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Subject: Program for Calculation and Summary of Capital and Operating Costs and Profitability

The attached program was written at the Eastern Marketing and Nutrition Research Division, Engineering and Development Laboratory.

Anyone interested in making cost estimates related to his work may find the program useful.

Comments on the program or documentation are welcomed. It is the intention to gradually expand or improve the program as needs and use require.

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Attachment

PROGRAM FOR CALCULATION AND SUMMARY OF CAPITAL AND OPERATING COSTS AND PROFITABILITY

by
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ABSTRACT

This program calculates total fixed capital, working capital and operating costs from basic capital and operating cost input data. Either an earnings rate or selling price can be calculated if either one or the other is a given value. Certain profitability criteria are also calculated. The cost estimation calculations are based on o derived from established methods used in the chemical processing industries, but the program can be used for estimates relating to food or other allied processing industries. The program is written for an 8K, IBM-1130 system with an 1132 printer. The language is FORTRAN IV.

GENERAL INFORMATION

The program is designed to accept input data relating to fixed capital costs and operating costs. Either a selling price or earnings rate will be calculated depending on which value is given as input (if selling price is given, earnings rate will be calculated, and vice versa). The overall program is composed of two programs: one for fixed capital cost calculation and printing; the other for operating cost, working capital, and financial analysis (and profitability) calculation and printing. The fixed capital cost program (CFGCC) calls the operating cost and analysis program (CFGOC) by a CALL LINK (CFGOC) statement. This is done because certain items of

operating cost depend on fixed capital cost items. The programs were originally written as one program, but it was separated into two parts because of limited core space.

The printed output consists of the following:

1. All original input data.
2. An itemized list of fixed capital cost components such as buildings, piping, electrical costs, etc.
3. An itemized list of the costs comprising the operating cost such as maintenance, labor, raw materials depreciation, general expense, etc. The costs are added to the selling cost, profit, discounts and federal income tax to arrive at the selling price. The costs items in this section are computed and printed on a per unit (such as pound), daily, and yearly basis.
4. The operating basis such as production rate and hours of operation per day are printed above the operating cost sheet.
5. A financial analysis sheet is printed. This presents a brief calculation, on a yearly basis, of net profit. Also, various profitability criteria are printed such as percentage earnings on fixed capital and total capital (fixed + working), turnover ratio, payout, etc. Cash flow, working capital and total capital are also printed.

Input-Output Device Numbers

It should be noted that, in the READ and WRITE statements, the proper input and output device numbers for the individual system should be used. For example, in READ (2,100), the 2 refers to the card reader in one system, but not necessarily in another system.

Input Data

The input data are transmitted by cards only. Twelve cards are required to supply the data. Descriptive data (not used in calculations) are supplied on two cards: these data may include alphabetical and numerical characters. The fifth card is used for describing the project or case, and the twelfth card is for giving the dimension of the production unit. All data are read in F format. In order to avoid possible errors, it is recommended that numerical data (not necessarily for descriptive data on cards 5 and 12) be entered with a decimal point. Capital cost dollar figures must be divided by 1000 before entering them on the cards. Operating cost dollar figures must also be divided by 1000 before entering on the cards. Operating cost dollar amount inputs are the daily costs except for depreciation, (DEPA), which is yearly. Other values that are divided by 1000 are: yearly depreciation, (DEPA = thousands of $/yr); yearly production rate, (W = thousands of units per year). Table 1 lists the capital cost input items giving the variable name, card number and card location, definition or description, and instructions. Table 2 lists the operating cost input items with information similar to Table 1.

Capital Cost Inputs-Table 1

Variables 1 through 14 include the physical plant cost items necessary to build the plant and operate it. Variables 6, 7, 8, 9, 10, 11 and 14 may be supplied as dollar cost values (actual value divided by 1000), or the value may be given as zero (real mode: o. or o.o) or left blank, in which case the corresponding factor fo

the variable must be supplied in order to calculate the variable. The value of the variable will be calculated by multiplying the factor for the variable by the value of the purchased equipment cost. Factors for variables are items 15 through 21. If both actual cost and factors are given, the actual cost value will be used. Values of the latter factors may range from greater than zero to greater than 1.0. Typical values may be found in the literature. Items 22, 23 and 24 are given as fractions which the program uses to calculate the value of engineering and construction, contractor's fee, and contingency respectively. Items 25, 26 and 27 are dollar figures (actual value divided by 1000) for the valuation of existing capital items to be used in conjunction with the new plant equipment for operating the process.

Operating Cost Inputs-Table 2

Variables 1 through 12 are the operating costs per day divided by 1000. Variables AL, CMR, CMS, CIN, CT, may be entered as zero (real mode, 0.0 or 0.) or left blank: in this case a value for the corresponding factor must be supplied in order to calculate the variable. If both the cost figure and factor are given the cost figure will be used.

Variable 13, DEPA, annual depreciation cost divided by 1000, may be given, or it can be calculated if EY, and BY are given. If DEPA and EY and BY are given, the value for DEPA will be used. Variable W is the number of units of production in a year divided by 1000. Any size or dimension of unit may be used such as grams, ounce, pound, kilogram, ton, metric ton, bushel, No. 10 can, case, gallon, barrel,

hundredweight, etc. If 400,000 gallons are produced in a year a value of 400. must be entered for W. Variables 17 through 20 are used in calculating the working capital required. Variable 24, FSPW is the factory selling price per unit of products in dollars per unit, such as $ per pound, $/gallon, $/ton, etc. If FSPW is given, variable ER must not be given, since the object of the program is to calculate either selling price or earning rate when either one or the other, but not both, are given. Variable 26, ER is the earning rate on fixed capital, expressed as a decimal fraction or multiple (net profit after taxes divided by fixed capital). If the earning rate on fixed capital is 12%, ER should be 0.12 or (.12). Variable 26, TR is the Federal income tax rate on net taxable profit, expressed as a decimal fraction, the value is usually between 0.48 and 0.52.

Variables 27 through 37 are expressed as decimal fractions (they will rarely be greater than 1.0). C1, C7, C8, C9, C10, and RI must be given in order to calculate the corresponding operating cost item. If not given, the item will be zero. RI is the interest rate for borrowed money, and will usually be between 0.06 to 0.12.

Items 38-40 must be given to calculate operating labor cost if OL is not given. DW is the actual number of dollars that one man will earn per day such as 24.0 or 26.55.

Variable 41, UNIT, defines the size of the production unit such as 1.0 pound, 1.0 ton, 100 lbs. It is recommended that standard sizes of units be used, such as 1.0 pound, 1.0 ton, or 1.0 gallon and not 40 pounds or 50 gallons.

Variable V is used to literally describe the dimension of the production unit such as the word(s) "POUND", "TON", "NO. 10 CAN", "CASE = 6 No. 10 CANS".

Preparation of Input Data

Capital Cost Data--The following sequence of manual operations is recommended. Calculate the various items of fixed capital and/or estimate the various multiplying factors. Divide the actual dollar figures by 1000. Arrange a sequential list of the data in the order that it will be entered on the cards. Table 1 gives this sequence. A numbered space form can be used to record the data before punching on the cards. This will aid in punching, since the numbers to be punched are shown in their proper space and sequence. This type of form is shown here, titled "INPUT FORM".

Operating Cost Data--The same procedure outlined above for capital cost data is applicable. For operating cost dollar figures calculate the daily costs (yearly for DEPA) and divide by 1000 before listing and punching the data. DW is not divided by 1000 but entered as the actual figure.

Input Deck

After the data are punched on the twelve data cards, the input deck should be placed in the card hopper in the following order:

1. Cards required by system, such as "cold start" (See your computer system operator or manual).
2. // JOB
3. // XEQ CFGCC
4. 12 data cards in proper sequence.
5. A blank card
6. // JOB
7. // XEQ CFGCC
8. Second set of 12 data card in proper sequence.
9. A blank card

Repeat sequence 2 to 5 for additional sets of data.

Program Listing

The complete program is given in the Program Listing together with a printed example of an estimate calculated by the program.

Method of Calculation of Selling Price and Profit

The calculation of factory selling price or earning rate (or profit) is done by a direct method. All the values required are either given as input or expressed in terms of factory selling price or fixed capital. Therefore, trial and error or iterative procedure is not required. The calculation of selling price, earnings rate and working capital is shown in lines OC 175 through OC 193. Working capital, also, is calculated directly in line OC 193.

Table 1. · CAPITAL COST INPUT DATA

Note: All dollar cost figures must be entered as actual cost divided by 1000

Variable Name	Definition	Data Card Sequence	Card Cols.
1 RL	Land and site preparation, $	1	1-10
2 YW	Yard Work, $	1	11-20
3 BS	Buildings and structures, $	1	21-30
4 U	Utilities, $	1	31-40
5 PE	Purchased equipment, $	1	41-50
6 PEI	Purchased equipment installation, $	1	51-60
7 P	Piping, $	1	61-70
8 ST	Instrumentation, $	1	71-80
9 EP	Electrical process wiring, $	2	1-10
10 SU	Insulation, $	2	11-20
11 PA	Painting, $	2	21-30
12 T	Transportation Equipment, $	2	31-40
13 AØFF	Office equipment, $	2	41-50
14 TFR	Freight charges, $	2	51-60
15 FPEI	Factor on purchased equipment for installation	3	1-8
16 FP	Factor on purchased equipment for piping	3	9-16
17 FST	Factor on purchased equipment for instrumentation	3	17-24
18 FEP	Factor on purchased equipment for electrical	3	25-32
19 FSU	Factor on purchased equipment for insulation	3	33-40
20 FPA	Factor on purchased equipment for painting	3	41-48
21 FTFR	Factor on purchased equipment for freight	3	49-56
22 CENG	Engineering and construction factor, fraction of total of items 1-14	3	57-64
23 CCTR	Contractor's fee as a fraction of total of items 1-14 plus engineering and construction	3	65-72
24 CCON	Contingency factor, fraction of total fixed capital	3	73-80
25 RCAPE	Existing land value use for plant, $	4	1-10
26 BCAPE	Existing buildings value used for plant, $	4	11-20
27 ECAPE	Existing equipment value used in plant, $	4	21-30
28 DESCR	Descriptive data such as case, project title or author	5	2-77

Table 2. OPERATING COST INPUT DATA

Note: All dollar cost figures must be entered as actual cost divided by 1000 unless otherwise indicated.

Variable Name	Definition	Data Card Sequence	Card Cols.
1 RM	Raw material cost per day, $	6	1-10
2 PM	Packaging material cost per day, $	6	11-20
3 CUT	Utilities cost per day, $	6	21-30
4 CL	Laboratory operating cost per day, $	6	31-40
5 CME	Miscellaneous costs per day, $	6	41-50
6 CR	Rent cost per day, $	6	51-60
7 ØL	Operating labor cost per day, $	6	61-70
8 AL	Indirect labor cost per day, $	6	71-80
9 CMR	Maintenance cost per day, $	7	1-10
10 CMS	Operating supplies cost per day, $	7	11-20
11 CIN	Insurance cost per day, $	7	21-30
12 CT	Taxes (real estate, etc.) cost per day, $	7	31-40
13 DEPA	Depreciation cost per year, $	7	41-50
14 EY	Average equipment life for depreciation, years	7	51-60
15 BY	Average building life for depreciation, years	7	61-70
16 W	Yearly number of production units in thousands	7	71-80
17 DRM	Number of days of raw material inventory	8	1-10
18 DWIP	Number of days of work in process	8	11-20
19 DAR	Number of days of accounts receivable	8	21-30
20 DINV	Number of days of product inventory	8	31-40
21 D	Number of days of operation per year	8	41-50
22 DH	Number of hours per day operation	8	51-60
23 WD	Number of days per week production	8	61-70
24 ESPW	Factory selling price per unit, dollars per unit	8	71-80
25 ER	Earning rate on fixed capital, fraction per year	9	1-10
26 TR	Federal income tax rate, fraction per year	9	11-20
27 C1	Fraction of total labor for non-wage payments	9	21-30
28 C2	Fraction of direct labor for indirect labor	9	31-40
29 C3	Fraction of fixed capital for maintenance	9	41-50
30 C4	Fraction of maintenance and repair for operating supplies	9	51-60
31 C5	Fraction of fixed capital for insurance	9	61-70
32 C6	Fraction of fixed capital for taxes (real estate)	9	71-80
33 C7	Fraction of factory selling price for research and development	10	1-10
34 C8	Fraction of factory selling price for administrative and general	10	11-20
35 C9	Fraction of factory selling price for selling cost	10	21-30
36 C10	Fraction of factory selling price for discounts	10	31-40
37 RI	Interest rate for borrowed money	10	41-50
38 ØMEN	Number of operating men per shift	10	51-60
39 S	Number of shifts per day	10	61-70
40 DW	Daily wage per operating man, actual dollars per day	10	71-80
41 UNIT	Size of production unit, i.e., 1.0 lb., 1.0 ton, 1.0 can, 100 lbs.	11	1-10
42 V	Literal description of dimension of UNIT, i.e., pound, ton	12	24-43

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// FOR                                                                    OC  0
*LIST ALL                                                                 OC  1
*EXTENDED PRECISION
*ONE WORD INTEGERS                                                        OC  2
*IOCS(CARD,1132PRINTER)                                                   OC  3
C* PITAL AND OPERATING COSTS. R.L. STABILE 12-24-70                       OC  4
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CCAPITAL AND OPERATING COSTS CALULATION AND SUMMARY PROGRAM COMM. FEAS.
CGROUP - EDL  11-4-70
COPERATING COST CALCULATION SECTION
      DIMENSION V(5),DESCR(19)
      COMMON FCAPT,ECAPT,BCAPT,DESCR
  200 FORMAT(8F10.0)
  201 FORMAT(1H ,33X,21HOPERATING COST INPUTS)
  202 FORMAT(//,1H ,2HRM8X,2HPM8X,3HCUT7X,2HCL8X,3HCME7X,2HCR8X,2HOL8X,2
     1HAL8X/(1H ,8F10.5))
  203 FORMAT(1H ,3HCMR7X,3HCMS7X,3HCIN7X,2HCT8X,4HDEPA6X,2HEY8X,2HBY8X,1
     1HW9X/(1H ,7F10.5,F10.3))
  204 FORMAT(1H ,3HDRM7X,4HDWIP6X,3HDAR7X,4HDINV6X,1HD9X,2HDH8X,2HWD8X,4
     1HFSPW6X/(1H ,8F10.5))
  205 FORMAT(1H ,2HER8X,2HTR8X,2HC18X,2HC28X,2HC38X,2HC48X,2HC58X,2HC68X
     1/(1H ,8F10.5))
  206 FORMAT(1H ,2HC78X,2HC88X,2HC98X,3HC107X,2HRI8X,4HOMEN6X,1HS9X,2HDW
     18X/(1H ,8F10.5))
  207 FORMAT(1H ,4HUNIT6X/(1H ,8F10.5))
  208 FORMAT(1H ,33X,15HOPERATING COSTS)
  301 FORMAT(1H ,1X,21H(DIMENSION OF UNIT IS1X,5A4,1H)
     17X,8HPER UNIT3X 8HDAILY)M$1X9HYEARLY-M$/)
  209 FORMAT(1H ,1X,19H OPERATION-HRS/DAY=F12.4,1H,10X,7HHRS/YR=F12.2)
  210 FORMAT(1H ,1X,19HM-UNITS/YR=F12.3,1H 3X,12HM-UNITS/DAY=F12.4,1H ,3
     1)
  320 FORMAT(1H ,1X,8HDAYS/WK=F12.4,10X,8HDAYS/YR=F12.2,10X,5HUNIT=F12.4
     1X,11HM-UNITS/HR=F12.4)
  211 FORMAT(1H ,30HI. FACTORY MANUFACTURING COSTS)
  212 FORMAT(1H ,1X,3H(A)1X,23HDIRECT PRODUCTION COSTS)
  213 FORMAT(1H ,2X,2H1.1X,13HRAW MATERIALS32X,F10.4,F10.5,F10.2)
  214 FORMAT(1H ,2X,2H2.1X,19HPACKAGING MATERIALS26X,F10.4, F10.5,F10.2)
  215 FORMAT(1H ,2X,2H3.1X,15HOPERATING LABOR30X,F10.4, F10.5,F10.2)
  216 FORMAT(1H ,2X,2H4.1X,14HINDIRECT LABOR31X,F10.4, F10.5,F10.2)
  217 FORMAT(1H ,2X2H5.1X,11HMAINTENANCE34X,F10.4, F10.5,F10.2)
  218 FORMAT(1H ,2X,2H6.1X,18HOPERATING SUPPLIES27X,F10.4, F10.5,F10.2)
  219 FORMAT(1H ,2X,2H7.1X,9HUTILITIES36X,F10.4, F10.5,F10.2)
  220 FORMAT(1H ,3X,24HTOTAL(A) (SUM OF 1 TO 7)23X,F10.4, F10.5,F10.2)
  221 FORMAT(1H ,1X,16H(B)FIXED CHARGES)
  222 FORMAT(1H ,2X,2H8.1X,9HINSURANCE36X,F10.4, F10.5,F10.2)
  223 FORMAT(1H ,2X,2H9.1X,5HTAXES40X,F10.4, F10.5,F10.2)
  224 FORMAT(1H ,2X,3H10.12HDEPRECIATION33X,F10.4, F10.5,F10.2)
  225 FORMAT(1H ,2X,3H11.4HRENT41X,F10.4, F10.5,F10.2)
  226 FORMAT(1H ,3X,25HTOTAL(B) (SUM OF 8 TO 11)22X,F10.4,F10.5,F10.2)
  227 FORMAT(/1H ,1X,23H(C)PLANT OVERHEAD COSTS)
  228 FORMAT(1H ,2X,3H12.17HNON WAGE PAYMENTS28X,F10.4, F10.5,F10.2)
  229 FORMAT(1H ,2X,15H13.LABORATORIES33X,F10.4, F10.5,F10.2)
  230 FORMAT(1H ,2X,32H14.MISCELLANEOUS FACTORY EXPENSE16X,F10.4, F10.5,
     1F10.2)
  231 FORMAT(1H ,3X,26HTOTAL(C) (SUM OF 12 TO 14)21X,F10.4, F10.5,F10.2)
  232 FORMAT(/1H ,3X29HTOTAL(I) FACTORY MFG. EXPENSE18X,F10.4, F10.5,F10
     1.2)
  233 FORMAT(/1H ,18HII.GENERAL EXPENSE)
  234 FORMAT(1H ,1X,30H(D)INTEREST ON WORKING CAPITAL19X,F10.4, F10.5,
     1F10.2)
  235 FORMAT(1H ,1X,27H(E)RESEARCH AND DEVELOPMENT22X,F10.4,F10.5,F10.2)
  236 FORMAT(1H ,1X,27H(F)ADMINISTRATION + GENERAL22X,F10.4,F10.5,F10.2)
  237 FORMAT(1H ,3X,25HTOTAL(II) GENERAL EXPENSE22X,F10.4, F10.5,F10.2)
  238 FORMAT(/1H ,30HIII.COST TO MAKE (SUM OF 1+II)20X,F10.4, F10.5,F10
     12)
  239 FORMAT(1H ,16HIV. SELLING COST34X,F10.4, F10.5,F10.2)
  240 FORMAT(1H ,10HV.  PROFIT40X,F10.4, F10.5,F10.2)
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241 FORMAT(1H ,13HVI. DISCOUNTS37X,F10.4, F10.5,F10.2)                    OC 65
242 FORMAT(1H ,22HVII.FEDERAL INCOME TAX28X,F10.4, F10.5,F10.2)           OC 66
243 FORMAT(1H ,36HVIII.SELLING PRICE (III+IV+V+VI+VII)14X,F10.4, F10.5OC 67
   1,F10.2)                                                               OC 68
                                                                          OC 69
244 FORMAT(1H 31X,18HFINANCIAL ANALYSIS)                                  OC 70
245 FORMAT(1H ,28X,37H(VALUE IN THOUSANDS OF $ OR AS NOTED))              OC 71
246 FORMAT(/1H ,15H1.  GROSS SALES55X,F10.2)                              OC 72
247 FORMAT(1H ,32H2.  RETURNS,ALLOWANCES,DISCOUNTS38X,F10.2)              OC 73
248 FORMAT(1H ,26H3.  NET ANNUAL SALES (1-2)44X,F10.2)                    OC 74
249 FORMAT(1H ,19H4.  PRODUCTION COST51X,F10.2)                           OC 75
250 FORMAT(1H ,29H5.  GROSS ANNUAL PROFIT (3-4)41X,F10.2)                 OC 76
251 FORMAT(1H ,43H6.  ADMINISTRATION,RESEARCH,SELLING EXPENSE27X,F10.20C 77
   1)                                                                     OC 78
252 FORMAT(1H ,29H7.  PROFIT BEFORE TAXES (5-6)41X,F10.2)                 OC 79
253 FORMAT(1H ,22H8.  FEDERAL INCOME TAX48X,F10.2)                        OC 80
254 FORMAT(/1H ,27H9.  NET ANNUAL PROFIT (7-8)43X,F10.2)                  OC 81
255 FORMAT(//1H ,42H10. TOTAL CAPITAL REQUIRED (FIXED+WORKING)28X,F10.OC 82
   12)                                                                    OC 83
256 FORMAT(/1H ,13H11. CASH FLOW57X,F10.2)                               OC 84
257 FORMAT(/1H ,40H12. EARNINGS ON FIXED CAPITAL (PER CENT)30X,F10.2)    OC 85
258 FORMAT(/1H ,40H13. EARNINGS ON TOTAL CAPITAL (PER CENT)30X,F10.2)    OC 86
259 FORMAT(/1H ,18H14. PAYOUT (YEARS)52X,F10.2)                          OC 87
260 FORMAT(/1H ,43H15. TURNOVER RATIO (GROSS SALES/FIXED CAP.)27X,F10.OC 88
   12)                                                                    OC 89
261 FORMAT(/1H ,39H16. NET PROFIT ON GROSS SALES (PERCENT)31X,F10.2)     OC 90
262 FORMAT(/1H ,19H17. WORKING CAPITAL51X,F10.2,//)                      OC 91
270 FORMAT(1H ,19A4,//)                                                  OC 92
7200 FORMAT(23X,5A4 ,37X)                                                OC 93
9200 FORMAT(F10.0)                                                       OC 94
 900 READ(2,200) RM,PM,CUT,CL,CME,CR,OL,AL                               OC 95
 901 READ(2,200)CMR,CMS,CIN,CT,DEPA,EY,BY,W                              OC 96
 902 READ(2,200)DRM,DWIP,DAR,DINV,D,DH,WD,FSPW                           OC 97
 903 READ(2,200)ER,TR,C1,C2,C3,C4,C5,C6                                  OC 98
 904 READ(2,200)C7,C8,C9,C10,RI,OMEN,S,DW                                OC 99
     READ(2,9200) UNIT                                                   OC100
     READ(2,7200) V                                                      OC101
     WRITE(3,128)                                                        OC102
     WRITE(3,270) DESCR                                                  OC103
     WRITE(3,201)                                                        OC104
     WRITE(3,202)RM,PM,CUT,CL,CME,CR,OL,AL                               OC105
     WRITE(3,203)CMR,CMS,CIN,CT,DEPA,EY,BY,W                             OC106
     WRITE(3,204)DRM,DWIP,DAR,DINV,D,DH,WD,FSPW                          OC107
     WRITE(3,205)ER,TR,C1,C2,C3,C4,C5,C6                                 OC108
     WRITE(3,206)C7,C8,C9,C10,RI,OMEN,S,DW                               OC109
     WRITE(3,207)UNIT                                                    OC110
     IF(OL)51,50,51                                                      OC111
  50 OL=OMEN*S*DW/1000.0                                                 OC112
  51 OLA=OL*D                                                            OC113
     OLW=OLA/W                                                           OC114
     IF(AL)53,52,53                                                      OC115
  52 AL=C2*OL                                                            OC116
  53 ALA=AL*D                                                            OC11
     ALW=ALA/W                                                           OC11
     IF(CMR)55,54,55                                                     OC11
  54 CMR=C3*FCAPT/D                                                      OC12
  55 CMRA=CMR*D                                                          OC12
     CMRW=CMRA/W                                                         OC12
     IF(CMS)57,56,57                                                     OC12
  56 CMS=C4*CMR                                                          OC12
  57 CMSA=CMS*D
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      CMSW=CMSA/W                                                        OC125
      DME=RM+PM+OL+AL+CMR+CMS+CUT                                        OC126
      RMA=RM*D                                                           OC127
      RMW=RMA/W                                                          OC128
      PMA=PM*D                                                           OC129
      PMW=PMA/W                                                          OC130
      CUTA=CUT*D                                                         OC131
      CUTW=CUTA/W                                                        OC132
      DMEA=RMA+PMA+OLA+ALA+CMRA+CMSA+CUTA                                OC133
      DMEW=RMW+PMW+OLW+ALW+CMRW+CMSW+CUTW                                OC134
      IF(CIN)59,58,59                                                    OC135
   58 CIN=C5*FCAPT/D                                                     OC136
   59 CINA=CIN*D                                                         OC137
      CINW=CINA/W                                                        OC138
      IF(CT)61,60,61                                                     OC139
   60 CT=C6*FCAPT/D                                                      OC140
   61 CTA=CT*D                                                           OC141
      CTW=CTA/W                                                          OC142
      IF(DEPA)63,62,63                                                   OC143
   62 DEPA=ECAPT/EY+BCAPT/BY                                             OC144
   63 DEP=DEPA/D                                                         OC145
      DEPW=DEPA/W                                                        OC146
      CRA=CR*D                                                           OC147
      CRW=CRA/W                                                          OC148
      FC=CIN+CT+DEP+CR                                                   OC149
      FCA=CINA+CTA+DEPA+CRA                                              OC150
      FCW=CINW+CTW+DEPW+CRW                                              OC151
      CNWP=C1*(OL+AL)                                                    OC152
      CNWPA=CNWP*D                                                       OC153
      CNWPW=CNWPA/W                                                      OC154
      CMEA=CME*D                                                         OC155
      CMEW=CMEA/W                                                        OC156
      CLA=CL*D                                                           OC157
      CLW=CLA/W                                                          OC158
      CPO=CNWP+CL+CME                                                    OC159
      CPOA=CNWPA+CLA+CMEA                                                OC160
      CPOW=CNWPW+CLW+CMEW                                                OC161
      FME=DME+FC+CPO                                                     OC162
      FMEA=FME*D                                                         OC163
      FMEW=FMEA/W                                                        OC164
      IF(C2)81,80,81                                                     OC165
   80 C2=AL/OL                                                           OC166
   81 IF(C3)83,82,83                                                     OC167
   82 C3=CMRA/FCAPT                                                      OC168
   83 IF(C4)85,84,85                                                     OC169
   84 C4=CMSA/CMRA                                                       OC170
   85 IF(C5)87,86,87                                                     OC171
   86 C5=CINA/FCAPT                                                      OC172
   87 IF(C6)89,88,89                                                     OC173
   88 C6=CTA/FCAPT                                                       OC174
   89 CL1=C3*(1.0+C4)+C5+C6                                              OC175
      IF(FSPW)71,70,71                                                   OC176
   70 WW=FCAPT*(CL1+ER*(1.0+(TR/(1.0-TR))))/W                            OC177
   71 XW=RMW+PMW+CUTW+CLW+CMEW+CRW                                       OC178
      YW=(1.0+C1)*(1.0+C2)*OL*D/W                                        OC179
      FWC=1.0-RI*(DINV/D)                                                OC180
      ZW =  (RI/FWC) * ((DINV*FME) + DWIP* DME + DRM* RM)                OC181
      ZW = ZW/W                                                          OC182
      G = 1.0- RI / (FWC*D) *(DAR +(C7 +C8) * DINV)-(C7+C8+C9+C10)       OC183
                                                                         OC184
```

```
90 FSPW=(XW+YW+ZW+WW+DEPW)/G
   FSP = FSPW*W/D
91 FSPA=FSPW*W
   FSP=FSPA/D
   IF(ER)67,66,67
66 H=1.0/((1.0+TR/( 1.0-TR))*FCAPT)*W
   WW1=FCAPT*CL1*(1.0/W)
   ER=H*(FSPW*G-(XW+YW+ZW+WW1+DEPW))
67 WC=(FSP*(DAR+(C7+C8)*DINV)+DINV*FME+DRM*RM+DWIP*DME)/FWC
   CIWC=RI*WC/D
   CIWCA=CIWC*D
   CIWCW=CIWCA/W
   RD=C7*FSP
   RDA=RD*D
   RDW=RDA/W
   AG=C8*FSP
   AGA=AG*D
   AGW=AGA/W
   GE=RD+CIWC+AG
   GEA=GE*D
   GEW=GEA/W
   CTM=FME+GE
   CTMA=CTM*D
   CTMW=CTMA/W
   SC=C9*FSP
   SCA=SC*D
   SCW=SCA/W
   PRA=ER*FCAPT
   PR=PRA/D
   PRW=PRA/W
   FITA=(TR/(1.-TR))*PRA
   FIT=FITA/D
   FITW=FITA/W
   DIS=C10*FSP
   DISA=DIS*D
   DISW=DISA/W
   YH=D*DH
   PD=W/D
   PH=PD/DH
   FSP=CTM+SC+PR+DIS+FIT
   FSPA=FSP*D
   FSPW=FSPA/W
   ANS=FSPA-DISA
   WGRS=CIWCA+AGA+RDA+SCA
   GAP=ANS-FMEA
   APBT=GAP-WGRS
   ANE=APBT-FITA
   TCAP=FCAPT+WC
   CAFL=DEPA+PRA
   ERTC=PRA/TCAP*100.0
   PAY=FCAPT/CAFL
   TOR=FSPA/FCAPT
   EFCAP=PRA/FCAPT*100.0
   PPRS=PRA/FSPA*100.0
   WRITE(3,128)
   WRITE(3,270) DESCR
   WRITE(3,208)
   WRITE(3,209)DH,YH
   WRITE(3,320)WD,D,UNIT
   WRITE(3,210)W,PD,PH
```

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```
      WRITE(3,301)     V                                                  OC245
      WRITE(3,211)                                                        OC246
      WRITE(3,212)                                                        OC247
      WRITE(3,213)RMW,RM,RMA                                              OC248
      WRITE(3,214)PMW,PM,PMA                                              OC249
      WRITE(3,215)OLW,OL,OLA                                              OC250
      WRITE(3,216)ALW,AL,ALA                                              OC251
      WRITE(3,217)CMRW,CMR,CMRA                                           OC252
      WRITE(3,218)CMSW,CMS,CMSA                                           OC253
      WRITE(3,219)CUTW,CUT,CUTA                                           OC254
      WRITE(3,220)DMEW,DME,DMEA                                           OC255
      WRITE(3,221)                                                        OC256
      WRITE(3,222)CINW,CIN,CINA                                           OC257
      WRITE(3,223)CTW,CT,CTA                                              OC258
      WRITE(3,224)DEPW,DEP,DEPA                                           OC259
      WRITE(3,225)CRW,CR,CRA                                              OC260
      WRITE(3,226)FCW,FC,FCA                                              OC261
      WRITE(3,227)                                                        OC262
      WRITE(3,228)CNWPW,CNWP,CNWPA                                        OC263
      WRITE(3,229)CLW,CL,CLA                                              OC264
      WRITE(3,230)CMEW,CME,CMEA                                           OC265
      WRITE(3,231)CPOW,CPO,CPOA                                           OC266
      WRITE(3,232)FMEW,FME,FMEA                                           OC267
      WRITE(3,233)                                                        OC268
      WRITE(3,234)CIWCW,CIWC,CIWCA                                        OC269
      WRITE(3,235)RDW,RD,RDA                                              OC270
      WRITE(3,236)AGW,AG,AGA                                              OC271
      WRITE(3,237)GEW,GE,GEA                                              OC272
      WRITE(3,238)CTMW,CTM,CTMA                                           OC273
      WRITE(3,239)SCW,SC,SCA                                              OC274
      WRITE(3,240)PRW,PR,PRA                                              OC275
      WRITE(3,241)DISW,DIS,DISA                                           OC276
      WRITE(3,242)FITW,FIT,FITA                                           OC277
      WRITE(3,243)FSPW,FSP,FSPA                                           OC278
      WRITE(3,128)                                                        OC279
      WRITE(3,270) DESCR                                                  OC280
      WRITE(3,244)                                                        OC281
      WRITE(3,245)                                                        OC282
      WRITE(3,246)FSPA                                                    OC283
      WRITE(3,247)DISA                                                    OC284
      WRITE(3,248)ANS                                                     OC285
      WRITE(3,249)FMEA                                                    OC286
      WRITE(3,250)GAP                                                     OC287
      WRITE(3,251)WGRS                                                    OC288
      WRITE(3,252)APBT                                                    OC289
      WRITE(3,253)FITA                                                    OC290
      WRITE(3,254)ANE                                                     OC291
      WRITE(3,255)TCAP                                                    OC292
      WRITE(3,256)CAFL                                                    OC293
      WRITE(3,257)EFCAP                                                   OC294
      WRITE(3,258)ERTC                                                    OC295
      WRITE(3,259)PAY                                                     OC296
      WRITE(3,260)TOR                                                     OC297
      WRITE(3,261)PPRS                                                    OC298
      WRITE(3,262) WC                                                     OC299
  128 FORMAT('1')                                                         OC300
 9999 CALL EXIT                                                           OC301
      END                                                                 OC302
VARIABLE ALLOCATIONS
 FCAPT(RC)=7FFD       ECAPT(RC)=7FFA       BCAPT(RC)=7FF7       DESCR(RC)=7FF4-7
```

```
  PM(R )=0012    CUT(R )=0015    CL(R )=0018    CME(R )=001B
  AL(R )=0024    CMR(R )=0027   CMS(R )=002A    CIN(R )=002D
  EY(R )=0036    BY(R )=0039     W(R )=003C    DRM(R )=003F
DINV(R )=0048     D(R )=004B    DH(R )=004E     WD(R )=0051
  TR(R )=005A    C1(R )=005D    C2(R )=0060     C3(R )=0063
  C6(R )=006C    C7(R )=006F    C8(R )=0072     C9(R )=0075
OMEN(R )=007E     S(R )=0081    DW(R )=0084   UNIT(R )=0087
  ALA(R )=0090   ALW(R )=0093  CMRA(R )=0096  CMRW(R )=0099
  DME(R )=00A2   RMA(R )=00A5   RMW(R )=00A8   PMA(R )=00AB
 CUTW(R )=00B4  DMEA(R )=00B7  DMEW(R )=00BA  CINA(R )=00BD
  CTW(R )=00C6   DEP(R )=00C9  DEPW(R )=00CC   CRA(R )=00CF
  FCA(R )=00D8   FCW(R )=00DB  CNWP(R )=00DE  CNWPA(R )=00E1
 CMEW(R )=00EA   CLA(R )=00ED   CLW(R )=00F0   CPO(R )=00F3
  FME(R )=00FC  FMEA(R )=00FF  FMEW(R )=0102   CL1(R )=0105
   YW(R )=010E   FWC(R )=0111    ZW(R )=0114     G(R )=0117
    H(R )=0120   WW1(R )=0123    WC(R )=0126  CIWC(R )=0129
   RD(R )=0132   RDA(R )=0135   RDW(R )=0138    AG(R )=013B
   GE(R )=0144   GEA(R )=0147   GEW(R )=014A   CTM(R )=014D
   SC(R )=0156   SCA(R )=0159   SCW(R )=015C   PRA(R )=015F
  FITA(R )=0168   FIT(R )=016B  FITW(R )=016E   DIS(R )=0171
   YH(R )=017A    PD(R )=017D    PH(R )=0180   ANS(R )=0183
  APBT(R )=018C   ANE(R )=018F  TCAP(R )=0192  CAFL(R )=0195
   TOR(R )=019E  EFCAP(R )=01A1 PPRS(R )=01A4

UNREFERENCED STATEMENTS
 900     901     902     903     904     9999

STATEMENT ALLOCATIONS
 200  =01BB  201  =01BE  202  =01CE  203  =01F2  204  =0217  205  =023C  206
 209  =02C0  320  =02D9  210  =02F0  211  =0312  212  =0325  213  =033A  214
 218  =039C  219  =03B1  220  =03C2  221  =03D7  222  =03E4  223  =03F5  224
 228  =044C  229  =0461  230  =0472  231  =048B  232  =04A1  233  =04BA  234
 238  =0524  239  =053C  240  =054C  241  =0559  242  =0568  243  =057B  244
 248  =05E0  249  =05F3  250  =0603  251  =0618  252  =0634  253  =0649  254
 258  =06B5  259  =06D0  260  =06E0  261  =06FD  262  =0718  270  =072B  7200
 901  =0766  902  =0779  903  =078C  904  =079F   50  =083B   51  =0845   52
  56  =0886   57  =088C   58  =08F1   59  =08F9   60  =090A   61  =0912   62
  82  =09CF   83  =09D5   84  =09DA   85  =09E0   86  =09E5   87  =09EB   88
  90  =0A90   91  =0AA6   66  =0AB7   67  =0AEB 9999  =0E0E

FEATURES SUPPORTED
 ONE WORD INTEGERS
 EXTENDED PRECISION
 IOCS

CALLED SUBPROGRAMS
 EADD    ESUB    EMPY    EDIV    ELD     ESTO    ESBR    EDVR    CARDZ   PRN
 SIOF

REAL CONSTANTS
   .100000000E 04=01B0     .100000000E 01=01B3     .100000000E 03=01B6

INTEGER CONSTANTS
     2=01B9      3=01BA

CORE REQUIREMENTS FOR
 COMMON      66  VARIABLES     432  PROGRAM    3168

END OF COMPILATION
```

71JUN02

OC303

DUP

OC304

*DELETE CFGOC
D 26 NAME NOT FOUND IN LET/FLET

OC305

*STORE WS UA CFGOC
CART ID 0002 DB ADDR 21AB DB CNT 00E5

```
                                                                      CC  0
// FOR                                                                CC  1
*LIST ALL
*EXTENDED PRECISION                                                   CC  2
*ONE WORD INTEGERS                                                    CC  3
*OCS(CARD,1132PRINTER)                                                CC  4
C  IXED CAPITAL CALCULATION SECTION                                   CC  5
      DIMENSION DESCR(19)                                             CC  6
      COMMON FCAPT, ECAPT, BCAPT,DESCR                                CC  7
  100 FORMAT(8F10.0)                                                  CC  8
  101 FORMAT(10F8.3)                                                  CC  9
  102 FORMAT(1H ,33X,19HCAPITAL COST INPUTS///1H ,2HRL8X,2HYW8X,2HBS8X,1CC  10
     1HU9X,2HPE8X,3HPEI7X,1HP9X,2HST8X,/(8F10.2))                     CC  11
  103 FORMAT(1H ,2HEP,8X,2HSU,8X,2HPA,8X,1HT,9X,4HAOFF,6X,3HTFR,7X/(8F10CC  12
     1.2))                                                            CC  13
  104 FORMAT(1H ,4HFPEI,4X,2HFP,6X,3HFST,5X,3HFEP,5X,3HFSU,5X,3HFPA,7X,4CC  14
     1HFTFR,4X,4HCENG,4X,4HCCTR,4X,4HCCON,4X/(10F8.3))                CC  15
  105 FORMAT(1H ,19A4,//)                                             CC  16
  106 FORMAT(1H ,5HRCAPE,5X,5HBCAPE,5X,5HECAPE,5X/(8F10.2))           CC  17
  128 FORMAT('1')                                                     CC  18
  129 FORMAT(29X,13HCAPITAL COSTS)                                    CC  19
  130 FORMAT(1H ,4H1.  ,23HLAND + SITE PREPARATION,43X,F10.2)         CC  20
  131 FORMAT(1H ,4H2.  ,9HYARD WORK,57X,F10.2)                        CC  21
  132 FORMAT(1H ,4H3.  ,22HBUILDINGS + STRUCTURES,44X,F10.2)          CC  22
  133 FORMAT(1H ,4H4.  ,9HUTILITIES,57X,F10.2)                        CC  23
  134 FORMAT(1H ,4H5.  ,19HPURCHASED EQUIPMENT,47X,F10.2)             CC  24
  135 FORMAT(1H ,4H6.  ,32HPURCHASED EQUIPMENT INSTALLATION,34X,F10.2)CC  25
  136 FORMAT(1H ,4H7.  ,6HPIPING,60X,F10.2)                           CC  26
  137 FORMAT(1H ,4H8.  ,15HINSTRUMENTATION,51X,F10.2)                 CC  27
  138 FORMAT(1H ,4H9.  ,27HPROCESS WIRING + ELECTRICAL,39X,F10.2)     CC  28
  139 FORMAT(1H ,4H10. ,10HINSULATION,56X,F10.2)                      CC  29
  140 FORMAT(1H ,4H11. ,8HPAINTING,58X,F10.2)                         CC  30
  141 FORMAT(1H ,4H12. ,24HTRANSPORATION EQUIPMENT 42X,F10.2)         CC  31
  142 FORMAT(1H ,4H13. ,28HOFFICE FURNITURE + EQUIPMENT,38X,F10.2)    CC  32
  143 FORMAT(1H ,4H14. ,15HFREIGHT CHARGES,51X,F10.2)                 CC  33
  144 FORMAT(1H ,4H15. ,26HENGINEERING + CONSTRUCTION,40X,F10.2)      CC  34
  145 FORMAT(1H ,4H16. ,14HCONTRACTOR FEE,52X,F10.2)                  CC  35
  146 FORMAT(1H ,4H17. ,11HCONTINGENCY,55X,F10.2)                     CC  36
  147 FORMAT(1H ,4H18. 19HTOTAL FIXED CAPITAL,47X,F10.2,//)           CC  37
  150 FORMAT(1H ,28X,25H(VALUE IN THOUSANDS OF $))                    CC  38
  151 FORMAT(1H ,4H19. 47HEXISTING FIXED CAPITAL USED IN PROCESS (IF ANYCC  39
     1),19X,F10.2)                                                    CC  40
  152 FORMAT(1H ,4H20. 45HTOTAL FIXED CAPITAL (NEW + EXISTING), (18+19),CC  41
     121X,F10.2//)                                                    CC  41A
  153 FORMAT(1X,19A4,3X)                                              CC  42
      READ(2,100)RL,YW,BS,U,PE,PEI,P,ST,EP,SU,PA,T,AOFF,TFR           CC  43
      READ(2,101)FPEI,FP,FST,FEP,FSU,FPA,FTFR,CENG,CCTR,CCON          CC  44
      READ(2,100)RCAPE,BCAPE,ECAPE                                    CC  45
      READ(2,153) DESCR                                               CC  46
      WRITE(3,128)                                                    CC  47
      WRITE(3,105) DESCR                                              CC  48
      WRITE(3,102)RL,YW,BS,U,PE,PEI,P,ST                              CC  49
      WRITE(3,103)EP,SU,PA,T,AOFF,TFR                                 CC  50
      WRITE(3,104)FPEI,FP,FST,FEP,FSU,FPA,FTFR,CENG,CCTR,CCON         CC  51
      WRITE(3,106) RCAPE,BCAPE,ECAPE                                  CC  52
      IF(PEI)11,10,11                                                 CC  53
   10 PEI=FPEI*PE                                                     CC  54
   11 IF(P)13,12,13                                                   CC  55
   12 P=FP*PE                                                         CC  56
   13 IF(ST)15,14,15                                                  CC  57
   14 ST=FST*PE                                                       CC  58
   15 IF(EP)17,16,17
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                                                                        CC 59
 16 EP=FEP*PE                                                           CC 60
 17 IF(SU)19,18,19                                                      CC 61
 18 SU=FSU*PE                                                           CC 62
    IF(PA)21,20,21                                                      CC 63
 20 PA=FPA*PE                                                           CC 64
 21 IF(TFR)23,22,23                                                     CC 65
 22 TFR=FTFR*PE                                                         CC 66
 23 CFC=(1.+CENG+CCTR*(1.+CENG))/(1.-CCON)                              CC 67
    E=YW+U+PE+PEI+P+ST+EP+SU+PA+T+TFR+AOFF                              CC 68
    ECAP = CFC*E                                                        CC 69
    BCAP=CFC*BS                                                         CC 70
    RLCAP=CFC*RL                                                        CC 71
    FCAP=ECAP+BCAP+RLCAP                                                CC 72
    CON=CCON*FCAP                                                       CC 73
    X=BS+E+RL                                                           CC 74
    ENG=CENG*X                                                          CC 75
    CTR=CCTR*X*(1.+CENG)                                                CC 76
    FCAPE=RCAPE + BCAPE + ECAPE                                         CC 77
    FCAPT=FCAP + FCAPE                                                  CC 78
    BCAPT=BCAP + BCAPE                                                  CC 79
    ECAPT=ECAP + ECAPE                                                  CC 80
    WRITE(3,128)                                                        CC 81
    WRITE(3,105) DESCR                                                  CC 82
    WRITE(3,129)                                                        CC 83
    WRITE(3,150)                                                        CC 84
    WRITE(3,130)RL                                                      CC 85
    WRITE(3,131)YW                                                      CC 86
    WRITE(3,132)BS                                                      CC 87
    WRITE(3,133)U                                                       CC 88
    WRITE(3,134)PE                                                      CC 89
    WRITE(3,135)PEI                                                     CC 90
    WRITE(3,136)P                                                       CC 91
    WRITE(3,137)ST                                                      CC 92
    WRITE(3,138)EP                                                      CC 93
    WRITE(3,139)SU                                                      CC 94
    WRITE(3,140)PA                                                      CC 95
    WRITE(3,141)T                                                       CC 96
    WRITE(3,142)AOFF                                                    CC 97
    WRITE(3,143)TFR                                                     CC 98
    WRITE(3,144)ENG                                                     CC 99
    WRITE(3,145)CTR                                                     CC100
    WRITE(3,146)CON                                                     CC101
    WRITE(3,147) FCAP                                                   CC102
    WRITE(3,151) FCAPE                                                  CC103
    WRITE(3,152)FCAPT                                                   CC104
    CALL LINK(CFGOC)                                                    CC105
    END
```

VARIABLE ALLOCATIONS

FCAPT(RC)=7FFD	ECAPT(RC)=7FFA	BCAPT(RC)=7FF7	DESCR(RC)=7FF4-7FBE		
BS(R)=0006	U(R)=0009	PE(R)=000C	PEI(R)=000F		
EP(R)=0018	SU(R)=001B	PA(R)=001E	T(R)=0021		
FPEI(R)=002A	FP(R)=002D	FST(R)=0030	FEP(R)=0033		
F R(R)=003C	CENG(R)=003F	CCTR(R)=0042	CCON(R)=0045		
ECAPE(R)=004E	CFC(R)=0051	E(R)=0054	ECAP(R)=0057		
FCAP(R)=0060	CON(R)=0063	X(R)=0066	ENG(R)=0069		

STATEMENT ALLOCATIONS

100	=007D	101	=0080	102	=0083	103	=00B3	104	=00CD	105	=00FA	106	=01
131	=0138	132	=0146	133	=015A	134	=0168	135	=017B	136	=0194	137	=01
141	=01E3	142	=01F8	143	=020F	144	=0220	145	=0236	146	=0246	147	=02

```
153  =02BF  10   =0376  11   =037C  12   =0381  13   =0387  14   =038C  15   =039
19   =03A8  20   =03AD  21   =03B3  22   =03B8  23   =03BE

FEATURES SUPPORTED
 ONE WORD INTEGERS
 EXTENDED PRECISION
 IOCS

CALLED SUBPROGRAMS
 EADD    ESUB    EMPY    ELD     ESTO    EDVR    CARDZ   PRNTZ   SRED    SWRT    S

REAL CONSTANTS
   .100000000E 01=0078

INTEGER CONSTANTS
     2=007B      3=007C

CORE REQUIREMENTS FOR
 COMMON     66  VARIABLES    120  PROGRAM   1118

END OF COMPILATION

// DUP                                                                    CC106
                                                                          CC107
*DELETE              CFGCC
D 26 NAME NOT FOUND IN LET/FLET

                                                                          CC108
*CORE      WS  UA  CFGCC
CART ID 0002   DB ADDR  2290   DB CNT   004E

// XEQ CFGCC L
R 41  0F2A (HEX) WDS UNUSED BY CORE LOAD
LIBF TRANSFER VECTOR
 XDD     0FC2
 EBCTB   0FBF
 HOLTB   0F83
 GETAD   0F40
 EDIV    0EF2
 ELDX    0D1A
 NORM    0EC4
 FARC    0EA2
 XMD     0E60
 HOLEZ   0E2A
 PAUSE   0E14
 FLOAT   0E0A
 IFIX    0DDE
 EDVR    0DCA
 ESUB    0D60
 EADD    0D6B
 EMPY    0D36
 SCOMP   07B5
 SWRT    06D4
 SDAF    07D4
 SIOF    07B1
 SRED    06D9
 ESTO    0D08
 ELD     0D1E
 PRNTZ   0C2A
```

```
 CARDZ  0B7A
 SF1O   07F1
SYSTEM SUBROUTINES
 ILS04  00C4
 ILS02  00B3
 ILS01  100E
 ILS00  1027
      04C2 (HEX) IS THE EXECUTION ADDR
```

EXTRUSION-PUFFED APPLES ARE COMMERCIALLY FEASIBLE - USDA-EMNRD-EDL,PHILA.,PA

CAPITAL COST INPUTS

RL	YW	BS	U	PE	PEI	P	ST
3.50	0.00	63.50	0.00	230.20	0.00	0.00	0.00

EP	SU	PA	T	AOFF	TFR
22.70	2.30	0.00	0.00	0.00	0.00

FPEI	FP	FST	FEP	FSU	FPA	FTFR	CENG	CCTR	CCON
0.150	0.110	0.020	0.000	0.000	0.000	0.020	0.129	0.034	0.100

RCAPE	BCAPE	ECAPE
0.00	0.00	0.00

EXPLOSION-PUFFED APPLES ARE COMMERCIALLY FEASIBLE - USDA-EMNRD-EDL,PHILA.,PA

CAPITAL COSTS
(VALUE IN THOUSANDS OF $)

1.	LAND + SITE PREPARATION	3.50
2.	YARD WORK	0.00
3.	BUILDINGS + STRUCTURES	63.50
4.	UTILITIES	0.00
5.	PURCHASED EQUIPMENT	230.20
6.	PURCHASED EQUIPMENT INSTALLATION	34.53
7.	PIPING	25.32
8.	INSTRUMENTATION	4.60
9.	PROCESS WIRING + ELECTRICAL	22.70
10.	INSULATION	2.30
11.	PAINTING	0.00
12.	TRANSPORATION EQUIPMENT	0.00
13.	OFFICE FURNITURE + EQUIPMENT	0.00
14.	FREIGHT CHARGES	4.60
15.	ENGINEERING + CONSTRUCTION	50.80
16.	CONTRACTOR FEE	15.20
17.	CONTINGENCY	50.80
18.	TOTAL FIXED CAPITAL	508.07
19.	EXISTING FIXED CAPITAL USED IN PROCESS (IF ANY)	0.00
20.	TOTAL FIXED CAPITAL (NEW + EXISTING), (18+19)	508.07

XPLOSION-PUFFED APPLES ARE COMMERCIALLY FEASIBLE - USDA-EMNRD-EDL,PHILA.,PA

OPERATING COST INPUTS

RM	PM	CUT	CL	CME	CR	OL		AL
	2.41075	0.51479	0.11740	0.00500	0.00500	0.07561	0.00000	0.02300
CMR	CMS	CIN	CT	DEPA	EY	BY	W	
	0.00000	0.00000	0.00000	0.00000	0.00000	12.00000	45.00000	687.104
ORM	DWIP	DAR	DINV	D	DH	WD	FSPW	
	14.00000	2.00000	10.00000	7.00000	128.00000	15.25000	5.00000	0.00000
ER	TR	C1	C2	C3	C4	C5	C6	
	0.12000	0.51000	0.20000	0.00000	0.03000	0.10000	0.01000	0.01500
C7	C8	C9	C10	RI	OMEN	S	DW	
	0.00500	0.01178	0.07000	0.00500	0.08000	6.00000	2.00000	24.00000

UNIT
1.00000

EXPLOSION-PUFFED APPLES ARE COMMERCIALLY FEASIBLE - USDA-EMNRD-EDL,PHILA.,PA

OPERATING COSTS

O._RATION-HRS/DAY=	15.2500,	HRS/YR=	1952.00	
DAYS/WK=	5.0000	DAYS/YR=	128.00	UNIT= 1.0000
M-UNITS/YR=	687.104	M-UNITS/DAY=	5.3680	M-UNITS/HR= 0.3519
(DIMENSION OF UNIT IS	POUND	)		

	PER UNIT	DAILY-M$	YEARLY-M$
. FACTORY MANUFACTURING COSTS			
(A) DIRECT PRODUCTION COSTS	0.4490	2.41075	308.57
1. RAW MATERIALS	0.0958	0.51479	65.89
2. PACKAGING MATERIALS	0.0536	0.28800	36.86
3. OPERATING LABOR	0.0042	0.02300	2.94
4. INDIRECT LABOR	0.0221	0.11908	15.24
5. MAINTENANCE	0.0022	0.01190	1.52
6. OPERATING SUPPLIES	0.0218	0.11740	15.02
7. UTILITIES	0.6492	3.48492	446.07
TOTAL(A) (SUM OF 1 TO 7)			
(B)FIXED CHARGES	0.0073	0.03969	5.08
8. INSURANCE	0.0110	0.05954	7.62
9. TAXES	0.0537	0.28845	36.92
10.DEPRECIATION	0.0140	0.07561	9.67
11.RENT	0.0863	0.46329	59.30
TOTAL(B) (SUM OF 8 TO 11)			
(C)PLANT OVERHEAD COSTS	0.0115	0.06219	7.96
12.NON WAGE PAYMENTS	0.0009	0.00500	0.64
,LABORATORIES	0.0009	0.00500	0.64
14.MISCELLANEOUS FACTORY EXPENSE	0.0134	0.07219	9.24
TOTAL(C) (SUM OF 12 TO 14)			
TOTAL(I) FACTORY MFG. EXPENSE	0.7489	4.02042	514.61
II.GENERAL EXPENSE	0.0146	0.07869	10.07
(D)INTEREST ON WORKING CAPITAL	0.0052	0.02791	3.57
(E)RESEARCH AND DEVELOPMENT	0.0122	0.06581	8.42
(F)ADMINISTRATION + GENERAL	0.0321	0.17242	22.06
TOTAL(II) GENERAL EXPENSE			
III.COST TO MAKE (SUM OF I+II)	0.7810	4.19284	536.68
IV. SELLING COST	0.0728	0.39085	50.03
V. PROFIT	0.0887	0.47632	60.96
VI. DISCOUNTS	0.0052	0.02791	3.57
VII.FEDERAL INCOME TAX	0.0923	0.49576	63.45
VIII.SELLING PRICE (III+IV+V+VI+VII)	1.0401	5.58371	714.71

EXPLOSION-PUFFED APPLES ARE COMMERCIALLY FEASIBLE - USDA-EMNRD-EDL,PHILA.,PA

FINANCIAL ANALYSIS
(VALUE IN THOUSANDS OF $ OR AS NOTED)

1.	GROSS SALES	714.71
2.	RETURNS,ALLOWANCES,DISCOUNTS	3.57
3.	NET ANNUAL SALES (1-2)	711.14
4.	PRODUCTION COST	514.61
5.	GROSS ANNUAL PROFIT (3-4)	196.52
6.	ADMINISTRATION,RESEARCH,SELLING EXPENSE	72.10
7.	PROFIT BEFORE TAXES (5-6)	124.42
8.	FEDERAL INCOME TAX	63.45
9.	NET ANNUAL PROFIT (7-8)	60.96
10.	TOTAL CAPITAL REQUIRED (FIXED+WORKING)	633.98
11.	CASH FLOW	97.89
12.	EARNINGS ON FIXED CAPITAL (PER CENT)	12.00
13.	EARNINGS ON TOTAL CAPITAL (PER CENT)	9.61
14.	PAYOUT (YEARS)	5.19
15.	TURNOVER RATIO (GROSS SALES/FIXED CAP.)	1.40
16.	NET PROFIT ON GROSS SALES (PERCENT)	8.53
17.	WORKING CAPITAL	125.90