instructions after completing each problem. It will continue to compute without interruption until all problems, for which there are Data Cards in the 533, have been completed.

#### Listing of Program

A SOAP listing of both Phase 1 and Phase 2 of the Modified Einstein Procedure Program is attached.

#### Flow Charts of Program

Figures 9 and 10 are flow charts of subject program for Phase 1 and Phase 2.

#### Acknowledgment

The preparation of this program was due in no small part to the interest shown in the work by the Regional Office, Region 3, Boulder City, Nevada. A considerable portion of the funds required to develop the program was furnished by that Region.

## Bibliography

1. "Computation of Total Sediment Discharge, Niobrara River near Cody, Nebraska," by B. R. Colby and C. H. Hembree, Geological Survey Water-Supply Paper 1357, Government Printing Office, Washington, 1955.
2. "Step Method for Computing Total Sediment Load by the Modified Einstein Procedure," Project Investigations Division, Bureau of Reclamation, July 1955.
3. "The Bed-Load Function for Sediment Transportation in Open Channel Flows," by Hans Albert Einstein, United States Department of Agriculture, Soil Conservation Service, Technical Bulletin No. 1026, September 1950.
4. "Approximations for Digital Computers," by Cecil Hastings, Jr., Princeton University Press, Princeton, New Jersey, 1955.
5. "Interim Report Total Sediment Transport Program, Lower Colorado River Basin," Sedimentation Section, Hydrology Branch, Division of Project Investigations, United States Bureau of Reclamation, January 1958.

Z	$\int_a^1 \left(\frac{1-y}{y}\right)^z dy$	$\int_a^1 \left(\frac{1-y}{y}\right)^z \ln y dy$
0	$1 - a$	$-1 + a - a \ln a$
1	$-1 + a - \ln a$	$1 - a + a \ln a - \frac{1}{2} \ln^2 a$
2	$\frac{1}{a} (1 - a^2 + 2a \ln a)$	$\frac{1}{a} \left[ 1 - 2a + a^2 + (1 - a^2) \ln a + a \ln^2 a \right]$
3	$\frac{1}{2a^2} (1 - 6a + 3a^2 + 2a^3 - 6a^2 \ln a)$	$\frac{1}{4a^2} \left[ 1 - 12a + 15a^2 - 4a^3 + 2(1 - 6a + 2a^3) \ln a - 6a^2 \ln^2 a \right]$
4	$\frac{1}{3a^3} (1 - 6a + 18a^2 - 10a^3 - 3a^4 + 12a^3 \ln a)$	$\frac{1}{9a^3} \left[ 1 - 9a + 54a^2 - 55a^3 + 9a^4 + 3(1 - 6a + 18a^2 - 3a^4) \ln a + 18a^3 \ln^2 a \right]$
5	$\frac{1}{12a^4} (3 - 20a + 60a^2 - 120a^3 + 65a^4 + 12a^5 - 60a^4 \ln a)$	$\frac{1}{144a^4} \left[ 9 - 80a + 360a^2 - 1440a^3 + 1295a^4 - 144a^5 + 12(3 - 20a + 60a^2 - 120a^3 + 12a^5) \ln a - 360a^4 \ln^2 a \right]$
Z > 1	$(-1)^z (1 - a + z \ln a) + \sum_{n=0}^{z-2} (-1)^n \binom{z}{n} \frac{1}{(n-z+1)}$ $- a^{1-z} \sum_{n=0}^{z-2} (-1)^n \binom{z}{n} \frac{a^n}{(n-z+1)}$	$(-1)^z (-1 + a - a \ln a + \frac{1}{2} z \ln^2 a) - \sum_{n=0}^{z-2} (-1)^n \binom{z}{n} \frac{1}{(n-z+1)^2}$ $+ a^{1-z} \left[ \sum_{n=0}^{z-2} (-1)^n \binom{z}{n} \frac{a^n}{(n-z+1)^2} - \ln a \sum_{n=0}^{z-2} (-1)^n \binom{z}{n} \frac{a^n}{(n-z+1)} \right]$

SEDIMENT TRANSPORT INTEGRALS  
FOR  
INTEGRAL VALUES OF THE EXPONENTIAL PARAMETER Z

$$\int_a^1 \left(\frac{1-y}{y}\right)^z dy = \frac{z\pi}{\sin z\pi} - a^{1-z} \sum_{n=0}^{\infty} (-1)^n \binom{z}{n} \frac{a^n}{(n-z+1)}$$

where  $\binom{z}{0} = 1$ ,  $\binom{z}{n} = \frac{z(z-1)(z-2)\cdots(z-n+1)}{n!}$ .

$$\int_a^1 \left(\frac{1-y}{y}\right)^z \ln y dy = \frac{z\pi}{\sin z\pi} \left[ -1 + C + \Psi(z) - \frac{1}{z} + \pi \cot z\pi \right]$$

$$+ a^{1-z} \left[ \sum_{n=0}^{\infty} (-1)^n \binom{z}{n} \frac{a^n}{(n-z+1)^2} - \ln a \sum_{n=0}^{\infty} (-1)^n \binom{z}{n} \frac{a^n}{(n-z+1)} \right]$$

where  $C + \Psi(z) \cong \ln \left[ 1 + 1.645289z + 0.129734z^2 - 0.077622z^3 + 0.025704z^4 - 0.004257z^5 + 0.000274z^6 \right], 0 \leq z \leq 5.$

SEDIMENT TRANSPORT INTEGRALS  
FOR  
NON-INTEGRAL VALUES OF THE EXPONENTIAL PARAMETER Z













IBM 650  
 FLOW CHART FOR  
 MODIFIED EINSTEIN PROCEDURE  
 PHASE 1

FIGURE 9  
 Sheet 1

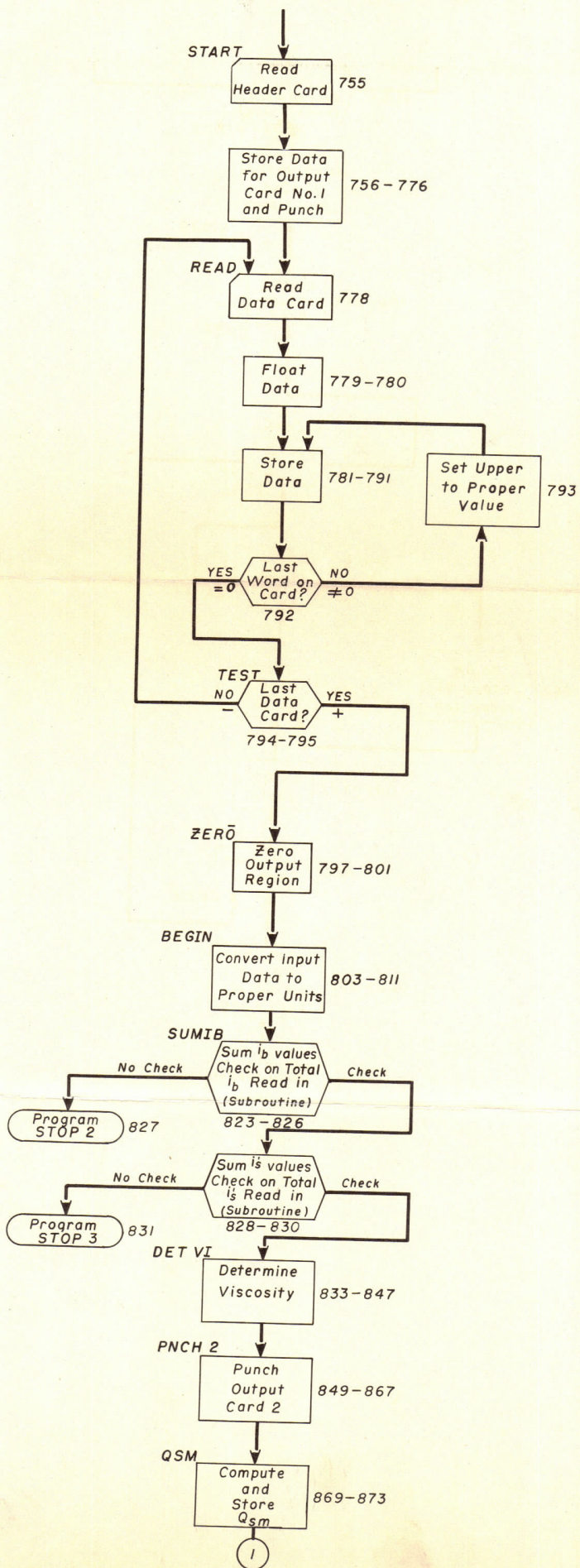
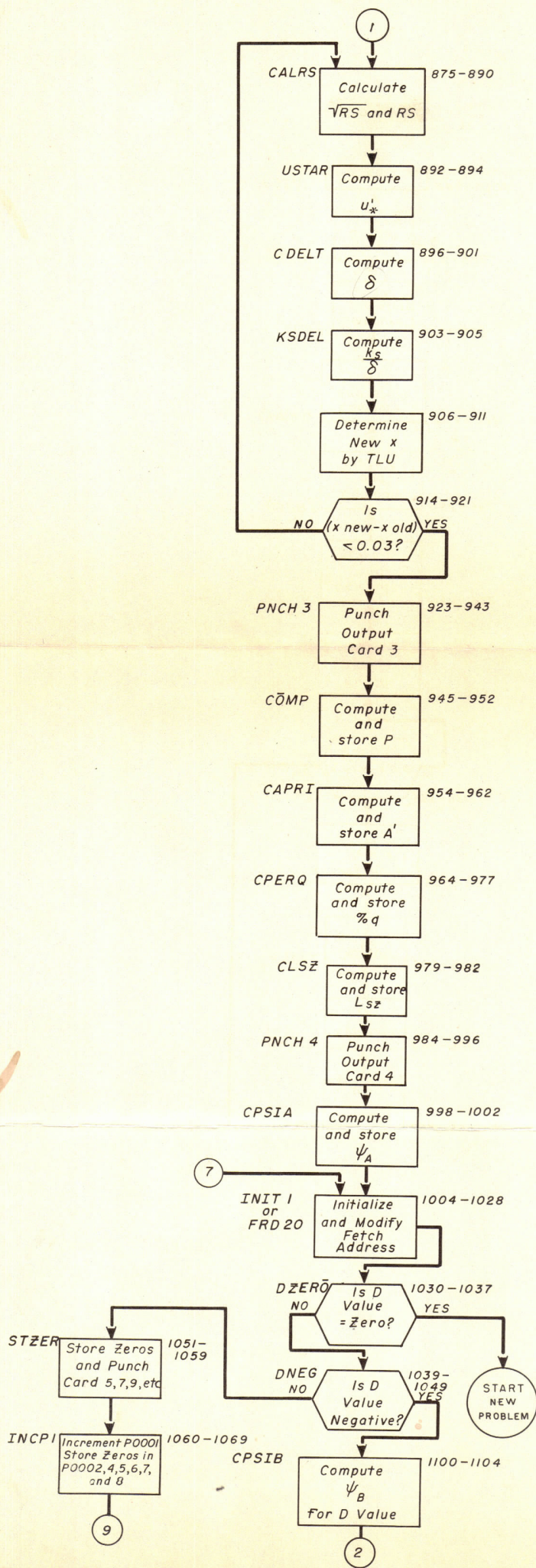
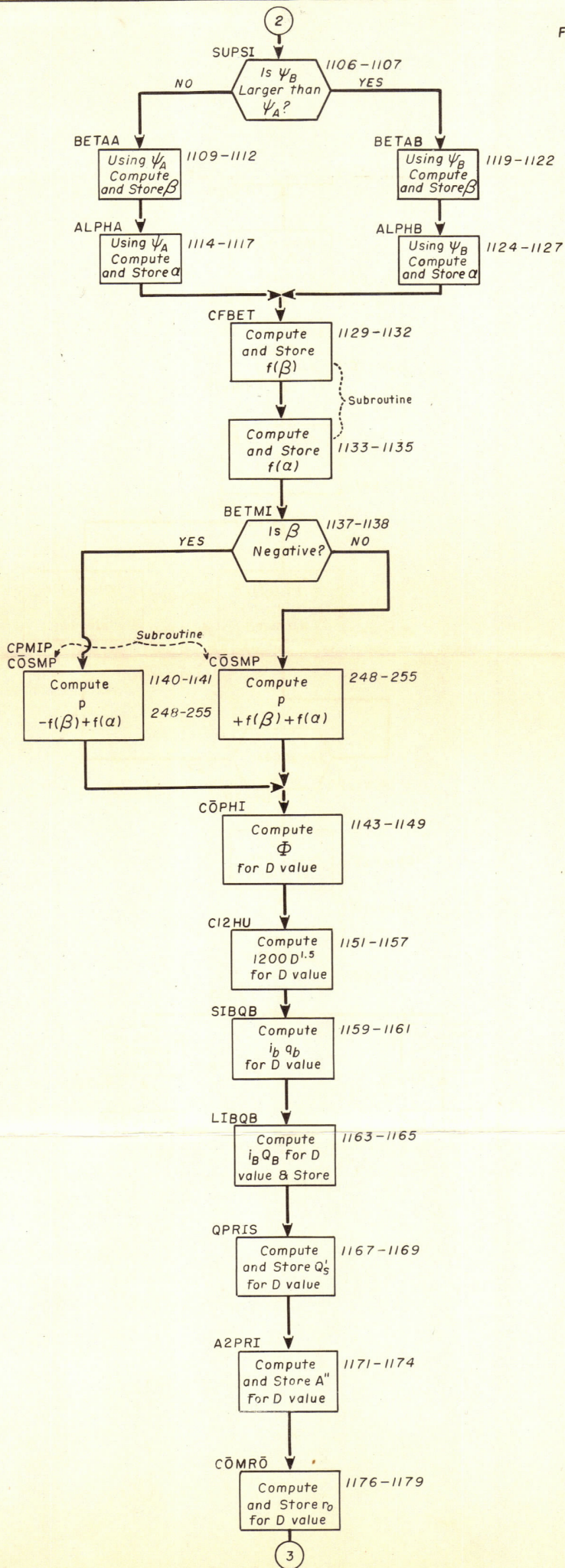


FIGURE 9  
SHEET 2





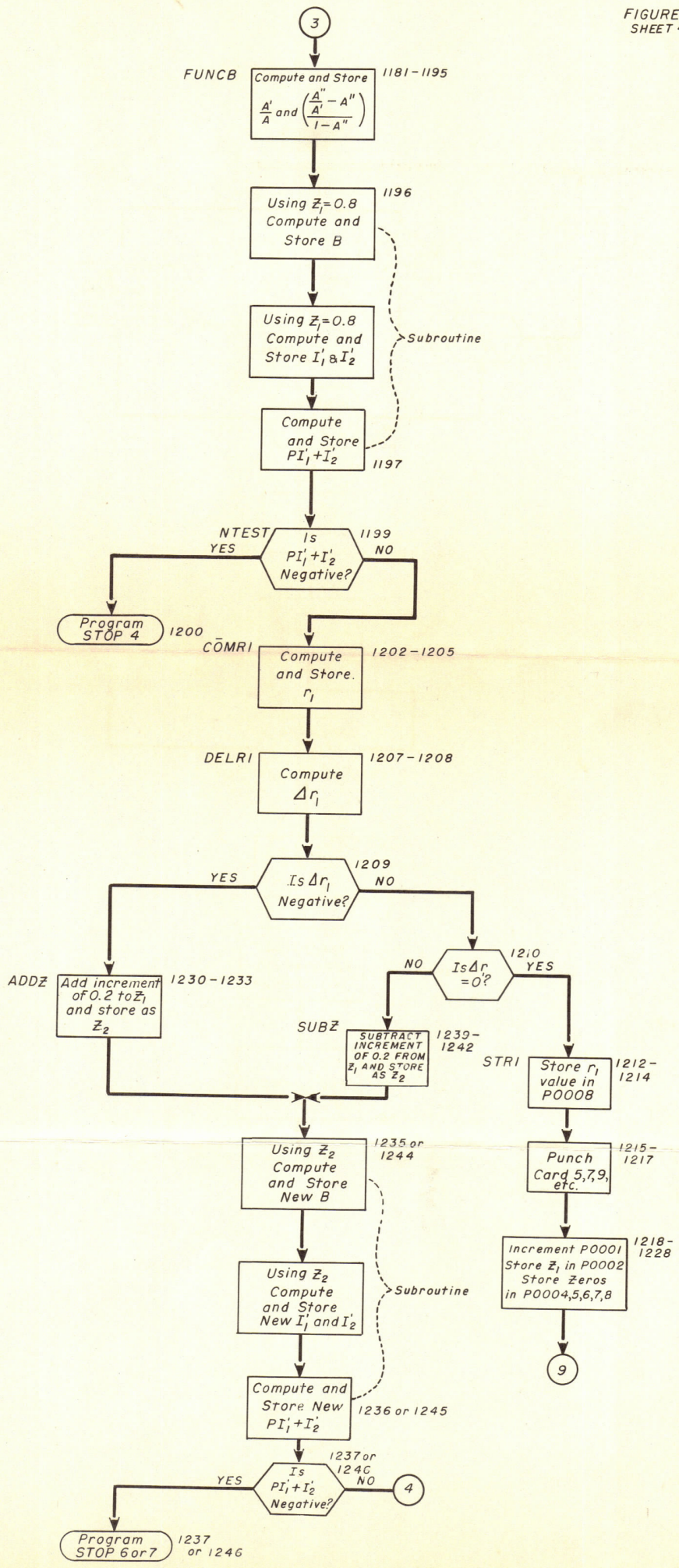
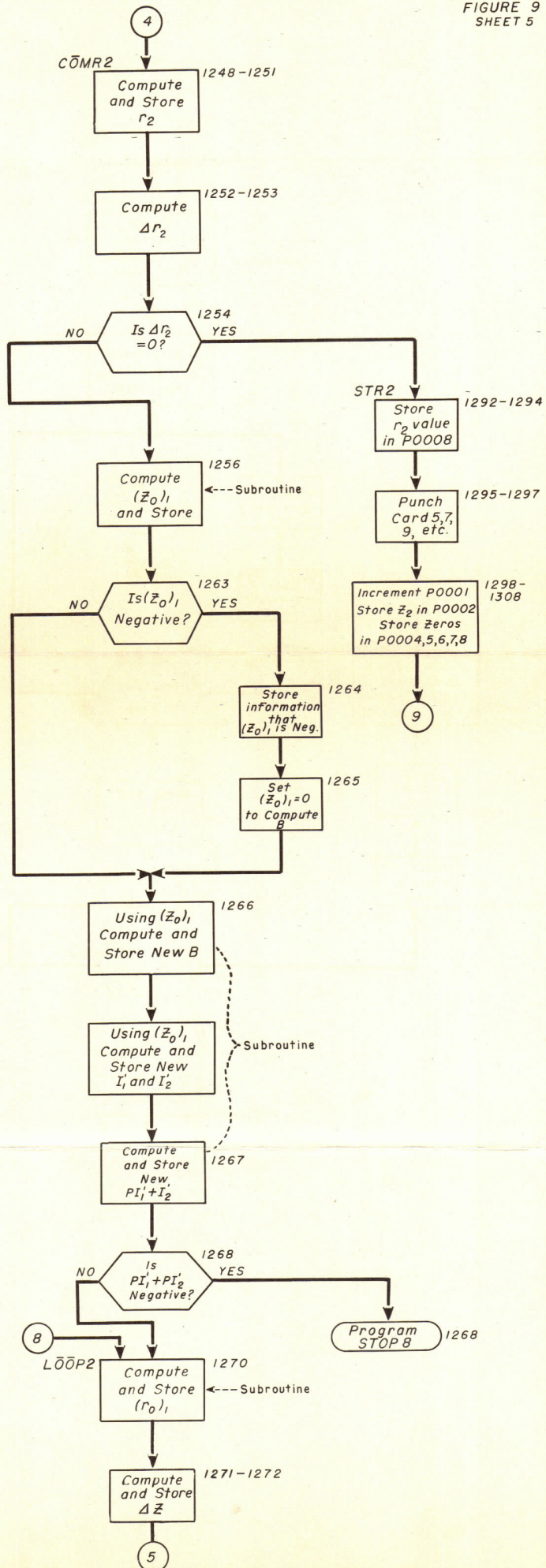
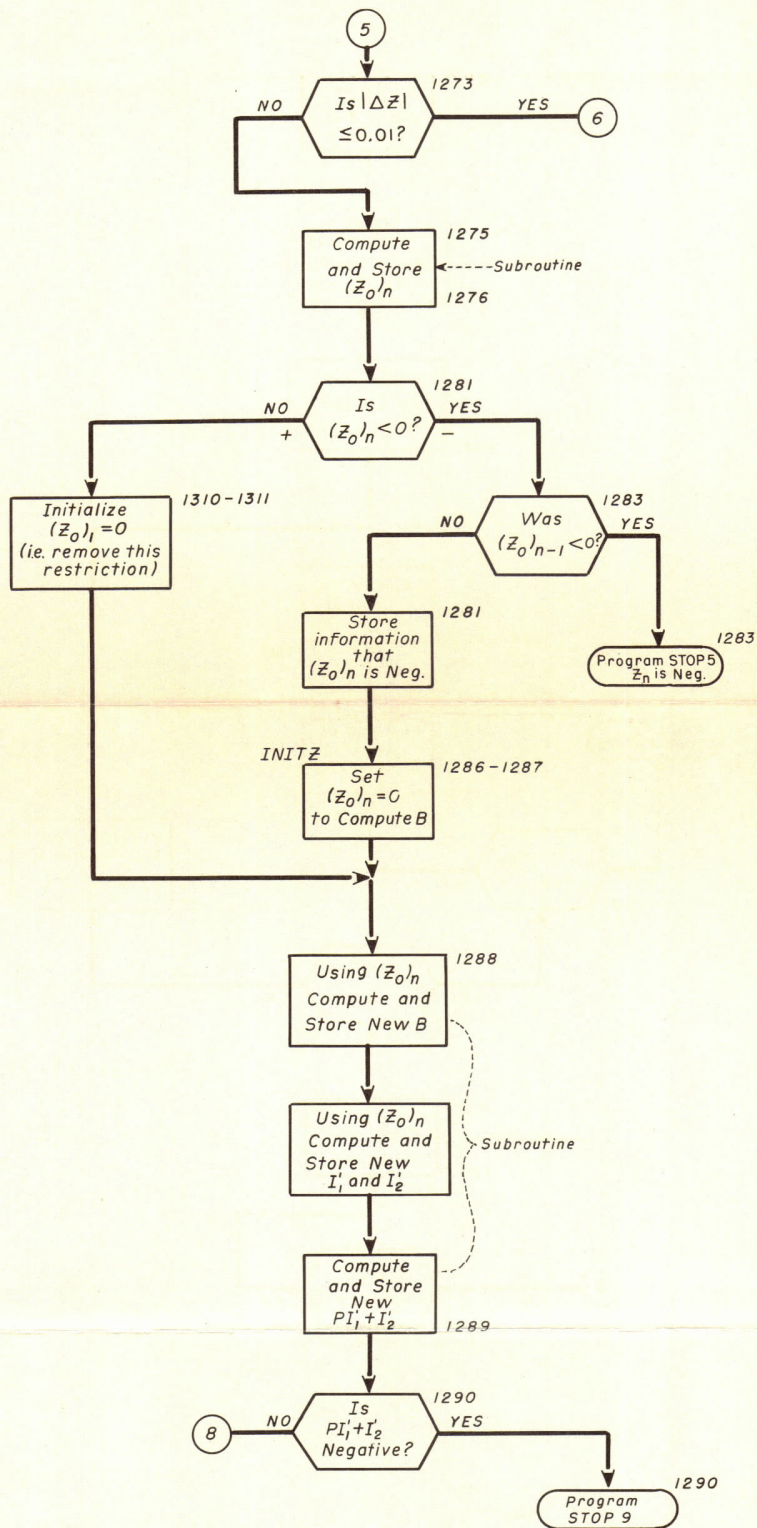
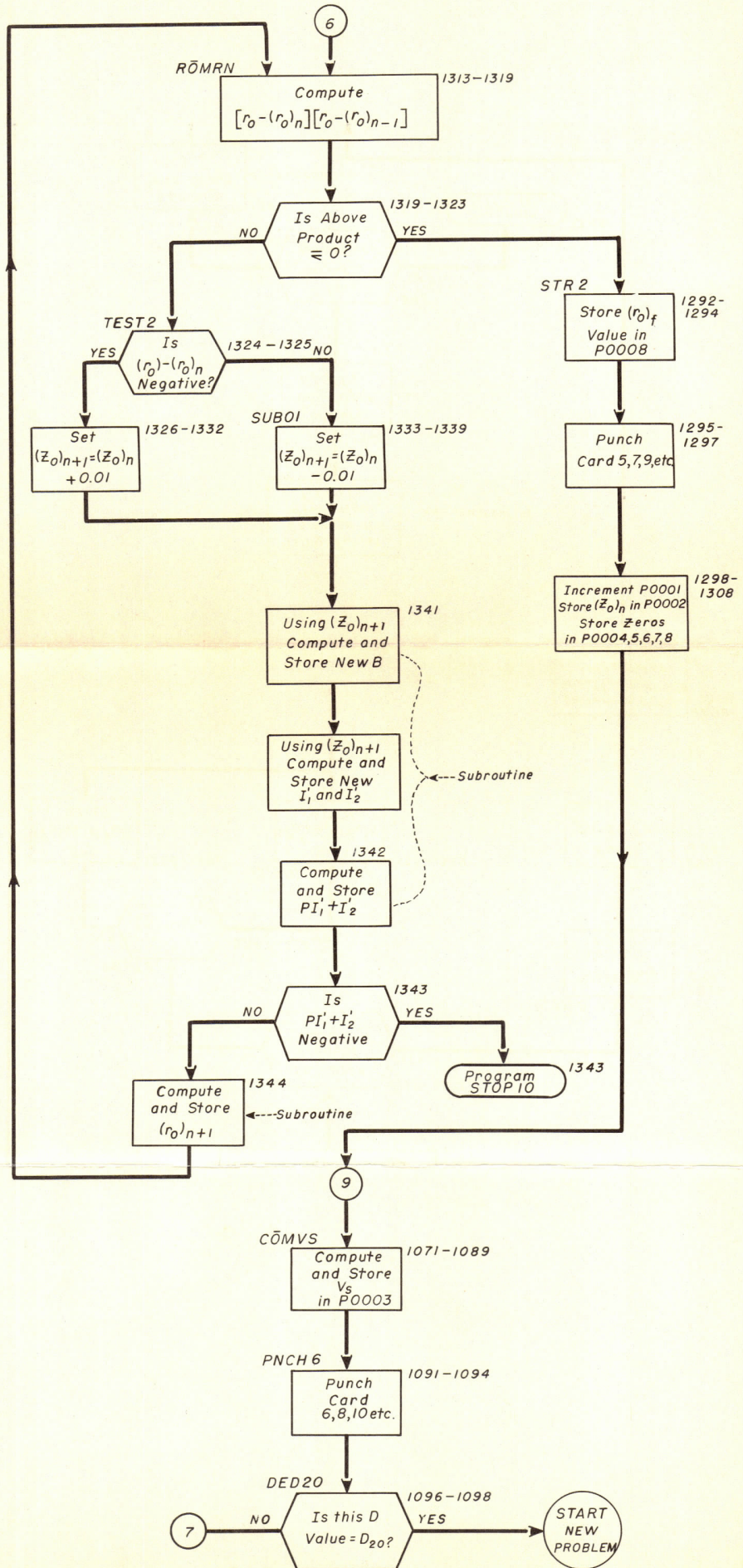


FIGURE 9  
SHEET 5







## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	SPRM.	SENIOR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1	1			PROGR	AM	TO DE	TERMINE	THE TOTAL	0000	00	0000	0000
2	1			SEDI	MEN	T LOA	D IN A	STREAM BY	0000	00	0000	0000
3	1			MODI	FIE	D EIN	STEIN	PROCEDURE	0000	00	0000	0000
4	1								0000	00	0000	0000
5	1			U	S B	UREAU	OF	RECLAMATION	0000	00	0000	0000
6	1					DENVE	R	COLORADO	0000	00	0000	0000
7	1								0000	00	0000	0000
8	1			U S	AR	MY CO	RPS	OF ENGINEERS	0000	00	0000	0000
9	1					OMAHA		NEBRASKA	0000	00	0000	0000
10	1								0000	00	0000	0000
11	1							1959	0000	00	0000	0000
12	1								0000	00	0000	0000
13	1					PH	ASE	1	0000	00	0000	0000
14	1								0000	00	0000	0000
15	1								0000	00	0000	0000
16	1								0000	00	0000	0000
17					BLR	0000	0799	RESRVE SIR	0000	00	0000	0000
18					BLR	1972	1973	READ ROUT	0000	00	0000	0000
19	1								0000	00	0000	0000
20	1			THE F	OLL	OWING	21	CARDS MAKE	0000	00	0000	0000
21	1			AVAIL	ABL	E 36	LOCATIONS	NOT	0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	COMM.	ERROR	BIBL	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
22	1			USED	AT	ANY T	IME BY	SIR OR	0000	00	0000	0000
23	1			ITS F	UNC	TIONS			0000	00	0000	0000
24					BLA	0002	0002		0000	00	0000	0000
25					BLA	0242	0242		0000	00	0000	0000
26					BLA	0289	0289		0000	00	0000	0000
27					BLA	0305	0306	2	0000	00	0000	0000
28					BLA	0450	0450		0000	00	0000	0000
29					BLA	0548	0548		0000	00	0000	0000
30					BLA	0595	0596	2	0000	00	0000	0000
31					BLA	0598	0599	2	0000	00	0000	0000
32					BLA	0648	0648		0000	00	0000	0000
33					BLA	0651	0652	2	0000	00	0000	0000
34					BLA	0682	0682		0000	00	0000	0000
35					BLA	0696	0696		0000	00	0000	0000
36					BLA	0698	0702	5	0000	00	0000	0000
37					BLA	0731	0732	2	0000	00	0000	0000
38					BLA	0746	0746		0000	00	0000	0000
39					BLA	0748	0752	5	0000	00	0000	0000
40					BLA	0781	0782	2	0000	00	0000	0000
41					BLA	0788	0788		0000	00	0000	0000
42					BLA	0791	0791		0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
43	BLA	0794	0794		0000	00	0000	0000
44	BLA	0796	0797	2	0000	00	0000	0000
45	1	THE	FO	LLOWI NG 31 CARDS	0000	00	0000	0000
46	1	MAKE	AVA	ILABL E A TOTAL OF 97	0000	00	0000	0000
47	1	LOCAT	ION	S NOR MALLY OCCUPIED BY	0000	00	0000	0000
48	1	THE S	QR	RT R OUTINE IN SIR	0000	00	0000	0000
49		BLA	0004	0004	0000	00	0000	0000
50		BLA	0042	0042	0000	00	0000	0000
51		BLA	0081	0081	0000	00	0000	0000
52		BLA	0089	0089	0000	00	0000	0000
53		BLA	0103	0103	0000	00	0000	0000
54		BLA	0152	0152	0000	00	0000	0000
55		BLA	0156	0156	0000	00	0000	0000
56		BLA	0169	0169	0000	00	0000	0000
57		BLA	0181	0181	0000	00	0000	0000
58		BLA	0226	0227	02	0000	00	0000
59		BLA	0231	0231	0000	00	0000	0000
60		BLA	0236	0236	0000	00	0000	0000
61		BLA	0252	0256	05	0000	00	0000
62		BLA	0267	0267	0000	00	0000	0000
63		BLA	0269	0274	06	0000	00	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DOWN	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
64					BLA	0276	0276		0000	00	0000	0000
65					BLA	0281	0284	04	0000	00	0000	0000
66					BLA	0286	0286		0000	00	0000	0000
67					BLA	0288	0288		0000	00	0000	0000
68					BLA	0290	0290		0000	00	0000	0000
69					BLA	0294	0294		0000	00	0000	0000
70					BLA	0300	0301	02	0000	00	0000	0000
71					BLA	0303	0304	02	0000	00	0000	0000
72					BLA	0309	0309		0000	00	0000	0000
73					BLA	0311	0311		0000	00	0000	0000
74					BLA	0313	0313		0000	00	0000	0000
75					BLA	0317	0317		0000	00	0000	0000
76					BLA	0320	0321	02	0000	00	0000	0000
77					BLA	0324	0324		0000	00	0000	0000
78					BLA	0347	0348	2	0000	00	0000	0000
79					BLA	0350	0399	50	0000	00	0000	0000
80	1			THE	FO	LLOWING 23 CARDS			0000	00	0000	0000
81	1			MAKE	AVA	ILABLE A TOTAL OF 68			0000	00	0000	0000
82	1			LOCAT	ION	S NORMALLY OCCUPIED BY			0000	00	0000	0000
83	1			THE A	RC	TAN ROUTINE IN SIR			0000	00	0000	0000
84					BLA	0009	0009		0000	00	0000	0000

## SOAP II LISTING

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PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	CPM.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
85					BLA	0448	0448		0000	00	0000	0000
86					BLA	0451	0495	45	0000	00	0000	0000
87					BLA	0497	0497		0000	00	0000	0000
88					BLA	0573	0573		0000	00	0000	0000
89					BLA	0593	0593		0000	00	0000	0000
90					BLA	0655	0655		0000	00	0000	0000
91					BLA	0657	0657		0000	00	0000	0000
92					BLA	0663	0663		0000	00	0000	0000
93					BLA	0665	0665		0000	00	0000	0000
94					BLA	0671	0671		0000	00	0000	0000
95					BLA	0673	0673		0000	00	0000	0000
96					BLA	0676	0676		0000	00	0000	0000
97					BLA	0679	0679		0000	00	0000	0000
98					BLA	0683	0683		0000	00	0000	0000
99					BLA	0686	0687	02	0000	00	0000	0000
100					BLA	0689	0689		0000	00	0000	0000
101					BLA	0705	0705		0000	00	0000	0000
102					BLA	0726	0726		0000	00	0000	0000
103					BLA	0729	0729		0000	00	0000	0000
104					BLA	0733	0733		0000	00	0000	0000
105					BLA	0736	0736		0000	00	0000	0000

# SOAP II LISTING

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 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DOWN	ERROR	SIDE	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
106					BLA	0783	0783		0000	00	0000	0000
107	1			THE	FO	LLOWI	NG	11 CARDS	0000	00	0000	0000
108	1			MAKE	AVA	ILABL	E	A TOTAL OF 24	0000	00	0000	0000
109	1			LOCAT	ION	S	NOR	MALLY OCCUPIED BY	0000	00	0000	0000
110	1			THE	TRA	CE RO	UTINE	IN SIR.	0000	00	0000	0000
111					BLA	0302	0302		0000	00	0000	0000
112					BLA	0307	0308	2	0000	00	0000	0000
113					BLA	0310	0310		0000	00	0000	0000
114					BLA	0314	0314		0000	00	0000	0000
115					BLA	0316	0316		0000	00	0000	0000
116					BLA	0318	0319	2	0000	00	0000	0000
117					BLA	0322	0323	2	0000	00	0000	0000
118					BLA	0325	0326	2	0000	00	0000	0000
119					BLA	0334	0342	9	0000	00	0000	0000
120					BLA	0344	0345	2	0000	00	0000	0000
121					BLA	0349	0349		0000	00	0000	0000
122	1			THE	FO	LLOWI	NG	49 CARDS	0000	00	0000	0000
123	1			MAKE	AVA	ILABL	E	A TOTAL OF 105	0000	00	0000	0000
124	1			LOCAT	ION	S	NOR	MALLY OCCUPIED BY	0000	00	0000	0000
125	1			THE E	XPO	NT R	ROUTINE	IN SIR	0000	00	0000	0000
126					BLA	0008	0008		0000	00	0000	0000

## SOAP II LISTING

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SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OPM.	ERRR	IBIN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
127					BLA	0449	0449		0000	00	0000	0000
128					BLA	0500	0536	37	0000	00	0000	0000
129					BLA	0538	0546	09	0000	00	0000	0000
130					BLA	0592	0592		0000	00	0000	0000
131					BLA	0594	0594		0000	00	0000	0000
132					BLA	0603	0603		0000	00	0000	0000
133					BLA	0606	0606		0000	00	0000	0000
134					BLA	0630	0632	3	0000	00	0000	0000
135					BLA	0634	0635	2	0000	00	0000	0000
136					BLA	0638	0638		0000	00	0000	0000
137					BLA	0641	0641		0000	00	0000	0000
138					BLA	0653	0653		0000	00	0000	0000
139					BLA	0656	0656		0000	00	0000	0000
140					BLA	0659	0659		0000	00	0000	0000
141					BLA	0661	0661		0000	00	0000	0000
142					BLA	0664	0664		0000	00	0000	0000
143					BLA	0666	0667	02	0000	00	0000	0000
144					BLA	0669	0670	2	0000	00	0000	0000
145					BLA	0672	0672		0000	00	0000	0000
146					BLA	0674	0675	02	0000	00	0000	0000
147					BLA	0677	0677		0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DDMM. ERROR SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
148			BLA	0680	0680		0000	00	0000	0000
149			BLA	0684	0685	02	0000	00	0000	0000
150			BLA	0688	0688		0000	00	0000	0000
151			BLA	0692	0693	02	0000	00	0000	0000
152			BLA	0695	0695		0000	00	0000	0000
153			BLA	0703	0703		0000	00	0000	0000
154			BLA	0707	0707		0000	00	0000	0000
155			BLA	0709	0709		0000	00	0000	0000
156			BLA	0711	0711		0000	00	0000	0000
157			BLA	0713	0713		0000	00	0000	0000
158			BLA	0715	0716	02	0000	00	0000	0000
159			BLA	0719	0719		0000	00	0000	0000
160			BLA	0723	0724	02	0000	00	0000	0000
161			BLA	0727	0727		0000	00	0000	0000
162			BLA	0734	0735	02	0000	00	0000	0000
163			BLA	0739	0739		0000	00	0000	0000
164			BLA	0743	0743		0000	00	0000	0000
165			BLA	0757	0757		0000	00	0000	0000
166			BLA	0759	0759		0000	00	0000	0000
167			BLA	0763	0763		0000	00	0000	0000
168			BLA	0765	0765		0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	DDMM	ERRR	ERRR	ERRR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
169						BLA	0773	0773		0000	00	0000	0000
170						BLA	0776	0777	02	0000	00	0000	0000
171						BLA	0779	0779		0000	00	0000	0000
172						BLA	0784	0784		0000	00	0000	0000
173						BLA	0789	0789		0000	00	0000	0000
174						BLA	0793	0793		0000	00	0000	0000
175	1									0000	00	0000	0000
176						REG	D0901	0974	DATA STORE	0000	00	0000	0000
177						REG	R1951	1960	READ BAND	0000	00	0000	0000
178						REG	P1977	1986	PUNCH BAND	0000	00	0000	0000
179						EQU	ENTER	0280	EQUENT SIR	0000	00	0000	0000
180						EQU	FIX	0200	EQU FIX	0000	00	0000	0000
181						EQU	FLOAT	0229	EQU FLOAT	0000	00	0000	0000
182						REG	A1101	1150	OUTPUT	0000	00	0000	0000
183						REG	X1200	1306	TLU X	0000	00	0000	0000
184						REG	V1350	1389	TLU VS	0000	00	0000	0000
185						BLA	1248	1249	NOT USED	0000	00	0000	0000
186						BLA	1298	1299	NOT USED	0000	00	0000	0000
187						SYN	CONT1	1972	READ HDR	0000	00	0000	0000
188						SYN	CONT2	1973	READ CARD	0000	00	0000	0000
189	1									0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	COND.	ERROR SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
190			SUM	STD	EXIT 1		SUBROUTINE	0300	24	0103	0156
191				LDD	VALUE		FOR	0156	69	0009	0362
192				SDA	VALUE		SUM	0362	22	0009	0462
193				SLT	0004		OF	0462	35	0004	0273
194				SDA	END3		N VALUES	0273	22	0227	0380
195				SLO	8002			0380	16	8002	0089
196				STL	TEMP 1	NEXT5		0089	20	0393	0396
197			NEXT5	RAL		ENTER	ENTER SIR	0396	65	0349	0280
198				RAL	TEMP 1	VALUE		0349	65	0393	0009
199			VALUE	ALO	9999	NEXT4		0009	15	9999	0253
200			NEXT4	STL	TEMP 1			0253	20	0393	0546
201				03	0000		EXIT SIR	0546	03	0000	0301
202				RAL	VALUE			0301	65	0009	0313
203				SLO	END3			0313	16	0227	0081
204				NZE		LAST		0081	45	0284	0335
205				ALO	8001			0284	15	8001	0341
206				ALO	D1			0341	15	0294	0399
207				STL	VALUE	NEXT5		0399	20	0009	0396
208			LAST	RAL	TEMP 1	EXIT 1		0335	65	0393	0103
209	1							0000	00	0000	0000
210			FIBETA	STD	EXIT 2			0350	24	0303	0256

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	DBM	ERROR	SIDE	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
211					STL	FUNCT			0256	20	0311	0314
212					RAL		ENTER	ENTER SIR	0314	65	0267	0280
213					RAM	FUNCT			0267	67	0311	0365
214					MPY	A5		SUB	0365	19	0318	0288
215					ALO	A4			0288	15	0391	0345
216					STL	TEMP5		ROUTINE	0345	20	0449	0002
217					RAM	FUNCT			0002	67	0311	0465
218					MPY	TEMP5		TO	0465	19	0449	0270
219					ALO	A3			0270	15	0323	0377
220					STL	TEMP5		EVALUATE	0377	20	0449	0152
221					RAM	FUNCT			0152	67	0311	0515
222					MPY	TEMP5		THE	0515	19	0449	0320
223					ALO	A2			0320	15	0373	0477
224					STL	TEMP5		APPROX	0477	20	0449	0252
225					RAM	FUNCT			0252	67	0311	0665
226					MPY	TEMP5		OF	0665	19	0449	0370
227					ALO	A1			0370	15	0473	0527
228					STL	TEMP5		HASTINGS	0527	20	0449	0302
229					RAM	FUNCT			0302	67	0311	0715
230					MPY	TEMP5			0715	19	0449	0470
231					ALO	F1P00	NEX10		0470	15	0523	0677

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DDMM.	ERROR	SIDE	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
232				NEX 10	STL	TEMP5		MORE	0677	20	0449	0352
233					MPY	TEMP5			0352	19	0449	0520
234					STL	TEMP5		OF	0520	20	0449	0452
235					MPY	TEMP5		APPROX	0452	19	0449	0670
236					STL	TEMP5			0670	20	0449	0502
237					MPY	TEMP5		OF	0502	19	0449	0820
238					STL	TEMP5			0820	20	0449	0652
239					RAL	F1P00		HASTINGS	0652	65	0523	0727
240					DIV	TEMP5			0727	14	0449	0310
241					STL	TEMP5		SUB	0310	20	0449	0702
242					RAL	F1P00			0702	65	0523	0777
243					SLO	TEMP5		ROUTINE	0777	16	0449	0353
244					STL	TEMP5			0353	20	0449	0752
245					03	0000		EXIT SIR	0752	03	0000	0307
246					RAL	TEMP5	EXIT2		0307	65	0449	0303
247	1								0000	00	0000	0000
248				CO SMP	RAL		ENTER	ENTER SIR	0450	65	0453	0280
249					RAL	TEMP6		SUB	0453	65	0306	0361
250					ALO	TEMP7		ROUTINE	0361	15	0364	0169
251					MPY	FOP50		TO	0169	19	0272	0042
252					STL	TEMP6		COMPUTE	0042	20	0306	0309

FIGURE 10  
SHEET 4

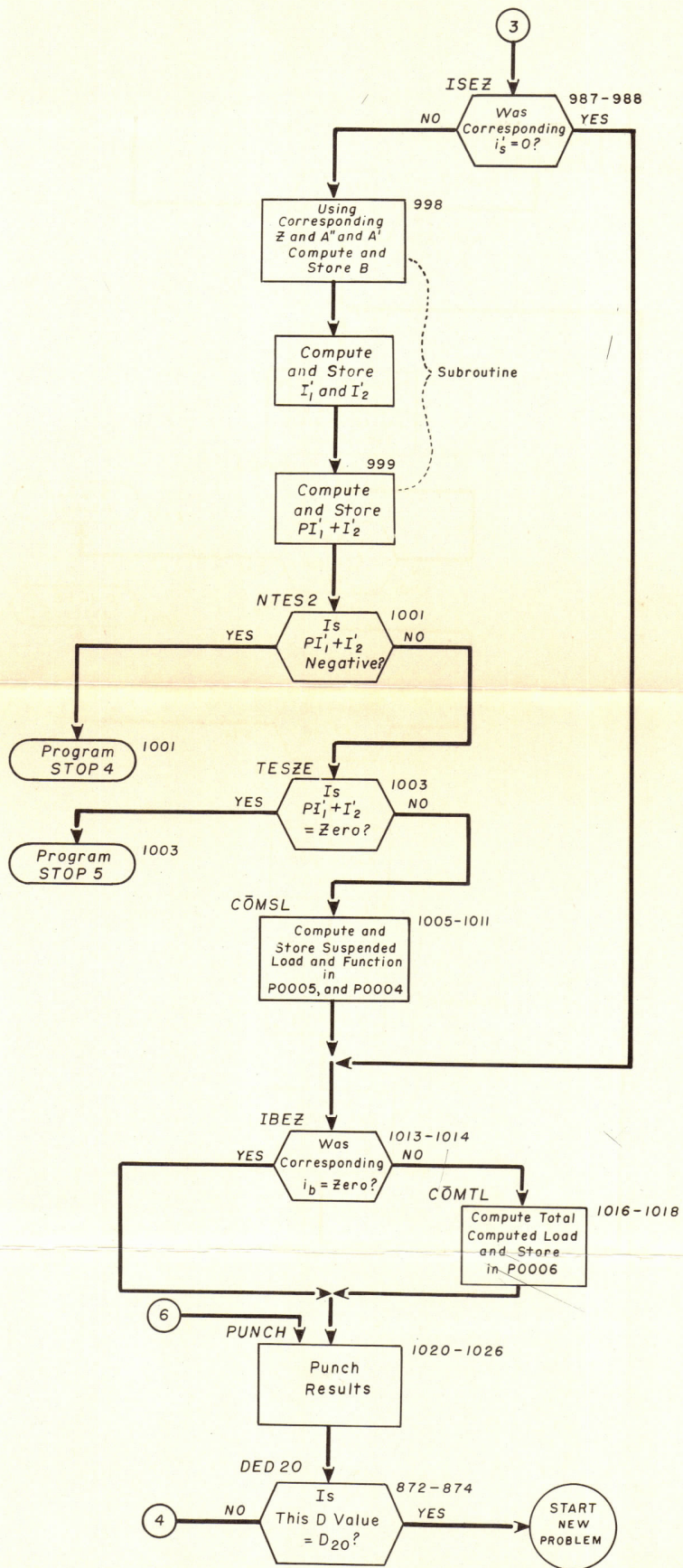
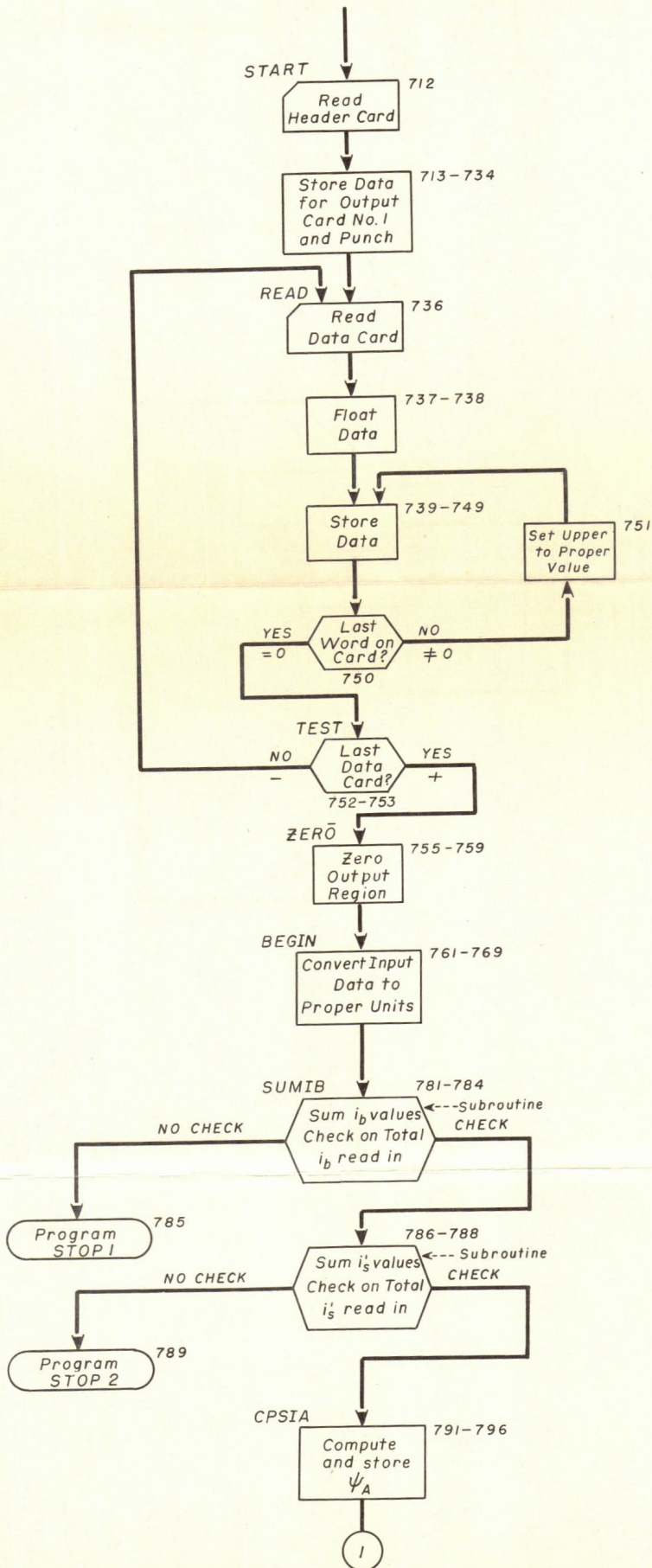
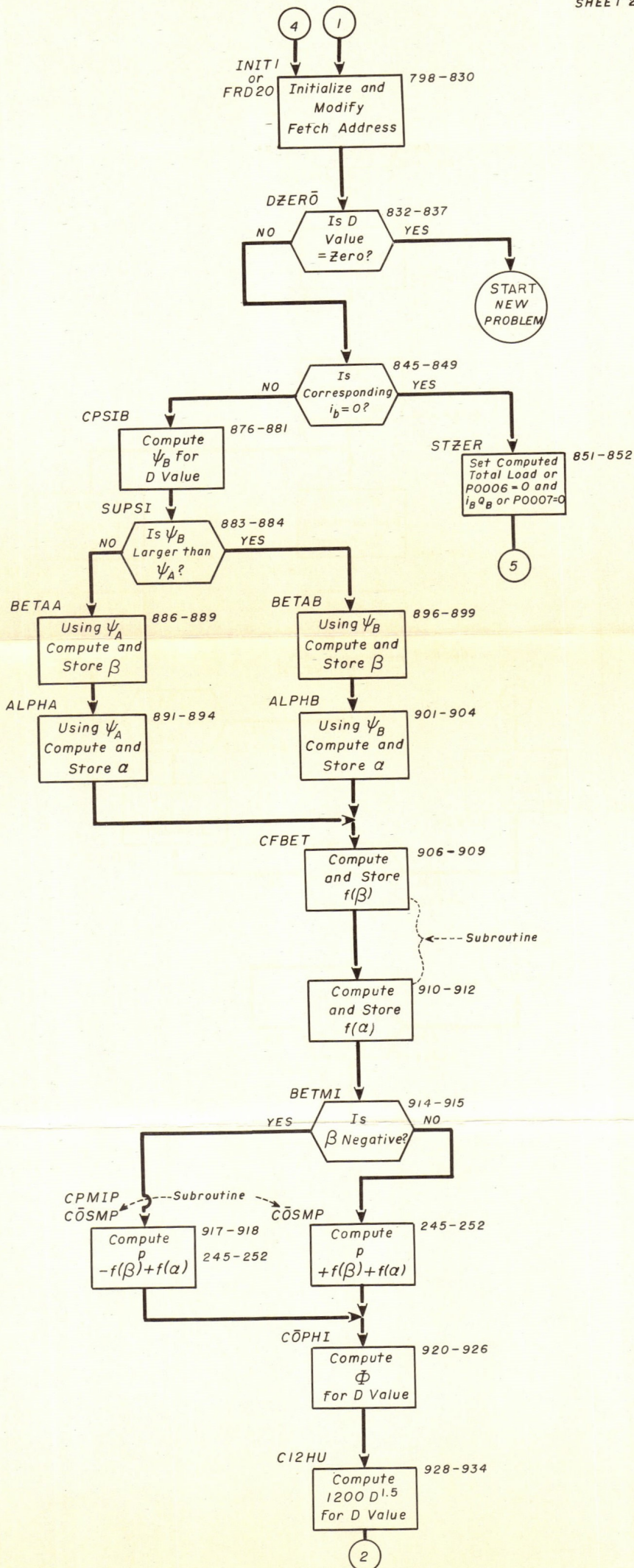


FIGURE 10  
SHEET 3



IBM 650  
FLOW CHART FOR  
MODIFIED EINSTEIN PROCEDURE  
PHASE 2





## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
253	RAL	F1P00		SMALL P	0309	65	0523	0827
254	SLO	TEMP6		AND	0827	16	0306	0461
255	STL	TEMP6	COPHI	STORE	0461	20	0306	0359
256	1				0000	00	0000	0000
257	STD	EXIT4			0500	24	0503	0356
258	RAL		ENTER	ENTER SIR	0356	65	0459	0280
259	RAL	A0038			0459	65	1138	0493
260	SLO	A0041		SUB	0493	16	1141	0395
261	STL	TEMP2			0395	20	0599	0802
262	RAL	A0040			0802	65	1140	0495
263	07	0000		ROUTINE	0495	07	0000	0700
264	STL	TEMP3			0700	20	0255	0008
265	RAL	A0042			0008	65	1142	0347
266	07	0000		TO	0347	07	0000	0852
267	STL	TEMP4			0852	20	0357	0360
268	SLO	TEMP3			0360	16	0255	0509
269	STL	TEMP3		COMPUTE	0509	20	0255	0308
270	RAL	A0035			0308	65	1135	0289
271	07	0000			0289	07	0000	0344
272	STL	TEMP5			0344	20	0449	1002
273	RAL	TEMP4		ZO	1002	65	0357	0511

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DDMM	ERROR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
274				SLO	TEMP5			0511	16	0449	0603
275				DIV	TEMP3		SUB	0603	14	0255	0316
276				MPY	TEMP2			0316	19	0599	0870
277				STL	TEMP2		N	0870	20	0599	1052
278				RAL	A0038			1052	65	1138	0543
279				SLO	TEMP2			0543	16	0599	0653
280				STL	TEMP2			0653	20	0599	1152
281				03	0000		EXIT SIR	1152	03	0000	0457
282				RAL	TEMP2	EXIT4		0457	65	0599	0503
283	1							0000	00	0000	0000
284			COMRN	STD	EXIT5			0750	24	0703	0456
285				RAL		ENTER	ENTER SIR	0456	65	0659	0280
286				RAL	A0045		COMPUTE	0659	65	1145	0699
287				MPY	A0039		AND STORE	0699	19	1139	0460
288				STL	A0046		THIS R	0460	20	1146	0749
289				RAL	A0042		COMPUTED	0749	65	1142	0397
290				STL	A0040		ADVANCE	0397	20	1140	0593
291				RAL	A0046		A0040 TO	0593	65	1146	0351
292				STL	A0042		PREVIOUS R	0351	20	1142	0545
293				RAL	A0043		COMPUTE	0545	65	1143	0693
294				SLO	A0041		DELTA	0693	16	1141	0595

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
295	STL	TEMP3	EXIT5	ZN	0595	20	0255	0703
296	1				0000	00	0000	0000
297	COMB	STD	EXIT3		0800	24	0803	0506
298	RAL		ENTER	ENTER SIR	0506	65	1691	0280
299	RAL	A0050		ZERO	1691	65	1150	1542
300	STL	TEM14	NEX19	TEM14	1542	20	1741	0709
301	NEX19	RAL	A0036	SUB	0709	65	1136	0491
302	07	0000		ROUTINE	0491	07	0000	0596
303	MPY	A0038		TO	0596	19	1138	0358
304	STL	EXPON			0358	20	0363	0366
305	03	0000		EXIT SIR	0366	03	0000	0271
306	LDD		EEXPO	COMPUTE	0271	69	0274	0877
307	MPY	A0037		AND STORE	0274	19	1137	0458
308	STL	A0039		B AND	0458	20	1139	0242
309	03	0000		EXIT SIR	0242	03	0000	0497
310	LDD		CCOEF	COMPUTE	0497	69	0850	0853
311	STL	TEM10		COEFFICIENT	0850	20	0305	0508
312	RAL	F1P00		COMPUTE	0508	65	0523	0977
313	SLO	A0038		A PRIME	0977	16	1138	0743
314	STL	TEMP4		TO THE	0743	20	0357	0510
315	RAL	A0030		ONE MINUS	0510	65	1130	0385

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DDMM	ERROR	BLEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
316					07	0000		Z	0385	07	0000	0290
317					MPY	TEMP4		POWER	0290	19	0357	0378
318					STL	EXPON			0378	20	0363	0466
319					03	0000		EXIT SIR	0466	03	0000	0321
320					LDD		EEXPO	AND	0321	69	0324	0877
321					STL	TEM12		STORE	0324	20	0379	0282
322					RAL	A0038		COMPUTE	0282	65	1138	0793
323					SLO	F1P00		AND STORE	0793	16	0523	1027
324					STL	TEMP3		Z MINUS 1	1027	20	0255	0808
325					SLO	F1P00		STORE	0808	16	0523	1077
326					STL	TEMP4		Z MINUS 2	1077	20	0357	0810
327					SLO	F1P00		STORE	0810	16	0523	1177
328					STL	TEMP5		Z MINUS 3	1177	20	0449	1402
329					SLO	F1P00		STORE	1402	16	0523	1327
330					STL	TEMP6		Z MINUS 4	1327	20	0306	0759
331					SLO	F1P00		STORE	0759	16	0523	1427
332					STL	TEMP7		Z MINUS 5	1427	20	0364	0317
333					RAL	TEMP3			0317	65	0255	0809
334					NZE		C2TS1		0809	45	0512	0463
335					RAL	F1P00		COMPUTE	0512	65	0523	1477
336					DIV	TEMP3		1ST TERM	1477	14	0255	0516

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	COMM.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
337					STL	TERM 1		SERIES ONE	0516	20	0371	0374
338					DIV	TEMP 3		1ST TERM	0374	14	0255	0666
339					STL	TER 11	C2TS1	SERIES TWO	0666	20	0471	0463
340				C2TS1	RAL	TEMP 4			0463	65	0357	0661
341					NZE		C3TS1		0661	45	0464	0765
342					RAL	A0038		COMPUTE	0464	65	1138	0843
343					DIV	TEMP 4		2ND TERM	0843	14	0357	0368
344					STL	TERM 2		SERIES ONE	0368	20	0573	0226
345					DIV	TEMP 4		2ND TERM	0226	14	0357	0468
346					STL	TER 12	C3TS1	SERIES TWO	0468	20	0673	0765
347				C3TS1	RAL	TEMP 5			0765	65	0449	1003
348					NZE		C4TS1		1003	45	0606	0507
349					RAL	A0038		COMPUTE	0606	65	1138	0893
350					MPY	TEMP 3		3RD	0893	19	0255	0276
351					MPY	FOP 50		TERM	0276	19	0272	0342
352					DIV	TEMP 5		SERIES	0342	14	0449	0860
353					STL	TERM 3		ONE	0860	20	0815	0518
354					DIV	TEMP 5		3RD TERM	0518	14	0449	1010
355					STL	TER 13	C4TS1	SERIES TWO	1010	20	0865	0507
356				C4TS1	RAL	TEMP 6			0507	65	0306	0711
357					NZE		C5TS1		0711	45	0514	1015

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DOWN GRADE SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
358			RAL	A0038		COMPUTE	0514	65	1138	0993
359			MPY	TEMP3		4TH	0993	19	0255	0326
360			MPY	TEMP4		TERM	0326	19	0357	0478
361			DIV	F6P00		OF	0478	14	0181	0392
362			DIV	TEMP6		SERIES	0392	14	0306	0716
363			STL	TERM4		ONE	0716	20	0521	0474
364			DIV	TEMP6		4TH TERM	0474	14	0306	0816
365			STL	TER14	C5TS1	SERIES TWO	0816	20	0671	1015
366		C5TS1	RAL	TEMP7			1015	65	0364	0269
367			NZE		C2TS3		0269	45	0322	0723
368			RAL	A0038		COMPUTE	0322	65	1138	1043
369			MPY	TEMP3		THE	1043	19	0255	0376
370			MPY	TEMP4		5TH	0376	19	0357	0528
371			MPY	TEMP5		TERM	0528	19	0449	1020
372			DIV	F4P00		OF	1020	14	0773	0334
373			DIV	F6P00			0334	14	0181	0492
374			DIV	TEMP7		SERIES	0492	14	0364	0524
375			STL	TERMS		ONE	0524	20	0479	0382
376			DIV	TEMP7		5TH TERM	0382	14	0364	0674
377			STL	TER15	C2TS3	SERIES TWO	0674	20	0529	0723
378		C2TS3	RAL	TERM2		COMPUTE	0723	65	0573	1527

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DEBIT	CREDIT	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
379				MPY	A0030		2ND TERM	1527	19	1130	0900
380				STL	TER22		SERIES 3	0900	20	0355	0858
381				RAL	TERM3		COMPUTE	0858	65	0815	0319
382				MPY	A0047		3RD TERM	0319	19	1147	0818
383				STL	TER23		SERIES 3	0818	20	0823	0476
384				RAL	TERM4		COMPUTE	0476	65	0521	0325
385				MPY	A0030		4TH	0325	19	1130	1000
386				MPY	A0047		TERM	1000	19	1147	0868
387				STL	TER24		SERIES 3	0868	20	0873	0526
388				RAL	TERMS		COMPUTE	0526	65	0479	0283
389				MPY	A0047		5TH	0283	19	1147	1018
390				MPY	A0047		TERM	1018	19	1147	1068
391				STL	TER25		SERIES 3	1068	20	1023	0676
392				RAL	TER12		COMPUTE	0676	65	0673	1577
393				MPY	A0030		2ND TERM	1577	19	1130	1050
394				STL	TER32		SERIES 4	1050	20	0455	1008
395				RAL	TER13		COMPUTE	1008	65	0865	0369
396				MPY	A0047		3RD TERM	0369	19	1147	1168
397				STL	TER33		SERIES 4	1168	20	1073	0726
398				RAL	TER14		COMPUTE	0726	65	0671	0375
399				MPY	A0030		4TH	0375	19	1130	1100

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DATA	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
400					MPY	A0047		TERM	1100	19	1147	1318
401					STL	TER34		SERIES 4	1318	20	1173	0776
402					RAL	TER15		COMPUTE	0776	65	0529	0383
403					MPY	A0047		5TH	0383	19	1147	1418
404					MPY	A0047		TERM	1418	19	1147	1468
405					STL	TER35		SERIES 4	1468	20	1323	0826
406					RAL	A0038		IS Z	0826	65	1138	1093
407					SLO	F5P00		EQUAL	1093	16	0696	0451
408					NZE		CIZ5	S	0451	45	0004	0505
409					ALO	F1P00		IS Z	0004	15	0523	1627
410					NZE		CIZ4	EQUAL 4	1627	45	0480	0231
411					ALO	F1P00		IS Z	0480	15	0523	1677
412					NZE		CIZ3	EQUAL 3	1677	45	0530	0281
413					ALO	F1P00		IS Z	0530	15	0523	1727
414					NZE		CIZ2	EQUAL 2	1727	45	0630	0381
415					ALO	F1P00		IS Z	0630	15	0523	1777
416					NZE		CIZ1	EQUAL 1	1777	45	0680	0481
417					ALO	F1P00			0680	15	0523	1827
418					NZE	NONIN			1827	45	0830	0531
419					RAL	F1P00		COMPUTE 11	0531	65	0523	1877
420					SLO	A0030		FOR Z	1877	16	1130	0485

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	OPMM	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
421					MPY	TEM10		EQUAL	0485	19	0305	0876
422					STL	TEMP2		ZERO	0876	20	0599	1452
423					RSL	A0030		COMPUTE	1452	66	1130	0535
424					MPY	A0048		12	0535	19	1148	1518
425					ALO	A0030		FOR	1518	15	1130	0635
426					SLO	F1P00		Z	0635	16	0523	1927
427					MPY	TEM10		EQUAL	1927	19	0305	0976
428					STL	TEMP3	P1112	ZERO	0976	20	0255	1058
429	1								0000	00	0000	0000
430				CCOEF	STD	EXIT6			0853	24	0656	0859
431					RAL		ENTER	ENTER SIR	0859	65	0812	0280
432					RAL	F1P00		COMPUTE	0812	65	0523	0828
433					SLO	A0030			0828	16	1130	0685
434					07	0000		THE	0685	07	0000	0340
435					MPY	A0038			0340	19	1138	1158
436					STL	EXPON			1158	20	0363	0866
437					03	0000		EXIT SIR	0866	03	0000	0821
438					LDD		EEXPO	COEFFICIENT	0821	69	0724	0877
439					STL	TEMP3			0724	20	0255	1308
440					RAL	A0038		OF	1308	65	1138	1193
441					SLO	F1P00			1193	16	0523	0878

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DOWN	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
442					STL	TEMP 4		I 1	0878	20	0357	1060
443					RAL	A0030			1060	65	1130	0735
444					07	0000		AND	0735	07	0000	0390
445					MPY	TEMP 4			0390	19	0357	0978
446					STL	EXPON			0978	20	0363	1016
447					03	0000		EXIT SIR	1016	03	0000	0871
448					LDD		EEXPO		0871	69	0824	0877
449					MPY	FP216		I 2	0824	19	1028	0348
450					DIV	TEMP 3	EXIT 6		0348	14	0255	0656
451	1								0000	00	0000	0000
452				CIZ 1	RAL	A0030		COMPUTE	0481	65	1130	0835
453					SLO	F1P00		I 1	0835	16	0523	1078
454					SLO	A0048		FOR	1078	16	1148	1053
455					MPY	TEM10		Z	1053	19	0305	1026
456					STL	TEMP 2		EQUAL 1	1026	20	0599	1502
457					RSL	A0048			1502	66	1148	1153
458					MPY	A0048		COMPUTE	1153	19	1148	1568
459					MPY	FOP50			1568	19	0272	0542
460					ALO	F1P00		I 2	0542	15	0523	1178
461					SLO	A0030			1178	16	1130	0885
462					STL	TEMP 4		FOR	0885	20	0357	1160

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OP.	D.	L.	COMMENTS	L.	OP.	D.	L.
463	RAL	A10030			1160	65	1130	0985
464	MPY	A10048		Z	0985	19	1148	1618
465	ALO	TEMP4			1618	15	0357	0811
466	MPY	TEM10		EQUAL	0811	19	0305	1076
467	STL	TEMP3	P1112	1	1076	20	0255	1058
468					0000	00	0000	0000
469	RAL	A10048			0505	65	1148	1403
470	MPY	F5P00		COMPUTE	1403	19	0696	1066
471	STL	TEMP3			1066	20	0255	1408
472	RSL	TERM1		AND	1408	66	0371	0475
473	ALO	TER22			0475	15	0355	1009
474	SLO	TER23		STORE	1009	16	0823	1328
475	ALO	TER24			1328	15	0873	1428
476	STL	TEMP5		11	1428	20	0449	1552
477	MPY	TEM12			1552	19	0379	1400
478	STL	TEMP4		FOR	1400	20	0357	1310
479	RSL	TERM1			1310	66	0371	0525
480	ALO	TERM2			0525	15	0573	1478
481	SLO	TERM3		Z	1478	16	0815	0469
482	ALO	TERM4			0469	15	0521	0675
483	SLO	TEMP4			0675	16	0357	0861

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	CDNA	ESDR	WDR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
484					SLO	F1P00		EQUAL	0861	16	0523	1528
485					ALO	A0030			1528	15	1130	1035
486					SLO	TEMP3			1035	16	0255	1059
487					MPY	TEM10			1059	19	0305	1176
488					STL	TEMP2		5	1176	20	0599	1602
489					RAL	A0030		COMPUTE	1602	65	1130	1085
490					MPY	A0048			1085	19	1148	1668
491					STL	TEMP6			1668	20	0306	1159
492					RAL	A0048			1159	65	1148	1453
493					MPY	A0048		AND	1453	19	1148	1718
494					MPY	F0P50			1718	19	0272	0592
495					MPY	F5P00			0592	19	0696	1166
496					STL	TEMP7			1166	20	0364	0367
497					RSL	TEMP5		STORE	0367	66	0449	1503
498					MPY	A0048			1503	19	1148	1768
499					ALO	TER11			1768	15	0471	0825
500					SLO	TER32			0825	16	0455	1309
501					ALO	TER33		12	1309	15	1073	1578
502					SLO	TER34			1578	16	1173	1628
503					MPY	TEM12			1628	19	0379	1450
504					SLO	TER11			1450	16	0471	0875

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
505	ALO	TER 12		FOR	0875	15	0673	1678
506	SLO	TER 13			1678	16	0865	0519
507	ALO	TER 14			0519	15	0671	0975
508	ALO	F 1 P 00		Z	0975	15	0523	1728
509	SLO	A 00 30			1728	16	1130	1185
510	ALO	TEMP 6		EQUAL	1185	15	0306	1011
511	SLO	TEMP 7			1011	16	0364	0669
512	MPY	TEM 10			0669	19	0305	1326
513	STL	TEMP 3	P 1 1 1 2	5	1326	20	0255	1058
514	1				0000	00	0000	0000
515	RAL	A 00 48		COMPUTE	0231	65	1148	1553
516	MPY	F 4 P 00			1553	19	0773	0394
517	STL	TEMP 3		AND	0394	20	0255	1458
518	RSL	TERM 1			1458	66	0371	1025
519	ALO	TER 22		STORE	1025	15	0355	1409
520	SLO	TER 23			1409	16	0823	1778
521	STL	TEMP 5		I 1	1778	20	0449	1652
522	MPY	TEM 12			1652	19	0379	1500
523	STL	TEMP 4		FOR	1500	20	0357	1410
524	RSL	TERM 1			1410	66	0371	1075
525	ALO	TERM 2			1075	15	0573	1828

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DDMM	ERRR	SIID	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
526					SLO	TERM3		Z	1828	16	0815	0719
527					SLO	TEMP4			0719	16	0357	1061
528					ALO	F1P00			1061	15	0523	1878
529					SLO	A0030		EQUAL	1878	16	1130	1335
530					ALO	TEMP3			1335	15	0255	1459
531					MPY	TEM10			1459	19	0305	1426
532					STL	TEMP2		4	1426	20	0599	1702
533					RAL	A0030			1702	65	1130	1435
534					MPY	A0048		COMPUTE	1435	19	1148	1818
535					STL	TEMP6			1818	20	0306	1509
536					RAL	A0048		AND	1509	65	1148	1603
537					MPY	A0048			1603	19	1148	1868
538					MPY	F0P50			1868	19	0272	0692
539					MPY	F4P00		STORE	0692	19	0773	0494
540					STL	TEMP7			0494	20	0364	0467
541					RSL	TEMP5			0467	66	0449	1653
542					MPY	A0048		12	1653	19	1148	1918
543					ALO	TER11			1918	15	0471	1175
544					SLO	TER32			1175	16	0455	1559
545					ALO	TER33		FOR	1559	15	1073	1928
546					MPY	TEM12			1928	19	0379	1550

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	DEPT.	ORDER	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
547					SLO	TER 11			1550	16	0471	1325
548					ALO	TER 12		Z	1325	15	0673	0679
549					SLO	TER 13			0679	16	0865	0819
550					SLO	F 1 P 00			0819	16	0523	0729
551					ALO	A 00 30		EQUAL	0729	15	1130	1485
552					SLO	TEMP 6			1485	16	0306	1161
553					ALO	TEMP 7			1161	15	0364	0869
554					MPY	TEM 10			0869	19	0305	1476
555					STL	TEMP 3	P 1 1 1 2	4	1476	20	0255	1058
556	1								0000	00	0000	0000
557				C 1 2 3	RAL	A 00 48			0281	65	1148	1703
558					MPY	F 3 P 00		COMPUTE	1703	19	0806	1526
559					STL	TEMP 3			1526	20	0255	1508
560					RSL	TERM 1		AND	1508	66	0371	1425
561					ALO	TER 22			1425	15	0355	1609
562					STL	TEMP 5		STORE	1609	20	0449	1752
563					MPY	TEM 12			1752	19	0379	1600
564					STL	TEMP 4		I 1	1600	20	0357	1460
565					RSL	TERM 1			1460	66	0371	1475
566					ALO	TERM 2		FOR	1475	15	0573	0779
567					SLO	TEMP 4			0779	16	0357	1311

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	CONV.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
568					SLO	F1P00		Z	1311	16	0523	0829
569					ALO	A0030			0829	15	1130	1535
570					SLO	TEMP3		EQUAL	1535	16	0255	1659
571					MPY	TEM10			1659	19	0305	1576
572					STL	TEMP2		3	1576	20	0599	1802
573					RAL	A0030			1802	65	1130	1585
574					MPY	A0048		COMPUTE	1585	19	1148	1968
575					STL	TEMP6			1968	20	0306	1709
576					RAL	A0048		AND	1709	65	1148	1753
577					MPY	A0048			1753	19	1148	1019
578					MPY	F0P50		STORE	1019	19	0272	0842
579					MPY	F3P00			0842	19	0806	1626
580					STL	TEMP7			1626	20	0364	0517
581					RSL	TEMP5		12	0517	66	0449	1803
582					MPY	A0048			1803	19	1148	1069
583					ALO	TER11			1069	15	0471	1525
584					SLO	TER32			1525	16	0455	1759
585					MPY	TEM12		FOR	1759	19	0379	1650
586					SLO	TER11			1650	16	0471	1575
587					ALO	TER12			1575	15	0673	0879
588					ALO	F1P00		Z	0879	15	0523	0979

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
589	SLO	A0030			0979	16	1130	1635
590	ALO	TEMP6			1635	15	0306	1411
591	SLO	TEMP7		EQUAL	1411	16	0364	1169
592	MPY	TEM10			1169	19	0305	1676
593	STL	TEMP3	P1112	3	1676	20	0255	1058
594	1				0000	00	0000	0000
595	RAL	A0048		COMPUTE	0381	65	1148	1853
596	MPY	F2P00		AND	1853	19	0856	1726
597	STL	TEMP3			1726	20	0255	1558
598	RSL	TERM1		STORE	1558	66	0371	1625
599	MPY	TEM12			1625	19	0379	1700
600	STL	TEMP4		I 1	1700	20	0357	1510
601	RSL	TERM1		FOR	1510	66	0371	1675
602	ALO	F1P00		Z	1675	15	0523	1029
603	SLO	A0030			1029	16	1130	1685
604	ALO	TEMP3		EQUAL	1685	15	0255	1809
605	SLO	TEMP4			1809	16	0357	1461
606	MPY	TEM10			1461	19	0305	1776
607	STL	TEMP2		2	1776	20	0599	1852
608	RAL	A0030			1852	65	1130	1735
609	MPY	A0048		COMPUTE	1735	19	1148	1319

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	BOOK	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
610					STL	TEMP6			1319	20	0306	1859
611					RAL	A0048		AND	1859	65	1148	1903
612					MPY	A0048			1903	19	1148	1419
613					STL	TEMP7		STORE	1419	20	0364	0667
614					RAL	TERM1			0667	65	0371	1725
615					MPY	A0048		12	1725	19	1148	1469
616					ALO	TER11			1469	15	0471	1775
617					MPY	TEM12		FOR	1775	19	0379	1750
618					SLO	TER11			1750	16	0471	1825
619					SLO	F1P00		Z	1825	16	0523	1079
620					ALO	A0030			1079	15	1130	1785
621					SLO	TEMP6		EQUAL	1785	16	0306	1511
622					ALO	TEMP7			1511	15	0364	1519
623					MPY	TEM10			1519	19	0305	1826
624					STL	TEMP3	P1112	2	1826	20	0255	1058
625	1								0000	00	0000	0000
626				NONIN	RAL	A0038		IS Z	0830	65	1138	1343
627					SLO	F1P00		LESS THAN	1343	16	0523	1179
628					BMI	LESS1	NEX18	ONE	1179	46	0482	0483
629				NEX18	RAL	A0038			0483	65	1138	1393
630					STL	TEM13			1393	20	0797	1800

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
631	03	0000		EXIT SIR	1800	03	0000	0655
632	RAL	FC2		IS	0655	65	1608	0513
633	LDD		FIX		0513	69	1316	0200
634	RAL	FLC2		Z	1316	65	1569	1423
635	LDD		FLOAT		1423	69	1876	0229
636	RAL		ENTER	ENTER SIR	1876	65	1329	0280
637	RAL	A0038		NEAR	1329	65	1138	1443
638	SLO	TEM13			1443	16	0797	0501
639	SLO	AVAR1		AN	0501	16	0254	1909
640	BMI	SET11			1909	46	0862	0663
641	SLO	FP930		INTEGER	0663	16	1416	1021
642	BMI		SET12		1021	46	0874	1875
643	RAL	A0038		COMPUTE	0874	65	1138	1493
644	MPY	F3P14		Z PI	1493	19	0746	1466
645	STL	ZPI		OVER	1466	20	1071	1024
646	05	0000		SINE	1024	05	0000	1429
647	STL	ZPIOS		Z PI	1429	20	0533	0236
648	RAL	ZPI			0236	65	1071	1925
649	DIV	ZPIOS		AND	1925	14	0533	0544
650	STL	TEM11		STORE	0544	20	0849	1902
651	RAL	ZPI		COMPUTE	1902	65	1071	1975

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	COMM.	ERRR	818Y	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
652					06	0000		PI CTN	1975	06	0000	0880
653					DIV	ZPIOS		Z PI	0880	14	0533	0594
654					MPY	F3P14		AND	0594	19	0746	1516
655					STL	A0049		STORE	1516	20	1149	0304
656					RSL	TERM1		COMPUTE	0304	66	0371	1926
657					ALO	TER22			1926	15	0355	1560
658					SLO	TER23		AND	1560	16	0823	1479
659					ALO	TER24			1479	15	0873	1529
660					SLO	TER25		STORE	1529	16	1023	1579
661					STL	TEMP5			1579	20	0449	0354
662					MPY	TEM12		I 1	0354	19	0379	1850
663					STL	TEMP3		FOR	1850	20	0255	1658
664					RAL	TEM11		Z	1658	65	0849	0454
665					SLO	TEMP3		NOT	0454	16	0255	1610
666					MPY	TEM10		AN	1610	19	0305	1976
667					STL	TEMP2		INTEGER	1976	20	0599	0504
668					RSL	TEMP5		COMPUTE	0504	66	0449	0804
669					MPY	A0048		AND	0804	19	1148	1619
670					ALO	TER11		STORE	1619	15	0471	1629
671					SLO	TER32		THE	1629	16	0455	1660
672					ALO	TER33		SUM	1660	15	1073	1679

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE: \_\_\_\_\_

CARD NO.	CDMK	ERROR	MARK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
673					SLO	TER34		OF	1679	16	1173	1729
674					ALO	TER35		THE	1729	15	1323	1779
675					MPY	TEM12		TWO	1779	19	0379	1900
676					STL	TEMP4	CPSIZ	SUMMATIONS	1900	20	0357	1710
677	1								0000	00	0000	0000
678				PI112	RAL	A0029		COMPUTE	1058	65	1129	0683
679					MPY	TEMP2		PI1	0683	19	0599	1070
680					ALO	TEMP3		PLUS	1070	15	0255	1760
681					STL	TEMP4		12	1760	20	0357	1810
682					03	0000		EXIT SIR	1810	03	0000	1065
683					RAL	TEMP4	EXIT3		1065	65	0357	0803
684	1								0000	00	0000	0000
685				CPSIZ	RAL	A0038		COMPUTE	1710	65	1138	1543
686					MPY	A0038		Z	1543	19	1138	1708
687					STL	TEMP3		SQUARED	1708	20	0255	1758
688					RAL	F1P64			1758	65	1561	1165
689					MPY	A0038		COMPUTE	1165	19	1138	1808
690					STL	TEMP5			1808	20	0449	0854
691					RAL	FP077		AND	0854	65	0657	1611
692					MPY	A0038			1611	19	1138	1858
693					STL	TEMP6		STORE	1858	20	0306	1860

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	COMM.	ERROR	BIEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
694					RAL	FP004			1860	65	0713	0817
695					MPY	A0038		EULERS	0817	19	1138	1908
696					STL	TEMP7			1908	20	0364	0867
697					RAL	FP002		CONSTANT	0867	65	1170	1829
698					MPY	TEMP3			1829	19	0255	1879
699					SLO	TEMP7		PLUS	1879	16	0364	1669
700					ALO	FP025			1669	15	0372	1929
701					MPY	TEMP3		PSI	1929	19	0255	0980
702					SLO	TEMP6			0980	16	0306	1661
703					ALO	FP129			1661	15	0664	1719
704					MPY	TEMP3		BRACKET	1719	19	0255	1030
705					ALO	TEMP5			1030	15	0449	1004
706					ALO	F1P00		Z	1004	15	0523	1080
707					07	0000			1080	07	0000	1835
708					STL	TEMP8		BRACKET	1835	20	0339	0892
709					RSL	F1P00			0892	66	0523	1180
710					DIV	A0038		COMPUTE	1180	14	1138	0398
711					ALO	A0049			0398	15	1149	1054
712					SLO	F1P00		AND	1054	16	0523	1330
713					ALO	TEMP8			1330	15	0339	1593
714					MPY	TEM11		STORE	1593	19	0849	1320

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	DEBK	ERRR	SLK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
715					ALO	TEMP4			1320	15	0357	1711
716					MPY	TEM10			1711	19	0305	1430
717					STL	TEMP3	P1112	12	1430	20	0255	1058
718	1								0000	00	0000	0000
719				EEXPO	STD	EXIT7			0877	24	1480	0733
720					RAL		ENTER	ENTER SIR	0733	65	0286	0280
721					RAM	EXPON			0286	67	0363	1017
722					MPY	A6TWO			1017	19	1420	0490
723					ALO	A5TWO		SUB	0490	15	1643	0847
724					STL	ACC1			0847	20	0651	1154
725					RAM	EXPON			1154	67	0363	1067
726					MPY	ACC1			1067	19	0651	0472
727					ALO	A4TWO		ROUTINE	0472	15	1530	1885
728					STL	ACC1			1885	20	0651	1404
729					RAM	EXPON			1404	67	0363	1167
730					MPY	ACC1		TO	1167	19	0651	0522
731					ALO	A3TWO			0522	15	1580	1935
732					STL	ACC1			1935	20	0651	1454
733					RAM	EXPON		EVALUATE	1454	67	0363	1317
734					MPY	ACC1			1317	19	0651	0672
735					ALO	A2TWO			0672	15	1630	0336

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	DOWN	ERROR	BURN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
736					STL	ACC1		E	0336	20	0651	1504
737					RAM	EXPON			1504	67	0363	1417
738					MPY	ACC1			1417	19	0651	0822
739					ALO	A1TWO			0822	15	1680	0386
740					STL	ACC1			0386	20	0651	1554
741					RAM	EXPON		TO	1554	67	0363	1467
742					MPY	ACC1			1467	19	0651	0872
743					ALO	F1P00			0872	15	0523	1730
744					STL	ACC1		THE	1730	20	0651	1604
745					MPY	ACC1			1604	19	0651	1022
746					STL	ACC1			1022	20	0651	1654
747					MPY	ACC1			1654	19	0651	1072
748					STL	ACC1		X	1072	20	0651	1704
749					RAL	EXPON			1704	65	0363	1517
750					BMI		NOTMI		1517	46	1470	1171
751					RAL	F1P00			1470	65	0523	1780
752					DIV	ACC1	EXIT7	POWER	1780	14	0651	1480
753				NOTMI	RAL	ACC1	EXIT7		1171	65	0651	1480
754	1								0000	00	0000	0000
755				START	RCD	CONT1	CONT1	READ HDR	1950	70	1972	1972
756				CONT1	LDD	R0001			1972	69	1951	1754

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OPPK	SEKRS	SIK	LOC	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
757					STD	P0001		STORE	1754	24	1977	1830
758					LDD	R0002			1830	69	1952	0705
759					STD	P0002			0705	24	1978	0631
760					LDD	R0003		AND	0631	69	1953	1006
761					STD	P0003			1006	24	1979	0532
762					LDD	R0004			0532	69	1954	0707
763					STD	P0004			0707	24	1980	0783
764					LDD	R0005		PUNCH	0783	69	1955	1910
765					STD	P0005			1910	24	1981	0384
766					LDD	R0006			0384	69	1956	1761
767					STD	P0006			1761	24	1982	0486
768					SLO	8002			0486	16	8002	0695
769					STL	P0007			0695	20	1983	0536
770					STD	P0008			0536	24	1984	0337
771					STD	P0009			0337	24	1985	0338
772					LDD	PCW1			0338	69	0541	0794
773					STD	P0010			0794	24	1986	0389
774					PCH	P0001			0389	71	1977	1880
775					LDD	PCW2			1880	69	0833	0686
776					STD	P0010	READ		0686	24	1986	0489
777	1								0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DDMM	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
778				READ	RCD	CONT2	CONT2	READ DATA	0489	70	1973	1973
779				CONT2	RAL	FLC1			1973	65	1930	0736
780					LDD		FLOAT	FLOAT	0736	69	0539	0229
781					RAM	R0001			0539	67	1951	0805
782					LDD	MOD1		AND	0805	69	1811	0814
783					SDA	MOD1			0814	22	1811	0864
784					SLT	0004		STORE	0864	35	0004	0731
785					ALO	8001			0731	15	8001	0689
786					SDA	END1		DATA	0689	22	1693	0796
787					RAL	RDC1			0796	65	0899	1804
788					AUP	MOD1	8002		1804	10	1811	8002
789				RDK1	ALO	D1			0701	15	0294	0999
790					AUP	8001			0999	10	8001	0757
791					SUP	END1			0757	11	1693	0897
792					NZU		TEST		0897	44	0751	1854
793					AUP	8001	8002		0751	10	8001	8002
794				TEST	RAL	R0001			1854	65	1951	0855
795					BMI	ZERO	READ		0855	46	1861	0489
796	1								0000	00	0000	0000
797				ZERO	RAU	MOD2	8003	ZERO	1861	60	1014	8003
798				ZK1	SUP	END2		THE	0801	11	1904	1911

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

CARD NO.	CPMH.	CRDR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
799					NZU		BEGIN	OUTPUT	1911	44	1315	1566
800					AUP	8001			1315	10	8001	1473
801					AUP	D1	8003	REGION	1473	10	0294	8003
802	1								0000	00	0000	0000
803				BEGIN	RAL	IDIA		INITIALIZE	1566	65	1769	1523
804					STL	DIA			1523	20	0781	0484
805					RAL	ISTD			0484	65	0387	0641
806					STL	DIAFT	NEXT1		0641	20	0845	0448
807				NEXT1	RAL	DIA	ENTER	ENTER SIR	0448	65	0781	0280
808				DIA	RAM	DOO11	NEXT2	CONVERT D	0781	67	0911	1415
809				NEXT2	NZE		SUMIB	VALUES	1415	45	1819	1869
810					MPY	FPO3D	DIAFT	TO	1819	19	1172	0845
811				DIAFT	STL	A0001	NEXT3	FEET	0845	20	1101	1005
812				NEXT3	03	0000		EXIT SIR	1005	03	0000	1961
813					RAL	DIA			1961	65	0781	0836
814					SLO	END4		STORE	0836	16	0739	1743
815					NZE		NSIR1		1743	45	0846	0997
816					RAL	DIA		AND	0846	65	0781	0886
817					ALO	D1			0886	15	0294	1049
818					STL	DIA		MODIFY	1049	20	0781	0534
819					RAL	DIAFT			0534	65	0845	1099

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO 

 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	OP.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
820			ALO	D1		ADDRESSES	1099	15	0294	1199
821			STL	DIAFT	NEXT1		1199	20	0845	0448
822	1						0000	00	0000	0000
823		SUMIB	03	0000	NSIR1	EXIT SIR	1869	03	0000	0997
824		NSIR1	RAL	IIB		ADD	0997	65	0851	1055
825			LDD		SUM	IBS	1055	69	1012	0300
826			SLO	D0053		AND	1012	16	0953	0807
827			NZE	STOP2		CHECK	0807	45	1062	1162
828			RAL	IIS		ADD	1162	65	1465	1919
829			LDD		SUM	ISS	1919	69	1322	0300
830			SLO	D0074		AND	1322	16	0974	0831
831			NZE	STOP3	DETVI	CHECK	0831	45	0634	0986
832	1						0000	00	0000	0000
833		DETVI	RAL		ENTER	ENTER SIR	0986	65	0789	0280
834			RAL	D0006		COMPUTE	0789	65	0906	1312
835			MPY	D0006			1312	19	0906	0881
836			MPY	FP68D		THE	0881	19	0684	1155
837			STL	TEMP1			1155	20	0393	0896
838			RAL	D0006		VISCOSITY	0896	65	0906	1412
839			MPY	FIPO14			1412	19	1515	1036
840			ALO	TEMP1		AND	1036	15	0393	1047

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OPM.	ERR.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
841				ALO	FP471			1047	15	1001	1405
842				STL	TEMP1		STORE	1405	20	0393	0996
843				RAL	FP19D			0996	65	1249	1455
844				DIV	TEMP1			1455	14	0393	0548
845				STL	A0023			0548	20	1123	0981
846				SLT	0005			0981	35	0005	1793
847				STL	P0008	PINCH2		1793	20	1984	0487
848	1							0000	00	0000	0000
849			PINCH2	03	0000		EXIT SIR	0487	03	0000	0992
850				RAL	P0006		MODIFY	0992	65	1982	0687
851				ALO	OP1			0687	15	0540	0895
852				STL	P0001		CARD	0895	20	1977	1031
853				LDD	D0001			1031	69	0901	1505
854				STD	P0002			1505	24	1978	1081
855				LDD	D0002		NUMBER	1081	69	0902	1555
856				STD	P0003			1555	24	1979	0632
857				LDD	D0003		AND	0632	69	0903	1056
858				STD	P0004			1056	24	1980	0883
859				LDD	D0004		FIX	0883	69	0904	0857
860				STD	P0005			0857	24	1981	0734
861				LDD	D0005		AND	0734	69	0905	1462

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	DDMM	ERRR	BIEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
862					STD	P0006			1462	24	1982	1086
863					LDD	D0006		PUNCH	1086	69	0906	1512
864					STD	P0007			1512	24	1983	1186
865					RAL	FC1		OUTPUT	1186	65	0839	1843
866					LDD		FIX	CARD	1843	69	1046	0200
867					PCH	P0001	QSM	TWO	1046	71	1977	1181
868	1								0000	00	0000	0000
869				QSM	RAL		ENTER	ENTER SIR	1181	65	0784	0280
870					RAL	D0001		COMPUTE	0784	65	0901	1605
871					MPY	D0007		AND	1605	19	0907	1331
872					MPY	FP27D		STORE	1331	19	0834	1655
873					STL	A0024	CALRS	QSM	1655	20	1124	1431
874	1								0000	00	0000	0000
875				CALRS	RAL	D0010			1431	65	0910	1565
876					STL	TEMP1	LOOP1		1565	20	0393	1096
877				LOOP1	RAL	F12P2		CALCULATE	1096	65	1299	1705
878					MPY	TEMP1			1705	19	0393	1064
879					MPY	D0003		SQ RT RS	1064	19	0903	1074
880					DIV	A0001			1074	14	1101	1562
881					07	0000		AND	1562	07	0000	1567
882					MPY	F114P1			1567	19	1520	0840

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OPM.	ERROR	BLK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
883					STL	TEMP2		RS	0840	20	0599	1755
884					RAL	D0002		AND	1755	65	0902	1007
885					DIV	TEMP2			1007	14	0599	1612
886					STL	A0025		STORE	1612	20	1125	1481
887					MPY	A0025			1481	19	1125	1196
888					STL	A0026			1196	20	1126	1531
889					SLT	0002			1531	35	0002	0837
890					STL	RSDEC	U	STAR	0837	20	0791	0844
891	1								0000	00	0000	0000
892				U	RAL	A0025		COMPUTE	0844	65	1125	1581
893					MPY	F5P67		U	1581	19	0884	1805
894					STL	A0027	C	DEL T	1805	20	1127	1631
895	1								0000	00	0000	0000
896				C	RAL	F11P6		COMPUTE	1631	65	0984	0889
897					MPY	A0023		AND	0889	19	1123	0894
898					DIV	A0027		STORE	0894	14	1127	0388
899					STL	A0028		DELTA	0388	20	1128	1681
900					SLT	0002			1681	35	0002	0887
901					STL	TEMP5	K	SDEL	0887	20	0449	1855
902	1								0000	00	0000	0000
903				K	RAL	A0001		COMPUTE	1855	65	1101	1905

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OPHA.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
904					DIV	A0028		KS OVER	1905	14	1128	0488
905					STL	TEMP3		DELTA	0488	20	0255	1662
906					03	0000		EXIT SIR	1662	03	0000	1617
907					RAU	TEMP3		TLU	1617	60	0255	1712
908					TLU	X0001		FOR	1712	84	1200	1156
909					LDD	CTLUX			1156	69	1762	1615
910					SDA	CTLUX	CTLUX	NEW X	1615	22	1762	1762
911				NEXT6	SLT	0005		AND STORE	1051	35	0005	0763
912					STL	TEMP3			0763	20	0255	1812
913					RAL		ENTER	ENTER SIR	1812	65	1665	0280
914					RAL	TEMP3		CHECK	1665	65	0255	1862
915					SLO	TEMP1		DIFF	1862	16	0393	1097
916					STL	TEMP4		OLD	1097	20	0357	1912
917					RAL	TEMP3		AND	1912	65	0255	1962
918					STL	TEMP1		NEW	1962	20	0393	1346
919					RAM	TEMP4		X	1346	67	0357	0813
920					SLO	FPO30		AND	0813	16	1616	1321
921					BMI	PNCH3	LOOP 1	INITIALIZE	1321	46	1174	1096
922	1								0000	00	0000	0000
923				PNCH3	03	0000		EXIT SIR	1174	03	0000	1731
924					RAL	P0001		MODIFY	1731	65	1977	1781

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.	
925	ALO	OP 1			1781	15	0540	0995	
926	STL	P0001		CARD	0995	20	1977	1831	
927	LDD	D0011			1831	69	0911	1164	
928	STD	P0002			1164	24	1978	1881	
929	LDD	D0012		NUMBER	1881	69	0912	1715	
930	STD	P0003			1715	24	1979	0682	
931	LDD	TEMP3		PUNCH	1336	69	0255	1163	
932	STD	P0004			0863	24	1980	0983	
933	LDD	D0008		FIX	0983	69	0908	1013	
934	STD	P0005			1013	24	1981	1034	
935	LDD	D0009		AND	1034	69	0909	1063	
936	STD	P0006			1063	24	1982	1336	
937	LDD	D0010		PUNCH	1336	69	0910	1163	
938	STD	P0007			1163	24	1983	1436	
939	LDD	A0025		OUTPUT	1436	69	1125	1931	
940	STD	P0008			1931	24	1984	0987	
941	RAL	FC1		CARD	0987	65	0839	1893	
942	LDD		FIX		1893	69	1396	0200	
943	PCH	P0001	COMP	THREE	1396	71	1977	0732	
944	1				0000	00	0000	0000	
945		COMP	RAL	ENTER	ENTER SIR	0732	65	1486	0280

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CONN.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
946					RAL	F30P2		COMPUTE	1486	65	0989	1943
947					MPY	D0003			1943	19	0903	1324
948					MPY	TEMP1		P	1324	19	0393	1314
949					DIV	A0001		AND	1314	14	1101	1313
950					07	0000			1313	07	0000	1969
951					STL	A0029		STORE	1969	20	1129	0782
952					STL	P0005	CAPRI		0782	20	1981	1084
953	1								0000	00	0000	0000
954				CAPRI	RAL	D0009		COMPUTE	1084	65	0909	1413
955					DIV	D0008		AND STORE	1413	14	0908	1570
956					STL	A0030		A PRIME	1570	20	1130	1033
957					STL	P0006		A PRIME	1033	20	1982	1536
958					MPY	A0030		SQUARED	1536	19	1130	1151
959					STL	A0047		AND LOG	1151	20	1147	1401
960					RAL	A0030		A PRIME	1401	65	1130	1586
961					07	0000			1586	07	0000	0841
962					STL	A0048	CPERQ		0841	20	1148	1451
963	1								0000	00	0000	0000
964				CPERQ	RAL	A0029		COMPUTE	1451	65	1129	1083
965					SLO	F1P00			1083	16	0523	0832
966					STL	TEMP1		AND	0832	20	0393	1446

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.		
967	RAL	A0030			1446	65	1130	1636		
968	07	0000		STORE	1636	07	0000	0891		
969	ALO	TEMP1			0891	15	0393	1197		
970	DIV	TEMP1		PER	1197	14	0393	1406		
971	MPY	A0030			1406	19	1130	1501		
972	STL	TEMP2		CENT	1501	20	0599	1456		
973	RAL	F1P00			1456	65	0523	0882		
974	SLO	TEMP2		Q	0882	16	0599	1506		
975	STL	A0031			1506	20	1131	1184		
976	SLT	0002			1184	35	0002	0991		
977	STL	P0007	CLSZ		0991	20	1983	1686		
978	1				0000	00	0000	0000		
979		CLSZ	RAL	A0031	COMPUTE	1686	65	1131	1736	
980			MPY	A0024	AND	1736	19	1124	0994	
981			STL	A0032	STORE	0994	20	1132	1786	
982			STL	P0008	PINCH4	LSZ	1786	20	1984	1037
983	1				0000	00	0000	0000		
984		PINCH4	03	0000	EXIT SIR	1037	03	0000	1042	
985			RAL	P0001	MODIFY	1042	65	1977	0982	
986			ALO	OP1	CARD	0982	15	0540	1045	
987			STL	P0001	NUMBER	1045	20	1977	1032	

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DDMM	ERROR	BLK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
988					LDD	RSDEC		AND	1032	69	0791	1044
989					STD	P0002		FIX	1044	24	1978	1082
990					LDD	A0027		AND	1082	69	1127	1182
991					STD	P0003		PUNCH	1182	24	1979	1332
992					LDD	TEMP5		OUTPUT	1332	69	0449	1556
993					STD	P0004			1556	24	1980	1183
994					RAL	FC1		CARD	1183	65	0839	1993
995					LDD		FIX		1993	69	1496	0200
996					PCH	P0001	CPSIA	FOUR	1496	71	1977	1432
997	1								0000	00	0000	0000
998				CPSIA	RAL		ENTER	ENTER SIR	1432	65	1836	0280
999					RAL	F1P65		COMPUTE	1836	65	1039	1094
1000					MPY	A0002		AND	1094	19	1102	1422
1001					DIV	A0026		STORE	1422	14	1126	1886
1002					STL	A0033	INIT1	PSIA	1886	20	1133	1936
1003	1								0000	00	0000	0000
1004				INIT1	03	0000		EXIT SIR	1936	03	0000	1041
1005					LDD	MOD31			1041	69	1194	1347
1006					STD	MOD3			1347	24	1551	1606
1007					LDD	MOD41		INITIALIZE	1606	69	1463	1666
1008					STD	MOD4			1666	24	1620	1573

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	DBM.	ERROR	LINK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1009					LDD	MOD5 I			1573	69	1482	1087
1010					STD	MOD5	FRD20		1087	24	0890	1344
1011				FRD20	RAL	P0001			1344	65	1977	1532
1012					ALO	OP1		MODIFY	1532	15	0540	1095
1013					STL	P0001	MOD3	CARD	1095	20	1977	1551
1014				MOD3 I	RAM	D0013		NUMBER	1194	67	0913	1667
1015					STL	P0002		AND	1667	20	1978	1582
1016					RAL	MOD3		D	1582	65	1551	1656
1017					ALO	D1		IB	1656	15	0294	1349
1018					STL	MOD3	MOD4	AND	1349	20	1551	1620
1019				MOD4 I	RAL	D0033		IS	1463	65	0933	1187
1020					STL	P0003		ADDRESSES	1187	20	1979	1632
1021					RAL	MOD4		AND	1632	65	1620	1682
1022					ALO	D1		TRANSFER	1682	15	0294	1399
1023					STL	MOD4	MOD5	THESE	1399	20	1620	0890
1024				MOD5 I	RAL	D0054		VALUES	1482	65	0954	1513
1025					STL	P0005		TO THE	1513	20	1981	1334
1026					RAL	MOD5		PUNCH	1334	65	0890	1195
1027					ALO	D1			1195	15	0294	1449
1028					STL	MOD5	DZERO	BAND	1449	20	0890	1394
1029	1								0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	COBH.	ERROR	BIEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1030				DZERO	RAL	MOD3		MODIFY	1394	65	1551	1706
1031					SLO	D1			1706	16	0294	1499
1032					LDD	FTCH1		CONTROL	1499	69	1756	1563
1033					SDA	FTCH1		AND	1563	22	1756	1613
1034					LDD	MOD6			1613	69	1716	1670
1035					SDA	MOD6	FTCH1		1670	22	1716	1756
1036				FTCH1	RAL	9999	NEXT8	TEST D	1756	65	9999	1806
1037				NEXT8	NZE	DNEG	START	FOR ZERO	1806	45	1663	1950
1038	1								0000	00	0000	0000
1039				DNEG	RAL	MOD3		MODIFY	1663	65	1551	1856
1040					ALO	D189		CONTROL	1856	15	1713	1717
1041					LDD	FTCH2		STORE	1717	69	1720	1623
1042					SDA	FTCH2	8001	D VALUE	1623	22	1720	8001
1043				FTCH2	RAL	9999	NEXT9	AND	1720	65	9999	1906
1044				NEXT9	STL	TEMP1		TEST FOR	1906	20	0393	1546
1045					RAL	MOD3			1546	65	1551	1057
1046					SLO	D1			1057	16	0294	1549
1047					LDD	FTCH3			1549	69	1157	1763
1048					SDA	FTCH3	8001		1763	22	1157	8001
1049				NEX16	BMI	CPSIB	STZER	MINUS	1601	46	1307	1407
1050	1								0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	COMM.	ERROR	FORN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1051				STZER	LDD	A0050		STORE	1407	69	1150	1457
1052					STD	P0004			1457	24	1980	1333
1053					STD	P0006		ZEROS	1333	24	1982	1337
1054					STD	P0007		FIX AND	1337	24	1983	1437
1055					STD	P0008		PUNCH	1437	24	1984	1487
1056					RAL	FC1		OUTPUT	1487	65	0839	1444
1057					LDD		FIX		1444	69	1397	0200
1058					PCH	P0001	INCP 1	CARD	1397	71	1977	1732
1059	1								0000	00	0000	0000
1060				INCP 1	RAL	P0001		MODIFY	1732	65	1977	1782
1061					ALO	OP 1		CARD	1782	15	0540	1345
1062					STL	P0001		NUMBER	1345	20	1977	1832
1063					LDD	A0050		AND	1832	69	1150	1507
1064					STD	P0002			1507	24	1978	1882
1065					STD	P0004		STORE	1882	24	1980	1433
1066					STD	P0005			1433	24	1981	1434
1067					STD	P0006		ZEROS	1434	24	1982	1537
1068					STD	P0007			1537	24	1983	1587
1069					STD	P0008	COMVS		1587	24	1984	1637
1070	1								0000	00	0000	0000
1071				COMVS	RAL		ENTER	ENTER SIR	1637	65	0990	0280

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	CDN.	ERRR	ERRR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1072					RAL	D0006		COMPUTE	0990	65	0906	1813
1073					SLO	F32P0		AND STORE	1813	16	1766	1421
1074					STL	TEMP2		T MINUS 32	1421	20	0599	1557
1075					03	0000	MOD6	EXIT SIR	1557	03	0000	1716
1076				MOD6	RAM	9999	NEX17	MODIFY	1716	67	9999	1607
1077				NEX17	TLU	V0021		CONTROL	1607	84	1370	1932
1078					LDD	CTLUV			1932	69	1687	1040
1079					SDA	CTLUV	CTLUV	TLU AND	1040	22	1687	1687
1080				NEX17	SLT	0005		STORE	1651	35	0005	1863
1081					STL	TEMP3		VALUES IN	1863	20	0255	1913
1082					RAL	8003			1913	65	8003	1471
1083					SLT	0005		FUNCTION	1471	35	0005	1483
1084					STL	TEMP4			1483	20	0357	1963
1085					RAL		ENTER	ENTER SIR	1963	65	1816	0280
1086					RAL	TEMP2		COMPUTE	1816	65	0599	1657
1087					MPY	TEMP3		AND	1657	19	0255	1533
1088					ALO	TEMP4		STORE	1533	15	0357	1414
1089					STL	P0003	PNCH6	VS	1414	20	1979	1583
1090	1								0000	00	0000	0000
1091				PNCH6	03	0000		EXIT SIR	1583	03	0000	0538
1092					RAL	FC1		FIX	0538	65	0839	1494

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OPM.	ERROR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1093				LDD		FIX	AND PUNCH	1494	69	1447	0200
1094				PCH	P0001	DED20	CARD	1447	71	1977	1633
1095	1							0000	00	0000	0000
1096			DED20	RAM	TEMP1		IS D VALUE	1633	67	0393	1497
1097				SML	A0022		EQUAL	1497	18	1122	1683
1098				NZE	FIRD20	START	D20	1683	45	1344	1950
1099	1							0000	00	0000	0000
1100			CPSIB	RAL		ENTER	ENTER SIR	1307	65	1464	0280
1101				RAM	TEMP1		COMPUTE	1464	67	0393	1547
1102				MPY	FP660		PSIB	1547	19	1701	1472
1103				DIV	A0026		AND	1472	14	1126	1737
1104				STL	TEMP2	SUPSI	STORE	1737	20	0599	1707
1105	1							0000	00	0000	0000
1106			SUPSI	SLO	A0033		IS PSIB	1707	16	1133	1787
1107				BMI	BETAA	BETAB	MORE PSIA	1787	46	1090	1091
1108	1							0000	00	0000	0000
1109			BETAA	RAL	BSTAR		COMPUTE	1090	65	1544	1599
1110				MPY	A0033		BETA A	1599	19	1133	1757
1111				SLO	RECNO		AND	1757	16	1514	1770
1112				STL	TEMP3	ALPHA	STORE	1770	20	0255	1564
1113	1							0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DOMN.	ERROR	SUB	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1114				ALPHA	RSL	BSTAR		COMPUTE	1564	66	1544	1649
1115					MPY	A0033		ALPHA A	1649	19	1133	1807
1116					SLO	RECNO		AND	1807	16	1514	1820
1117					STL	TEMP4	CFBET	STORE	1820	20	0357	1614
1118	1								0000	00	0000	0000
1119				BETAB	RAL	BSTAR		COMPUTE	1091	65	1544	1699
1120					MPY	TEMP2		BETA B	1699	19	0599	1870
1121					SLO	RECNO		AND	1870	16	1514	1920
1122					STL	TEMP3	ALPHB	STORE	1920	20	0255	1664
1123	1								0000	00	0000	0000
1124				ALPHB	RSL	BSTAR		COMPUTE	1664	66	1544	1749
1125					MPY	A0033		ALPHA B	1749	19	1133	1857
1126					SLO	RECNO		AND	1857	16	1514	1970
1127					STL	TEMP4	CFBET	STORE	1970	20	0357	1614
1128	1								0000	00	0000	0000
1129				CFBET	03	0000		EXIT SIR	1614	03	0000	1521
1130					RAL	TEMP3		COMPUTE	1521	65	0255	1714
1131					LDD		FBETA	FUNCT BETA	1714	69	1767	0350
1132					STL	TEMP6		AND STORE	1767	20	0306	1764
1133					RAL	TEMP4		COMPUTE	1764	65	0357	1814
1134					LDD		FBETA	FUNC ALPHA	1814	69	1817	0350

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1135	STL	TEMP7	BETMI	AND STORE	1817	20	0364	1867
1136	1				0000	00	0000	0000
1137	BETMI	RAL	TEMP3	TEST BETA	1867	65	0255	1864
1138	BMI	CPMIP	COSMP	FOR MINUS	1864	46	1917	0450
1139	1				0000	00	0000	0000
1140	CPMIP	RSL	TEMP6	CHANGE TO	1917	66	0306	1914
1141	STL	TEMP6	COSMP	NEG FBETA	1914	20	0306	0450
1142	1				0000	00	0000	0000
1143	COPHI	RAL	F1P00	COMPUTE	0359	65	0523	1733
1144	SLO	TEMP6			1733	16	0306	1964
1145	MPY	ASTAR		AND	1964	19	1967	0638
1146	STL	TEMP7			0638	20	0364	1571
1147	RAL	TEMP6		STORE	1571	65	0306	1765
1148	DIV	TEMP7			1765	14	0364	1424
1149	STL	TEMP6	C12HU	PHI	1424	20	0306	1815
1150	1				0000	00	0000	0000
1151	C12HU	RAM	TEMP1	COMPUTE	1815	67	0393	1597
1152	07	0000		1200 D TO	1597	07	0000	1907
1153	MPY	F1P50		3 HALVES	1907	19	1865	1837
1154	STL	EXPON			1837	20	0363	1866
1155	03	0000		EXIT SIR	1866	03	0000	1916

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CON.	ERR.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1156				LDD		DEXPO		1916	69	1621	0877
1157				MPY	F12HU	SIBQB	POWER	1621	19	1474	1594
1158	1							0000	00	0000	0000
1159			SIBQB	MPY	F0P50		COMPUTE	1594	19	0272	1092
1160				MPY	TEMP6		SMALL	1092	19	0306	1783
1161				MPY	P0003	LIBQB	IBQB	1783	19	1979	1751
1162	1							0000	00	0000	0000
1163			LIBQB	MPY	F43P2		COMPUTE	1751	19	1915	1887
1164				MPY	D0004		AND STORE	1887	19	0904	1524
1165				STL	P0004	QPRIS	LARGE IBQB	1524	20	1980	1833
1166	1							0000	00	0000	0000
1167			QPRIS	RAL	A0032		COMPUTE	1833	65	1132	1937
1168				MPY	P0005		AND STORE	1937	19	1981	1965
1169				STL	P0006	A2PRI	Q PRIME S	1965	20	1982	1987
1170	1							0000	00	0000	0000
1171			A2PRI	RAL	F2P00		COMPUTE	1987	65	0856	1966
1172				MPY	TEMP1		AND	1966	19	0393	1671
1173				DIV	D0003		STORE	1671	14	0903	1721
1174				STL	A0034	COMRO	A 2 PRIME	1721	20	1134	0688
1175	1							0000	00	0000	0000
1176			COMRO	RAL	P0006			0688	65	1982	0788

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1 177	DIV	P0004			0788	14	1980	1190
1 178	STL	P0007			1190	20	1983	0838
1 179	STL	A0035	FUNCB		0838	20	1135	0888
1 180	1				0000	00	0000	0000
1 181	RAL	F1P00		COMPUTE	0888	65	0523	1883
1 182	SLO	A0034		AND	1883	16	1134	1089
1 183	STL	TEMP2			1089	20	0599	1771
1 184	RAL	A0034		STORE	1771	65	1134	1189
1 185	DIV	A0030			1189	14	1130	1340
1 186	SLO	A0034		FUNCTIONS	1340	16	1134	1339
1 187	DIV	TEMP2			1339	14	0599	1821
1 188	STL	A0036		OF	1821	20	1136	1439
1 189	RAL	A0030			1439	65	1130	0988
1 190	DIV	A0034		B	0988	14	1134	1644
1 191	STL	A0037			1644	20	1137	1390
1 192	RAL	F0P80		STORE	1390	65	1694	1799
1 193	STL	A0038		Z	1799	20	1138	1191
1 194	STL	A0041			1191	20	1141	1744
1 195	03	0000		EXIT SIR	1744	03	0000	1849
1 196	LDD		COMB	STORE P11	1849	69	1871	0800
1 197	STL	A0045	NTEST	PLUS 12	1871	20	1145	0598

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CDNN.	ERRORS	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1198	1								0000	00	0000	0000
1199				NTEST	RAL	A0045		IS P11 PLU	0598	65	1145	1899
1200					BMI	STOP4	COMR1	S P12 NEG	1899	46	1921	1971
1201	1								0000	00	0000	0000
1202				COMR1	RAL		ENTER	ENTER SIR	1971	65	1574	0280
1203					RAL	A0045		COMPUTE	1574	65	1145	1949
1204					MPY	A0039		AND STORE	1949	19	1139	1522
1205					STL	A0040	DELR1	R1	1522	20	1140	1794
1206	1								0000	00	0000	0000
1207				DELR1	RAL	A0035		COMPUTE	1794	65	1135	1489
1208					SLO	A0040		AND CHECK	1489	16	1140	1395
1209					BMI	ADDZ		DELTA	1395	46	0648	1999
1210					NZE	SUBZ	STR1	R1	1999	45	1572	1622
1211	1								0000	00	0000	0000
1212				STR1	03	0000		EXIT SIR	1622	03	0000	1933
1213					RAL	A0040		STORE R1	1933	65	1140	1445
1214					STL	P0008		IN P0008	1445	20	1984	1038
1215					RAL	FC1		FIX AND	1038	65	0839	1844
1216					LDD		FIX	PCH OUTPUT	1844	69	1647	0200
1217					PCH	P0001		CARD	1647	71	1977	1484
1218					RAL	P0001		MODIFY	1484	65	1977	1534

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.	
1219	ALO	OP 1		CARD	1534	15	0540	1495	
1220	STL	P0001		NUMBER	1495	20	1977	1584	
1221	LDD	FOP80		STORE	1584	69	1694	1697	
1222	STD	P0002		Z 1	1697	24	1978	1634	
1223	LDD	A0050		AND	1634	69	1150	1672	
1224	STD	P0004			1672	24	1980	1684	
1225	STD	P0005		STORE	1684	24	1981	1734	
1226	STD	P0006			1734	24	1982	1088	
1227	STD	P0007		ZEROS	1088	24	1983	1188	
1228	STD	P0008	COMVS		1188	24	1984	1637	
1229	1				0000	00	0000	0000	
1230		ADDZ	RAL	FOP80	ADD TO Z 1	0648	65	1694	1801
1231	STL	A0041			1801	20	1141	1894	
1232	ALO	FOP20		AND STORE	1894	15	1747	1851	
1233	STL	A0038		AS Z 2	1851	20	1138	1341	
1234	03	0000		EXIT SIR	1341	03	0000	1596	
1235	LDD		COMB	STORE PI 1	1596	69	1901	0800	
1236	STL	A0045		PLUS I 2	1901	20	1145	0698	
1237	BMI	STOP6	COMR 2		0698	46	1722	1772	
1238	1				0000	00	0000	0000	
1239		SUBZ	RAL	FOP80	SUBTRACT	1572	65	1694	1822

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DNK	ERR	SIR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1240					STL	A0041		FROM Z1	1822	20	1141	1944
1241					SLO	FOP20		AND STORE	1944	16	1747	1872
1242					STL	A0038		AS Z2	1872	20	1138	1391
1243					03	0000		EXIT SIR	1391	03	0000	1646
1244					LDD		COMB	STORE P11	1646	69	1922	0800
1245					STL	A0045		PLUS I2	1922	20	1145	0748
1246					BMI	STOP7	COMR2		0748	46	1673	1772
1247	1								0000	00	0000	0000
1248				COMR2	RAL		ENTER	ENTER SIR	1772	65	1784	0280
1249					RAL	A0045		COMPUTE	1784	65	1145	1723
1250					MPY	A0039		AND STORE	1723	19	1139	1773
1251					STL	A0042		R2	1773	20	1142	1545
1252					RAL	A0035		COMPUTE	1545	65	1135	1539
1253					SLO	A0042		AND CHECK	1539	16	1142	1797
1254					NZE		STR2	DELTA R2	1797	45	1823	1873
1255					03	0000		EXIT SIR	1823	03	0000	1834
1256					LDD		CZON	STORE THIS	1834	69	1338	0500
1257					STL	A0043		Z VALUE	1338	20	1143	1696
1258					STL	A0044		COMPUTED	1696	20	1144	1847
1259					RAL	A0038		ADVANCE	1847	65	1138	1994
1260					STL	A0041		A0041 TO	1994	20	1141	1595

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	COMM.	ERROR	FLAG	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1261					RAL	A0043		PREVIOUS	1595	65	1143	1897
1262					STL	A0038		Z VALUE	1897	20	1138	1441
1263					BMI		NEX12	IS Z NEG	1441	46	1645	1695
1264					LDD	A0050		SET Z TO	1645	69	1150	1923
1265					STD	A0038	NEX12	ZERO	1923	24	1138	1695
1266				NEX12	LDD		COMB	STORE P11	1695	69	0848	0800
1267					STL	A0045		PLUS 12	0848	20	1145	0898
1268					BMI	STOP8	LOOP2		0898	46	1624	1674
1269	1								0000	00	0000	0000
1270				LOOP2	LDD		COMRN		1674	69	1884	0750
1271					RAL	FPO10		CHECK ON	1884	65	1438	1745
1272					SML	TEMP3		VALUE OF	1745	18	0255	1724
1273					BMI		ROMRN	DELTA ZN	1724	46	1934	1488
1274					03	0000		EXIT SIR	1934	03	0000	1589
1275					LDD		CZON		1589	69	1192	0500
1276					STL	A0043		STORE THIS	1192	20	1143	1746
1277					RAL	A0038		Z VALUE	1746	65	1138	1795
1278					STL	A0041		ADVANCE	1795	20	1141	1845
1279					RAL	A0043		A0041 TO	1845	65	1143	1947
1280					STL	A0038		ZN MINUS 1	1947	20	1138	1491
1281					BMI		INITZ	IS Z NEG	1491	46	1895	1945

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1282	RAL	A0044		WAS ZN	1895	65	1144	1774
1283	BMI	STOP5		MINUS1 NEG	1774	46	1538	1588
1284	RAL	A0043		ADVANCE	1588	65	1143	1997
1285	STL	A0044		A0044	1997	20	1144	0998
1286	LDD	A0050		SET Z TO	0998	69	1150	1824
1287	STD	A0038	NEX13	ZERO	1824	24	1138	1541
1288	LDD		COMB	STORE P11	1541	69	1995	0800
1289	STL	A0045		PLUS 12	1995	20	1145	1048
1290	BMI	STOP9	LOOP2		1048	46	1874	1674
1291					0000	00	0000	0000
1292				EXIT SIR	1873	03	0000	1638
1293	RAL	A0042		STORE R2	1638	65	1142	1098
1294	STL	P0008		IN P0008	1098	20	1984	1688
1295	RAL	FC1		FIX AND	1688	65	0839	1796
1296	LDD		FIX	PCH OUTPUT	1796	69	1924	0200
1297	PCH	P0001		CARD	1924	71	1977	1738
1298	RAL	P0001		MODIFY	1738	65	1977	1788
1299	ALO	OP1		CARD	1788	15	0540	1846
1300	STL	P0001		NUMBER	1846	20	1977	1838
1301	LDD	A0043		STORE	1838	69	1143	1591
1302	STD	P0002			1591	24	1978	1888

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	CPM.	ERROR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1303				LDD	A0050		Z2	1888	69	1150	1974
1304				STD	P0004			1974	24	1980	1938
1305				STD	P0005		AND	1938	24	1981	1988
1306				STD	P0006		STORE	1988	24	1982	1639
1307				STD	P0007			1639	24	1983	1689
1308				STD	P0008	COMVS	ZEROS	1689	24	1984	1637
1309	1							0000	00	0000	0000
1310			INITZ	LDD	A0050		INITIALIZE	1945	69	1150	1739
1311				STD	A0044	NEX13	Z01 TO 0	1739	24	1144	1541
1312	1							0000	00	0000	0000
1313			ROMRN	RAL	A0035		COMPUTE	1488	65	1135	1789
1314				SLO	A0046		AND STORE	1789	16	1146	1839
1315				STL	TEMP4		RO MIN RN	1839	20	0357	1889
1316				RAL	A0035		COMPUTE RO	1889	65	1135	1939
1317				SLO	A0040		MIN RON	1939	16	1140	1896
1318				MPY	TEMP4		MINUS 1	1896	19	0357	1989
1319				NZE		STR2	GET PRODC	1989	45	1342	1873
1320				BMI	STR2		CHECK PROD	1342	46	1873	1392
1321				RAL	TEM14		CHECK FOR	1392	65	1741	1791
1322				SLO	A0038		SET INTEGR	1791	16	1138	1442
1323				NZE	TEST2	STR2	CHECK RO	1442	45	1946	1873

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	CONV.	ERROR	BLIN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1324				TEST2	RAL	TEMP4		CHECK RO	1946	65	0357	1440
1325					BMI		SUB01	MIN RON	1440	46	1996	1198
1326					RAL	A0043		ADD 01	1996	65	1143	1248
1327					ALO	FPO10		TO ZN AND	1248	15	1438	1298
1328					STL	A0043		STORE AND	1298	20	1143	1348
1329					RAL	A0038		ADVANCE	1348	65	1138	1398
1330					STL	A0041		A0041 TO	1398	20	1141	1448
1331					RAL	A0043		ZN MIN 1	1448	65	1143	1498
1332					STL	A0038	NEX14		1498	20	1138	1641
1333				SUB01	RAL	A0043		SUB 01 FR	1198	65	1143	1548
1334					SLO	FPO10		ZN AND	1548	16	1438	1598
1335					STL	A0043		STORE AND	1598	20	1143	1648
1336					RAL	A0038		ADVANCE	1648	65	1138	1698
1337					STL	A0041		A0041 TO	1698	20	1141	1748
1338					RAL	A0043		ZN MIN 1	1748	65	1143	1798
1339					STL	A0038	NEX14		1798	20	1138	1641
1340				NEX14	03	0000		EXIT SIR	1641	03	0000	1848
1341					LDD		COMB	STORE PI 1	1848	69	1490	0800
1342					STL	A0045		PLUS 12	1490	20	1145	1898
1343					BMI	STP10			1898	46	1540	1590
1344					LDD	ROMRN	COMRN		1590	69	1488	0750

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	EDM.	ERR.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1345			SETI 1	RAL	TEM13		SET Z TO	0862	65	0797	1492
1346				STL	TEM14			1492	20	1741	1640
1347				STL	A0038	NEX19	INTEGER	1640	20	1138	0709
1348			SETI 2	RAL	TEM13		SET Z TO	1875	65	0797	1690
1349				ALO	F1P00		INTEGER	1690	15	0523	1841
1350				STL	TEM14			1841	20	1741	1740
1351				STL	A0038	NEX19	PLUS ONE	1740	20	1138	0709
1352			LESS 1	ALO	FP030		IS Z NEAR	0482	15	1616	1790
1353				BMI		SETZ 1	ONE	1790	46	1948	1998
1354				ALO	FP930		IS Z NEAR	1948	15	1416	1840
1355				BMI	SETZ0	NEX18	ZERO	1840	46	1890	0483
1356			SETZ 1	RAL	F1P00		SET Z	1998	65	0523	1891
1357				STL	TEM14			1891	20	1741	1940
1358				STL	A0038	NEX19	EQUAL ONE	1940	20	1138	0709
1359			SETZ0	RAL	A0050		SET Z	1890	65	1150	1941
1360				STL	TEM14			1941	20	1741	1990
1361				STL	A0038	NEX19	EQUAL ZERO	1990	20	1138	0709
1362	1							0000	00	0000	0000
1363			ASTAR	51	4347	8261		1967	51	4347	8261
1364			BSTAR	49	1428	5714		1544	49	1428	5714
1365			RECNO	50	2000	0000		1514	50	2000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DOWN ERRORS	DOWN ERRORS	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1366			A 1	49	1411	2821		0473	49	1411	2821
1367			A 2	48	8864	0270		0373	48	8864	0270
1368			A 3	48	2743	3490	NUMERICAL	0323	48	2743	3490
1369			& A 4	46	3944	6000		0391CR	46	3944	6000
1370			A 5	47	3289	7500		0318	47	3289	7500
1371			F 1 P 0 0	50	1000	0000		0523	50	1000	0000
1372			F P 0 3 D	47	3280	8300		1172	47	3280	8300
1373			F P 1 9 D	45	1918	0000		1249	45	1918	0000
1374			F P 4 7 1	49	4712	0000		1001	49	4712	0000
1375			F P 0 1 4	48	1435	0000		1515	48	1435	0000
1376			F P 6 8 D	45	6820	0000		0684	45	6820	0000
1377			F P 2 7 D	47	2700	0000		0834	47	2700	0000
1378			F 1 4 P 1	51	1417	1200	CONSTANTS	1520	51	1417	1200
1379			F 1 2 P 2	51	1227	0000		1299	51	1227	0000
1380			F 5 P 6 7	50	5674	5000		0884	50	5674	5000
1381			F 1 1 P 6	51	1160	0000		0984	51	1160	0000
1382			F P 0 3 0	48	3000	0000		1616	48	3000	0000
1383			F 3 0 P 2	51	3020	0000		0989	51	3020	0000
1384			F 1 P 6 5	50	1650	0000		1039	50	1650	0000
1385			F P 6 6 0	49	6600	0000		1701	49	6600	0000
1386			F O P 5 0	49	5000	0000		0272	49	5000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	DEBIT	ERROR	TRAIL	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1387				F12HU	53	1200	0000		1474	53	1200	0000
1388				F1P50	50	1500	0000		1865	50	1500	0000
1389				F43P2	51	4320	0000		1915	51	4320	0000
1390				F2P00	50	2000	0000		0856	50	2000	0000
1391				F0P80	49	8000	0000		1694	49	8000	0000
1392				F0P20	49	2000	0000		1747	49	2000	0000
1393				FP010	48	1000	0000		1438	48	1000	0000
1394				F32P0	51	3200	0000		1766	51	3200	0000
1395				F3P00	50	3000	0000		0806	50	3000	0000
1396				F4P00	50	4000	0000		0773	50	4000	0000
1397				F5P00	50	5000	0000		0696	50	5000	0000
1398				F6P00	50	6000	0000		0181	50	6000	0000
1399				FP216	49	2160	0000		1028	49	2160	0000
1400				F1P64	50	1645	2890		1561	50	1645	2890
1401				FP077	48	7762	2000		0657	48	7762	2000
1402				FP004	47	4257	0000		0713	47	4257	0000
1403				FP002	46	2740	0000		1170	46	2740	0000
1404				FP025	48	2570	4000		0372	48	2570	4000
1405				F3P14	50	3141	5900		0746	50	3141	5900
1406				FP129	49	1297	3400		0664	49	1297	3400
1407				A1TWO	49	2499	9868		1680	49	2499	9868

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	CONN.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1408				A 2 TWO	48	3 1 2 5	7 5 8 3		1 6 3 0	48	3 1 2 5	7 5 8 3
1409				A 3 TWO	47	2 5 9 1	3 7 1 2		1 5 8 0	47	2 5 9 1	3 7 1 2
1410				A 4 TWO	46	1 7 1 5	6 2 0 0		1 5 3 0	46	1 7 1 5	6 2 0 0
1411				A 5 TWO	44	5 4 3 0	2 0 0 0		1 6 4 3	44	5 4 3 0	2 0 0 0
1412				A 6 TWO	43	6 9 0 6	0 0 0 0		1 4 2 0	43	6 9 0 6	0 0 0 0
1413				FP 0 3 0	48	3 0 0 0	0 0 0 0		1 6 1 6	48	3 0 0 0	0 0 0 0
1414				FP 9 3 0	49	9 3 0 0	0 0 0 0		1 4 1 6	49	9 3 0 0	0 0 0 0
1415				A VAR 1	48	4 0 0 0	0 0 0 0		0 2 5 4	48	4 0 0 0	0 0 0 0
1416	1								0 0 0 0	00	0 0 0 0	0 0 0 0
1417				MOD 1	STD	9 9 9 9	RDK 1		1 8 1 1	24	9 9 9 9	0 7 0 1
1418				END 1	STD	9 9 9 9	RDK 1		1 6 9 3	24	9 9 9 9	0 7 0 1
1419				RDC 1	LDD	R 0 0 0 2	8 0 0 3		0 8 9 9	69	1 9 5 2	8 0 0 3
1420				D 1	00	0 0 0 1	0 0 0 0	COMMAND	0 2 9 4	00	0 0 0 1	0 0 0 0
1421				FLC 1	06	R 0 0 0 2	R 0 0 0 7		1 9 3 0	06	1 9 5 2	1 9 5 7
1422				MOD 2	STL	A 0 0 0 1	ZK 1		1 0 1 4	20	1 1 0 1	0 8 0 1
1423				END 2	STL	A 0 0 5 0	ZK 1	OR	1 9 0 4	20	1 1 5 0	0 8 0 1
1424				END 4	RAM	D 0 0 3 2	NEXT 2		0 7 3 9	67	0 9 3 2	1 4 1 5
1425				IDIA	RAM	D 0 0 1 1	NEXT 2		1 7 6 9	67	0 9 1 1	1 4 1 5
1426				I STD	STL	A 0 0 0 1	NEXT 3		0 3 8 7	20	1 1 0 1	1 0 0 5
1427				I IB	00	D 0 0 3 3	D 0 0 5 2		0 8 5 1	00	0 9 3 3	0 9 5 2
1428				I IS	00	D 0 0 5 4	D 0 0 7 3		1 4 6 5	00	0 9 5 4	0 9 7 3

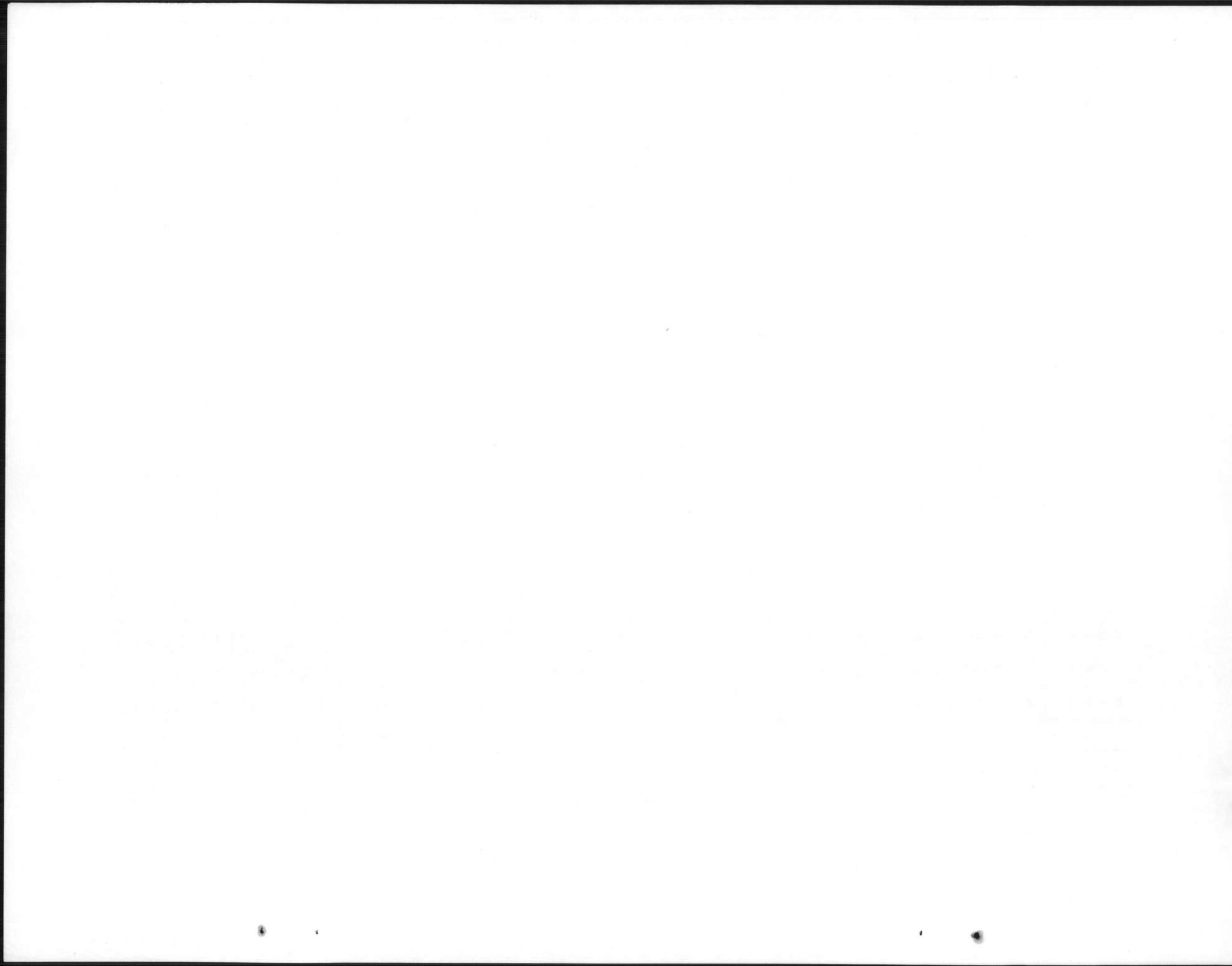
## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1429	STOP 2	HLT	0002	READ CONTROL	1062	01	0002	0489
1430	STOP 3	HLT	0003	READ	0634	01	0003	0489
1431	OP 1	01	0000		0540	01	0000	0000
1432	FC 1	06	P0002	P0008	0839	06	1978	1984
1433	CTLUX	RAL	9999	NEXT 6	1762	65	9999	1051
1434	CTLUV	RAL	9999	NEXT 7	1687	65	9999	1651
1435	FTCH 1	RAL	9999	NEXT 8	1756	65	9999	1806
1436	D189	00	0189	0000	1713	00	0189	0000
1437	FTCH 2	RAL	9999	NEXT 9	1720	65	9999	1906
1438	STOP 4	HLT	0004	READ	1921	01	0004	0489
1439	STOP 5	HLT	0005	READ	1538	01	0005	0489
1440	PCW 1	00	0000	0008	0541	00	0000	0008
1441	PCW 2	00	000		0833	00	0000	0000
1442	FTCH 3	RAL	9999	NEX 16	1157	65	9999	1601
1443	STOP 6	HLT	0006	READ	1722	01	0006	0489
1444	STOP 7	HLT	0007	READ	1673	01	0007	0489
1445	STOP 8	HLT	0008	READ	1624	01	0008	0489
1446	STOP 9	HLT	0009	READ	1874	01	0009	0489
1447	STP 10	HLT	0010	READ	1540	01	0010	0489
1448	FLC 2	10	TEM 13	TEM 13	1569	10	0797	0797
1449	FC 2	10	TEM 13	TEM 13	1608	10	0797	0797



## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CHK.	ERR.	SIGN.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1	1			PROGR	AM	TO DE	TERMI	NE THE TOTAL	0000	00	0000	0000
2	1			SEDI	MEN	T LOA	D IN A	STREAM BY	0000	00	0000	0000
3	1			MODI	FIE	D EIN	STEIN	PROCEDURE	0000	00	0000	0000
4	1								0000	00	0000	0000
5	1			U	S B	UREAU	OF RE	CLAMATION	0000	00	0000	0000
6	1					DENVE	R CO	LORADO	0000	00	0000	0000
7	1								0000	00	0000	0000
8	1			U S	AR	MY CO	RPS OF	ENGINEERS	0000	00	0000	0000
9	1					OMAHA	NEBR	ASKA	0000	00	0000	0000
10	1								0000	00	0000	0000
11	1						1959		0000	00	0000	0000
12	1								0000	00	0000	0000
13	1					PH	ASE 2		0000	00	0000	0000
14	1								0000	00	0000	0000
15	1								0000	00	0000	0000
16	1								0000	00	0000	0000
17					BLR	0000	0799	RESRVE SIR	0000	00	0000	0000
18					BLR	1972	1973	READ ROUT	0000	00	0000	0000
19	1								0000	00	0000	0000
20	1			THE F	OLL	OWING	21	CARDS MAKE	0000	00	0000	0000
21	1			AVAIL	ABL	E 36	LOCATIONS	NOT	0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OP.	D.	L.	COMMENTS	L.	OP.	D.	L.
22	1			USED AT ANY TIME BY SIR OR	0000	00	0000	0000
23	1			ITS FUNCTIONS	0000	00	0000	0000
24				BLA 0002 0002	0000	00	0000	0000
25				BLA 0242 0242	0000	00	0000	0000
26				BLA 0289 0289	0000	00	0000	0000
27				BLA 0305 0306 2	0000	00	0000	0000
28				BLA 0450 0450	0000	00	0000	0000
29				BLA 0548 0548	0000	00	0000	0000
30				BLA 0595 0596 2	0000	00	0000	0000
31				BLA 0598 0599 2	0000	00	0000	0000
32				BLA 0648 0648	0000	00	0000	0000
33				BLA 0651 0652 2	0000	00	0000	0000
34				BLA 0682 0682	0000	00	0000	0000
35				BLA 0696 0696	0000	00	0000	0000
36				BLA 0698 0702 5	0000	00	0000	0000
37				BLA 0731 0732 2	0000	00	0000	0000
38				BLA 0746 0746	0000	00	0000	0000
39				BLA 0748 0752 5	0000	00	0000	0000
40				BLA 0781 0782 2	0000	00	0000	0000
41				BLA 0788 0788	0000	00	0000	0000
42				BLA 0791 0791	0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DOWN	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
43					BLA	0794	0794		0000	00	0000	0000
44					BLA	0796	0797	2	0000	00	0000	0000
45	1			THE	FO	LLOWI	NG	31 CARDS	0000	00	0000	0000
46	1			MAKE	AVA	ILABL	E	A TOTAL OF 97	0000	00	0000	0000
47	1			LOCAT	ION	S	NOR	MALLY OCCUPIED BY	0000	00	0000	0000
48	1			THE S	QR	RT	R	CUTINE IN SIR	0000	00	0000	0000
49					BLA	0004	0004		0000	00	0000	0000
50					BLA	0042	0042		0000	00	0000	0000
51					BLA	0081	0081		0000	00	0000	0000
52					BLA	0089	0089		0000	00	0000	0000
53					BLA	0103	0103		0000	00	0000	0000
54					BLA	0152	0152		0000	00	0000	0000
55					BLA	0156	0156		0000	00	0000	0000
56					BLA	0169	0169		0000	00	0000	0000
57					BLA	0181	0181		0000	00	0000	0000
58					BLA	0226	0227	02	0000	00	0000	0000
59					BLA	0231	0231		0000	00	0000	0000
60					BLA	0236	0236		0000	00	0000	0000
61					BLA	0252	0256	05	0000	00	0000	0000
62					BLA	0267	0267		0000	00	0000	0000
63					BLA	0269	0274	06	0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.M.	ENR.	ENR.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
64					BLA	0276	0276		0000	00	0000	0000
65					BLA	0281	0284	04	0000	00	0000	0000
66					BLA	0286	0286		0000	00	0000	0000
67					BLA	0288	0288		0000	00	0000	0000
68					BLA	0290	0290		0000	00	0000	0000
69					BLA	0294	0294		0000	00	0000	0000
70					BLA	0300	0301	02	0000	00	0000	0000
71					BLA	0303	0304	02	0000	00	0000	0000
72					BLA	0309	0309		0000	00	0000	0000
73					BLA	0311	0311		0000	00	0000	0000
74					BLA	0313	0313		0000	00	0000	0000
75					BLA	0317	0317		0000	00	0000	0000
76					BLA	0320	0321	02	0000	00	0000	0000
77					BLA	0324	0324		0000	00	0000	0000
78					BLA	0347	0348	2	0000	00	0000	0000
79					BLA	0350	0399	50	0000	00	0000	0000
80	1			THE	FO	LLOWI	NG	23 CARDS	0000	00	0000	0000
81	1			MAKE	AVA	ILABL	E	A TOTAL OF 68	0000	00	0000	0000
82	1			LOCAT	ION	S	NOR	MALLY OCCUPIED BY	0000	00	0000	0000
83	1			THE A	RC	TAN R	ROUTINE	IN SIR	0000	00	0000	0000
84					BLA	0009	0009		0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	DDMM	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
85					BLA	0448	0448		0000	00	0000	0000
86					BLA	0451	0495	45	0000	00	0000	0000
87					BLA	0497	0497		0000	00	0000	0000
88					BLA	0573	0573		0000	00	0000	0000
89					BLA	0593	0593		0000	00	0000	0000
90					BLA	0655	0655		0000	00	0000	0000
91					BLA	0657	0657		0000	00	0000	0000
92					BLA	0663	0663		0000	00	0000	0000
93					BLA	0665	0665		0000	00	0000	0000
94					BLA	0671	0671		0000	00	0000	0000
95					BLA	0673	0673		0000	00	0000	0000
96					BLA	0676	0676		0000	00	0000	0000
97					BLA	0679	0679		0000	00	0000	0000
98					BLA	0683	0683		0000	00	0000	0000
99					BLA	0686	0687	02	0000	00	0000	0000
100					BLA	0689	0689		0000	00	0000	0000
101					BLA	0705	0705		0000	00	0000	0000
102					BLA	0726	0726		0000	00	0000	0000
103					BLA	0729	0729		0000	00	0000	0000
104					BLA	0733	0733		0000	00	0000	0000
105					BLA	0736	0736		0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	COMM.	ERROR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
106				BLA	0783	0783		0000	00	0000	0000
107	1		THE	FO	LLOWI	NG	11 CARDS	0000	00	0000	0000
108	1		MAKE	AVA	ILABL	E	A TOTAL OF 24	0000	00	0000	0000
109	1		LOCAT	ION	S	NOR	MALLY OCCUPIED BY	0000	00	0000	0000
110	1		THE	TRA	CE	RO	UTINE IN SIR	0000	00	0000	0000
111				BLA	0302	0302		0000	00	0000	0000
112				BLA	0307	0308	2	0000	00	0000	0000
113				BLA	0310	0310		0000	00	0000	0000
114				BLA	0314	0314		0000	00	0000	0000
115				BLA	0316	0316		0000	00	0000	0000
116				BLA	0318	0319	2	0000	00	0000	0000
117				BLA	0322	0323	2	0000	00	0000	0000
118				BLA	0325	0326	2	0000	00	0000	0000
119				BLA	0334	0342	9	0000	00	0000	0000
120				BLA	0344	0345	2	0000	00	0000	0000
121				BLA	0349	0349		0000	00	0000	0000
122	1		THE	FO	LLOWI	NG	49 CARDS	0000	00	0000	0000
123	1		MAKE	AVA	ILABL	E	A TOTAL OF 105	0000	00	0000	0000
124	1		LOCAT	ION	S	NOR	MALLY OCCUPIED BY	0000	00	0000	0000
125	1		THE	E	XPO	NT	R OUTINE IN SIR	0000	00	0000	0000
126				BLA	0008	0008		0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DOMM.	ERROR	BLK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
127					BLA	0449	0449		0000	00	0000	0000
128					BLA	0500	0536	37	0000	00	0000	0000
129					BLA	0538	0546	09	0000	00	0000	0000
130					BLA	0592	0592		0000	00	0000	0000
131					BLA	0594	0594		0000	00	0000	0000
132					BLA	0603	0603		0000	00	0000	0000
133					BLA	0606	0606		0000	00	0000	0000
134					BLA	0630	0632	3	0000	00	0000	0000
135					BLA	0634	0635	2	0000	00	0000	0000
136					BLA	0638	0638		0000	00	0000	0000
137					BLA	0641	0641		0000	00	0000	0000
138					BLA	0653	0653		0000	00	0000	0000
139					BLA	0656	0656		0000	00	0000	0000
140					BLA	0659	0659		0000	00	0000	0000
141					BLA	0661	0661		0000	00	0000	0000
142					BLA	0664	0664		0000	00	0000	0000
143					BLA	0666	0667	02	0000	00	0000	0000
144					BLA	0669	0670	2	0000	00	0000	0000
145					BLA	0672	0672		0000	00	0000	0000
146					BLA	0674	0675	02	0000	00	0000	0000
147					BLA	0677	0677		0000	00	0000	0000

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OPPK.	OPPK.	OPPK.	LOC.	OP.	D.	I.	COMMENTS	L.	OP.	D.	I.
148					BLA	0680	0680		0000	00	0000	0000
149					BLA	0684	0685	02	0000	00	0000	0000
150					BLA	0688	0688		0000	00	0000	0000
151					BLA	0692	0693	02	0000	00	0000	0000
152					BLA	0695	0695		0000	00	0000	0000
153					BLA	0703	0703		0000	00	0000	0000
154					BLA	0707	0707		0000	00	0000	0000
155					BLA	0709	0709		0000	00	0000	0000
156					BLA	0711	0711		0000	00	0000	0000
157					BLA	0713	0713		0000	00	0000	0000
158					BLA	0715	0716	02	0000	00	0000	0000
159					BLA	0719	0719		0000	00	0000	0000
160					BLA	0723	0724	02	0000	00	0000	0000
161					BLA	0727	0727		0000	00	0000	0000
162					BLA	0734	0735	02	0000	00	0000	0000
163					BLA	0739	0739		0000	00	0000	0000
164					BLA	0743	0743		0000	00	0000	0000
165					BLA	0757	0757		0000	00	0000	0000
166					BLA	0759	0759		0000	00	0000	0000
167					BLA	0763	0763		0000	00	0000	0000
168					BLA	0765	0765		0000	00	0000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	DOWN	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
169					BLA	0773	0773		0000	00	0000	0000
170					BLA	0776	0777	02	0000	00	0000	0000
171					BLA	0779	0779		0000	00	0000	0000
172					BLA	0784	0784		0000	00	0000	0000
173					BLA	0789	0789		0000	00	0000	0000
174					BLA	0793	0793		0000	00	0000	0000
175	1								0000	00	0000	0000
176					REG	D0901	0994	DATA STORE	0000	00	0000	0000
177					REG	R1951	1960	READ BAND	0000	00	0000	0000
178					REG	P1977	1986	PUNCH BAND	0000	00	0000	0000
179					EQU	ENTER	0280	EQUENT. SIR	0000	00	0000	0000
180					EQU	FIX	0200	EQU FIX	0000	00	0000	0000
181					EQU	FLOAT	0229	EQU FLOAT	0000	00	0000	0000
182					REG	A1101	1150	OUTPUT	0000	00	0000	0000
183					SYN	CONT1	1972	READ HDR	0000	00	0000	0000
184					SYN	CONT2	1973	READ CARD	0000	00	0000	0000
185					SYN	START	1950	BEGIN PROG	0000	00	0000	0000
186	1								0000	00	0000	0000
187				SUM	STD	EXIT1		SUBROUTINE	0300	24	0103	0156
188					LDD	VALUE		FOR	0156	69	0009	0362
189					SDA	VALUE		SUM	0362	22	0009	0462

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L.	OP.	D.	I.
190	SLT	0004		OF	0462	35	0004	0273
191	SDA	END3		N VALUES	0273	22	0227	0380
192	SLO	8002			0380	16	8002	0089
193	STL	TEMP 1	NEXT5		0089	20	0393	0396
194	RAL		ENTER	ENTER SIR	0396	65	0349	0280
195	RAL	TEMP 1	VALUE		0349	65	0393	0009
196	ALO	9999	NEXT 4		0009	15	9999	0253
197	STL	TEMP 1			0253	20	0393	0546
198	03	0000		EXIT SIR	0546	03	0000	0301
199	RAL	VALUE			0301	65	0009	0313
200	SLO	END3			0313	16	0227	0081
201	NZE		LAST		0081	45	0284	0335
202	ALO	8001			0284	15	8001	0341
203	ALO	D1			0341	15	0294	0399
204	STL	VALUE	NEXT5		0399	20	0009	0396
205	RAL	TEMP 1	EXIT 1		0335	65	0393	0103
206					0000	00	0000	0000
207	STD	EXIT 2			0350	24	0303	0256
208	STL	FUNCT			0256	20	0311	0314
209	RAL		ENTER	ENTER SIR	0314	65	0267	0280
210	RAM	FUNCT			0267	67	0311	0365

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	COND.	ERRS	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
211					MPY	A5		SUB	0365	19	0318	0288
212					ALO	A4			0288	15	0391	0345
213					STL	TEMPS		ROUTINE	0345	20	0449	0002
214					RAM	FUNCT			0002	67	0311	0465
215					MPY	TEMPS		TO	0465	19	0449	0270
216					ALO	A3			0270	15	0323	0377
217					STL	TEMPS		EVALUATE	0377	20	0449	0152
218					RAM	FUNCT			0152	67	0311	0515
219					MPY	TEMPS		THE	0515	19	0449	0320
220					ALO	A2			0320	15	0373	0477
221					STL	TEMPS		APPROX	0477	20	0449	0252
222					RAM	FUNCT			0252	67	0311	0665
223					MPY	TEMPS		OF	0665	19	0449	0370
224					ALO	A1			0370	15	0473	0527
225					STL	TEMPS		HASTINGS	0527	20	0449	0302
226					RAM	FUNCT			0302	67	0311	0715
227					MPY	TEMPS			0715	19	0449	0470
228					ALO	F1P00	NEX10		0470	15	0523	0677
229				NEX10	STL	TEMPS		MORE	0677	20	0449	0352
230					MPY	TEMPS			0352	19	0449	0520
231					STL	TEMPS		OF	0520	20	0449	0452

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CDMM	ERROR	TYPE	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
232					MPY	TEMP5		APPROX	0452	19	0449	0670
233					STL	TEMP5			0670	20	0449	0502
234					MPY	TEMP5		OF	0502	19	0449	0820
235					STL	TEMP5			0820	20	0449	0652
236					RAL	F1P00		HASTINGS	0652	65	0523	0727
237					DIV	TEMP5			0727	14	0449	0310
238					STL	TEMP5		SUB	0310	20	0449	0702
239					RAL	F1P00			0702	65	0523	0777
240					SLO	TEMP5		ROUTINE	0777	16	0449	0353
241					STL	TEMP5			0353	20	0449	0752
242					03	0000		EXIT SIR	0752	03	0000	0307
243					RAL	TEMP5	EXIT2		0307	65	0449	0303
244	1								0000	00	0000	0000
245				COSMP	RAL		ENTER	ENTER SIR	0450	65	0453	0280
246					RAL	TEMP6		SUB	0453	65	0306	0361
247					ALO	TEMP7		ROUTINE	0361	15	0364	0169
248					MPY	F0P50		TO	0169	19	0272	0042
249					STL	TEMP6		COMPUTE	0042	20	0306	0309
250					RAL	F1P00		SMALL P	0309	65	0523	0827
251					SLO	TEMP6		AND	0827	16	0306	0461
252					STL	TEMP6	COPHI	STORE	0461	20	0306	0359

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	OP.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
253	1						0000	00	0000	0000
254		COMB	STD	EXIT3			0500	24	0503	0356
255			RAL		ENTER	ENTER SIR	0356	65	0459	0280
256			RAL	A0050		ZERO	0459	65	1150	0255
257			STL	TEM14	NEX19	TEM14	0255	20	0509	0512
258		NEX19	RAL	A0036		SUB	0512	65	1136	0491
259			07	0000		ROUTINE	0491	07	0000	0596
260			MPY	A0038		TO	0596	19	1138	0008
261			STL	EXPON			0008	20	0363	0316
262			03	0000		EXIT SIR	0316	03	0000	0271
263			LDD		EEXPO	COMPUTE	0271	69	0274	0877
264			MPY	A0037		AND STORE	0274	19	1137	0308
265			STL	A0039		B AND	0308	20	1139	0242
266			03	0000		EXIT SIR	0242	03	0000	0347
267			LDD		CCOEF	COMPUTE	0347	69	0700	0603
268			STL	TEM10		COEFFICIENT	0700	20	0305	0358
269			RAL	F1P00		COMPUTE	0358	65	0523	1027
270			SLO	A0038		A PRIME	1027	16	1138	0493
271			STL	TEMP4		TO THE	0493	20	0397	0750
272			RAL	A0030		ONE MINUS	0750	65	1130	0385
273			07	0000		Z	0385	07	0000	0290

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
274	MPY	TEMP4		POWER	0290	19	0397	0368
275	STL	EXPON			0368	20	0363	0366
276	03	0000		EXIT SIR	0366	03	0000	0321
277	LDD		EEXPO	AND	0321	69	0324	0877
278	STL	TEM12		STORE	0324	20	0379	0282
279	RAL	A0038		COMPUTE	0282	65	1138	0543
280	SLO	F1P00		AND STORE	0543	16	0523	1077
281	STL	TEMP3		Z MINUS 1	1077	20	0181	0334
282	SLO	F1P00		STORE	0334	16	0523	1177
283	STL	TEMP4		Z MINUS 2	1177	20	0397	0800
284	SLO	F1P00		STORE	0800	16	0523	1227
285	STL	TEMP5		Z MINUS 3	1227	20	0449	0802
286	SLO	F1P00		STORE	0802	16	0523	1277
287	STL	TEMP6		Z MINUS 4	1277	20	0306	0659
288	SLO	F1P00		STORE	0659	16	0523	1327
289	STL	TEMP7		Z MINUS 5	1327	20	0364	0317
290	RAL	TEMP3			0317	65	0181	0485
291	NZE		C2TS1		0485	45	0338	0289
292	RAL	F1P00		COMPUTE	0338	65	0523	1377
293	DIV	TEMP3		1ST TERM	1377	14	0181	0342
294	STL	TERM1		SERIES ONE	0342	20	0497	0850

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DDMM-	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
295					DIV	TEMP3		1ST TERM	0850	14	0181	0392
296					STL	TER11	C2TS1	SERIES TWO	0392	20	0797	0289
297				C2TS1	RAL	TEMP4			0289	65	0397	0351
298					NZE		C3TS1		0351	45	0004	0355
299					RAL	A0038		COMPUTE	0004	65	1138	0593
300					DIV	TEMP4		2ND TERM	0593	14	0397	0458
301					STL	TERM2		SERIES ONE	0458	20	0463	0466
302					DIV	TEMP4		2ND TERM	0466	14	0397	0508
303					STL	TER12	C3TS1	SERIES TWO	0508	20	0513	0355
304				C3TS1	RAL	TEMP5			0355	65	0449	0653
305					NZE		C4TS1		0653	45	0456	0357
306					RAL	A0038		COMPUTE	0456	65	1138	0693
307					MPY	TEMP3		3RD	0693	19	0181	0852
308					MPY	FOP50		TERM	0852	19	0272	0492
309					DIV	TEMP5		SERIES	0492	14	0449	0360
310					STL	TERM3		ONE	0360	20	0765	0468
311					DIV	TEMP5		3RD TERM	0468	14	0449	0460
312					STL	TER13	C4TS1	SERIES TWO	0460	20	0815	0357
313				C4TS1	RAL	TEMP6			0357	65	0306	0511
314					NZE		C5TS1		0511	45	0464	0865
315					RAL	A0038		COMPUTE	0464	65	1138	0743

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	L.	COMMENTS	L.	OP.	D.	L.
316	MPY	TEMP3		4TH	0743	19	0181	1002
317	MPY	TEMP4		TERM	1002	19	0397	0518
318	DIV	F6P00		OF	0518	14	0371	0382
319	DIV	TEMP6		SERIES	0382	14	0306	0516
320	STL	TERM4		ONE	0516	20	0471	0374
321	DIV	TEMP6		4TH TERM	0374	14	0306	0666
322	STL	TER14	C5TS1	SERIES TWO	0666	20	0521	0865
323	RAL	TEMP7	C5TS1		0865	65	0364	0269
324	NZE		C2TS3		0269	45	0322	0573
325	RAL	A0038		COMPUTE	0322	65	1138	0793
326	MPY	TEMP3		THE	0793	19	0181	1052
327	MPY	TEMP4		5TH	1052	19	0397	0818
328	MPY	TEMP5		TERM	0818	19	0449	0870
329	DIV	F4P00		OF	0870	14	0673	0384
330	DIV	F6P00			0384	14	0371	0482
331	DIV	TEMP7		SERIES	0482	14	0364	0474
332	STL	TERM5		ONE	0474	20	0479	0532
333	DIV	TEMP7		5TH TERM	0532	14	0364	0524
334	STL	TER15	C2TS3	SERIES TWO	0524	20	0529	0573
335	RAL	TERM2	C2TS3	COMPUTE	0573	65	0463	0367
336	MPY	A0030		2ND TERM	0367	19	1130	0900

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	CONN.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
337					STL	TER22		SERIES 3	0900	20	0455	0808
338					RAL	TERM3		COMPUTE	0808	65	0765	0319
339					MPY	A0047		3RD TERM	0319	19	1147	0868
340					STL	TER23		SERIES 3	0868	20	0723	0226
341					RAL	TERM4		COMPUTE	0226	65	0471	0325
342					MPY	A0030		4TH	0325	19	1130	1000
343					MPY	A0047		TERM	1000	19	1147	1018
344					STL	TER24		SERIES 3	1018	20	0773	0276
345					RAL	TERMS		COMPUTE	0276	65	0479	0283
346					MPY	A0047		5TH	0283	19	1147	1068
347					MPY	A0047		TERM	1068	19	1147	1168
348					STL	TER25		SERIES 3	1168	20	0823	0326
349					RAL	TER12		COMPUTE	0326	65	0513	0467
350					MPY	A0030		2ND TERM	0467	19	1130	1050
351					STL	TER32		SERIES 4	1050	20	0505	0858
352					RAL	TER13		COMPUTE	0858	65	0815	0369
353					MPY	A0047		3RD TERM	0369	19	1147	1218
354					STL	TER33		SERIES 4	1218	20	0873	0376
355					RAL	TER14		COMPUTE	0376	65	0521	0375
356					MPY	A0030		4TH	0375	19	1130	1100
357					MPY	A0047		TERM	1100	19	1147	1268

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_ PROBLEM: \_\_\_\_\_

CARD NO.	OP.	LOC.	D.	I.	COMMENTS	L	OP.	D.	I.
358	STL		TER34		SERIES 4	1268	20	1023	0476
359	RAL		TER15		COMPUTE	0476	65	0529	0383
360	MPY		A0047		5TH	0383	19	1147	1318
361	MPY		A0047		TERM	1318	19	1147	1368
362	STL		TER35		SERIES 4	1368	20	1073	0526
363	RAL		A0038		IS Z	0526	65	1138	0843
364	SLO		F5P00		EQUAL	0843	16	0696	0451
365	NZE			CIZ5	5	0451	45	0254	0655
366	ALO		F1P00		IS Z	0254	15	0523	1427
367	NZE			CIZ4	EQUAL 4	1427	45	0480	0231
368	ALO		F1P00		IS Z	0480	15	0523	1477
369	NZE			CIZ3	EQUAL 3	1477	45	0530	0281
370	ALO		F1P00		IS Z	0530	15	0523	1527
371	NZE			CIZ2	EQUAL 2	1527	45	0630	0381
372	ALO		F1P00		IS Z	0630	15	0523	1577
373	NZE			CIZ1	EQUAL 1	1577	45	0680	0481
374	ALO		F1P00			0680	15	0523	1627
375	NZE		NONIN			1627	45	0830	0531
376	RAL		F1P00		COMPUTE 11	0531	65	0523	1677
377	SLO		A0030		FOR Z	1677	16	1130	0535
378	MPY		TEM10		EQUAL	0535	19	0305	0676

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DDMM	ERROR	RISK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
379					STL	TEMP 2		ZERO	0676	20	0631	0484
380					RSL	A0030		COMPUTE	0484	66	1130	0635
381					MPY	A0048		12	0635	19	1148	1418
382					ALO	A0030		FOR	1418	15	1130	0685
383					SLO	F1P00		Z	0685	16	0523	1727
384					MPY	TEM10		EQUAL	1727	19	0305	0726
385					STL	TEMP 3	PI112	ZERO	0726	20	0181	0534
386	1								0000	00	0000	0000
387				CCOEF	STD	EXIT6			0603	24	0506	0709
388					RAL		ENTER	ENTER SIR	0709	65	0812	0280
389					RAL	F1P00		COMPUTE	0812	65	0523	1777
390					SLO	A0030			1777	16	1130	0735
391					07	0000		THE	0735	07	0000	0340
392					MPY	A0038			0340	19	1138	1008
393					STL	EXPON			1008	20	0363	0716
394					03	0000		EXIT SIR	0716	03	0000	0671
395					LDD		EEXPO	COEFFICIENT	0671	69	0674	0877
396					STL	TEMP 3			0674	20	0181	0634
397					RAL	A0038		OF	0634	65	1138	0893
398					SLO	F1P00			0893	16	0523	1827
399					STL	TEMP 4		11	1827	20	0397	1200

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DBM.	ERRR	QERR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
400					RAL	A0030			1200	65	1130	0835
401					07	0000		AND	0835	07	0000	0390
402					MPY	TEMP4			0390	19	0397	1468
403					STL	EXPON			1468	20	0363	0816
404					03	0000		EXIT SIR	0816	03	0000	0821
405					LDD		EEXPO		0821	69	0724	0877
406					MPY	FIP216		I2	0724	19	1877	0348
407					DIV	TEMP3	EXIT6		0348	14	0181	0506
408	1								0000	00	0000	0000
409				CIZ1	RAL	A0030		COMPUTE	0481	65	1130	0885
410					SLO	F1P00		I1	0885	16	0523	1927
411					SLO	A0048		FOR	1927	16	1148	0703
412					MPY	TEM10		Z	0703	19	0305	0776
413					STL	TEMP2		EQUAL 1	0776	20	0631	0684
414					RSL	A0048			0684	66	1148	0803
415					MPY	A0048		COMPUTE	0803	19	1148	1518
416					MPY	FOP50			1518	19	0272	0542
417					ALO	F1P00		I2	0542	15	0523	0378
418					SLO	A0030			0378	16	1130	1035
419					STL	TEMP4		FOR	1035	20	0397	1250
420					RAL	A0030			1250	65	1130	1085

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	COMM.	ERROR	STOR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
421					MPY	A0048		Z	1085	19	1148	1568
422					ALO	TEMP4			1568	15	0397	0501
423					MPY	TEM10		EQUAL	0501	19	0305	0826
424					STL	TEMP3	P1112	1	0826	20	0181	0534
425	1								0000	00	0000	0000
426				C125	RAL	A0048			0655	65	1148	0853
427					MPY	F5P00		COMPUTE	0853	19	0696	0866
428					STL	TEMP3			0866	20	0181	0734
429					RSL	TERM1		AND	0734	66	0497	0651
430					ALO	TER22			0651	15	0455	0759
431					SLO	TER23		STORE	0759	16	0723	0478
432					ALO	TER24			0478	15	0773	0528
433					STL	TEMP5		I 1	0528	20	0449	1152
434					MPY	TEM12			1152	19	0379	1300
435					STL	TEMP4		FOR	1300	20	0397	1350
436					RSL	TERM1			1350	66	0497	0701
437					ALO	TERM2			0701	15	0463	0517
438					SLO	TERM3		Z	0517	16	0765	0469
439					ALO	TERM4			0469	15	0471	0475
440					SLO	TEMP4			0475	16	0397	0751
441					SLO	F1P00		EQUAL	0751	16	0523	0828

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
442	ALO	A0030			0828	15	1130	1185
443	SLO	TEMP3			1185	16	0181	1235
444	MPY	TEM10			1235	19	0305	0876
445	STL	TEMP2		5	0876	20	0631	0784
446	RAL	A0030		COMPUTE	0784	65	1130	1285
447	MPY	A0048			1285	19	1148	1618
448	STL	TEMP6			1618	20	0306	0809
449	RAL	A0048			0809	65	1148	1003
450	MPY	A0048		AND	1003	19	1148	1668
451	MPY	F0P50			1668	19	0272	0592
452	MPY	F0P00			0592	19	0696	1016
453	STL	TEMP7			1016	20	0364	0667
454	RSL	TEMP5		STORE	0667	66	0449	1053
455	MPY	A0048			1053	19	1148	1718
456	ALO	TER11			1718	15	0797	0801
457	SLO	TER32			0801	16	0505	0859
458	ALO	TER33		12	0859	15	0873	0878
459	SLO	TER34			0878	16	1023	1028
460	MPY	TEM12			1028	19	0379	1400
461	SLO	TER11			1400	16	0797	0851
462	ALO	TER12		FOR	0851	15	0513	0817

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	DDMM	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
463					SLO	TER 13			0817	16	0815	0519
464					ALO	TER 14			0519	15	0521	0525
465					ALO	F1P00		Z	0525	15	0523	1078
466					SLO	A0030			1078	16	1130	1335
467					ALO	TEMP6		EQUAL	1335	15	0306	0661
468					SLO	TEMP7			0661	16	0364	0669
469					MPY	TEM10			0669	19	0305	1026
470					STL	TEMP3	P1112	5	1026	20	0181	0534
471	1								0000	00	0000	0000
472				CIZ4	RAL	A0048		COMPUTE	0231	65	1148	1153
473					MPY	F4P00			1153	19	0673	0344
474					STL	TEMP3		AND	0344	20	0181	0834
475					RSL	TERM1			0834	66	0497	1001
476					ALO	TER22		STORE	1001	15	0455	1009
477					SLO	TER23			1009	16	0723	1178
478					STL	TEMP5		I 1	1178	20	0449	1202
479					MPY	TEM12			1202	19	0379	1450
480					STL	TEMP4		FOR	1450	20	0397	1500
481					RSL	TERM1			1500	66	0497	1051
482					ALO	TERM2			1051	15	0463	0867
483					SLO	TERM3		Z	0867	16	0765	0719

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CDMM	ERROR	RETN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
484					SLO	TEMP 4			0719	16	0397	1151
485					ALO	F1P00			1151	15	0523	1228
486					SLO	A0030		EQUAL	1228	16	1130	1385
487					ALO	TEMP 3			1385	15	0181	1435
488					MPY	TEM 10			1435	19	0305	1076
489					STL	TEMP 2		4	1076	20	0631	0884
490					RAL	A0030			0884	65	1130	1485
491					MPY	A0048		COMPUTE	1485	19	1148	1768
492					STL	TEMP 6			1768	20	0306	1059
493					RAL	A0048		AND	1059	65	1148	1203
494					MPY	A0048			1203	19	1148	1818
495					MPY	F0P50			1818	19	0272	0692
496					MPY	F4P00		STORE	0692	19	0673	0394
497					STL	TEMP 7			0394	20	0364	1017
498					RSL	TEMP 5			1017	66	0449	1253
499					MPY	A0048		12	1253	19	1148	1868
500					ALO	TER 11			1868	15	0797	1201
501					SLO	TER 32			1201	16	0505	1159
502					ALO	TER 33		FOR	1159	15	0873	1278
503					MPY	TEM 12			1278	19	0379	1550
504					SLO	TER 11			1550	16	0797	1251

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	COMM.	ERROR	BLK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
505					ALO	TER 12		Z	1251	15	0513	1067
506					SLO	TER 13			1067	16	0815	0819
507					SLO	F1P00			0819	16	0523	1328
508					ALO	A0030		EQUAL	1328	15	1130	1535
509					SLO	TEMP6			1535	16	0306	0711
510					ALO	TEMP7			0711	15	0364	0869
511					MPY	TEM10			0869	19	0305	1176
512					STL	TEMP3	PI112	4	1176	20	0181	0534
513	1								0000	00	0000	0000
514				C123	RAL	A0048			0281	65	1148	1303
515					MPY	F3P00		COMPUTE	1303	19	0606	1226
516					STL	TEMP3			1226	20	0181	1034
517					RSL	TERM1		AND	1034	66	0497	1301
518					ALO	TER22			1301	15	0455	1209
519					STL	TEMP5		STORE	1209	20	0449	1252
520					MPY	TEM12			1252	19	0379	1600
521					STL	TEMP4		I 1	1600	20	0397	1650
522					RSL	TERM1			1650	66	0497	1351
523					ALO	TERM2		FOR	1351	15	0463	1167
524					SLO	TEMP4			1167	16	0397	1401
525					SLO	F1P00		Z	1401	16	0523	1378

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	OPM.	ERR.	CHK.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
526					ALO	A0030			1378	15	1130	1585
527					SLO	TEMP3		EQUAL	1585	16	0181	1635
528					MPY	TEM10			1635	19	0305	1276
529					STL	TEMP2		3	1276	20	0631	1084
530					RAL	A0030			1084	65	1130	1685
531					MPY	A0048		COMPUTE	1685	19	1148	1918
532					STL	TEMP6			1918	20	0306	1259
533					RAL	A0048		AND	1259	65	1148	1353
534					MPY	A0048			1353	19	1148	1968
535					MPY	F0P50		STORE	1968	19	0272	0842
536					MPY	F3P00			0842	19	0606	1326
537					STL	TEMP7			1326	20	0364	1217
538					RSL	TEMP5		12	1217	66	0449	1403
539					MPY	A0048			1403	19	1148	1019
540					ALO	TER11			1019	15	0797	1451
541					SLO	TER32			1451	16	0505	1309
542					MPY	TEM12		FOR	1309	19	0379	1700
543					SLO	TER11			1700	16	0797	1501
544					ALO	TER12			1501	15	0513	1267
545					ALO	F1P00		Z	1267	15	0523	1428
546					SLO	A0030			1428	16	1130	1735

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

CARD NO.	DOWN ERROR SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
547			ALO	TEMP6			1735	15	0306	0811
548			SLO	TEMP7		EQUAL	0811	16	0364	1069
549			MPY	TEM10			1069	19	0305	1376
550			STL	TEMP3	P1112	3	1376	20	0181	0534
551	1						0000	00	0000	0000
552		C122	RAL	A0048		COMPUTE	0381	65	1148	1453
553			MPY	F2P00		AND	1453	19	0656	1426
554			STL	TEMP3			1426	20	0181	1184
555			RSL	TERM1		STORE	1184	66	0497	1551
556			MPY	TEM12			1551	19	0379	1750
557			STL	TEMP4		I 1	1750	20	0397	1800
558			RSL	TERM1		FOR	1800	66	0497	1601
559			ALO	F1P00		Z	1601	15	0523	1478
560			SLO	A0030			1478	16	1130	1785
561			ALO	TEMP3		EQUAL	1785	15	0181	1835
562			SLO	TEMP4			1835	16	0397	1651
563			MPY	TEM10			1651	19	0305	1476
564			STL	TEMP2		2	1476	20	0631	1234
565			RAL	A0030			1234	65	1130	1885
566			MPY	A0048		COMPUTE	1885	19	1148	1169
567			STL	TEMP6			1169	20	0306	1359

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CONN.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
568					RAL	A0048		AND	1359	65	1148	1503
569					MPY	A0048			1503	19	1148	1219
570					STL	TEMP7		STORE	1219	20	0364	1317
571					RAL	TERM1			1317	65	0497	1701
572					MPY	A0048		I2	1701	19	1148	1269
573					ALO	TER11			1269	15	0797	1751
574					MPY	TEM12		FOR	1751	19	0379	1850
575					SLO	TER11			1850	16	0797	1801
576					SLO	F1P00		Z	1801	16	0523	1528
577					ALO	A0030			1528	15	1130	1935
578					SLO	TEMP6		EQUAL	1935	16	0306	0861
579					ALO	TEMP7			0861	15	0364	1319
580					MPY	TEM10			1319	19	0305	1526
581					STL	TEMP3	P1112	2	1526	20	0181	0534
582	1								0000	00	0000	0000
583				NONIN	RAL	A0038		IS Z	0830	65	1138	1043
584					SLO	F1P00		LESS THAN	1043	16	0523	1578
585					BMI	LESS1	NEX18	ONE	1578	46	0731	0632
586				NEX18	RAL	A0038			0632	65	1138	1093
587					STL	TEM13			1093	20	0847	1900
588					03	0000		EXIT SIR	1900	03	0000	0705

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO

CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	COMM.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
589					RAL	FC2		IS	0705	65	1058	0663
590					LDD		FIX		0663	69	1066	0200
591					RAL	FLC2		Z	1066	65	1369	1173
592					LDD		FLOAT		1173	69	1576	0229
593					RAL		ENTER	ENTER SIR	1576	65	0679	0280
594					RAL	A0038		NEAR	0679	65	1138	1193
595					SLO	TEM13			1193	16	0847	1851
596					SLO	AVAR1		AN	1851	16	0304	1409
597					BMI	SET11			1409	46	0862	0713
598					SLO	FP930		INTEGER	0713	16	1166	0871
599					BMI		SET12		0871	46	0824	0675
600					RAL	A0038		COMPUTE	0824	65	1138	1243
601					MPY	F3P14		Z PI	1243	19	0746	1216
602					STL	ZPI		OVER	1216	20	1021	0874
603					05	0000		SINE	0874	05	0000	0729
604					STL	ZPIOS		Z PI	0729	20	0483	0236
605					RAL	ZPI			0236	65	1021	0825
606					DIV	ZPIOS		AND	0825	14	0483	0494
607					STL	TEM11		STORE	0494	20	0599	1302
608					RAL	ZPI		COMPUTE	1302	65	1021	0875
609					06	0000		PI CTN	0875	06	0000	0880

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO 

PROBLEM: \_\_\_\_\_

 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	CONN.	ERROR	SIGN	LOG.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
610					DIV	ZPIOS		Z PI	0880	14	0483	0544
611					MPY	F3P14		AND	0544	19	0746	1266
612					STL	A0049		STORE	1266	20	1149	1352
613					RSL	TERM1		COMPUTE	1352	66	0497	1901
614					ALO	TER22			1901	15	0455	1459
615					SLO	TER23		AND	1459	16	0723	1628
616					ALO	TER24			1628	15	0773	1678
617					SLO	TER25		STORE	1678	16	0823	1728
618					STL	TEMP5			1728	20	0449	1402
619					MPY	TEM12		I I	1402	19	0379	1452
620					STL	TEMP3		FOR	1452	20	0181	1284
621					RAL	TEM11		Z	1284	65	0599	1553
622					SLO	TEMP3		NOT	1553	16	0181	0286
623					MPY	TEM10		AN	0286	19	0305	1626
624					STL	TEMP2		INTEGER	1626	20	0631	1334
625					RSL	TEMP5		COMPUTE	1334	66	0449	1603
626					MPY	A0048		AND	1603	19	1148	1419
627					ALO	TER11		STORE	1419	15	0797	1502
628					SLO	TER32		THE	1502	16	0505	1509
629					ALO	TER33		SUM	1509	15	0873	1778
630					SLO	TER34		OF	1778	16	1023	1828

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DDMM	ERROR	BIBN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
631					ALO	TER35		THE	1828	15	1073	1878
632					MPY	TEM12		TWO	1878	19	0379	1552
633					STL	TEMP4	CPSIZ	SUMMATIONS	1552	20	0397	1602
634	1								0000	00	0000	0000
635				PI112	RAL	D0002		COMPUTE	0534	65	0902	0457
636					MPY	TEMP2		PI1	0457	19	0631	1652
637					ALO	TEMP3		PLUS	1652	15	0181	0336
638					STL	TEMP4		I2	0336	20	0397	1702
639					03	0000		EXIT SIR	1702	03	0000	0507
640					RAL	TEMP4	EXIT3		0507	65	0397	0503
641	1								0000	00	0000	0000
642				CPSIZ	RAL	A0038		COMPUTE	1602	65	1138	1293
643					MPY	A0038		Z	1293	19	1138	1158
644					STL	TEMP3		SQUARED	1158	20	0181	1384
645					RAL	F1P64			1384	65	0337	0541
646					MPY	A0038		COMPUTE	0541	19	1138	1208
647					STL	TEMP5			1208	20	0449	1752
648					RAL	FPO77		AND	1752	65	0805	1559
649					MPY	A0038			1559	19	1138	1258
650					STL	TEMP6		STORE	1258	20	0306	1609
651					RAL	FPO04			1609	65	1012	1367

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	CDM#	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
652					MPY	A0038		EULERS	1367	19	1138	1308
653					STL	TEMP7			1308	20	0364	1417
654					RAL	FP002		CONSTANT	1417	65	1020	1025
655					MPY	TEMP3			1025	19	0181	1802
656					SLO	TEMP7		PLUS	1802	16	0364	1469
657					ALO	FP025			1469	15	0372	1928
658					MPY	TEMP3		PSI	1928	19	0181	1852
659					SLO	TEMP6			1852	16	0306	1011
660					ALO	FP129			1011	15	0514	1519
661					MPY	TEMP3		BRACKET	1519	19	0181	1902
662					ALO	TEMP5			1902	15	0449	1653
663					ALO	F1P00		Z	1653	15	0523	0779
664					07	0000			0779	07	0000	1434
665					STL	TEMP8		BRACKET	1434	20	0339	0892
666					RSL	F1P00			0892	66	0523	0829
667					DIV	A0038		COMPUTE	0829	14	1138	0398
668					ALO	A0049			0398	15	1149	1703
669					SLO	F1P00		AND	1703	16	0523	0879
670					ALO	TEMP8			0879	15	0339	1343
671					MPY	TEM11		STORE	1343	19	0599	1070
672					ALO	TEMP4			1070	15	0397	1753

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	EDM.	ERRORS	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
673					MPY	TEM10			1753	19	0305	1676
674					STL	TEMP3	P1112	12	1676	20	0181	0534
675	1								0000	00	0000	0000
676				EEXPO	STD	EXIT7			0877	24	1030	0533
677					RAL		ENTER	ENTER SIR	0533	65	0386	0280
678					RAM	EXPON			0386	67	0363	1467
679					MPY	A6TWO			1467	19	1170	0490
680					ALO	A5TWO		SUB	0490	15	1393	0897
681					STL	ACC1			0897	20	1803	0806
682					RAM	EXPON			0806	67	0363	1517
683					MPY	ACC1			1517	19	1803	1024
684					ALO	A4TWO		ROUTINE	1024	15	1029	0683
685					STL	ACC1			0683	20	1803	0856
686					RAM	EXPON			0856	67	0363	1567
687					MPY	ACC1		TO	1567	19	1803	1074
688					ALO	A3TWO			1074	15	1079	0733
689					STL	ACC1			0733	20	1803	1006
690					RAM	EXPON		EVALUATE	1006	67	0363	1617
691					MPY	ACC1			1617	19	1803	1174
692					ALO	A2TWO			1174	15	1179	0783
693					STL	ACC1		E	0783	20	1803	1056

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

PROBLEM: \_\_\_\_\_

DATE \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.	
694	RAM	EXPON			1056	67	0363	1667	
695	MPY	ACC1			1667	19	1803	1224	
696	ALO	A1TWO			1224	15	1229	0833	
697	STL	ACC1			0833	20	1803	1156	
698	RAM	EXPON		TO	1156	67	0363	1717	
699	MPY	ACC1			1717	19	1803	1274	
700	ALO	F1POO			1274	15	0523	1279	
701	STL	ACC1		THE	1279	20	1803	1206	
702	MPY	ACC1			1206	19	1803	1324	
703	STL	ACC1			1324	20	1803	1256	
704	MPY	ACC1			1256	19	1803	1374	
705	STL	ACC1		X	1374	20	1803	1306	
706	RAL	EXPON			1306	65	0363	1767	
707	BMI		NOTMI		1767	46	1220	1071	
708	RAL	F1POO			1220	65	0523	1329	
709	DIV	ACC1	EXIT7	POWER	1329	14	1803	1030	
710	RAL	ACC1	EXIT7		1071	65	1803	1030	
711	1				0000	00	0000	0000	
712	START	RCD	CONT1	CONT1	READ HDR	1950	70	1972	1972
713	CONT1	LDD	R0001			1972	69	1951	0354
714	STD	P0001		STORE	0354	24	1977	1080	

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CARD NO.	EDM.	ERR.	BIEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
715					LDD	R0002			1080	69	1952	0855
716					STD	F0002			0855	24	1978	0781
717					LDD	R0003		AND	0781	69	1953	1356
718					STD	F0003			1356	24	1979	0682
719					LDD	R0004			0682	69	1954	0657
720					STD	F0004			0657	24	1980	0883
721					LDD	R0005		PUNCH	0883	69	1955	1358
722					STD	F0005			1358	24	1981	1484
723					LDD	R0006			1484	69	1956	1659
724					STD	F0006			1659	24	1982	0688
725					STD	CARDM			0688	24	0788	0486
726					SLO	8002			0486	16	8002	0395
727					STL	F0007			0395	20	1983	0536
728					STD	F0008			0536	24	1984	0387
729					STD	F0009			0387	24	1985	0388
730					LDD	PCW1			0388	69	0641	0594
731					STD	F0010			0594	24	1986	0389
732					PCH	F0001			0389	71	1977	1379
733					LDD	PCW2			1379	69	0732	0686
734					STD	F0010	READ		0686	24	1986	0489
735	1								0000	00	0000	0000

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CARD NO.	OP.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
736		READ	RCD	CONT2	CONT2	READ DATA	0489	70	1973	1973
737		CONT2	RAL	FLC1			1973	65	1726	0831
738			LDD		FLOAT	FLOAT	0831	69	1534	0229
739			RAM	R0001			1534	67	1951	1005
740			LDD	MOD1		AND	1005	69	1408	1061
741			SDA	MOD1			1061	22	1408	1161
742			SLT	0004		STORE	1161	35	0004	1171
743			ALO	8001			1171	15	8001	1429
744			SDA	END1		DATA	1429	22	1033	0736
745			RAL	RDC1			0736	65	0539	1443
746			AUP	MOD1	8002		1443	10	1408	8002
747		RDK1	ALO	D1			1853	15	0294	0699
748			AUP	8001			0699	10	8001	0707
749			SUP	END1			0707	11	1033	0487
750			NZU		TEST		0487	44	0791	1042
751			AUP	8001	8002		0791	10	8001	8002
752		TEST	RAL	R0001			1042	65	1951	1055
753			BMI	ZERO	READ		1055	46	1458	0489
754	1						0000	00	0000	0000
755		ZERO	RAU	MOD2	8003	ZERO	1458	60	1211	8003
756		ZK1	SUP	END2		THE	1903	11	1406	1261

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CARD NO.	DOWN ERRORS BIEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
757			NZU		BEGIN	OUTPUT	1261	44	1015	1316
758			AUP	8001			1015	10	8001	1223
759			AUP	D1	8003	REGION	1223	10	0294	8003
760	1						0000	00	0000	0000
761		BEGIN	RAL	IDIA		INITIALIZE	1316	65	1569	1273
762			STL	DIA			1273	20	1479	0782
763			RAL	ISTD			0782	65	0836	0841
764			STL	DIAFT	NEXT1		0841	20	0495	0448
765		NEXT1	RAL	DIA	ENTER	ENTER SIR	0448	65	1479	0280
766		DIA	RAM	DOO11	NEXT2	CONVERT D	1479	67	0911	1065
767		NEXT2	NZE		SUMIB	VALUES	1065	45	1619	1669
768			MPY	FPO3D	DIAFT	TO	1619	19	0472	0495
769		DIAFT	STL	A0001	NEXT3	FEET	0495	20	1101	0454
770		NEXT3	03	0000		EXIT SIR	0454	03	0000	1709
771			RAL	DIA			1709	65	1479	1083
772			SLO	END4		STORE	1083	16	0886	0891
773			NZE		NSIR1		0891	45	0794	0545
774			RAL	DIA		AND	0794	65	1479	1183
775			ALO	D1			1183	15	0294	0749
776			STL	DIA		MODIFY	0749	20	1479	0832
777			RAL	DIAFT			0832	65	0495	0849

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CARD NO.	CPM.	ERROR	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
778				ALO	D1		ADDRESSES	0849	15	0294	0899
779				STL	DIAFT	NEXT1		0899	20	0495	0448
780	1							0000	00	0000	0000
781			SUMIB	03	0000	NSIR1	EXIT SIR	1669	03	0000	0545
782			NSIR1	RAL	IIB		ADD	0545	65	0548	0504
783				LDD		SUM	IBS	0504	69	0757	0300
784				SLO	D0053		AND	0757	16	0953	0807
785				NZE	STOP1		CHECK	0807	45	0510	1311
786				RAL	IIS		ADD	1311	65	0664	1719
787				LDD		SUM	ISS	1719	69	0522	0300
788				SLO	D0074		AND	0522	16	0974	1529
789				NZE	STOP2	CPSIA	CHECK	1529	45	0882	1233
790	1							0000	00	0000	0000
791			CPSIA	RAL		ENTER	ENTER SIR	1233	65	1036	0280
792				RAL	F1P65		COMPUTE	1036	65	0689	1493
793				MPY	A0002		AND	1493	19	1102	0672
794				DIV	D0001		STORE	0672	14	0901	1062
795				SLT	0002			1062	35	0002	1769
796				STL	A0033	INIT1	PSIA	1769	20	1133	1086
797	1							0000	00	0000	0000
798			INIT1	03	0000		EXIT SIR	1086	03	0000	1041

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CARD NO.	EDM. ERRORS	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
799				LDD	MOD3 I		INITIALIZE	1041	69	0844	0997
800				STD	MOD3			0997	24	0804	0857
801				LDD	MOD4 I		FETCH	0857	69	0810	0763
802				STD	MOD4			0763	24	1366	1819
803				LDD	MOD5 I			1819	69	0822	1075
804				STD	MOD5		ADDRESSES	1075	24	1579	1032
805				LDD	MOD7 I			1032	69	1186	0739
806				STD	MOD7	FRD20		0739	24	1092	0595
807			FRD20	RAL	CARDM		MODIFY	0595	65	0788	0687
808				ALO	OP1		CARD	0687	15	0540	0838
809				STL	CARDM			0838	20	0788	0695
810				STL	P0001	MOD3	NUMBER	0695	20	1977	0804
811			MOD3 I	RAL	D0013		D	0844	65	0913	1817
812				STL	P0002		AND	1817	20	1978	0881
813				RAL	MOD3		IB	0881	65	0804	1759
814				ALO	D1			1759	15	0294	0999
815				STL	MOD3	MOD4	AND	0999	20	0804	1366
816			MOD4 I	RAL	D0033			0810	65	0933	0837
817				STL	A0023			0837	20	1123	1776
818				RAL	MOD4		IS	1776	65	1366	1221
819				ALO	D1			1221	15	0294	1049

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CARD NO.	OP.	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
820			STL	MOD4	MOD5		1049	20	1366	1579
821		MOD5 I	RAL	D0054		AND	0822	65	0954	1809
822			STL	A0024			1809	20	1124	1629
823			RAL	MOD5			1629	65	1579	1283
824			ALO	D1			1283	15	0294	1099
825			STL	MOD5	MOD7	Z	1099	20	1579	1092
826		MOD7 I	RAL	D0075			1186	65	0975	1679
827			STL	A0025			1679	20	1125	1729
828			RAL	MOD7			1729	65	1092	1047
829			ALO	D1		ADDRESSES	1047	15	0294	1199
830			STL	MOD7	DZERO		1199	20	1092	0845
831	1						0000	00	0000	0000
832		DZERO	RAL	MOD3		MODIFY	0845	65	0804	1859
833			SLO	D1			1859	16	0294	1249
834			LDD	FTCH1		CONTROL	1249	69	0854	1007
835			SDA	FTCH1	FTCH1	AND	1007	22	0854	0854
836		FTCH1	RAL	9999	NEXT8	TEST D	0854	65	9999	1004
837		NEXT8	NZE	DSTOR	START	FOR ZERO	1004	45	1508	1950
838	1						0000	00	0000	0000
839		DSTOR	RAL	MOD3		MODIFY	1508	65	0804	1909
840			ALO	D189		CONTROL	1909	15	1162	1867

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CARD NO.	DOWN ENCR SIDE	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
841			LDD	FTCH2		STORE	1867	69	1270	1323
842			SDA	FTCH2	8001	D VALUE	1323	22	1270	8001
843		FTCH2	RAL	9999	NEXT9		1270	65	9999	1054
844		NEXT9	STL	TEMP1			1054	20	0393	0796
845			RAL	MOD4		AND	0796	65	1366	1271
846			SLO	D1		TEST	1271	16	0294	1299
847			LDD	FTCH3		IB	1299	69	1154	1057
848			SDA	FTCH3	8001	FOR	1057	22	1154	8001
849		NEX16	BMI	STZER	CPSIB	MINUS	1204	46	1157	1558
850	1						0000	00	0000	0000
851		STZER	LDD	A0050		STORE	1157	69	1150	1357
852			STD	P0007			1357	24	1983	1254
853			STD	P0006	ISZER	ZERO	1254	24	1982	1236
854	1						0000	00	0000	0000
855		ISZER	RAL	A0024		IS IS	1236	65	1124	1779
856			NZE	QPRIS	SLZER	ZERO	1779	45	1082	1333
857	1						0000	00	0000	0000
858		SLZER	RAL	A0050		SET P0005	1333	65	1150	1407
859			STL	P0008		AND P0008	1407	20	1984	1155
860			STL	P0005	IBZER	TO ZERO	1155	20	1981	1584
861	1						0000	00	0000	0000

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CARD NO.	OPK	ERR	LOC	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
862			IBZER	RAL	A0023		IS IB	1584	65	1123	1829
863				NZE	OSIR	ZEROP	ZERO	1829	45	0538	1383
864	1							0000	00	0000	0000
865			ZEROP	LDD	A0050		STORE	1383	69	1150	1304
866				STD	P0003		ZEROS	1304	24	1979	1232
867				STD	P0004	PICHOS		1232	24	1980	1636
868	1							0000	00	0000	0000
869			DED20	RAM	TEMP1		IS D VALUE	1354	67	0393	1097
870				SML	A0022		EQUAL	1097	18	1122	1879
871				NZE	FRD20	START	D20	1879	45	0595	1950
872	1							0000	00	0000	0000
873			CPSIB	RAL		ENTER	ENTER SIR	1558	65	1361	0280
874				RAM	TEMP1		COMPUTE	1361	67	0393	1197
875				MPY	FP660		PSIB	1197	19	1404	1424
876				DIV	D0001		AND	1424	14	0901	1212
877				SLT	0002			1212	35	0002	1869
878				STL	TEMP2	SUPSI	STORE	1869	20	0631	1634
879	1							0000	00	0000	0000
880			SUPSI	SLO	A0033		IS PSIB	1634	16	1133	1037
881				BMI	BETAA	BETAB	MORE PSIA	1037	46	0890	1091
882	1							0000	00	0000	0000

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CARD NO.	DOWN	ERROR	SIDE	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
883				BETAA	RAL	BSTAR		COMPUTE	0890	65	1543	1247
884					MPY	A0033		BETA A	1247	19	1133	1454
885					SLO	RECNO		AND	1454	16	1207	1411
886					STL	TEMP3	ALPHA	STORE	1411	20	0181	1684
887	1								0000	00	0000	0000
888				ALPHA	RSL	BSTAR		COMPUTE	1684	66	1543	1297
889					MPY	A0033		ALPHA A	1297	19	1133	1504
890					SLO	RECNO		AND	1504	16	1207	1461
891					STL	TEMP4	CFBET	STORE	1461	20	0397	1554
892	1								0000	00	0000	0000
893				BETAB	RAL	BSTAR		COMPUTE	1091	65	1543	1347
894					MPY	TEMP2		BETA B	1347	19	0631	1604
895					SLO	RECNO		AND	1604	16	1207	1511
896					STL	TEMP3	ALPHB	STORE	1511	20	0181	1734
897	1								0000	00	0000	0000
898				ALPHB	RSL	BSTAR		COMPUTE	1734	66	1543	1397
899					MPY	A0033		ALPHA B	1397	19	1133	1654
900					SLO	RECNO		AND	1654	16	1207	1561
901					STL	TEMP4	CFBET	STORE	1561	20	0397	1554
902	1								0000	00	0000	0000
903				CFBET	03	0000		EXIT SIR	1554	03	0000	0860

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CARD NO.	CDNN.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
904					RAL	TEMP3		COMPUTE	0860	65	0181	1336
905					LDD		FBETA	FUNCT BETA	1336	69	0789	0350
906					STL	TEMP6		AND STORE	0789	20	0306	1010
907					RAL	TEMP4		COMPUTE	1010	65	0397	1704
908					LDD		FBETA	FUNCT ALPHA	1704	69	1257	0350
909					STL	TEMP7	BETMI	AND STORE	1257	20	0364	1917
910	1								0000	00	0000	0000
911				BETMI	RAL	TEMP3		TEST BETA	1917	65	0181	1386
912					BMI	CPMIP	COSMP	FOR MINUS	1386	46	0839	0450
913	1								0000	00	0000	0000
914				CPMIP	RSL	TEMP6		CHANGE TO	0839	66	0306	1611
915					STL	TEMP6	COSMP	NEG FBETA	1611	20	0306	0450
916	1								0000	00	0000	0000
917				COPHI	RAL	F1P00		COMPUTE	0359	65	0523	1929
918					SLO	TEMP6			1929	16	0306	1661
919					MPY	ASTAR		AND	1661	19	0814	1784
920					STL	TEMP7			1784	20	0364	1967
921					RAL	TEMP6		STORE	1967	65	0306	1711
922					DIV	TEMP7			1711	14	0364	1474
923					STL	TEMP6	C12HU	PHI	1474	20	0306	1060
924	1								0000	00	0000	0000

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CARD NO.	EDMK	ERRR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
925				C12HU	RAM	TEMP1		COMPUTE	1060	67	0393	1447
926					07	0000		1200 D TO	1447	07	0000	1754
927					MPY	F1P50		3 HALVES	1754	19	1307	1180
928					STL	EXPON			1180	20	0363	1416
929					03	0000		EXIT SIR	1416	03	0000	1466
930					LDD		EEXPO		1466	69	1919	0877
931					MPY	F12HU	SIBQB	POWER	1919	19	0872	1192
932	1								0000	00	0000	0000
933				SIBQB	MPY	F0P50		COMPUTE	1192	19	0272	1242
934					MPY	TEMP6		SMALL	1242	19	0306	1826
935					MPY	A0023	LIBQB	IBQB	1826	19	1123	0894
936	1								0000	00	0000	0000
937				LIBQB	MPY	F43P2		COMPUTE	0894	19	1497	1969
938					MPY	D0004		AND STORE	1969	19	0904	1524
939					STL	A0026		LARGE IBQB	1524	20	1126	0888
940					STL	P0007			0888	20	1983	0638
941					03	0000	ISZER	EXIT SIR	0638	03	0000	1236
942	1								0000	00	0000	0000
943				QPRIS	RAL		ENTER	ENTER SIR	1082	65	0863	0280
944					RAL	D0006		COMPUTE	0863	65	0906	1761
945					MPY	A0024		AND STORE	1761	19	1124	0996

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CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
946	STL	P0008			0996	20	1984	1044
947	STL	A0027	A2PRI	Q PRIME S	1044	20	1127	1182
948					0000	00	0000	0000
949	RAL	A2PRI	ENTER	ENTER SIR	0538	65	1182	0280
950	RAL	F2P00		COMPUTE	1182	65	0656	1811
951	MPY	TEMP1		AND	1811	19	0393	0864
952	DIV	D0003		STORE	0864	14	0903	1014
953	STL	A0034		A 2 PRIME	1014	20	1134	1087
954	STL	A0030		A 2 PRIME	1087	20	1130	1483
955	MPY	A0034			1483	19	1134	1804
956	STL	A0047		SQUARED	1804	20	1147	1854
957	RAL	A0034		AND	1854	65	1134	0889
958	07	0000		LOG	0889	07	0000	1094
959	STL	A0048	FUNC B	A 2 PRIME	1094	20	1148	1904
960					0000	00	0000	0000
961	RAL	F1P00		COMPUTE	1904	65	0523	1230
962	SLO	A0034		AND	1230	16	1134	1039
963	STL	TEMP2			1039	20	0631	1834
964	RAL	A0034		STORE	1834	65	1134	1089
965	DIV	D0005			1089	14	0905	1516
966	SLO	A0034		FUNCTIONS	1516	16	1134	1189

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PROBLEM: \_\_\_\_\_

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 CHECKED: YES  NO

CARD NO.	DMA	ERR	W	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
967					DIV	TEMP2			1189	14	0631	1292
968					STL	A0036		OF	1292	20	1136	1239
969					RAL	D0005			1239	65	0905	1160
970					DIV	A0034		B	1160	14	1134	1194
971					STL	A0037			1194	20	1137	1040
972					RAL	A0025		STORE	1040	65	1125	1280
973					STL	A0038		Z	1280	20	1138	1191
974					03	0000		EXIT SIR	1191	03	0000	0846
975					LDD		COMB	STORE P11	0846	69	1349	0500
976					STL	A0045	ADD1	PLUS 12	1349	20	1145	0648
977	1								0000	00	0000	0000
978				ADD1	RAL		ENTER	ENTER SIR	0648	65	1205	0280
979					RAL	A0045		COMP P11	1205	65	1145	1399
980					ALO	F1P00		PLUS 12	1399	15	0523	1330
981					STL	P0003	NTEST	PLUS ONE	1330	20	1979	1282
982	1								0000	00	0000	0000
983				NTEST	RAL	A0045		IS P11 PLU	1282	65	1145	1449
984					BMI	STOP3	ISEZ	S P12 NEG	1449	46	1255	1305
985	1								0000	00	0000	0000
986				ISEZ	RAL	A0024		WAS IS	1305	65	1124	1380
987					NZE	SETAP	IBEZ	ZERO	1380	45	1884	1436

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

CARD NO.	CPM#	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
988	1								0000	00	0000	0000
989				SETAP	RAL	D0005		STORE	1884	65	0905	1210
990					STL	A0030		A PRIME	1210	20	1130	1533
991					MPY	D0005		A PRIME	1533	19	0905	1876
992					STL	A0047		SQUARED	1876	20	1147	1355
993					RAL	A0030		STORE	1355	65	1130	1486
994					07	0000		LOG	1486	07	0000	1241
995					STL	A0048		A PRIME	1241	20	1148	1405
996					03	0000		EXIT SIR	1405	03	0000	1260
997					LDD		COMB	STORE PI 1	1260	69	0813	0500
998					STL	A0046	NTES2	PLUS 12	0813	20	1146	1499
999	1								0000	00	0000	0000
1000				NTES2	BMI	STOP4	TESZE	TEST MINUS	1499	46	1455	1505
1001	1								0000	00	0000	0000
1002				TESZE	NZE	COMSL	STOP5	TEST FOR 0	1505	45	1608	1310
1003	1								0000	00	0000	0000
1004				COMSL	RAL		ENTER	ENTER SIR	1608	65	0488	0280
1005					RAL	A0045		COMPUTE	0488	65	1145	1549
1006					DIV	A0046		SUSPENDED	1549	14	1146	1456
1007					DIV	A0039		LOAD	1456	14	1139	1555
1008					STL	P0004		AND	1555	20	1980	1583

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO   
 CHECKED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	COMM.	ERROR	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1009					MPY	A0027			1583	19	1127	0698
1010					STL	P0005	IBEZ	STORE	0698	20	1981	1436
1011	1								0000	00	0000	0000
1012				IBEZ	RAL	A0023		WAS IB	1436	65	1123	1430
1013					NZE	COMTL	PUNCH	EQUAL ZERO	1430	45	1934	1536
1014	1								0000	00	0000	0000
1015				COMTL	RAL	P0003		COMPUTE	1934	65	1979	1633
1016					MPY	A0026		TOTAL	1633	19	1126	0896
1017					STL	P0006	PUNCH	LOAD	0896	20	1982	1536
1018	1								0000	00	0000	0000
1019				PUNCH	03	0000	PCHOS	EXIT SIR	1536	03	0000	1636
1020				PCHOS	RAL	FC1		FIX AND	1636	65	0840	0995
1021					LDD		FIX	PUNCH	0995	69	0748	0200
1022					PCH	P0001	DED20	CARD	0748	71	1977	1354
1023	1								0000	00	0000	0000
1024				SET11	RAL	TEM13		SET Z TO	0862	65	0847	1655
1025					STL	TEM14			1655	20	0509	1262
1026					STL	A0038	NEX19	INTEGER	1262	20	1138	0512
1027				SET12	RAL	TEM13		SET Z TO	0675	65	0847	1705
1028					ALO	F1P00		INTEGER	1705	15	0523	1480
1029					STL	TEM14			1480	20	0509	1312

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CARD NO.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1030	STL	A0038	NEX19	PLUS ONE	1312	20	1138	0512
1031	ALO	FP030		IS Z NEAR	0731	15	1686	1341
1032	BMI		SETZ1	ONE	1341	46	1244	1045
1033	ALO	FP930		IS Z NEAR	1244	15	1166	1321
1034	BMI	SETZ0	NEX18	ZERO	1321	46	1574	0632
1035	RAL	F1P00		SET Z	1045	65	0523	1530
1036	STL	TEM14			1530	20	0509	1362
1037	STL	A0038	NEX19	EQUAL ONE	1362	20	1138	0512
1038	RAL	A0050		SET Z	1574	65	1150	1755
1039	STL	TEM14			1755	20	0509	1412
1040	STL	A0038	NEX19	EQUAL ZERO	1412	20	1138	0512
1041					0000	00	0000	0000
1042	ASTAR	51	4347	8261	0814	51	4347	8261
1043	BSTAR	49	1428	5714	1543	49	1428	5714
1044	RECNO	50	2000	0000	1207	50	2000	0000
1045	A1	49	1411	2821	0473	49	1411	2821
1046	A2	48	8864	0270	0373	48	8864	0270
1047	A3	48	2743	3490	0323	48	2743	3490
1048	& A4	46	3944	6000	0391CR	46	3944	6000
1049	A5	47	3289	7500	0318	47	3289	7500
1050	F1P00	50	1000	0000	0523	50	1000	0000

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	DDMM	ERROR	BLK	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1051				F P 03 D	47	3280	8300		0472	47	3280	8300
1052				F 1 P 65	50	1650	0000		0689	50	1650	0000
1053				F P 660	49	6600	0000		1404	49	6600	0000
1054				F 0 P 50	49	5000	0000	CONSTANTS	0272	49	5000	0000
1055				F 12 H U	53	1200	0000		0872	53	1200	0000
1056				F 1 P 50	50	1500	0000		1307	50	1500	0000
1057				F 43 P 2	51	4320	0000		1497	51	4320	0000
1058				F 2 P 00	50	2000	0000		0656	50	2000	0000
1059				F 3 P 00	50	3000	0000		0606	50	3000	0000
1060				F 4 P 00	50	4000	0000		0673	50	4000	0000
1061				F 5 P 00	50	5000	0000		0696	50	5000	0000
1062				F 6 P 00	50	6000	0000		0371	50	6000	0000
1063				F P 216	49	2160	0000		1877	49	2160	0000
1064				F 1 P 64	50	1645	2890		0337	50	1645	2890
1065				F P 077	48	7762	2000		0805	48	7762	2000
1066				F P 004	47	4257	0000		1012	47	4257	0000
1067				F P 002	46	2740	0000		1020	46	2740	0000
1068				F P 025	48	2570	4000		0372	48	2570	4000
1069				F 3 P 14	50	3141	5900		0746	50	3141	5900
1070				F P 129	49	1297	3400		0514	49	1297	3400
1071				A 1 T W O	49	2499	9868		1229	49	2499	9868

# SOAP II LISTING

WRITTEN BY \_\_\_\_\_

PROBLEM: \_\_\_\_\_

 SOAPED: YES  NO   
 CHECKED: YES  NO 

DATE \_\_\_\_\_

CARD NO.	CDNN	ERRORS	SIGN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1072				A2TWO	48	3125	7583		1179	48	3125	7583
1073				A3TWO	47	2591	3712		1079	47	2591	3712
1074				A4TWO	46	1715	6200		1029	46	1715	6200
1075				A5TWO	44	5430	2000		1393	44	5430	2000
1076				A6TWO	43	6906	0000		1170	43	6906	0000
1077				FP030	48	3000	0000		1686	48	3000	0000
1078				FP930	49	9300	0000		1166	49	9300	0000
1079				AVAR1	48	4000	0000		0304	48	4000	0000
1080	1								0000	00	0000	0000
1081				MOD1	STD	9999	RDK1		1408	24	9999	1853
1082				END1	STD	9999	RDK1		1033	24	9999	1853
1083				RDC1	LDD	R0002	8003		0539	69	1952	8003
1084				D1	00	0001	0000	COMMAND	0294	00	0001	0000
1085				FLC1	06	R0002	R0007		1726	06	1952	1957
1086				MOD2	STL	A0001	ZK1		1211	20	1101	1903
1087				END2	STL	A0050	ZK1	OR	1406	20	1150	1903
1088				END4	RAM	D0032	NEXT2		0886	67	0932	1065
1089				IDIA	RAM	D0011	NEXT2		1569	67	0911	1065
1090				I STD	STL	A0001	NEXT3		0836	20	1101	0454
1091				IIB	00	D0033	D0052		0548	00	0933	0951
1092				IIS	00	D0054	D0073		0664	00	0954	0973

## SOAP II LISTING

WRITTEN BY \_\_\_\_\_

SOAPED: YES  NO

DATE \_\_\_\_\_

PROBLEM: \_\_\_\_\_

CHECKED: YES  NO

CARD NO.	DOWN	ERROR	BLEN	LOC.	OP.	D.	I.	COMMENTS	L	OP.	D.	I.
1093				STOP 2	HLT	0002	READ	CONTROL	0882	01	0002	0489
1094				STOP 3	HLT	0003	READ		1255	01	0003	0489
1095				OP 1	01	0000			0540	01	0000	0000
1096				FC 1	06	P0002	P0008		0840	06	1978	1984
1097				CTLUX	RAL	9999	NEXT 6		1805	65	9999	1855
1098				CTLUV	RAL	9999	NEXT 7		1905	65	9999	1506
1099				FTCH 1	RAL	9999	NEXT 8		0854	65	9999	1004
1100				D189	00	0189	0000		1162	00	0189	0000
1101				FTCH 2	RAL	9999	NEXT 9	CONSTANTS	1270	65	9999	1054
1102				STOP 4	HLT	0004	READ		1455	01	0004	0489
1103				STOP 5	HLT	0005	READ		1310	01	0005	0489
1104				PCW 1	00	0000	0008		0641	00	0000	0008
1105				PCW 2	00	0000			0732	00	0000	0000
1106				FTCH 3	RAL	9999	NEX 16		1154	65	9999	1204
1107				STOP 1	HLT	0001	READ		0510	01	0001	0489
1108				FLC 2	10	TEM 13	TEM 13		1369	10	0847	0847
1109				FC 2	10	TEM 13	TEM 13		1058	10	0847	0847