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L.0114 JF=JF2
L.0115 DELT=DELT2
L.0116 63 B(L,1)=1./(2.*TOR)
L.0117 CONST=PI/TOR
L.0118 C FITTING FOURIER CURVES TO THE INPUT AND OUTPUT
L.0119 C INTEGRATION IS BY SIMPSON'S RULE
L.0120 C *****
L.0121 DO 65 N=2, NCOEF
L.0122 SUM4=0.
L.0123 SUM5=0.0
L.0124 F=N-1
L.0125 J11=J1+1
L.0126 JF1=JF-1
L.0127 DO 64 J=J11, JF1, 2
L.0128 ANG1=CONST*F*DELT*J
L.0129 ANG2=CONST*F*DELT*(J+1)
L.0130 SUM4=SUM4+C(J)*DCOS(ANG1)*4.+C(J+1)*DCOS(ANG2)*2.
L.0131 SUM5=SUM5+C(J)*DSIN(ANG1)*4.+C(J+1)*DSIN(ANG2)*2.
L.0132 A(L,N)=(SUM5+C(J1)*DSIN(CONST*F*DELT*J1)+C(JF)*DSIN(CONST*F*DELT*JF))/(TOR*AREA(L)*3.)*DELT
L.0133 B(L,N)=(SUM4+C(J1)*DCOS(CONST*F*DELT*J1)+C(JF)*DCOS(CONST*F*DELT*JF))/(TOR*AREA(L)*3.)*DELT
L.0134 IF(L-2)60,66,66
L.0135 BN(1)=B(2,1)/12.*TOR*B(1,1)
L.0136 PRINT 229
L.0137 PRINT 212
L.0138 PRINT 210
L.0139 C EVALUATION OF EXPERIMENTAL AMPLITUDE RATIO FOR INPUT AND OUTPUT
L.0140 C *****
L.0141 DO 40 N=2, NCOEF
L.0142 BAR=DSORT(A(1,N)*A(1,N)+B(1,N)*B(1,N))*TOR
L.0143 DAR=DSORT(A(2,N)*A(2,N)+B(2,N)*B(2,N))*TOR
L.0144 F=N-1
L.0145 W=F*PI/TOR
L.0146 IF(1DUM)40,223,40
L.0147 223 PRINT 211,F,A(1,N),B(1,N),BAR,W,A(2,N),B(2,N),DAR
L.0148 40 CONTINUE
L.0149 READ(9,22C)KDUM
L.0150 400 PRINT 213
L.0151 PRINT 207
L.0152 N=0
L.0153 PRINT 208,N,BN(1)
L.0154 D=DV
L.0155 TDUM=0
L.0156 C EVALUATION OF EXPERIMENTAL SYSTEM FOURIER COEFFICIENTS
L.0157 C *****
L.0158 DO 73 N=2, NCOEF
L.0159 AN(N)=1.0+CO/TOR*(A(2,N)*B(1,N)-B(2,N)*A(1,N))/(A(1,N)*A(1,N)+B(1,N)*B(1,N))
L.0160 BN(N)=(B(2,N)*B(1,N)+A(2,N)*A(1,N))/(A(1,N)*A(1,N)+B(1,N)*B(1,N))/TOR
L.0161 704 CONTINUE
L.0162 NNN=1
L.0163 IF(1DUM)706,705,706
L.0164 705 III=11
L.0165 GO TO 707
L.0166 706 III=TDUM
L.0167 707 TDUM=0
L.0168 C EVALUATION OF EXPERIMENTAL A.R. AND P.L. FOR THE SYSTEM
L.0169 AR=DSORT(AN(N)*AN(N)+BN(N)*BN(N))*TOR
L.0170 PL=DELOG(AR)
L.0171 PL=BN(N)/AN(N)
L.0172 PHL=DATAN(PL)

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L.0173 F=N-1
L.0174 K=F*PI/TOR
L.0175 625 A1=1.
L.0176 NNN=NNN+1
L.0177 IF(NNN-10)703,703,702
L.0178 702 READ(9,215)D,U,N
L.0179 READ(9,9999)IT,IDUM
L.0180 9999 FORMAT(2Y)
L.0181 IF(N.EQ.0)GO TO 400
L.0182 GO TO 714
L.0183 703 CONTINUE
L.0184 C EVALUATION OF THEORETICAL COEFFICIENTS, A,R, AND P,L, FOR THE SYSTEM
L.0185 CALL ONE(W,D,U,X,THETA,SS,RR,RD,RU,SD,AL,PT,PHT)
L.0186 C EVALUATION OF PARAMETERS K AND M USING ILAW AND BAILFYI
L.0187 C *****
L.0188 AU=-SS/D-X/(4.*RR**3)*RD*DCOS(THETA)+RR*X*DSIN(THETA)*SD*2.*W/(U*U)
L.0189 AU=SS/U-X/(4.*RR**3)*RU*DCOS(THETA)+X*RR*DSIN(THETA)*SD*(-4.*W*D/U**3)
L.0190 PV=-1.D+0.0/(DSIN(X*RR*DSIN(THETA)))**2
L.0191 PD=PV*(X*RR*DCOS(THETA)*SD*2.*W/(U*U)+DSIN(THETA)*X/(4.*RR**3)*RD)
L.0192 PU=PV*(X*RR*DCOS(THETA)*SD*(-4.*W*D/U**3)+X/(4.*RR**3)*RU*DSIN(THETA))
L.0193 SB=((PAR-AL)**2+(PL-PT)**2)/(PAR**2+PL**2)
L.0194 F1=(PAR-AL)*AD+(PL-PT)*PD
L.0195 F2=(PAR-AL)*AU+(PL-PT)*PU
L.0196 F1D=- (AD*AD+PD*PD)
L.0197 F2D=- (AD*AU+PD*PU)
L.0198 FIU=F2D
L.0199 F2U=- (AU*AU+PU*PU)
L.0200 DU=(F2U*(-F1)-F1U*(-F2))/(F2U*F1D-F1U*F2D)
L.0201 DU=(F2D*(-F1)-F1D*(-F2))/(F2D*F1U-F1D*F2U)
L.0202 DT=- (F1*DC+F2*DU)
L.0203 IF(DT)620,621,621
L.0204 621 DU=-DU
L.0205 DU=-DU
L.0206 DT=-DT
L.0207 620 CONTINUE
L.0208 U1=U
L.0209 U1=0
L.0210 624 CONTINUE
L.0211 D=D+A1*DD
L.0212 U=U+A1*DU
L.0213 CALL ONE(W,D,U,X,THETA,SS,RR,RD,RU,SD,AL,PT,PHT)
L.0214 C TEST FOR CONVERGENCE
L.0215 C *****
L.0216 SA=((PAR-AL)**2+(PL-PT)**2)/(PAR**2+PL**2)
L.0217 TE=-0.1D+0.0*DT*(A1*A1-2.*A1)/(PAR**2+PL**2)
L.0218 610 CONTINUE
L.0219 611 CONTINUE
L.0220 701 CONTINUE
L.0221 IF(SA-SB-TE)606,606,605
L.0222 605 IF(SA-TT)606,606,604
L.0223 604 A1=A1/2.
L.0224 IF(A1-1.E-25)625,625,624
L.0225 606 CONTINUE
L.0226 IF(SA-TT)630,630,625
L.0227 630 PRINT 215,F,AR(IN),BN(N),W,AR,PHL,D,U
L.0228 WRITE(9,221)D,U,SA,SB,TE
L.0229 73 CONTINUE
L.0230 PRINT 242
L.0231 242 FORMAT(/)

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L0232 READ(9,5001)DUMMY
L0233 5001 FORMAT(Y)
L0234 IF(DUMMY.EQ.0.0)GO TO 590
L0235 74 CONTINUE
L0236 STOP
L0237 END
L0238 SUBROUTINE ONE(W,D,U,X,THETA,SS,RR,RD,RU,SD,AL,PT,PHT)
L0239 DOUBLE PRECISION W,D,U,X,THETA,SS,RR,RD,RU,SD,AL,PT,PHT
L0240 THETA=DATAN(4.*W*D/(U*U))/2.
L0241 SS=U*X/(2.*D)
L0242 RR=DSORT(DSORT(U**4/(15.*D**4)+W*W/(D*D)))
L0243 RD=- (U**4/(4.*D**5)+2.*W*W/D**3)
L0244 RU=U**3/(4.*D**4)
L0245 SD=1.D+0.0/(1+(4.*W*D/(U*U))**2)
L0246 AL=SS-X*RR*DCOS(THETA)
L0247 PT=-DCOS(-X*RR*DSIN(THETA))/DSIN(-X*RR*DSIN(THETA))
L0248 PHT=DATAN(PT)
L0249 RETURN
L0250 END
L0251 /DATA
L0252 /DATA

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END OF PRINT * NO OF LINES PRINTED- 252

RUN NO= 1 FLOWRATE= .100 LITRES PER MINUTE

INPUT CURVE.

START POINT NUMBER = 10 FINISH POINT NUMBER = 93 TIME AXIS INTERVAL = .144

CONCENTRATION PROFILE.

0.0	2.0	11.0	26.0	41.0	55.0	66.5	75.0	80.0	83.7	84.1	81.6	72.2	75.0	71.5	67.5
64.0	60.0	56.5	53.0	50.0	46.8	44.8	41.0	38.0	36.0	34.0	32.0	29.8	28.0	26.4	24.8
23.3	22.0	21.5	19.4	18.0	17.0	16.0	15.0	14.0	13.2	12.5	11.0	11.0	10.4	9.8	9.2
8.8	8.2	7.8	7.3	6.9	6.5	6.1	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8
3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.0	.8	.6
.4	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OUTPUT CURVE.

START POINT NUMBER = 155 FINISH POINT NUMBER = 248 TIME AXIS INTERVAL = .144

CONCENTRATION PROFILE.

0.0	.5	1.2	2.5	4.5	7.5	11.7	17.0	24.0	31.2	39.5	42.2	56.0	63.0	69.0	73.7
76.3	77.8	78.0	77.5	75.5	73.0	70.0	66.6	63.0	59.8	56.5	53.1	50.0	47.2	44.4	41.6
39.0	36.9	34.6	32.6	30.8	29.0	28.0	25.5	24.0	22.7	21.2	20.0	18.8	17.8	16.8	15.8
14.8	14.0	13.0	12.4	11.8	11.0	10.5	10.0	9.5	9.0	8.5	8.0	7.5	7.0	6.5	6.2
6.0	5.6	5.2	5.0	4.8	4.6	4.4	4.2	4.0	3.8	3.6	3.4	3.2	3.0	2.8	2.6
2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.0	.8	.6	.4	.2	0.0	0.0	0.0	0.0

MOMENT ANALYSIS.

U= 8.377 CM PER SEC TIME= 21.846 SEC D= .953 SQ CM PER SEC VARI= .593
T00 = 150. SEC

INPUT AND OUTPUT

N	A(INPUT)	S(INPUT)	AR(INPUT)	FREQUENCY	A(OUTPUT)	B(OUTPUT)	AR(OUTPUT)
1.	53489373D-03	66299501D-02	99904198D+00	20943951D-01	34978417D-02	56668122D-02	99891055D+00
2.	12596536D-02	65206118D-02	99617512D+00	41887902D-01	59331541D-02	29760368D-02	99585558D+00
3.	18644362D-02	63410820D-02	99142447D+00	62831853D-01	65763947D-02	57828491D-03	99026365D+00
4.	24399743D-02	60953466D-02	98483568D+00	83775804D-01	52554473D-02	39125990D-02	98279374D+00
5.	29778427D-02	57887008D-02	97645973D+00	10471976D+00	24013557D-02	60280150D-02	97330784D+00
6.	34706784D-02	54277222D-02	96637466D+00	12566371D+00	10976984D-02	63180239D-02	96190086D+00
7.	39123633D-02	50199388D-02	95466925D+00	14660766D+00	41816674D-02	47448708D-02	94868496D+00
8.	42981634D-02	45736119D-02	94144731D+00	16755161D+00	59491086D-02	18333718D-02	93278036D+00
9.	46247995D-02	40973660D-02	92681526D+00	18849556D+00	59261353D-02	15102176D-02	91733108D+00
10.	48904644D-02	36001208D-02	91090287D+00	20943951D+00	41914103D-02	42886011D-02	89950611D+00
11.	50948606D-02	30906586D-02	89385118D+00	23038346D+00	13259644D-02	57178280D-02	88043405D+00
12.	52390323D-02	25774153D-02	87580643D+00	25132741D+00	17869008D-02	54500823D-02	86033030D+00
13.	53252843D-02	20682590D-02	85692303D+00	27227136D+00	42408105D-02	36508539D-02	83937309D+00
14.	53569971D-02	15702542D-02	83735902D+00	29321531D+00	53736879D-02	91793124D-03	81772867D+00
15.	53384617D-02	10895969D-02	81727834D+00	31415927D+00	49437827D-02	19215743D-02	79561441D+00
16.	52746235D-02	63142003D-03	79684236D+00	33510322D+00	31685330D-02	40660142D-02	77322160D+00
17.	51709167D-02	19978434D-03	77621621D+00	35606717D+00	62751100D-03	49652496D-02	75071177D+00
18.	50329907D-02	20235290D-03	75555853D+00	37699112D+00	19203593D-02	44554940D-02	72829364D+00
19.	48665442D-02	57309811D-03	73502592D+00	39703507D+00	39040363D-02	27723464D-02	70613468D+00
20.	46770576D-02	91155284D-03	71475899D+00	41879002D+00	45400359D-02	45185572D-03	68436997D+00
21.	44697339D-02	12177057D-02	69489559D+00	43982297D+00	40106936D-02	18407269D-02	66316647D+00
22.	42492437D-02	14923006D-02	67555033D+00	46076692D+00	24703383D-02	35003042D-02	64263580D+00
23.	40197607D-02	17366006D-02	65683167D+00	48171087D+00	37116790D-03	41358287D-02	62286757D+00
24.	37847654D-02	19526773D-02	63882035D+00	50265492D+00	16929693D-02	36531212D-02	60395148D+00
25.	35471437D-02	21423547D-02	62158599D+00	52359878D+00	31909201D-02	22530640D-02	58592824D+00

SYSTEM

N	B(N)	U	AMPLITUDE RATIO	PHASE LAG	D	U
1.	33333333D-02	20943951D-01	99996844D+00	11132596D+01	.963	8.377
2.	59801687D-02	41887902D-01	99047847D+00	65575192D+00	.955	8.377
3.	40629158D-02	62831853D-01	99883117D+00	19825828D+00	.952	8.377
4.	13115454D-02	83775804D-01	99792663D+00	25919585D+00	.950	8.378
5.	17051462D-02	10471976D+00	99677213D+00	71657986D+00	.947	8.378
6.	43645963D-02	12566371D+00	99577053D+00	11739073D+01	.944	8.378
7.	61199892D-02	14660766D+00	99733150D+00	15104390D+01	.940	8.379
8.	66128135D-02	16755161D+00	99185621D+00	10533010D+01	.937	8.380
9.	57465569D-02	18849556D+00	98976692D+00	59626615D+00	.931	8.380
10.	37054027D-02	20943951D+00	98748192D+00	13935976D+00	.924	8.381
11.	91446173D-03	23038346D+00	98498952D+00	31740279D+00	.917	8.382
12.	20494357D-02	25132741D+00	98232996D+00	77402075D+00	.909	8.383
13.	45777633D-02	27227136D+00	97951981D+00	12304682D+01	.899	8.384
14.	6155977D-02	29321531D+00	97655684D+00	14548481D+01	.889	8.385
15.	6466652D-02	31415927D+00	97349259D+00	99874437D+00	.877	8.386
16.	54566979D-02	33510322D+00	97035704D+00	54283174D+00	.864	8.387
17.	33416686D-02	35604717D+00	96714261D+00	87097150D-01	.850	8.389
18.	56085937D-03	37699112D+00	96391426D+00	36846797D+00	.835	8.390
19.	23145937D-02	3977507D+00	96069357D+00	82386004D+00	.818	8.391
20.	46995450D-02	41887902D+00	95748354D+00	12791103D+01	.800	8.393
21.	61135988D-02	43982297D+00	95433972D+00	14073484D+01	.781	8.394
22.	62774692D-02	46076692D+00	95127745D+00	95231073D+00	.761	8.395
23.	51670692D-02	48171087D+00	94829101D+00	49732170D+00	.740	8.397
24.	30160294D-02	50265492D+00	94541678D+00	42344149D-01	.719	8.398
25.	26680604D-03	52359878D+00	94263560D+00	41266767D+00	.698	8.399

REMOTE PRINT/DISPLAY FOR USER NO 20

FILE NAME MG52

DEPT OF CHEM ENG

DATE= 69-279

L.0001 /FTC BCB

L.0002 G ANALYSIS OF K AND M ----- ACTIVE SOLUTE

L.0003 C *****

L.0004 DOUBLE PRECISION W,D,U,X,BM,AK,FF,SS,Z,Y,BE,UU,V,THEIE,RR,AL,PI,PHT,CONST,F,TOR,BAR,DAR,AR,PAR,PL,PHL

L.0005 DOUBLE PRECISION PI,T,DELT,SUM1,SUM2,SUM3,SUM4,SUM5,IF,IF2,ANGLE

L.0006 DOUBLE PRECISION AL,DUDK,DVDK,DTHDK,AKA,DUDM,DVDM,DTHDM,AMA,PV,PK,PM,SB,SA,TTT

L.0007 DOUBLE PRECISION F1,F2,F1K,F2K,F1M,F2M,DK,DM,CT,BMI,AKI,TE,ANG1,ANG2

L.0008 DOUBLE PRECISION C(2000),A(2,40),B(2,40),AN(40),BN(40),VAR(2),DZ(40),UZ(40)

L.0009 C INPUT AND OUTPUT

L.0010 C *****

L.0011 200 FORMAT(13,F6.2)

L.0012 201 FORMAT(8H RUN NO=,13,5X,10H FLOWRATE=,F6.3,18H LITRES PER MINUTE/)

L.0013 202 FORMAT(414,2F6.0)

L.0014 203 FORMAT(' START POINT NUMBER =',14,5X,'FINISH POINT NUMBER =',14,5X,'TIME AX'S INTERVAL =',F5.3/)

L.0015 204 FORMAT(16F4.0)

L.0016 205 FORMAT(16F6.1)

L.0017 206 FORMAT(/3H M=,F9.3,13X,3H K=,F11.3,' SQ CM PER SEC')

L.0018 207 FORMAT(1X,2H N,9X,5H A(N),14X,2H W,9X,16H AMPLITUDE RATIO,4X,10H PHASE LAG,8X,2H K,6X,' M',8X,'D',6X,'U')

L.0019 208 FORMAT(13,23X,E14.8)

L.0020 209 FORMAT(F8.0,4E20.8,12X,F8.3)

L.0021 210 FORMAT(' N',6X,'A(INPUT)',7X,'B(INPUT)',5X,'FREQUENCY',6X,'A(OUTPUT)',7X,'B(OUTPUT)',5X,'AR(OUTPUT)')

L.0022 211 FORMAT(F4.0,7E15.8)

L.0023 212 FORMAT(/17H INPUT AND OUTPUT/)

L.0024 213 FORMAT(/7H SYSTEM/)

L.0025 214 FORMAT(//)

L.0026 215 FORMAT(F4.0,5E18.8,2X,4F8.3)

L.0027 216 FORMAT(4F20.8)

L.0028 217 FORMAT(6E18.8)

L.0029 218 FORMAT(2D20.15)

L.0030 219 FORMAT(2Y,13)

L.0031 220 FORMAT(14)

L.0032 221 FORMAT(3H U=,F8.3,11H CM PER SEC,3X,3H D=,F8.3,14H SQ CM PER SEC)

L.0033 222 FORMAT(5H TME=,F8.3,' SEC',8X,6H VARI=,F8.3)

L.0034 223 FORMAT(3F10.0)

L.0035 225 FORMAT(' INPUT CURVE.'/)

L.0036 326 FORMAT(' CONCENTRATION PROFILE.'/)

L.0037 327 FORMAT(' OUTPUT CURVE.'/)

L.0038 328 FORMAT(// ' MOMENT ANALYSIS.'/)

L.0039 329 FORMAT(' FREQUENCY ANALYSIS.'/)

L.0040 G READING IN OF DATA

L.0041 C *****

L.0042 TT=1.D-16

L.0043 READ(9,220)ICUM

L.0044 PI=4.*DATAN(1.)

L.0045 X=183.

L.0046 49 READ 200,NRUN,FLO

L.0047 READ 220,NCORF

L.0048 READ 223,F6,FL,ACOL

L.0049 FF=FL/FG

L.0050 READ 218,{DZ(1),UZ(1),I=1,NCORF)

L.0051 50 L=0

L.0052 PRINT 214

L.0053 PRINT 201,NRUN,FLO

L.0054 READ 202,J11,JF1,J12,JF2,DELT1,DELT2

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L.0001 /FTC BCD
L.0002 G ANALYSIS OF K AND M ----- ACTIVE SOLUTE
L.0003 C *****
L.0004 DOUBLE PRECISION W,D,U,X,BM,AK,FF,SS,Z,Y,BE,UU,V,THETE,RR,AL,PT,PHT,CONST,F,IOR,BAR,DAR,AR,PAR,PL,PHL
L.0005 DOUBLE PRECISION PI,T,DELT,SUM1,SUM2,SUM3,SUM4,SUM5,TF,TF2,ANGLE
L.0006 DOUBLE PRECISION AL,DUDK,DVDK,DTHDK,AKA,DUDM,DVDM,DTHDM,AMA,PV,PK,PM,SB,SA,TF
L.0007 DOUBLE PRECISION F1,F2,F1K,F2K,F1M,F2M,DK,DM,DT,BMI,AKI,TE,ANG1,ANG2
L.0008 DOUBLE PRECISION C(2000),A(2,40),B(2,40),AN(40),BN(40),VAR(2),DZ(40),UZ(40)
L.0009 C INPUT AND OUTPUT
L.0010 C *****
L.0011 200 FORMAT(13,F6.2)
L.0012 201 FORMAT(18H RUN NO=,13,5X,10H FLOWRATE=,F6.3,18H LITRES PER MINUTE/)
L.0013 202 F9RMT(414,2F6.0)
L.0014 203 FORMAT(' START POINT NUMBER =',14,5X,'FINISH POINT NUMBER =',14,5X,'TIME AXIS INTERVAL =',F5.3/)
L.0015 204 FORMAT(16F4.0)
L.0016 205 F9RMT(16F6.1)
L.0017 206 F9RMT(3H M=,F9.3,13X,3H K=,F11.3,' SQ CM PER SEC')
L.0018 207 F9RMT(1X,2H N,9X,5H A(N),14X,5H B(N),14X,2H W,9X,16H AMPLITUDE RATIO,4X,10H PHASE LAG,8X,2H K,6X,' M',8X,'D',6X,'U')
L.0019 208 F9RMT(13,23X,E14.8)
L.0020 209 F9RMT(8.0,4E20.8,12X,F8.3)
L.0021 210 F9RMT(' N',6X,'A(INPUT)',7X,'B(INPUT)',7X,'AR(INPUT)',5X,'FREQUENCY',6X,'A(OUTPUT)',7X,'B(OUTPUT)',5X,'AR(OUTPUT)')
L.0022 211 F9RMT(4.0,7E15.8)
L.0023 212 F9RMT(17H INPUT AND OUTPUT/)
L.0024 213 F9RMT(17H SYSTEM/)
L.0025 214 F9RMT(17H)
L.0026 215 F9RMT(4.0,5E18.8,2X,4F8.3)
L.0027 216 F9RMT(4F20.8)
L.0028 217 F9RMT(6E18.8)
L.0029 218 F9RMT(2020.15)
L.0030 219 F9RMT(2Y,13)
L.0031 220 F9RMT(14)
L.0032 221 F9RMT(3H U=,F8.3,11H CM PER SEC,3X,3H D=,F8.3,14H SQ CM PER SEC)
L.0033 222 F9RMT(5H TME=,F8.3,' SEC',8X,6H VARI=,F8.3)
L.0034 223 F9RMT(3F10.0)
L.0035 325 F9RMT(' INPUT CURVE.//')
L.0036 326 F9RMT(' CONCENTRATION PROFILE.//')
L.0037 327 F9RMT(' OUTPUT CURVE.//')
L.0038 328 F9RMT('///' MOMENT ANALYSIS.//')
L.0039 329 F9RMT(' FREQUENCY ANALYSIS.//')
L.0040 C READING IN OF DATA
L.0041 C *****
L.0042 TT=1.0-16
L.0043 READ(9,220)IDUM
L.0044 PI=4.*DATAN(1.)
L.0045 X=183.
L.0046 49 READ 200,NRUN,FLO
L.0047 READ 220,NCOEF
L.0048 READ 223,FC,FL,ACOL
L.0049 FF=FL/FC
L.0050 READ 218,(DZ(I),UZ(I),I=1,NCOEF)
L.0051 50 L=0
L.0052 PRINT 214
L.0053 PRINT 201,NRUN,FLO
L.0054 READ 202,J11,JF1,J12,JF2,DELT1,DELT2
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L.0055 PRINT 214
L.0056 PRINT 325
L.0057 PRINT 203,J11,JF1,DELT1
L.0058 PRINT 326
L.0059 51 L=L+1
L.0060 IF(L-2)52,53,53
L.0061 52 J1=J11
L.0062 JF=JF1
L.0063 DELT=DELT1
L.0064 GO TO 54
L.0065 53 J1=J12
L.0066 JF=JF2
L.0067 DELT=DELT2
L.0068 54 I=J1
L.0069 IF(L-2)47,46,47
L.0070 46 PRINT 214
L.0071 PRINT 327
L.0072 PRINT 203,J12,JF2,DELT2
L.0073 PRINT 326
L.0074 47 DO 55 J=J1,JF,16
L.0075 READ 204,(C(I+M),M=1,16)
L.0076 IF(IDUM)55,226,55
L.0077 226 PRINT 205,(C(I+M),M=1,16)
L.0078 55 I=I+16
L.0079 C EVALUATION OF MOMENTS USING SIMPSONS RULE FOR INTEGRATION
L.0080 C EVALUATION OF AREAS FOR NORMALIZATION OF INPUT AND OUTPUT
L.0081 C *****
L.0082 SUM1=0.
L.0083 SUM2=0.
L.0084 SUM3=0.
L.0085 J1=J1+1
L.0086 J11=J1+1
L.0087 JF1=JF-1
L.0088 DO 56 J=J11,JF1,2
L.0089 SUM1=SUM1+C(J)*4.+C(J+1)*2.
L.0090 SUM2=SUM2+C(J)*DELT*J*4.+C(J+1)*DELT*(J+1)*2.
L.0091 AREA(L)=(SUM1+C(J1)+C(JF))*DELT/3.
L.0092 TM(L)=(SUM2+C(J1)*DELT*J1+C(JF)*DELT*JF)*DELT/(3.*AREA(L))
L.0093 I=J1
L.0094 DO 57 J=J1,JF
L.0095 T=J
L.0096 T=T*DELT
L.0097 I=I+1
L.0098 57 SUM3=SUM3+(T-TM(L))*(T-TM(L))*C(I)*DELT
L.0099 VAR(L)=SUM3/AREA(L)
L.0100 IF(L-2)51,58,58
L.0101 58 VAR1=VAR(2)-VAR(1)
L.0102 TME=TM(2)-TM(1)
L.0103 700 D=DZ(1)
L.0104 U=UZ(1)
L.0105 BME=(U*TME/X-1.)/FF
L.0106 AKE=2.*BME*FF*BME*X*U/(U**3*VAR1-2.*X*(BME*FF+1.))*2*0)
L.0107 AKP=FL*AKE/ACOL
L.0108 PRINT 328
L.0109 PRINT 206,BME,AKP
L.0110 PRINT 221,U,D
L.0111 PRINT 222,TME,VARI
L.0112 PRINT 228
L.0113 228 FORMAT('+TOR=')

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L.0114 READ(9,229)TOR,TTS
L.0115 FORMAT(Y,A4)
L.0116 READ(9,220)KDUM
L.0117 WRITE(9,227)X,FG,FL,ACOL,TOR
L.0118 WRITE(9,295)J11,J12,JF1,JF2,DELT1,DELT2
L.0119 FORMAT(4I5,2E20.8)
L.0120 WRITE(9,296)AREA(2)
L.0121 FORMAT(E20.8)
L.0122 FORMAT(5E20.8)
L.0123 L=0
L.0124 60 L=L+1
L.0125 IF(L-2)61,62,62
L.0126 61 J1=J11+1
L.0127 JF=JF1
L.0128 DEET=DELT2
L.0129 DELT=DELT1
L.0130 GO TO 63
L.0131 62 J1=J12+1
L.0132 JF=JF2
L.0133 DELT=DELT2
L.0134 63 TF=JF
L.0135 TF=TF*DELT
L.0136 TF2=JF2
L.0137 TF2=TF2*DELT
L.0138 B(L,1)=TF/2.*TOR)
L.0139 CONST=PI/TOR
L.0140 C FITTING FOURIER CURVES TO THE INPUT AND OUTPUT *****
L.0141 C *****
L.0142 DO 65 N=2,NCOFF
L.0143 SUM4=0.
L.0144 SUM5=0.0
L.0145 F=N-1
L.0146 J11=J1+1
L.0147 JF1=JF-1
L.0148 DO 64 J=J11,JF1,2
L.0149 ANG1=CONST*F*DELT*J
L.0150 ANG2=CONST*F*DELT*(J+1)
L.0151 SUM4=SUM4+C(J)*DCOS(ANG1)*4.+C(J+1)*DCOS(ANG2)*2.
L.0152 SUM5=SUM5+C(J)*DSIN(ANG1)*4.+C(J+1)*DSIN(ANG2)*2.
L.0153 A(L,N)=(SUM5+C(J1)*DSIN(CONST*F*DELT1*J1)+C(JF)*DSIN(CONST*F*DELT1*JF))/((TOR*AREA(L)*3.)*DELT
L.0154 B(L,N)=(SUM4+C(J1)*DCOS(CONST*F*DELT1*J1)+C(JF)*DCOS(CONST*F*DELT1*JF))/((TOR*AREA(L)*3.)*DELT
L.0155 IF(L-2)60,66,66
L.0156 66 BN(1)=B(2,1)/(2.*TOR*B(1,1))
L.0157 PRINT 329
L.0158 PRINT 212
L.0159 PRINT 210
L.0160 C EVALUATION OF EXPERIMENTAL AMPLITUDE RATIO FOR INPUT AND OUTPUT *****
L.0161 C *****
L.0162 DO 40 N=2,NCOFF
L.0163 BAR=DSORT(A(1,N)*A(1,N)+B(1,N)*B(1,N))*TOR
L.0164 DAR=DSORT(A(2,N)*A(2,N)+B(2,N)*B(2,N))*TOR
L.0165 F=N-1
L.0166 W=F*PI/TOR
L.0167 IF(IDUM)40,1000,40
L.0168 1000 PRINT 211,F,A(1,N),B(1,N),BAR,W,A(2,N),B(2,N),DAR
L.0169 40 CONTINUE
L.0170 READ(9,220)KDUM
L.0171 400 PRINT 213
L.0172 PRINT 207

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L.0173 N=0
L.0174 PRINT 208,N,BN(1)
L.0175 WRITE(9,225)B(1,1),BN(1),B(2,1)
L.0176 225 FORMAT(20X,E20.8,20X,E20.8,20X,E20.8)
L.0177 AK=AKE
L.0178 BM=BME
L.0179 TDUM=0
L.0180 C EVALUATION OF EXPERIMENTAL SYSTEM FOURIER COEFFICIENTS
L.0181 C *****
L.0182 DD 73 N=2,NCDEF *****
L.0183 714 D=DZ(N)
L.0184 U=UZ(N)
L.0185 AN(N)=1-D+00/TOR*(A(2,N)*B(1,N)-B(1,N)*A(1,N))/(A(1,N)*A(1,N)+B(1,N)*B(1,N))
L.0186 BN(N)=(B(2,N)*B(1,N)+A(2,N)*A(1,N))/(A(1,N)*A(1,N)+B(1,N)*B(1,N))/TOR
L.0187 704 CONTINUE
L.0188 NNN=1
L.0189 IF(IDUM)705,706,705
L.0190 705 TT=TDUM
L.0191 CG TO 707
L.0192 706 TT=TT
L.0193 707 IDUM=0
L.0194 C EVALUATION OF EXPERIMENTAL A.R. AND P.L. FOR THE SYSTEM
L.0195 C *****
L.0196 AR=DSQRT((AN(N)*AN(N)+BN(N)*BN(N))*TOR *****
L.0197 PAR=DLOG(AR)
L.0198 PL=BN(N)/AN(N)
L.0199 PHL=CATAN(PL)
L.0200 F=N-1
L.0201 W=F*PI/TOR
L.0202 625 A1=1.
L.0203 NNN=NNN+1
L.0204 IF(NNN-6)703,703,702
L.0205 702 READ(9,219)BM,AK,N
L.0206 AK=AK*ACOL/FL
L.0207 READ(9,299)TT,TDUM
L.0208 299 FORMAT(206.0)
L.0209 IF(N.EQ.0)GO TO 400
L.0210 GO TO 714
L.0211 703 CONTINUE
L.0212 C EVALUATION OF THEORETICAL COEFFICIENTS, A.R. AND P.L. FOR THE SYSTEM
L.0213 C *****
L.0214 CALL DNE(W,D,U,X,BM,AK,FF,SS,Z,Y,BF,UU,V,THETA,RR,AL,PT,PHI)
L.0215 C EVALUATION OF PARAMETERS U AND U USING ILAW AND BAILEY
L.0216 C *****
L.0217 DUDK=X*X/D*(BM*W*Y**3/AR*DSIN(BE)-Y*1.+(Y*BM*W/AR)**2)*DCOS(BE)+1.)*FF
L.0218 DVDK=-X*X/D*(Y*1.+(Y*BM*W/AR)**2)*DSIN(BE)+BM*W*Y**3/AR*DCOS(BE))*FF
L.0219 DTHDK=(UU*DUDK-V*DUDK)/(UU*UU+V*V)
L.0220 AKA=0.5D+CO*(RR*DTHDK*DSIN(THETA)-(UU*DUDK+V*DUDK)/(RR**3)*DCOS(THETA))
L.0221 DUDM=X*X*(Y**3)*W/D*(W*BM/AR*DCOS(BE)-DSIN(BE))*FF
L.0222 DVDM=X*X*(Y**3)*W/D*(W*BM/AR*DSIN(BE)+DCOS(BE))*FF
L.0223 DTHDM=(UU*DUDM-V*DUDM)/(UU*UU+V*V)
L.0224 AMA=0.5D+CO*(RR*DTHDM*DSIN(THETA)-(UU*DUDM+V*DUDM)/(RR**3)*DCOS(THETA))
L.0225 PV=-1.U+CG/(DSIN(RR*DSIN(THETA)))*2
L.0226 PK=PV*0.5*(RR*DTHDK*DCOS(THETA)+(UU*DUDK+V*DUDK)/(RR**3)*DSIN(THETA))
L.0227 PM=PV*0.5*(RR*DTHDM*DCOS(THETA)+(UU*DUDM+V*DUDM)/(RR**3)*DSIN(THETA))
L.0228 SB=({(PAR-AL)**2+(PL-PT)**2)/(PAR**2+PL**2)
L.0229 F1=({(PAR-AL)*AKA+{(PL-PT)*PK
L.0230 F2=({(PAR-AL)*AMA+{(PL-PT)*PM
L.0231 F1K=-{(AKA*AKA+PK*PK)

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L.0232 F2K=-(AKA*AMA+PK*PM)
L.0233 F1M=F2K
L.0234 F2M=-(ANA*AMA+PM*PM)
L.0235 DK=(F2M*(-F1)-F1M*(-F2))/(F2M*F1K-F1M*F2K)
L.0236 DM=(F2K*(-F1)-F1K*(-F2))/(F2K*F1M-F1K*F2M)
L.0237 DT=2J*(F1*DK+F2*DM)
L.0238 IF(DT)620,621,621
L.0239 621 DK=DK
L.0240 DM=DM
L.0241 DT=DT
L.0242 620 CONTINUE
L.0243 BMI=BM
L.0244 AKI=AK
L.0245 624 CONTINUE
L.0246 AK=AKI+AI*DK
L.0247 BM=BM1+AI*DM
L.0248 CALL ONE(W,D,U,X,BM,AK,FF,SS,Z,Y,BE,UU,V,THETA,RR,AL,PT,PHT)
L.0249 G TEST FOR CONVERGENCE
L.0250 C *****
L.0251 SA=((PAR-AL)*2+(PL-PT)*2)/((PAR*2+PL)*2)
L.0252 TE=-.1D+00*DT*(AI*AI-2.*AI)/((PAR*2+PL)*2)
L.0253 610 CONTINUE
L.0254 701 CONTINUE
L.0255 IF(SA-SB-TE)606,606,605
L.0256 605 IF(SA-TTT)606,606,604
L.0257 604 AI=AI/2.
L.0258 IF(AI-1.E-25)625,625,624
L.0259 606 CONTINUE
L.0260 IF(SA-TTT)630,630,625
L.0261 630 AK3P=FL*AK/ACOL
L.0262 PRINT 215,F,AN(N),BN(N),W,AR,PHL,AKBP,BM,D,U
L.0263 WRITE(9,224)A(1,N),B(1,N),AN(N),BN(N),A(2,N),B(2,N)
L.0264 224 FORMAT(6E20.8)
L.0265 73 CONTINUE
L.0266 READ(9,220)K0UM
L.0267 STOP 4
L.0268 STOP
L.0269 END
L.0270 SUBROUTINE ONE(W,D,U,X,BM,AK,FF,SS,Z,Y,BE,UU,V,THETA,RR,AL,PT,PHT)
L.0271 DOUBLE PRECISION W,D,U,X,BM,AK,FF,SS,Z,Y,BE,UU,V,THETA,RR,AL,PT,PHT
L.0272 SS=U*X/(2.*D)
L.0273 Z= SS*SS
L.0274 Y=1.D+00/DSQRT((BM*W/AK)**2+1.)
L.0275 BE=-DATAN(BM*W/AK)
L.0276 UU=Z-X*AK/D*(Y*DCOS(BE)-1.)*FF
L.0277 V=X*X/D*(W-AK*Y*DSIN(BE)*FF)
L.0278 THETA=DATAN(V/UU)/2.
L.0279 RR=DSQRT(DSQRT(UU*UU+V*V))
L.0280 AL=SS-RR*DCOS(THETA)
L.0281 PT=-DCOS(-RR*DSIN(THETA))/DSIN(-RR*DSIN(THETA))
L.0282 PHT=DATAN(PT)
L.0283 RETURN
L.0284 END
L.0285 /DATA

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END OF PRINT * NO OF LINES PRINTED- 285

BUTANE.

RUN NO= 2 FLOWRATE= .100 LITRES PER MINUTE

INPUT CURVE.

START POINT NUMBER = 10 FINISH POINT NUMBER = 102 TIME AXIS INTERVAL = .144

CONCENTRATION PROFILE.

0.0	5.6	15.3	25.0	33.0	39.0	43.0	45.2	46.6	47.0	47.0	46.5	45.5	44.5	43.5	42.2
41.0	39.8	38.4	37.2	36.0	34.8	33.5	32.3	31.1	30.0	29.0	28.0	27.0	26.0	25.0	24.0
23.0	22.2	21.3	20.7	19.9	19.0	18.2	17.8	17.0	16.4	15.8	15.2	14.7	14.0	13.6	13.1
12.8	12.3	11.9	11.5	11.0	10.8	10.6	10.2	10.0	9.6	9.2	8.8	8.4	8.0	7.6	7.2
6.8	6.4	6.0	5.6	5.2	4.8	4.6	4.2	4.0	3.8	3.6	3.2	3.0	2.8	2.6	2.4
2.2	2.0	1.8	1.6	1.4	1.2	1.0	.8	.6	.4	.2	0.0	0.0	0.0	0.0	0.0

OUTPUT CURVE.

START POINT NUMBER = 722 FINISH POINT NUMBER = 953 TIME AXIS INTERVAL = .144

CONCENTRATION PROFILE.

0.0	.2	.3	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.3	1.4	1.6	1.8
2.0	2.2	2.5	2.7	3.0	3.2	3.4	3.6	3.9	4.2	4.7	5.2	5.8	6.2	7.0	7.6
8.2	9.0	9.8	10.6	11.4	12.3	13.1	14.0	15.1	16.2	17.3	18.6	19.5	20.7	22.0	23.2
24.4	25.7	26.9	28.0	29.3	30.6	31.8	33.0	34.3	35.6	36.9	38.0	39.0	40.0	41.0	42.1
43.2	44.3	45.3	46.3	47.1	48.0	48.8	49.5	50.0	50.5	51.0	51.5	51.9	52.2	52.6	52.8
53.0	53.1	53.2	53.3	53.3	53.3	53.2	53.1	53.0	52.8	52.4	52.0	51.6	51.2	50.8	50.2
49.8	49.0	48.5	47.9	47.2	46.5	45.9	45.0	44.5	43.6	42.8	42.0	41.3	40.5	39.6	38.8
38.0	37.0	36.0	35.5	34.6	33.9	33.0	32.2	31.5	30.7	30.0	29.2	28.4	27.7	27.0	26.2
25.6	24.9	24.0	23.4	22.8	22.0	21.4	20.8	20.0	19.5	19.0	18.5	18.0	17.5	17.0	16.5
16.0	15.5	15.0	14.5	14.0	13.7	13.4	13.1	12.8	12.4	12.0	11.8	11.4	11.0	10.8	10.5
10.2	9.9	9.7	9.5	9.3	9.1	8.9	8.7	8.5	8.3	8.1	7.9	7.7	7.5	7.3	7.1
6.9	6.7	6.5	6.3	6.1	5.9	5.7	5.5	5.3	5.1	4.9	4.7	4.5	4.3	4.1	3.9
3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3
2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	.9	.8	.7
.6	.5	.4	.3	.2	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMPONENT ANALYSIS.

N= 63.862
 H= 8.377 CM PER SEC
 TMF= 112.362 SEC
 TOR=150. SEC
 K= 522.923 SQ CM PER SEC
 D= .953 SQ CM PER SEC
 VARI= 21.476

FREQUENCY ANALYSIS.

INPUT AND OUTPUT

N	A(INPUT)	B(INPUT)	AR(INPUT)	FREQUENCY	A(OUTPUT)	B(OUTPUT)	AR(OUTPUT)
1.	.74764438D-03	.66141485D-02	.99844052D+00	.20943951D-01	.41443310D-02	.51686797D-02	.99375118D+00
2.	.14778413D-02	.64582543D-02	.99377760D+00	.41887902D-01	.63475508D-02	.74076130D-02	.97526277D+00
3.	.21738258D-02	.62038895D-02	.98605764D+00	.62831853D-01	.56461380D-02	.27992634D-02	.94529459D+00
4.	.28201630D-02	.58589820D-02	.97535750D+00	.83775804D-01	.25116393D-02	.54861723D-02	.90506597D+00
5.	.34033291D-02	.54341246D-02	.96128381D+00	.10471976D+00	.14427937D-02	.55225612D-02	.85618781D+00
6.	.39121962D-02	.49421025D-02	.94547199D+00	.12566371D+00	.43261389D-02	.31256526D-02	.80057267D+00
7.	.43383981D-02	.43973306D-02	.92658504D+00	.14660766D+00	.49235341D-02	.34368579D-03	.74032725D+00
8.	.46765612D-02	.38152319D-02	.90531206D+00	.16755161D+00	.32371971D-02	.31509970D-02	.67763228D+00
9.	.49243919D-02	.32115888D-02	.88186655D+00	.18840556D+00	.36345260D-03	.40812214D-02	.61461492D+00
10.	.50826194D-02	.26019024D-02	.85648445D+00	.20943951D+00	.21726134D-02	.29802760D-02	.55321931D+00
11.	.51548024D-02	.20007903D-02	.82942201D+00	.23038346D+00	.32259503D-02	.69774652D-03	.49508194D+00
12.	.51470135D-02	.14214543D-02	.80095337D+00	.25132741D+00	.25481877D-02	.14720352D-02	.44142187D+00
13.	.50674234D-02	.87524110D-03	.77136801D+00	.27227136D+00	.77915921D-03	.25011897D-02	.39296103D+00
14.	.49258103D-02	.37131547D-03	.74096785D+00	.29321531D+00	.10132868D-02	.21010536D-02	.34989494D+00
15.	.47330231D-02	.83543058D-04	.71006406D+00	.31415927D+00	.19417654D-02	.74438391D-03	.31193366D+00
16.	.45004305D-02	.48501572D-03	.67897355D+00	.33510322D+00	.17163283D-02	.70669909D-03	.27841900D+00
17.	.42393840D-02	.83119537D-03	.64801497D+00	.35604717D+00	.68254959D-03	.15095186D-02	.24849891D+00
18.	.39607243D-02	.11224277D-02	.61750410D+00	.37699112D+00	.47543250D-03	.13067390D-02	.22131563D+00
19.	.36743533D-02	.13610249D-02	.58774856D+00	.39793507D+00	.11517386D-02	.61940098D-03	.19615959D+00
20.	.33889170D-02	.15509760D-02	.55904163D+00	.41887902D+00	.11137948D-02	.28783719D-03	.17255797D+00
21.	.31114336D-02	.16975048D-02	.53165514D+00	.43982297D+00	.54321734D-03	.84192675D-03	.15029405D+00
22.	.28474061D-02	.18066757D-02	.50583147D+00	.46076692D+00	.14841111D-03	.84062452D-03	.12937339D+00
23.	.26005312D-02	.18849674D-02	.48177480D+00	.48171087D+00	.59460572D-03	.44228786D-03	.10995956D+00
24.	.23728857D-02	.19388747D-02	.45964224D+00	.50265482D+00	.61157348D-03	.67876433D-04	.92299295D-01
25.	.21650460D-02	.19745545D-02	.43953557D+00	.52359278D+00	.32524500D-03	.39412077D-03	.76649191D-01

SYSTEM

N	A(N)	B(N)	W	AMPLITUDE RATIO	PHASE LAG	K	M	D	U
0		.33333333D-02							
1.	.47059996D-02	.46777677D-02	.20943951D-01	.99530333D+00	.78238959D+00	539.118	63.858	.963	8.377
2.	.65423133D-02	.44038860D-04	.41887902D-01	.98136923D+00	.07312880D-02	528.429	63.850	.355	8.377
3.	.44650757D-02	.45726236D-02	.62831853D-01	.95866038D+00	.79729758D+00	526.909	63.834	.952	8.377
4.	.11924205D-03	.61850677D-02	.83775804D-01	.92793253D+00	.15515197D+01	529.812	63.811	.950	8.378
5.	.43191252D-02	.40701441D-02	.10471976D+00	.89020818D+00	.75572834D+00	533.239	63.782	.947	8.378
6.	.56395132D-02	.24791025D-03	.12566371D+00	.84674363D+00	.43931229D-01	539.430	63.744	.944	8.378
7.	.35220658D-02	.39959157D-02	.14660766D+00	.70898468D+00	.84834376D+00	548.447	63.699	.940	8.379
8.	.43653273D-03	.49709149D-02	.16755161D+00	.74850685D+00	.14832037D+01	563.254	63.645	.937	8.380
9.	.36513140D-02	.28733571D-02	.18849556D+00	.69694776D+00	.66672531D+00	583.228	63.583	.931	8.381
10.	.42533080D-02	.67236623D-03	.20943951D+00	.64593869D+00	.15678408D+00	610.848	63.514	.924	8.382
11.	.21915828D-02	.33214538D-02	.23038346D+00	.59689993D+00	.98754428D+00	654.305	63.438	.917	8.383
12.	.92461990D-03	.35558911D-02	.25132741D+00	.55112057D+00	.13164050D+01	716.271	63.359	.909	8.384
13.	.30233096D-02	.15472399D-02	.27227136D+00	.50943392D+00	.47301940D+00	806.529	63.280	.899	8.385
14.	.29303249D-02	.11505052D-02	.29321531D+00	.47221339D+00	.37412849D+00	944.291	63.205	.889	8.386
15.	.99990841D-03	.27527090D-02	.31415927D+00	.43930355D+00	.12223709D+01	1150.092	63.140	.877	8.387
16.	.13057003D-02	.24017487D-02	.33510322D+00	.41005869D+00	.23104267D+00	1465.294	63.055	.864	8.388
17.	.24885828D-02	.58542284D-03	.35604717D+00	.38340349D+00	.60423367D+00	1965.539	63.039	.850	8.390
18.	.366217D-02	.13574690D-02	.37699112D+00	.33374746D+00	.14321130D+01	2729.616	63.039	.835	8.391
19.	.30757989D-03	.22036207D-02	.39793507D+00	.30866748D+00	.88869053D+00	3788.920	63.040	.818	8.393
20.	.12972863D-02	.15973478D-02	.41887902D+00	.28269097D+00	.73563364D-01	4873.582	63.054	.800	8.394
21.	.18795087D-02	.13851293D-03	.43982297D+00	.25576381D+00	.73833443D+00	5159.313	63.078	.781	8.395
22.	.12610701D-02	.11476242D-02	.46076692D+00	.22823850D+00	.15503145D+01	4369.609	63.107	.761	8.397
23.	.31152775D-04	.15212708D-02	.48171087D+00	.20080682D+00	.77518357D+00	2390.497	63.115	.740	8.398
24.	.95623211D-03	.93689393D-03	.50265482D+00	.17438578D+00	.49469714D-01	2443.566	63.156	.719	8.398
25.	.11611563D-02	.57488973D-04	.52359278D+00	.17438578D+00		1676.892	63.163	.698	8.399

8
9
0
1
2
3
4
5
6
7

Flowrate = 3.100 litres per minute

INPUT CURVE.

CONCENTRATION PROFILE.

OUTPUT CURVE.

CONCENTRATION PROFILE.

CONCLUSIONS AND ANALYSIS

$\alpha = 10.940$
 $\beta = 0.377$ CM PER SEC
 $\gamma = 0.642$ SEC
 $k = 103.745$ SO CM PER SEC
 $D = .053$ SO CM PER SEC
 $VAPI = 28.493$

FREQUENCY ANALYSIS.

INPUT AND OUTPUT

N	A (INPUT)	B (INPUT)	AR (INPUT)	FREQUENCY	A (OUTPUT)	R (OUTPUT)	AR (OUTPUT)
1.	78205650-03	660817860-02	998146100+00	209430510-01	58430100-02	-300638510-02	991942210+00
2.	158343030-02	643480540-02	992597700+00	418870020-01	533005290-02	-366030960-02	969295080+00
3.	226434770-02	615271320-02	983423050+00	628310530-01	735064540-03	616010000-02	930600630+00
4.	292680410-02	577182960-02	970723690+00	837759060-01	551000000-02	-203050310-02	891307200+00
5.	351532070-02	530534170-02	954664280+00	106710760+00	400075980-02	-375079150-02	923587700+00
6.	401756170-02	476903750-02	935361800+00	125663710+00	140550000-02	404055100-02	761005880+00
7.	443277570-02	418053050-02	913009130+00	146607660+00	600600000-02	-651600010-03	907586160+00
8.	474204250-02	355841200-02	888102070+00	167551510+00	600600000-02	-351302400-02	636611230+00
9.	493831450-02	292138930-02	860658650+00	188405560+00	216071100-02	321630070-02	590967470+00
10.	504625790-02	228743930-02	831076620+00	200430510+00	348507600-02	660376160-03	532316710+00
11.	506191000-02	167305690-02	799685050+00	230383460+00	670310000-03	-320341760-02	400919710+00
12.	499617850-02	109260640-02	766844050+00	251327610+00	250601230-02	171022860-02	455709560+00
13.	485422060-02	557827870-03	732925070+00	972071360+00	238340870-02	159970760-02	426732580+00
14.	465476240-02	775122870-04	698300160+00	293215310+00	433200010-03	-260281460-02	305795010+00
15.	440026580-02	-340664270-03	663383070+00	316150070+00	237207000-02	500303710-02	367061480+00
16.	413140600-02	-699090830-03	629543230+00	351030000-02	130630700-02	177139720-02	337405680+00
17.	393420380-02	-994793700-03	594172590+00	356067170+00	057661260-03	-100505720-02	306516020+00
18.	352954850-02	-122974250-02	560646530+00	376001120+00	192761210-02	-100010000-03	274793070+00
19.	322771970-02	-140960720-02	529310040+00	307000070+00	610060000-03	159770700-02	263143740+00
20.	293706780-02	-154101000-02	497518750+00	419970020+00	106556000-02	-059176600-03	212728400+00
21.	266384150-02	-163106090-02	468529950+00	430000070+00	111760100-02	-055646000-03	194697850+00
22.	241216000-02	-168764720-02	441509100+00	460766020+00	710687540-04	106305510-02	159962700+00
23.	218412000-02	-171846700-02	416000110+00	481710070+00	006300370-03	-067000700-02	138988750+00
24.	198001670-02	-173072050-02	304470330+00	502656820+00	487160570-03	-646276660-03	121306000+00
25.	179865270-02	-173071160-02	376614060+00	523500000+00	386006540-03	500006600-03	106837340+00

SYSTEM

N	A (N)	B (N)	AR (N)	FREQUENCY	A (OUTPUT)	R (OUTPUT)	AR (OUTPUT)
1.	617893870-02	333333330-02	209430510-01	209430510-01	007006000+00	-300638510+00	104.725
2.	436717740-02	-230051560-02	410070020-01	410070020-01	075101600+00	-926046070+00	106.050
3.	286575690-02	-491997350-02	620310530-01	620310530-01	046007100+00	-100025130+01	106.106
4.	601274340-02	693260750-03	837759060-01	837759060-01	007000070+00	114703170+00	108.194
5.	133121230-02	-550527550-02	106710760+00	106710760+00	062718260+00	-133729150+01	111.315
6.	456235290-02	203437300-02	125663710+00	125663710+00	813690730+00	-571500050+00	116.013
7.	308207270-02	317565760-02	146007660+00	146007660+00	763077210+00	073178500+00	122.064
8.	169190050-02	-447300030-02	167551510+00	167551510+00	716021420+00	-121116360+01	133.395
9.	440271000-02	-250154200-03	188405560+00	188405560+00	675000740+00	576104300-01	149.076
10.	997718040-03	415101360-02	200430510+00	200430510+00	640510000+00	133606470+01	172.005
11.	354042760-02	-205300250-02	230383460+00	230383460+00	594266550+00	-525600630+00	207.284
12.	288824560-02	-271176390-02	251327610+00	251327610+00	570503600+00	753004040+00	260.039
13.	170086830-02	346879910-02	272271360+00	272271360+00	566702600+00	-111601180+01	343.245
14.	373713050-02	558305060-03	293215310+00	293215310+00	553316870+00	148320030+00	471.037
15.	622205170-03	-363592520-02	314150270+00	314150270+00	536805850+00	160131100+01	655.281
16.	316701740-02	170306130-02	335103220+00	335103220+00	515070350+00	-406252460+00	042.279
17.	253622510-02	232276050-02	356047170+00	356047170+00	490136050+00	741604690+00	1284.275
18.	128056020-02	-300236440-02	376091120+00	376091120+00	400136050+00	-115510530+01	1568.545
19.	306030720-02	-27557210-03	390350700+00	390350700+00	460220640+00	710678900-01	1650.632
20.	219780080-02	144094360-02	418870020+00	418870020+00	427578660+00	131216000+01	1565.313
21.	188058760-02	-151458730-02	460766920+00	460766920+00	362100040+00	-580322600+00	1367.493
22.	-810191600-03	206811020-02	481710870+00	481710870+00	333171000+00	679012720+00	1211.293
23.	204626920-02	-148414340-03	502656820+00	502656820+00	307746650+00	-110741820+01	1106.831
24.	434417270-03	-185203140-02	523500000+00	523500000+00	285344740+00	724026560-01	1045.298
25.						134030000+01	1011.106

M

D

M

F

PHASE

LAC

AMPLITUDE

RATIO

M

B (N)

A (N)

M

D

WANDIGAS!

QIN NO= 5 FLOWRATE= .100 LITRES PER MINUTE

INPUT CURVE.

START POINT NUMBER = 0 FINISH POINT NUMBER = 111 TIME AXIS INTERVAL = .144

CONCENTRATION PROFILE.

0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	7.9	15.5	25.5	23.5	40.0
44.5	47.5	48.5	48.0	48.5	44.5	42.5	30.0	37.2	35.5	36.0	32.3	30.0
20.2	27.8	26.5	25.0	24.0	20.5	19.3	17.2	16.2	15.4	14.9	14.0	13.0
12.6	12.0	11.4	10.0	10.2	9.0	8.3	7.0	7.2	6.8	6.5	6.2	6.0
5.8	5.6	5.3	5.0	4.8	4.2	4.0	3.7	3.5	3.3	3.2	3.1	3.0
2.0	2.8	2.7	2.6	2.5	2.3	2.2	2.0	1.8	1.7	1.6	1.5	1.4
1.3	1.2	1.1	1.0	1.0	1.7	1.6	1.4	1.2	1.1	1.0	0.9	0.8

OUTPUT CURVE.

START POINT NUMBER = 740 FINISH POINT NUMBER = 921 TIME AXIS INTERVAL = .144

CONCENTRATION PROFILE.

2.2	4.4	5.6	8.0	1.0	1.2	1.4	1.6	2.0	2.4	2.8	3.2	3.6
3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8
6.0	6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0
0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.1	7.0	6.0	6.8	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.2	5.0
4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.0	3.8	3.6	3.4	3.2	3.0
3.0	3.2	3.1	3.1	3.0	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3
2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.7
1.5	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.0	0.9
0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.2
0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WEIGHT ANALYSIS.

W = 63.296 K = 887.699 SO CM PER SEC
 D = 0.377 CM PER SEC
 TUE = 111.550 SEC
 TOS = 150. SEC
 D = .953 SO CM PER SEC
 VARI = 18.810

FREQUENCY ANALYSIS.

INPUT AND OUTPUT

N	A (INPUT)	B (INPUT)	AP (INPUT)	FREQUENCY	A (OUTPUT)	B (OUTPUT)	AP (OUTPUT)
1.	.68844566D-03	.66210794D-02	.99851620D+00	.20943951D-01	.42966334D-02	.50675813D-02	.00438301D+00
2.	.13620055D-02	.64857673D-02	.99408517D+00	.41897002D-01	.58274451D-02	.10971019D-02	.07771186D+00
3.	.20064201D-02	.62650057D-02	.98676765D+00	.62831053D-01	.58457875D-02	.32601200D-02	.05051934D+00
4.	.26086458D-02	.59656771D-02	.97666400D+00	.83775904D-01	.10625555D-02	.57650791D-02	.01367180D+00
5.	.31573739D-02	.55969235D-02	.96301060D+00	.10671070D+00	.21507050D-02	.57656400D-02	.06833765D+00
6.	.36434494D-02	.51696909D-02	.94869837D+00	.125566371D+00	.83317654D-02	.26097717D-02	.81594522D+00
7.	.40601671D-02	.46961946D-02	.93119026D+00	.146007050D+00	.40095904D-02	.12067370D-02	.75813171D+00
8.	.44034319D-02	.41893493D-02	.91169707D+00	.16755163D+00	.26667709D-02	.20100016D-02	.60668492D+00
9.	.46717765D-02	.36691336D-02	.89060705D+00	.18960550D+00	.53105671D-02	.41005711D-02	.43347927D+00
10.	.48662421D-02	.31271160D-02	.86755949D+00	.20943951D+00	.20010405D-02	.26595704D-02	.57040652D+00
11.	.49901351D-02	.25958582D-02	.84374071D+00	.23038376D+00	.32011601D-02	.15995048D-02	.50030007D+00
12.	.50486704D-02	.20785381D-02	.81897006D+00	.25139741D+00	.60660036D-02	.21010750D-02	.45184914D+00
13.	.50485010D-02	.15838259D-02	.79207061D+00	.27007132D+00	.60660036D-02	.20005904D-02	.30040685D+00
14.	.49976113D-02	.11760309D-02	.76910017D+00	.28930153D+00	.13105157D-02	.10009067D-02	.25331826D+00
15.	.49060124D-02	.68506020D-02	.74276055D+00	.31415007D+00	.20007001D-02	.10700021D-02	.21309847D+00
16.	.46216717D-02	.28010292D-02	.71373050D+00	.33580300D+00	.12100070D-02	.10000000D-02	.20115379D+00
17.	.44487805D-02	.60373500D+00	.68373500D+00	.35606710D+00	.10300010D-02	.10000000D-02	.20000000D+00
18.	.42629853D-02	.60001072D+00	.65001072D+00	.37600110D+00	.10000000D-02	.10000000D-02	.20000000D+00
19.	.40694010D-02	.64757700D+00	.60001072D+00	.39702000D+00	.10000000D-02	.10000000D-02	.20000000D+00
20.	.38722535D-02	.62009313D+00	.56009313D+00	.41007000D+00	.10000000D-02	.10000000D-02	.20000000D+00
21.	.36741456D-02	.58057300D+00	.52057300D+00	.42007000D+00	.10000000D-02	.10000000D-02	.20000000D+00
22.	.34767152D-02	.53861456D+00	.48061456D+00	.43007000D+00	.10000000D-02	.10000000D-02	.20000000D+00
23.	.32806153D-02	.49503566D+00	.44003566D+00	.44007000D+00	.10000000D-02	.10000000D-02	.20000000D+00
24.	.30850206D-02	.45076630D+00	.40076630D+00	.45007000D+00	.10000000D-02	.10000000D-02	.20000000D+00

SYSTEM

N	A (N)	B (N)	U	AMPLITUDE RATIO	PHASE IAC	V	M	D	H
1.	.47864695D-02	.33333333D-02	.00000000D+00	.00000000D+00	.00000000D+00	.0074435	.63.002	.063	8.377
2.	.65516081D-02	.46007591D-02	.08390070D+00	.08390070D+00	.00000000D+00	.065591	.63.289	.055	8.377
3.	.62543720D-02	.26242913D-02	.06320051D+00	.06320051D+00	.00000000D+00	.043030	.63.279	.052	8.377
4.	.52325535D-03	.69103600D-02	.03775904D+00	.03775904D+00	.00000000D+00	.025576	.63.265	.050	8.378
5.	.46929621D-02	.37600054D-02	.10671070D+00	.00000000D+00	.00000000D+00	.0097461	.63.246	.047	8.378
6.	.56903962D-02	.72109591D-02	.12566771D+00	.06007710D+00	.13650700D+00	.739568	.63.221	.044	8.378
7.	.31613859D-02	.44261651D-02	.14660755D+00	.01416540D+00	.05350041D+00	.753251	.63.190	.040	8.370
8.	.10345253D-02	.40823464D-02	.16755163D+00	.78417771D+00	.13650700D+00	.731112	.63.150	.037	8.300
9.	.40715080D-02	.24327021D-02	.10040555D+00	.71146863D+00	.57855170D+00	.700232	.63.101	.031	8.300
10.	.41013554D-02	.10909505D-02	.20043051D+00	.65740000D+00	.20660000D+00	.600022	.63.040	.024	8.301
11.	.16770091D-02	.36576431D-02	.23038376D+00	.60700150D+00	.11000070D+00	.601350	.62.067	.017	8.300
12.	.15140420D-02	.33510506D-02	.25170741D+00	.55170740D+00	.11664003D+00	.601060	.62.991	.009	8.300
13.	.22463936D-02	.02040060D-02	.27027136D+00	.50355340D+00	.20065505D+00	.607546	.62.782	.000	8.304
14.	.25367844D-02	.17995806D-02	.20007000D+00	.45005300D+00	.50052050D+00	.738351	.62.672	.009	8.385
15.	.24552137D-03	.28066103D-02	.31415007D+00	.40250040D+00	.14935380D+00	.913591	.62.557	.077	8.386
16.	.18844001D-02	.18080316D-02	.33510320D+00	.30172590D+00	.76471869D+00	.044510	.62.444	.854	8.397
17.	.24257743D-02	.31634021D-02	.35606771D+00	.36606727D+00	.12067970D+00	.1178195	.62.343	.850	8.380
18.	.12124245D-02	.19706046D-02	.37600112D+00	.34705555D+00	.10100750D+00	.1599017	.62.263	.835	8.300
19.	.70940582D-03	.20842569D-02	.39793507D+00	.33025161D+00	.12627370D+00	.2416465	.62.211	.818	8.301
20.	.19502005D-02	.77039674D-02	.41897002D+00	.31459023D+00	.37621690D+00	.4280250	.62.187	.800	8.393
21.	.17661302D-02	.91089027D-02	.43082297D+00	.20907800D+00	.47617193D+00	.9479038	.62.189	.761	8.304
22.	.47120776D-03	.18031772D-02	.46076692D+00	.27055031D+00	.13151015D+00	.4698145	.62.213	.761	8.395
23.	.93179634D-03	.14647489D-02	.48171087D+00	.25822098D+00	.09887054D+00	.4240922	.62.253	.740	8.397

L.0001 /FTC

L.0002 C SENSITIVITY ANALYSIS

L.0003 C

L.0004 C DOUBLE PRECISION GAS,X,FG,FL,ACOL,TT,D1,D2,FF,PI,FAC

L.0005 C DOUBLE PRECISION K,K2,M,AE(200),AT(200),BE(200),BT(200),DEL(4),FV(4),PC(4,20)

L.0006 C DOUBLE PRECISION U,D,K,M,K2,SS,Z,W,BET,Y,UU,V,THEIA,RR,ALT,F1,F2,S,SI

L.0007 C READING IN OF DATA

L.0008 C *****

L.0009 C READ(9,1)NC

L.0010 C READ(5,2)X,FG,FL,ACOL,TT

L.0011 C NC1=NC+1

L.0012 C READ(5,3)(D1,D2,AE(J),BE(J),J=1,NC1)

L.0013 C READ(5,4)(VAR(1,1),FV(1),DEL(1),VO(1),I=1,4)

L.0014 C FAC=1./(ACOL*FL)

L.0015 C FF=FL/FG

L.0016 C AT(1)=0.

L.0017 C BT(1)=0.5/TT

L.0018 C PI=4.*DATAN(1.)

L.0019 C READ(9,5)GAS

L.0020 C WRITE(6,13)

L.0021 C WRITE(6,10)

L.0022 C PREPARATION OF VALUES FOR CALCULATION OF SDS

L.0023 C

L.0024 C WRITE(6,12)

L.0025 C DO 20 I=1,4

L.0026 C DO 20 J=2,20

L.0027 C 20 VAR(1,J)=C.

L.0028 C DO 21 I=1,4

L.0029 C DO 22 J=2,20

L.0030 C VAR(1,J)=VAR(1,1)+DEL(1)*(J-1)

L.0031 C PC(1,J)=DABS(VAR(1,J)-VO(1))/VO(1)*100.

L.0032 C IF(VAR(1,J).GE.FV(1))GO TO 221

L.0033 C 22 CONTINUE

L.0034 C 221 PC(1,1)=DABS(VAR(1,1)-VO(1))/VO(1)*100.

L.0035 C 21 CONTINUE

L.0036 C U=VO(1)

L.0037 C D=VO(2)

L.0038 C K=VO(3)

L.0039 C M=VO(4)

L.0040 C VARIATION OF SDS WITH U

L.0041 C

L.0042 C DO 23 I=1,20

L.0043 C IF(VAR(1,1).EQ.0.)GO TO 24

L.0044 C U=VAR(1,1)

L.0045 C CALL AVRIL(U,D,K,M,FAC,NC1,X,PI,W,FF,TT,AT,BT,AE,BE,S)

L.0046 C 23 WRITE(6,11)U,D,K,M,PC(1,1),S

L.0047 C 24 U=VO(1)

L.0048 C VARIATION OF SDS WITH D

L.0049 C

L.0050 C WRITE(6,12)

L.0051 C DO 25 I=1,20

L.0052 C IF(VAR(2,1).EQ.0.)GO TO 26

L.0053 C D=VAR(2,1)

L.0054 C CALL AVRIL(U,D,K,M,FAC,NC1,X,PI,W,FF,TT,AT,BT,AE,BE,S)


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L.0055 25 WRITE(6,11)U,D,K,M,PC(2,1),S
L.0056 26 D=VD(2)
L.0057 C VARIATION OF SOS WITH D
L.0058 C *****
L.0059 WRITE(6,12)
L.0060 DO 27 I=1,20
L.0061 IF(VAR(3,I).EQ.0.)GO TO 28
L.0062 K=VAR(3,I)
L.0063 CALL AVRIL(U,D,K,M,FAC,NCL,X,PI,W,FF,II,AT,BT,AE,BE,S)
L.0064 27 WRITE(6,11)U,D,K,M,PC(3,1),S
L.0065 28 K=VD(3)
L.0066 C VARIATION OF SOS WITH M
L.0067 C *****
L.0068 WRITE(6,12)
L.0069 DO 29 I=1,20
L.0070 IF(VAR(4,I).EQ.0.)GO TO 30
L.0071 M=VAR(4,I)
L.0072 CALL AVRIL(U,D,K,M,FAC,NCL,X,PI,W,FF,II,AT,BT,AE,BE,S)
L.0073 29 WRITE(6,11)U,D,K,M,PC(4,1),S
L.0074 30 WRITE(6,12)
L.0075 STOP 1
L.0076 1 FORMAT(12)
L.0077 2 FORMAT(5D20.8)
L.0078 3 FORMAT(2E20.8,2E20.8)
L.0079 4 FORMAT(4Y)
L.0080 5 FORMAT(4R)
L.0081 10 FORMAT(//,T7,U',T25,'D',T43,'K',T61,'M',T79,'R',T97,'SUS')
L.0082 11 FORMAT(6F14.8,4X)
L.0083 12 FORMAT(1H,103(' '))
L.0084 13 FORMAT(//, SENSITIVITY ANALYSIS '/')
L.0085 END
L.0086 SUBROUTINE AVRIL(U,D,K,M,FAC,NCL,X,PI,W,FF,II,AT,BT,AE,BE,S)
L.0087 C EVALUATION OF FOURIER COEFFICIENTS
L.0088 C *****
L.0089 DOUBLE PRECISION U,D,K,M,FAC,X,PI,W,FF,II,K2,SS,Z,BET,Y,UU,V,THETA,RR,ALP,F1,F2,S,SI
L.0090 DOUBLE PRECISION AT(200),AE(200),BE(200),BT(200)
L.0091 K2=K*FAC
L.0092 DO 50 JJ=2,NC1
L.0093 SS=U*X*0.5/D
L.0094 Z=SS*95
L.0095 K=PI*(JJ-1)/TI
L.0096 BET=-DATAN(M*W/K2)
L.0097 Y=((M*W/K2)**2+1.-)**(-0.5)
L.0098 UU=Z-X*X*K2/D*(Y*DCOS(BET)-1.)*FF
L.0099 V=X*X/D*(K-K2*Y*DSIN(BET)*FF)
L.0100 THETA=DATAN(V/UU)/2.
L.0101 RR=(UU*UU+V*V)*0.25
L.0102 ALP=SS-RR*DCOS(THETA)
L.0103 F1=DEXP(ALP)/TI
L.0104 F2=-RR*DSIN(THETA)
L.0105 AT(JJ)=-F1*DSIN(F2)
L.0106 50 BT(JJ)=F1*DCOS(F2)
L.0107 S=0.
L.0108 SI=0.
L.0109 DO 51 JJ=2,NC1
L.0110 51 S=S+(AT(JJJ)-AE(JJJ))*2+(BT(JJJ)-BE(JJJ))*2
L.0111 RETURN
L.0112 END
L.0113 /DATA

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SENSITIVITY ANALYSIS

U	D	K	M	S	SOS
.82800000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.11579324D+01	.10907567D-03
.83000000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.91918348D+00	.92711689D-04
.83200000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.68043452D+00	.77527017D-04
.83400000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.44168557D+00	.63631873D-04
.83600000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.20293661D+00	.51129292D-04
.83800000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.35912343D+01	.40114151D-04
.84000000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.27456130D+00	.30672278D-04
.84200000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.51331025D+00	.22879658D-04
.84400000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.75205021D+00	.16801750D-04
.84600000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.99080817D+00	.12492918D-04
.84800000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.12295571D+01	.99959793D-05
.83770000D+01	.96000000D+00	.18820000D+03	.64395000D+02	.10309278D+01	.42107943D-04
.83770000D+01	.96200000D+00	.18820000D+03	.64395000D+02	.82474227D+00	.42018453D-04
.83770000D+01	.96400000D+00	.18820000D+03	.64395000D+02	.61955670D+00	.41929730D-04
.83770000D+01	.96600000D+00	.18820000D+03	.64395000D+02	.41237113D+00	.41841769D-04
.83770000D+01	.96800000D+00	.18820000D+03	.64395000D+02	.20619557D+00	.41754566D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64395000D+02	.00000000D-75	.41668116D-04
.83770000D+01	.97200000D+00	.18820000D+03	.64395000D+02	.20618557D+00	.41582417D-04
.83770000D+01	.97400000D+00	.18820000D+03	.64395000D+02	.41237113D+00	.41497463D-04
.83770000D+01	.97600000D+00	.18820000D+03	.64395000D+02	.61955670D+00	.41413250D-04
.83770000D+01	.97800000D+00	.18820000D+03	.64395000D+02	.82474227D+00	.41329774D-04
.83770000D+01	.98000000D+00	.18820000D+03	.64395000D+02	.10309278D+01	.41247031D-04
.83770000D+01	.98200000D+00	.18820000D+03	.64395000D+02	.12371134D+01	.41165018D-04
.83770000D+01	.97000000D+00	.18600000D+03	.64395000D+02	.11689692D+01	.41648892D-04
.83770000D+01	.97000000D+00	.18650000D+03	.64395000D+02	.90329437D+00	.41653297D-04
.83770000D+01	.97000000D+00	.18700000D+03	.64395000D+02	.63761955D+00	.41657681D-04
.83770000D+01	.97000000D+00	.18750000D+03	.64395000D+02	.37194474D+00	.41662043D-04
.83770000D+01	.97000000D+00	.18800000D+03	.64395000D+02	.10626993D+00	.41666385D-04
.83770000D+01	.97000000D+00	.18850000D+03	.64395000D+02	.15940489D+00	.41670707D-04
.83770000D+01	.97000000D+00	.18900000D+03	.64395000D+02	.42507970D+00	.41675007D-04
.83770000D+01	.97000000D+00	.18950000D+03	.64395000D+02	.69075452D+00	.41679288D-04
.83770000D+01	.97000000D+00	.19000000D+03	.64395000D+02	.95642933D+00	.41683547D-04
.83770000D+01	.97000000D+00	.18820000D+03	.63750000D+02	.10016306D+01	.15373163D-04
.83770000D+01	.97000000D+00	.18820000D+03	.63850000D+02	.84633900D+00	.18146661D-04
.83770000D+01	.97000000D+00	.18820000D+03	.63950000D+02	.69104744D+00	.21415170D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64050000D+02	.53575588D+00	.25168092D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64150000D+02	.38046432D+00	.29393964D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64250000D+02	.22517276D+00	.34080593D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64350000D+02	.69881202D+01	.39215078D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64450000D+02	.85410358D+01	.44783846D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64550000D+02	.24070192D+00	.50772697D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64650000D+02	.39599348D+00	.57166845D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64750000D+02	.55128504D+00	.63950960D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64850000D+02	.70657660D+00	.71109217D-04
.83770000D+01	.97000000D+00	.18820000D+03	.64950000D+02	.86186816D+00	.78625328D-04
.83770000D+01	.97000000D+00	.18820000D+03	.65050000D+02	.10171597D+01	.86482640D-04

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