

```

0101      +      .AND.(MC3.GT.MC4).AND.(MC4.GT.MC5).AND.(MC5.GT.MC6))
0102      +      ) F )
0103      GO TO 200
0104      ELSE
0105          IADD=IADD+1
0106          IF(IADD.GT.3)GOTO 300
0107          L=LMO+LINC(IADD)
0108          GO TO 200
0109      ENDIF
0110      300 CONTINUE
0111          IADD=1
0112          LMIN=LMO
0113          IF(L.EQ.1)LM1=LMO
0114          IF(LM1.NE.0.0)L= LM1
0115          IF(LMIN.EQ. 0.0)LMIN=10.0
0116          GOTO 200
0117      ELSE
0118          IF(STMX.LE.STRLMT)THEN
0119              LM1= L
0120              L=L+LINC(IADD)
0121              GOTO 200
0122          ELSE
0123              IADD=IADD+1
0124              IF(IADD.GT.3)GOTO 400
0125              L=LM1+LINC(IADD)
0126              GO TO 200
0127          ENDIF
0128      ENDIF
0129      400 IF(FILE.EQ.'Y')WRITE(1,14)LMO,LM1
0130          WRITE(6,3)OD
0131          WRITE(6,4)T
0132          WRITE(6,5)EM
0133          WRITE(6,6)GAMMA
0134          WRITE(6,7)SG
0135          WRITE(6,8)SIGINT
0136          WRITE(6,9)STRLMT
0137          WRITE(6,10)H
0138          WRITE(6,14)LMO,LM1
0139          GOTO 700
0140      500 IADD=IADD+1
0141          IF(IADD.GT.3)GOTO 600
0142          L= LMN - 9.0*LINC(IADD)
0143          IF(LSTX.EQ.0)L= LMN - 4.0*LINC(IADD)
0144          LSTX= 1
0145          L=L+LINC(IADD)
0146          IF(L.LT.0.0)L=LINC(IADD)
0147          GOTO 200
0148      600 IF(FILE.EQ.'Y')WRITE(1,15)STMN,LMN
0149          WRITE(6,3)OD
0150          WRITE(6,4)T

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0151      WRITE(6,5)EM
0152      WRITE(6,6)GAMMA
0153      WRITE(6,7)SG
0154      WRITE(6,8)SIGINT
0155      WRITE(6,9)STRLMT
0156      WRITE(6,10)H
0157      WRITE(6,15)STMN,LMN
0158      IF(LMN.EQ.0.0)LMN= 10.0
0159      LMO=LMN
0160      LM1=LMN
0161 700 CONTINUE
0162      STOP
0163      1 FORMAT(// '0This program calculates the range of distances between'
0164      &,' supports of a'/' pipeline necessary to keep the maximum stress'
0165      &,' below a given stress limit.')
0166      2 FORMAT(/// '0ENTER THE FOLLOWING DATA: :')
0167      3 FORMAT('/'$ Outside diameter of pipe (inches): '
0168      &,:,F13.3)
0169      4 FORMAT('/'$ Wall thickness of pipe (inches): '
0170      &,:,F13.3)
0171      5 FORMAT('% Elastic modulus of pipe material (psi): '
0172      &,:,F13.3)
0173      6 FORMAT('/'$ Specific weight of pipe material (lb/in**3): '
0174      &,:,F13.3)
0175      7 FORMAT('/'$ Specify gravity of fluid in pipeline : '
0176      &,:,F13.3)
0177      8 FORMAT('/'$ Existing axial stress in pipeline (psi): '
0178      &,:,F13.3)
0179      9 FORMAT('/'$ Maximum allowable stress in pipeline (psi): '
0180      &,:,F13.3)
0181      10 FORMAT('/'$ Height difference between adjacent supports (inches): '
0182      &,:,F13.3)
0183      11 FORMAT('0 Output will be displayed on the terminal screen.')
0184      12 FORMAT('/'$ Do you want an additional copy on file FOR001? (Y/N): ')
0185      13 FORMAT(A1)
0186      14 FORMAT('0 Supports must be spaced between',F6.0,' and',F6.0,
0187      &,' feet.'//)
0188      15 FORMAT('0 Minimum possible stress =',f9.0,' @ for a support '
0189      &,' spacing of',f6.0,' feet.'//)
0190      END

```

```

0001      SUBROUTINE MOMENT(MXC,STL)
0002      IMPLICIT REAL*8 (A-Z)
0003      PARAMETER (PI=3.141592654)
0004      COMMON /LM,L1,QN,SIGMA,QEI,H,EI
0005      COMMON/CONST/C1,C2,C3,C4
0006      C
0007      LM2= LM*LM
0008      IF(SIGMA)100,200,300
0009      100 LL=LM*L1
0010      CLL= COS(LL)
0011      SLL= SIN(LL)
0012      C3= SLL*(H+QN/2.*L1*L1)+QN*L1*(CLL-1)/LM
0013      C3= C3/(2.*(1.-CLL)-SLL*LL)
0014      C4= -(QN*L1/LM+C3*(1.-CLL))/SLL
0015      C1= -C4
0016      C2= -LM*C3
0017      C
0018      MX= 0.0
0019      XLM= ATAN2(C3,C4)
0020      101 CONTINUE
0021      IF(XLM/LM.LT.L1)THEN
0022          MXI= 0.0
0023          IF(XLM.GT.0.0)MXI= ABS((C3*SIN(XLM)+C4*COS(XLM))*LM2+QN)
0024          MX= MAX(MX,MXI)
0025          XLM= XLM+PI
0026          GOTO 101
0027      ENDIF
0028      MO= ABS(C4*LM2+QN)
0029      ML= ABS((C3*SLL+C4*CLL)*LM2+QN)
0030      MXC= MAX(MO,MX,ML)
0031      MXC= MXC*EI
0032      GOTO 500
0033      C
0034      200 LS= L1*L1
0035      C1=0.0
0036      C2=0.0
0037      C3= QEI*LS/24. + 3.*H/LS
0038      C4= -(QEI*L1/12.+2.*H/LS/L1)
0039      MO= ABS(2.*C3)
0040      ML= ABS(2.*C3+6.*C4*L1+QEI*LS/2.)
0041      X= 12.*H/QEI/LS/L1 +L1/2.
0042      MX= 0
0043      IF((X.GT.0.0).AND.(X.LT.L1))MX= ABS(2.*C3+6.*C4*X+QEI/2.*X*X)
0044      MXC= MAX(MO,MX,ML)
0045      MXC= MXC*EI
0046      GOTO 500
0047      C
0048      300 LL=LM*L1
0049      CLL= COSH(LL)
0050      SLL= SINH(LL)

```

```

35I      C3= -SLL*(H+QN/2.*L1*L1)+QN*L1*(CLL-1.)/LM
0052     C3= C3/(2.*(1.-CLL)+SLL*LL)
0053     C4= (QN*L1/LM+C3*(1.-CLL))/SLL
354      C1= -C4
0055     C2= -LM*C3
0056     C
357      ATX=0.0
0058     IF(C4+C3.NE.0.0)ATX= (C4-C3)/(C4+C3)
0059     X=0.0
0060     IF(ATX.GT.0.0)X= (LOG(ATX))/2./LM
0061     C
0062     M0= ABS(C4*LM2-QN)
0063     MX= 0.0
0064     IF((X.GT.0.0).AND.(X.LT.L1))MX= ABS((C3*SINH(LM*X)+C4*COSH(LM*X))
0065     & *LM2-QN)
0066     ML= ABS((C3*SLL + C4*CLL)*LM2-QN)
0067     MXC= MAX(M0,MX,ML)
0068     MXC= MXC*EI
0069     GOTO 500
0070     C
0071     500 CALL STRESS(STL)
0072     END

```

```

0001      SUBROUTINE STRESS(STL)
0002      IMPLICIT REAL*8 (A-Z)
0003      INTEGER*4 I,IMAX
0004      COMMON/      /LM,L1,QN,SIGMA,QEI,H,EI
0005      COMMON/CONST/C1,C2,C3,C4
0006      C
0007      SLEN=0.0
0008      IMAX= NINT(L1/6.0) + 1
0009      DX= L1/FLOAT(IMAX)
0010      DX2= DX*DX
0011      IF(SIGMA)100,200,300
0012      100 DO 101 I=0,IMAX
0013          X= DX*FLOAT(I)
0014          LX=LM*X
0015          W= C1+C2*X+C3*SIN(LX)+C4*COS(LX)-QN*X*X/2.
0016          IF( X.NE.0.0)THEN
0017              DW=W-WOLD
0018              DS= SQRT(DX2+DW*DW)
0019              SLEN= SLEN+DS
0020          ?
0021      101 WOLD=W
0022          GOTO 500
0023      200 DO 201 I=0,IMAX
0024          X= DX*FLOAT(I)
0025          X2=X*X
0026          X3=X2*X
0027          X4=X2*X2
0028          W=C3*X2+C4*X3+QE1*X4/24.0
0029          IF(X.NE.0.0)THEN
0030              DW=W-WOLD
0031              DS= SQRT(DX2+DW*DW)
0032              SLEN= SLEN+DS
0033          ENDIF
0034      201 WOLD=W
0035          GOTO 500
0036      300 DO 301 I=0,IMAX
0037          X= DX*FLOAT(I)
0038          LX=LM*X
0039          W= C1+C2*X+C3*SINH(LX)+C4*COSH(LX)-QN*X*X/2.
0040          IF(X.NE.0.0)THEN
0041              DW=W-WOLD
0042              DS= SQRT(DX2+DW*DW)
0043              SLEN= SLEN+DS
0044          ENDIF
0045      301 WOLD=W
0046          GOTO 500
0047      500 STL= (SLEN/L1-1.0)
0048          RETURN
0049          END

```



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