

Acme Coke
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Coal Analysis Program v2.0

Dated: 1991

VV.96A

Dec. 3, 1997

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10 PRINT "          COAL EVALUATION PROGRAM"
20 PRINT
30 PRINT "NOTE: PROGRAM USES MARCH 1991 STANDARDS FOR BY-PRODUCT VALUES, FIXED A
40 PRINT
DIM A(25, 5) AS DOUBLE, E(20, 30) AS DOUBLE, B(20, 30) AS DOUBLE
DIM Z(20, 20) AS DOUBLE, C(20, 20) AS DOUBLE
DIM F(50, 10) AS DOUBLE, G(15, 5) AS DOUBLE, H(4, 4) AS DOUBLE
DIM J(10, 10) AS DOUBLE, ZZ(5) AS DOUBLE
DIM aa$(30), bb$(30), ff$(50), gg$(15), jj$(10)
60 REM THE FOLLOWINGS ARE COALS
70 ff$(1) = "FORDING H"
80 ff$(2) = "FORDING M"
90 ff$(3) = "FORDING L"
100 ff$(4) = "#2 GAS"
110 ff$(5) = "RIDGELAND"
120 ff$(6) = "ELK RUN USS"
130 ff$(7) = "SIDEWINDER"
140 ff$(8) = "HERN(PEAB)"
150 ff$(9) = "CAMP(PEAB)"
160 ff$(10) = "KNOX CREEK"
170 ff$(11) = "AMMONATE"
180 ff$(12) = "McCOY"
190 ff$(13) = "POND CREEK"
200 ff$(14) = "TRU ENERGY"
210 ff$(15) = "POWELTON"
220 ff$(16) = "PRE-MIX"
230 ff$(17) = "TAR PITCH"
240 ff$(18) = "INDIANA"
250 ff$(19) = "EAGLE NEST"
260 ff$(20) = "MAPLE MDW"
270 ff$(21) = "MCCLURE B"
280 ff$(22) = "SMOKY RIVR"
290 ff$(23) = "WELLS"
300 ff$(24) = "SOMERSET O"
310 ff$(25) = "WELLMORE"
320 ff$(26) = "INDIANA O"
330 ff$(27) = "ELK RUN"
340 ff$(28) = "RED RIVER"
350 ff$(29) = "JN ELKHORN"
360 ff$(30) = "HERNSHAW"
370 ff$(31) = "SOMERSET"
380 ff$(32) = "LINE CREEK"
390 ff$(33) = "FIRE CREEK"
400 ff$(34) = "SCANC LV"
410 ff$(35) = "SCANC LVB"
420 ff$(36) = "JEWEL"
430 ff$(37) = "ELKVIEW"
440 ff$(38) = "ELM STREET"
450 ff$(39) = "WHITE DEER"
460 ff$(40) = "SPLASHDAN"
470 ff$(41) = "ELK CREEK"
480 ff$(42) = "BLAIR"
490 ff$(43) = "TAGGART"
492 ff$(44) = "EAGLE96"
494 ff$(45) = "RAPOCA"
496 ff$(46) = "BLUESTONE"
498 ff$(47) = "MARFORK"
499 ff$(48) = "MEADOW RI"
500 REM DATA FOLLOWS COAL NAMES
510 REM CODE, COST, H2O, (DRY BASIS)F.C., ASH, V.M., S, Ox, BTU
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520 FOR I = 1 TO 48
530 READ F(I, 1), F(I, 2), F(I, 3), F(I, 4), F(I, 5), F(I, 6), F(I, 7), F(I, 8),
540 NEXT I
550 REM 01 HV-FORDING
560 DATA 1,52.71,9.5,63.16,6.62,30.22,.50,5.8,14450
570 REM 02 MV-FORDING
580 DATA 2,53.32,9.5,64.19,8.22,27.59,.68,5.2,14300
590 REM 03 LV-FORDING
600 DATA 3,50.87,9.5,67.59,8.81,23.60,.47,4.2,14300
610 REM 04 HVF-#2 GAS
620 DATA 4,52.20,7.0,63.05,3.97,32.98,.61,6.0,14650
630 REM 05 LV-RIDGELAND
640 DATA 5,54.70,7.0,74.62,6.27,19.11,0.69,2.0,14600
650 REM 06 HVF-ELK RUN(USS VERSION)
660 DATA 6,48.87,7.0,63.13,3.84,33.03,0.86,5.0,15000
670 REM 07 HV-SIDEWINDER
680 DATA 7,46.71,8.0,58.25,6.25,35.50,.65,7.0,14000
690 REM 08 HVF-HERNSHAW(PEABODY)
700 DATA 8,49.51,7.5,58.6,6.6,34.80,.79,4.95,14450
710 REM 09 HVF-CAMPBELL CREEK(PEABODY)
720 DATA 9,51.01,6.80,60.6,5.2,34.2,.85,5.93,14576
730 REM 10 MV-KNOX CREEK
740 DATA 10,49.90,8.6,66.52,5.99,28.49,.71,3.95,14300
750 REM 11 MV-AMMONATE
760 DATA 11,56.40,7.0,70.70,5.75,23.55,.73,3.8,14500
770 REM 12 HVF-McCOY
780 DATA 12,47.15,8.24,62.31,5.69,32.0,.59,7.2,13800
790 REM 13 HV-POND CREEK
800 DATA 13,45.3,8.5,57.5,6.5,36.0,.75,7.2,13777
810 REM 14 LV-TRUE ENERGY
820 DATA 14,50.50,9.25,76.49,4.40,19.11,.86,2.0,15150
830 REM 15 HVF-POWELTON
840 DATA 15,47.45,7.50,60.67,5.21,34.12,.73,6.8,14400
850 REM 16 PRE-MIX
860 DATA 16,36.15,9.0,67.0,7.0,26.0,.82,5.0,13500
870 REM 17 TAR-PITCH
880 DATA 17,0.0,1.0,51.0,6.0,43.0,.50,2.0,16000
890 REM 18 HV-INDIANA(BRAZIL)
900 DATA 18,38.9,14.0,55.17,10.22,34.61,.95,9.0,13175
910 REM 19 HVF-EAGLE NEST
920 DATA 19,50.31,6.5,59.90,5.29,34.81,.95,5.5,14600
930 REM 20 LV-MAPLE MEADOW
940 DATA 20,50.17,9.0,76.35,5.06,18.59,.74,2.0,15000
950 REM 21 HVF-McCLURE B
960 DATA 21,46.98,7.5,61.50,7.17,31.33,1.03,5.5,14400
970 REM 22 LV-SMOKY RIVER
980 DATA 22,58.51,9.5,75.42,6.57,18.01,.49,3.50,14250
990 REM 23 HVF-WELLS
1000 DATA 23,47.11,7.0,58.90,5.60,35.50,0.93,5.5,14550
1010 REM 24 HV-SOMERSET(ORIGINAL PROXIMATE)
1020 DATA 24,39.0,8.0,58.24,7.61,34.15,.64,10.75,13300
1030 REM 25 HVF-WELLMORE
1040 DATA 25,48.65,7.71,60.87,7.04,32.09,1.04,4.5,14100
1050 REM 26 HV-INDIANA(ORIGINAL PROXIMATE)
1060 DATA 26,38.9,16.17,58.42,6.23,35.35,.84,9.0,13775
1070 REM 27 HVF-ELK RUN
1080 DATA 27,47.25,7.0,60.80,5.46,33.74,.83,6.5,13900
1090 REM 28 HVF-RED RIVER
1100 DATA 28,53.05,7.0,59.88,6.45,33.67,.76,4.58,14400
1110 REM 29 HV-JOHNSON ELKHORN
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1120 DATA 29,43.45,10.0,56.0,8.0,36.0,.8,7.2,13700
1130 REM 30 HVF-HERNSHAW(NEW)
1140 DATA 30,53.75,6.5,62.78,3.77,33.45,.69,6.86,14900
1150 REM 31 HV-SOMERSET
1160 DATA 31,41.40,12.54,51.84,10.16,38.00,.54,12.54,12500
1170 REM 32 MV-LINE CREEK
1180 DATA 32,55.50,9.0,69.28,9.21,21.5,.39,3.34,14150
1190 REM 33 MV-FIRE CREEK
1200 DATA 33,57.00,7.5,62.86,8.46,28.68,.62,3.8,13600
1210 REM 34 LV-SCANCARBON
1220 DATA 34,54.72,9.0,72.0,8.5,19.5,.60,2.3,14100
1230 REM 35 LVB-SCANCARBON
1240 DATA 35,50.72,9.0,72.0,9.5,18.5,.60,2.2,14000
1250 REM 36 MV-JEWELL
1260 DATA 36,56.22,7.0,70.62,6.42,22.96,.82,3.8,14600
1270 REM 37 MV-ELKVIEW
1280 DATA 37,57.00,8.0,69.75,9.55,20.70,.36,4.0,14300
1290 REM 38 MV-ELM STREET
1300 DATA 38,51.70,5.0,67.15,5.85,27.0,.86,4.0,14700
1310 REM 39 HVF-WHITE DEER
1320 DATA 39,50.30,7.0,59.80,4.03,36.17,.87,6.3,14600
1330 REM HVF-SPLASHDAM
1340 DATA 40,46.0,8.0,60.05,6.53,33.42,.78,6.9,13800
1350 REM HVF-ELK CREEK
1360 DATA 41,50.51,7.5,59.0,6.0,35.0,.70,5.2,14400
1370 REM 42 HVF-BLAIR
1380 DATA 42,56.10,6.5,59.82,5.04,35.14,.80,5.8,14600
1390 REM 43 HVF-TAGGART
1400 DATA 43,62.60,6.5,61.62,2.5,35.88,.7,5.75,15300
1410 REM 44 HVF-EAGLE96
1420 DATA 44,50.0,6.75,62.75,5.75,31.5,.95,4.50,14500
1430 REM 45 HVF-RAPOCA
1435 DATA 45,57.70,7.50,66.47,4.22,29.31,.77,3.9,14700
1440 REM 46 LV-BLUESTONE
1445 DATA 46,57.70,7.00,76.0,4.8,19.2,.80,2.0,15000
1450 REM 47 HVF-MARFORK
1455 DATA 47,51.06,8.00,61.92,6.02,32.06,0.93,6.0,14400
1460 REM 48 MV-MEADOW RIVER
1465 DATA 48,55.65,7.0,68.5,6.0,25.5,.85,4.5,14500
1500 REM THE FOLLOWINGS ARE PETCOKES
1510 FOR I = 1 TO 6
1520 READ J(I, 1), J(I, 2), J(I, 3), J(I, 4), J(I, 5), J(I, 6), J(I, 7), J(I,
1530 NEXT I
1540 REM 1 PETCOKE-1/2 SUN OIL + 1/2 AIMCOR
1550 DATA 1,47.50,8.98,82.07,1.81,16.12,2.20,.12,15700
1560 REM 2 PETCOKE-SUN OIL
1570 DATA 2,53.60,8.00,87.12,0.38,12.50,1.70,.12,16000
1580 REM 3 PETCOKE-AIMCOR BLEND
1590 DATA 3,72.85,8.0,88.30,0.20,11.50,0.85,.12,16000
1600 REM 4 PETCOKE-AMOCO
1610 DATA 4,20.0,8.0,82.0,1.0,17.0,5.5,.12,15900
1620 REM 5 PETCOKE-REGINA
1630 DATA 5,48.45,8.00,88.55,.45,11.00,2.10,.12,16000
1640 REM 6 PETCOKE-REGINA(NOW)
1650 DATA 6,48.45,8.40,85.87,2.23,11.90,2.39,0.12,15600
1700 PRINT "DO YOU WANT TO PRINT OUT COAL LIST AND PETCOKE LIST? ENTER 'YES' OR
1710 INPUT ans$
1720 IF UCASE$(ans$) = "NO" GOTO 2010
1730 LPRINT "
1740 LPRINT

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1750 LPRINT
1770 LPRINT "                COAL LIST"
1780 LPRINT
1790 LPRINT "                *****DRY BASIS*****"
1800 LPRINT "COAL NAME          CODE      H2O      F.C.      ASH      VOL.MAT.      S
1810 LPRINT "IN BLEND                %          %          %          %          %
1820 P$ = "\          \  ####  ###.##  ###.##  ###.##  ##.##  ##.###  ##.#
1830 FOR I = 1 TO 47
1840 LPRINT USING P$; ff$(I); F(I, 1); F(I, 3); F(I, 4); F(I, 5); F(I, 6); F(I,
1850 NEXT I
1860 jj$(1) = "SUN+AIM"
1870 jj$(2) = "SUN OIL"
1880 jj$(3) = "AIMCOR BLD"
1890 jj$(4) = "AMOCO"
1895 jj$(5) = "REGINA"
1896 jj$(6) = "REGINA-NOW"
1900 LPRINT
1910 LPRINT
1930 LPRINT "                PETCOKE LIST"
1940 LPRINT
1950 LPRINT "                *****DRY BASIS*****"
1960 LPRINT "PETCOKE          CODE      H2O      F.C.      ASH      VOL.MAT.      S
1970 LPRINT "IN BLEND                %          %          %          %          %
1980 FOR I = 1 TO 6
1990 LPRINT USING P$; jj$(I); J(I, 1); J(I, 3); J(I, 4); J(I, 5); J(I, 6); J(I,
2000 NEXT I
2010 PRINT "THIS PROGRAM IS DESIGNED FOR A BLEND CONTAINING UP TO FOURTEEN COALS
2020 INPUT C
2030 FOR I = 1 TO C
2040 PRINT "ENTER DATA IN THIS ORDER: COAL CODE, PERCENTAGE"
2050 INPUT G(I, 1), G(I, 2)
2060 NEXT I
2070 FOR I = 1 TO C
2080 C(I, 1) = F(G(I, 1), 2)
2090 A(I, 1) = G(I, 2)
2100 B(I, 5) = F(G(I, 1), 3)
2110 B(I, 1) = F(G(I, 1), 4)
2120 B(I, 2) = F(G(I, 1), 5)
2130 B(I, 3) = F(G(I, 1), 6)
2140 B(I, 4) = F(G(I, 1), 7)
2150 B(I, 21) = F(G(I, 1), 8)
2160 B(I, 22) = F(G(I, 1), 9)
2170 NEXT I
2180 PRINT "IS THERE ANY PETCOKE IN YOUR BLEND? ENTER 'YES' OR 'NO'"
2190 INPUT D$
2200 IF UCASE$(D$) = "NO" THEN 2320
2210 PRINT "ENTER DATA IN THIS ORDER: PETCOKE CODE, PERCENTAGE"
2220 INPUT H(1, 1), H(1, 2)
2230 C(15, 1) = J(H(1, 1), 2)
2240 A(15, 1) = H(1, 2)
2250 B(15, 5) = J(H(1, 1), 3)
2260 B(15, 1) = J(H(1, 1), 4)
2270 B(15, 2) = J(H(1, 1), 5)
2280 B(15, 3) = J(H(1, 1), 6)
2290 B(15, 4) = J(H(1, 1), 7)
2300 B(15, 21) = J(H(1, 1), 8)
2310 B(15, 22) = J(H(1, 1), 9)
2320 FOR I = 1 TO C
2330 aa$(I) = ff$(G(I, 1))
2340 NEXT I

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2350 aa$(15) = "PETCOKE"
2360 aa$(16) = "COAL PORTION"
2370 aa$(17) = "BLEND"
2380 aa$(19) = "FCE COKE"
2390 PRINT
2400 PRINT "ENTER THE PREDICTED COKE STABILITY"
2410 INPUT S
2420 LPRINT "
2430 LPRINT "
2440 LPRINT
2450 LPRINT
2460 LPRINT
2470 LPRINT
2480 LPRINT "COST UPDATED:      DECEMBER 1997"
2485 LPRINT "CHEMISTRY UPDATED:  JUNE      1997"
2490 LPRINT
2500 LPRINT
2510 LPRINT "
2520 LPRINT
2530 LPRINT "
2540 LPRINT "COAL NAME      WET COAL/PC  H2O      F.C.      ASH      VOL.MAT.  S      O2
2550 LPRINT "IN BLEND      IN MIX,%   %        %        %        %        %        %
2560 FOR N = 1 TO 15
2570 A(17, 1) = A(17, 1) + A(N, 1)
2580 E(1, 5) = E(1, 5) + A(N, 1) * B(N, 5) / 100
2590 E(1, 1) = E(1, 1) + A(N, 1) * ((100 - B(N, 5)) / 100) * B(N, 1) / 100
2600 E(1, 2) = E(1, 2) + A(N, 1) * ((100 - B(N, 5)) / 100) * B(N, 2) / 100
2610 E(1, 3) = E(1, 3) + A(N, 1) * ((100 - B(N, 5)) / 100) * B(N, 3) / 100
2620 E(1, 4) = E(1, 4) + A(N, 1) * ((100 - B(N, 5)) / 100) * B(N, 4) / 100
2630 E(1, 21) = E(1, 21) + A(N, 1) * ((100 - B(N, 5)) / 100) * B(N, 21) / 100
2640 E(1, 22) = E(1, 22) + A(N, 1) * ((100 - B(N, 5)) / 100) * B(N, 22) / 100
2650 NEXT N
2660 FOR N = 1 TO C
2670 P$ = "\          \ ###.##  ##.###  ##.###  ##.###  ##.###  ##.###  ##.###
2680 LPRINT USING P$; aa$(N); A(N, 1); B(N, 5); B(N, 1); B(N, 2); B(N, 3); B(N,
2690 NEXT N
2700 IF D$ = "NO" THEN 2720
2710 LPRINT USING P$; aa$(15); A(15, 1); B(15, 5); B(15, 1); B(15, 2); B(15, 3);
2720 N = C
2730 LPRINT
2740 LPRINT
2750 LPRINT "
2760 LPRINT
2770 REM COAL BLEND LESS PETCOKE ANALYSIS
2780 A(16, 1) = A(17, 1) - A(15, 1)
2790 E(11, 5) = (E(1, 5) - A(15, 1) * B(15, 5) / 100) * 100 / A(16, 1)
2800 E(11, 1) = (E(1, 1) - (A(15, 1) * B(15, 1) / 100) * (100 - B(15, 5)) / 100)
2810 E(11, 2) = (E(1, 2) - (A(15, 1) * B(15, 2) / 100) * (100 - B(15, 5)) / 100)
2820 E(11, 3) = (E(1, 3) - (A(15, 1) * B(15, 3) / 100) * (100 - B(15, 5)) / 100)
2830 E(11, 4) = (E(1, 4) - (A(15, 1) * B(15, 4) / 100) * (100 - B(15, 5)) / 100)
2840 E(11, 21) = (E(1, 21) - (A(15, 1) * B(15, 21) / 100) * (100 - B(15, 5)) / 1
2850 E(11, 22) = (E(1, 22) - (A(15, 1) * B(15, 22) / 100) * (100 - B(15, 5)) / 1
2860 E(8, 1) = B(15, 1) * (100 - B(15, 5)) / 100
2870 E(8, 2) = B(15, 2) * (100 - B(15, 5)) / 100
2880 E(8, 3) = B(15, 3) * (100 - B(15, 5)) / 100
2890 E(8, 4) = B(15, 4) * (100 - B(15, 5)) / 100
2900 E(8, 21) = B(15, 21) * (100 - B(15, 5)) / 100
2910 E(8, 22) = B(15, 22) * (100 - B(15, 5)) / 100
2920 LPRINT "
2930 LPRINT "

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COAL EVALUATION PROGRAM"

COAL ANALYSIS"

*****DRY BASIS*****

WET BLEND ANALYSIS"

*****WET BASIS*****

WET COAL/PC H2O F.C. ASH VOL.MAT. S O2


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2940 LPRINT "                IN MIX,%      %      %      %      %      %
2950 Y = E(11, 4)
2960 X = E(11, 21)
2970 LPRINT USING P$; aa$(16); A(16, 1); E(11, 5); E(11, 1); E(11, 2); E(11, 3);
2980 Y = E(8, 4)
2990 X = E(8, 21)
3000 LPRINT USING P$; aa$(15); A(15, 1); B(15, 5); E(8, 1); E(8, 2); E(8, 3); Y;
3010 Y = E(1, 4)
3020 X = E(1, 21)
3030 LPRINT USING P$; aa$(17); A(17, 1); E(1, 5); E(1, 1); E(1, 2); E(1, 3); Y;
3040 LPRINT
3050 REM PRODUCED COKE (COKE PUSHED FROM THE OVENS)=COAL +PETCOKE
3060 Z(4, 1) = E(11, 1) + E(11, 2) + 9.000001E-02 * E(11, 3) + 1.18 * (100 - E(1
3070 Z(4, 1) = (Z(4, 1) / 100) * 2000 * (A(16, 1) / 100)
3080 Z(4, 2) = (B(15, 1) + B(15, 2)) * ((100 - B(15, 5)) / 100)
3090 Z(4, 2) = (Z(4, 2) / 100) * 2000 * (A(15, 1) / 100)
3100 Z(4, 3) = Z(4, 1) + Z(4, 2)
3110 Z(5, 1) = E(11, 1) + E(11, 2)
3120 Z(6, 1) = E(11, 3) - E(11, 21)
3130 REM T IS THE COKING TEMPERATURE IN KELVIN
3140 T = 1323
3150 Z(6, 1) = (Z(6, 1) ^ (1.26 * (T / 1000) ^ 1.4)) / (9.5 * (T / 1000) ^ 7.3)
3160 Z(5, 1) = Z(5, 1) + Z(6, 1)
3170 Z(5, 1) = (Z(5, 1) / 100) * 2000 * (A(16, 1) / 100)
3180 Z(5, 2) = (B(15, 1) + B(15, 2)) * ((100 - B(15, 5)) / 100)
3190 Z(5, 2) = (Z(5, 2) / 100) * 2000 * (A(15, 1) / 100)
3200 Z(5, 3) = Z(5, 1) + Z(5, 2)
3210 Z(6, 1) = (1 / 2) * (Z(4, 1) + Z(5, 1))
3220 Z(6, 2) = (1 / 2) * (Z(4, 2) + Z(5, 2))
3230 Z(6, 3) = (1 / 2) * (Z(4, 3) + Z(5, 3))
3240 REM TAR YIELD
3250 Z(1, 1) = 8.399999 * (E(11, 3) - E(11, 21)) ^ 2 / T
3260 Z(1, 1) = (Z(1, 1) / 100) * (A(16, 1) / 100) * 2000
3270 Z(1, 2) = .95 * B(15, 3) * ((100 - B(15, 5)) / 100)
3280 Z(1, 2) = (Z(1, 2) / 100) * (A(15, 1) / 100) * 2000
3290 Z(1, 3) = Z(1, 1) + Z(1, 2)
3300 REM LIGHT OIL YIELD
3310 Z(2, 1) = -.284 + .0384 * E(11, 3)
3320 Z(2, 1) = (Z(2, 1) / 100) * (A(16, 1) / 100) * 2000
3330 Z(2, 2) = 0
3340 Z(2, 3) = Z(2, 1) + Z(2, 2)
3350 REM COKE OVEN GAS YIELD
3360 Z(3, 1) = 14500 * E(11, 1) / 100
3370 Z(3, 1) = .105 * (E(11, 22) - Z(3, 1))
3380 Z(3, 1) = Z(3, 1) * (T / E(11, 3)) ^ (1 / 2)
3390 Z(3, 1) = Z(3, 1) * 2000 / (500 * 35.6)
3400 Z(3, 1) = Z(3, 1) * (A(16, 1) / 100)
3410 Z(3, 2) = .05 * B(15, 3) * (100 - B(15, 5)) / 100
3420 Z(3, 2) = (Z(3, 2) / 100) * 2000
3430 Z(3, 2) = Z(3, 2) * (A(15, 1) / 100)
3440 Z(3, 3) = Z(3, 1) + Z(3, 2)
3450 REM DETERMINE COKE FC, ASH, VM AND S ANALYSIS ON A DRY WT BASIS
3460 A(19, 1) = (Z(6, 3) / 2000) * 100
3470 E(12, 2) = (E(1, 2) / A(19, 1)) * 100
3480 E(12, 3) = .9
3490 E(12, 4) = .6 * (A(16, 1) / 100) * E(11, 4)
3500 E(12, 4) = E(12, 4) + .8 * (A(15, 1) / 100) * E(8, 4)
3510 E(12, 4) = (E(12, 4) / A(19, 1)) * 100
3520 E(12, 1) = 100 - E(12, 2) - E(12, 3)
3530 X = E(12, 4)

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3540 REM COKE OVEN GAS FOR UNDERFIRING REQUIREMENT
3550 REM 1,022 BTU/LB OF DRY COAL; 1,710 BTU/LB OF WATER
3560 REM C.O.G. IS AT 35.6 CU FT/LB AND 500 BTU/CU FT
3570 Z(3, 4) = 1022! * 2000! * ((100! - E(1, 5)) / 100!)
3580 Z(3, 4) = Z(3, 4) + 1710! * 2000! * (E(1, 5) / 100!)
3590 Z(3, 4) = Z(3, 4) / (500! * 35.6)
3600 REM PRODUCED COKE TO FURNACE COKE, BREEZE AND BUCKWHEAT
3610 REM BREEZE; PRODUCED COKE ASH; STABILITY; FURNACE COKE
3620 M = E(12, 2)
3630 L = .79 + (1.824 * M - .152 * S)
3640 Z(7, 3) = Z(6, 3) * (L / 100)
3650 Z(7, 5) = Z(7, 3)
3660 Z(8, 3) = Z(6, 3) - Z(7, 3)
3670 FOR I = 1 TO 8
3680 Z(I, 5) = Z(I, 3) - Z(I, 4)
3690 NEXT I
3700 REM PRODUCTS PER NT OF DRY FURNACE COKE
3710 FOR I = 1 TO 8
3720 Z(I, 6) = Z(I, 5) * (2000 / Z(8, 5))
3730 NEXT I
3740 REM UNIT VALUES
3750 Z(1, 7) = .44 / 9.68
3755 ZZ(1) = .44
3760 Z(2, 7) = .61 / 7.41
3765 ZZ(2) = .61
3770 Z(3, 7) = (1.93 / 1000000!) * 500 * 35.6
3775 ZZ(3) = 1.93
3780 Z(7, 7) = 50.28 / (2000! * (100! - 12) / 100!)
3785 ZZ(4) = 50.28
3790 REM DETERMINE VALUE PER NT OF FURNACE COKE
3800 FOR I = 1 TO 8
3810 Z(I, 8) = Z(I, 6) * Z(I, 7)
3820 NEXT I
3830 REM DRY BLEND ANALYSIS
3840 LPRINT
3850 LPRINT "                DRY BLEND ANALYSIS"
3860 LPRINT
3870 LPRINT "                *****DRY BASIS*****"
3880 LPRINT "                COAL/PC      H2O      F.C.      ASH      VOL.MAT.      S      O2
3890 LPRINT "                IN MIX,%      %      %      %      %      %      %
3900 A = A(17, 1) - E(1, 5)
3910 B = E(1, 5)
3920 C = E(1, 1) * 100 / A
3930 D = E(1, 2) * 100 / A
3940 E = E(1, 3) * 100 / A
3950 F = E(1, 4) * 100 / A
3960 G = E(1, 21) * 100 / A
3970 H = E(1, 22) * 100 / A
3980 aaaA$ = "DRY BLEND"
3990 E(1, 5) = 0!
4000 LPRINT USING P$; aaaA$; A(17, 1); E(1, 5); C; D; E; F; G; H
LPRINT CHR$(12)
4420 LPRINT "
4430 Q$ = "ESTIMATED COKE STABILITY=##.##"
4440 LPRINT USING Q$; S
4450 LPRINT
4470 LPRINT "    COKE PRODUCED FROM COAL ONLY      FURNACE      BREEZE &      TOTAL
4480 LPRINT "    FORMULA 1 FORMULA 2 AVERAGE      COKE      BUCKWHEAT      COKE"
4490 T$ = "    ####.##    ####.##    ####.##    ####.##    ####.##    ####.##"
4500 LPRINT USING T$; Z(4, 1); Z(5, 1); Z(6, 1); Z(8, 3); Z(7, 3); Z(6, 3)

```



```

4510 LPRINT
4520 LPRINT
4530 LPRINT
4540 LPRINT "          DRY PRODUCTS OF COKING, LB/NT WET BLEND"
4550 LPRINT
4560 bb$(1) = "COAL"
4570 bb$(2) = "PETCOKE"
4580 bb$(3) = "BLEND"
4590 bb$(4) = "USED"
4600 bb$(5) = "PRODUCT"
4610 bb$(6) = "LB/DRY  "
4620 bb$(7) = "$/LB"
4630 bb$(8) = "$/NT COKE"
4640 LPRINT "ITEM          TAR          L.OIL      COKE OVEN  FURNACE    COKE      T
4650 LPRINT "          GAS          COKE      BREEZE    C
4660 Z(7, 1) = Z(7, 3)
4670 Z(8, 1) = Z(6, 1) - Z(7, 1)
4680 Z(8, 2) = Z(6, 2)
4690 FOR I = 1 TO 5
4700 S$ = "\          \ ###.###  ###.###  ###.###  #####.##  #####.##  ###
4710 T$ = "          ###.###  ###.###  ###.###  #####.##  #####.##  #####.##"
4720 LPRINT USING S$; bb$(I); Z(1, I); Z(2, I); Z(3, I); Z(8, I); Z(7, I); Z(6,
4730 NEXT I
4740 LPRINT
4750 LPRINT
4760 LPRINT
4770 LPRINT "          DRY PRODUCTS OF COKING, LB/NT DRY FURNACE COKE"
4780 LPRINT
4790 LPRINT "          TAR          L.OIL      COKE OVEN  FURNACE    COKE      TOTAL"
4800 LPRINT "          GAS          COKE      BREEZE    COKE"
4810 LPRINT USING T$; Z(1, 6); Z(2, 6); Z(3, 6); Z(8, 6); Z(7, 6); Z(6, 6)
4820 REM COAL COST
4830 C(16, 2) = 2000 / Z(8, 5)
4840 FOR I = 1 TO 15
4850 C(I, 2) = C(16, 2) * A(I, 1) / 100
4860 C(I, 3) = C(I, 2) * (100 - B(I, 5)) / 100
4870 C(I, 4) = C(I, 1) * C(I, 2)
4880 C(16, 3) = C(16, 3) + C(I, 3)
4890 C(16, 4) = C(16, 4) + C(I, 4)
4900 NEXT I
4910 C(16, 1) = C(16, 4) / C(16, 2)
4920 LPRINT
4930 LPRINT
4940 LPRINT
4950 LPRINT "          COAL COST"
4960 LPRINT
4970 LPRINT " COAL IN          UNIT WET          NT WET COAL/          NT DRY COAL/          COAL CO
4980 LPRINT " BLEND          COAL COST          NT DRY          NT DRY          $/NT OF
4990 LPRINT "          $/NT          FURNACE COKE          FURNACE COKE          FURNACE
5000 FOR I = 1 TO N
5010 U$ = "\          \ ##.##          #.###          #.###          ###.###
5020 LPRINT USING U$; aa$(I); C(I, 1); C(I, 2); C(I, 3); C(I, 4)
5030 NEXT I
5040 IF D$ = "NO" THEN 5060
5050 LPRINT USING U$; aa$(15); C(15, 1); C(15, 2); C(15, 3); C(15, 4)
5060 LPRINT
5070 LPRINT USING U$; aa$(17); C(16, 1); C(16, 2); C(16, 3); C(16, 4)
5080 LPRINT
5090 LPRINT
5100 LPRINT

```



```

5120 R$ = "\          \   ###.##  ##.###  ##.###  #.###  ##.###  ##.###"
5130 LPRINT "          COKE ANALYSIS, DRY BASIS AND AT 2.5% H2O"
5140 LPRINT
5150 aa$(19) = "FURNACE COKE "
5160 aa$(20) = "TOTAL COKE"
5170 LPRINT "          COKE          H2O          F.C.          ASH          VOL. MAT.          S "
5180 LPRINT "          YIELD,%          %          %          %          %          % "
5190 LPRINT USING R$; aa$(20); A(19, 1); E(12, 5); E(12, 1); E(12, 2); E(12, 3);
5200 Y = (Z(8, 3) / 2000) * 100
5210 LPRINT USING R$; aa$(19); Y; E(12, 5); E(12, 1); E(12, 2); E(12, 3); X
5220 A = Y / .975
5230 B = 2.5
5240 C = E(12, 1) * .975
5250 D = E(12, 2) * .975
5260 E = E(12, 3) * .975
5270 F = X * .975
5280 LPRINT USING R$; aa$(19); A; B; C; D; E; F
LPRINT CHR$(12)
5530 LPRINT "          PAGE
5540 LPRINT "          COST ANALYSIS"
5550 LPRINT
5560 LPRINT " DESCRIPTION          $/NT DRY          REMARK
5570 LPRINT "          FURNACE COKE"
5580 LPRINT
5590 LPRINT " RAW MATERIAL COST"
5600 LPRINT
5610 X$ = "          COAL          ###.###"
5620 LPRINT USING X$; C(16, 4)
5630 LPRINT
5640 LPRINT "          BULK DENSITY OIL          0.770"
5650 LPRINT "          1.53 GAL/NT FCE COKE"
5660 LPRINT "          AT $0.50/GALLON          "
5670 LPRINT
5680 X$ = "          INVENTORY COST AT 1%          ###.###"
5690 C(17, 4) = (1 / 100) * C(16, 4)
5700 LPRINT USING X$; C(17, 4)
5710 LPRINT
5720 X$ = "          COG FOR UNDERFIRING          ###.###"
5730 C(18, 4) = Z(3, 8) * Z(3, 4) / Z(3, 5)
5740 LPRINT USING X$; C(18, 4)
5750 LPRINT
5760 Y$ = "          SUBTOTAL RAW MATERIALS          ###.###"
5770 C(19, 4) = C(16, 4) + .77 + C(17, 4) + C(18, 4)
5780 LPRINT USING Y$; C(19, 4)
5790 LPRINT
5800 LPRINT
5810 LPRINT
5820 LPRINT " BY-PRODUCT CREDITS"
5830 LPRINT
5840 X$ = "          EXCESS COKE OVEN GAS          ###.###          ($#.##/MMBTU) "
5850 LPRINT USING X$; Z(3, 8) * (-1); ZZ(3)
5860 LPRINT
5870 X$ = "          COG FOR UNDERFIRING          ###.###"
5880 A = Z(3, 8) * Z(3, 4) / Z(3, 5) * (-1)
5890 LPRINT USING X$; A
5900 LPRINT
5910 X$ = "          TOTAL COKE OVEN GAS          ###.###"
5920 T = Z(3, 8) * Z(3, 3) / Z(3, 5) * (-1)
5930 LPRINT USING X$; T
5940 LPRINT

```


5950 X\$ = " TAR ###.### (\$#.##/GAL) "
 5960 LPRINT USING X\$; Z(1, 8) * (-1); ZZ(1)
 5970 LPRINT
 5980 X\$ = " LIGHT OIL ###.### (\$#.##/GAL) "
 5990 LPRINT USING X\$; Z(2, 8) * (-1); ZZ(2)
 6000 LPRINT
 6010 X\$ = " COKE BREEZE AND BUCKWHEAT ###.### (\$##.##/TON) "
 6020 LPRINT USING X\$; Z(7, 8) * (-1); ZZ(4)
 6030 LPRINT
 6040 B = T - Z(1, 8) - Z(2, 8) - Z(7, 8)
 6050 Y\$ = " TOTAL BY-PRODUCTS CREDITS ###.###"
 6060 LPRINT USING Y\$; B
 6070 LPRINT
 6080 LPRINT
 6090 LPRINT
 6100 LPRINT " CONVERSION COST "
 6110 LPRINT
 6120 X\$ = " CONVERSION - VARIABLE ###.###"
 6130 C = 15.11
 6140 LPRINT USING X\$; C
 6150 LPRINT
 6160 X\$ = " CONVERSION - FIXED ###.###"
 6170 D = 226655 / (7 * 99 * 17 * (Z(8, 5) / 2000))
 6180 LPRINT USING X\$; D
 6190 LPRINT
 6200 Y\$ = " TOTAL CONVERSION COST ###.###"
 6210 B = C + D
 6220 LPRINT USING Y\$; E
 6230 LPRINT
 6240 LPRINT
 6250 LPRINT
 6260 Y\$ = " TOTAL PRODUCTION COST ###.###"
 6270 G = C(19, 4) + B + E
 6280 LPRINT USING Y\$; G
 6290 LPRINT " \$/NT DRY FURNACE COKE"
 6300 LPRINT
 6310 LPRINT
 6320 LPRINT
 6350 LPRINT "END OF RUN"
 LPRINT CHR\$(12)
 SYSTEM