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C      CONSTANT.  THE PEAK APPLIED PRESSURE IN EACH CASE IS "LEFTP" IN
C      MEGABARS.
C      OPTION = 1 GIVES SQUARE PULSE
C      OPTION = 2 GIVES LINEAR PULSE
C      OPTION = 3 GIVES EXPONENTIAL
C      OPTION = 4 UNASSIGNED
C      OPTION = 5 GIVES NO PULSE (FOR EXPLOSION)
C      OPTION = 6 GIVES NO PULSE (FOR FLYER PLATE)
      OPTION=1
C-----IF OPTION = 1 OR 2, SET TAU
      TAU=500.0
C-----IF OPTION = 6, SET U(1) (FOR FLYER PLATE)
      U(1)=0.0
C-----IF OPTION = 1,2, OR 3, SET LEFTP (PRESSURE ON LEFT BOUNDARY)
      LEFTP=0.200
C-----VISCOSITY COEFFICIENT (CQ FOR QUADRATIC AND CONA FOR LINEAR)
      CONA=0.1
      CQ=2.0
C-----LENGTH OF RUN MAY BE DETERMINED BY SETTING ANY OR ALL OF NEXT
C      WHEN CYCLE=CYCLES OR TIMES=TQUIT OR J=JQUIT, COMPUTATION WILL
C      STOP, WHICH EVER OCCURS FIRST.
C      J IS THE INTEGER LABEL OF THE SPACE CELLS.  J=1 AT THE LEFTMOST
C      CELL OF THE LEFTMOST REGION AND RUNS TO H(S1), THE RIGHTMOST CELL
C      OF THE RIGHTMOST REGION.
C      CYCLES= NUMBER OF INCREMENTS IN TIME
C      TQUIT (PROPAGATION TIME)
C      JQUIT (NUMBER OF LAST CELL)
      CYCLES=100
      TQUIT=260
      JQUIT=25
      JQUIT=250
C-----THE NUMBER OF ZONES IN REGION K IS ZON(K)
      ZON(2) =50
C-----THE THICKNESS OF REGION K IN CM. IS L(K)
      L(2)=5.0
C-----DELT IS STARTING VALUE FOR DELTAT
C      "DELTAT" IS THE TIME-INCREMENT FROM ONE CYCLE TO THE NEXT,
C      MICROSECONDS.
      DELT=.05
C-----DTMX IS UPPER LIMIT FOR DELTAT
      DTMX=.05
C-----PRINTOUTS OF CYCLES IS MODULO COUNTS
C      "COUNTS" CONTROLS PRINTING.  IF COUNTS=5, THE STANDARD FLOW
C      VARIABLES U,P,Q,E,V, ETC. ARE PRINTED OUT EVERY FIFTH CYCLE, ETC.
C      FREQUENTLY "COUNTS" IS SET =1 IN "DECIDE", THEN AFTER THE FIRST
C      FEW CYCLES INCREMENTED TO 10 OR 20.
      COUNTS=1
C      H(S) IS AN INTEGER LABEL EQUAL TO THE NUMBER OF SPACE CELLS TO
C      THE LEFT OF AND INCLUDING REGION S.
      H(1) = 0
      DO 12 S=2,S1
        DX(S) = L(S)/FLOAT(ZON(S))
      12 H(S)=H(S-1) + ZON(S)
C-----CALL ROUTINES TO SET INITIAL REGIONS
C      AT THIS POINT CONTROL IS TRANSFERRED TO B_INIT(S) FOR S=2 TO S1,

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C WHERE _ IS AN INTEGER FROM 1 TO 5, CORRESPONDING TO THE VALUE
 C OF BURN(S). FOR EXAMPLE IF S1=4 AND BURN(2)=1, BURN(3)=4, AND
 C BURN(4)=3, THEN B1INIT(2), B4INIT(3), B3INIT(4) ARE CALLED IN
 C TURN; I.E., THE NEXT THREE STATEMENTS WOULD BE: "CALL B1INIT(2)",
 C "CALL B4INIT(3)", "CALL B3INIT(4)".
 CALL B5INIT(2)

C
 RETURN
 102 FORMAT (10I4)
 906 FORMAT(23I3)
 907 FORMAT(7(14F5.2/))
 END
 SUBROUTINE EQST(S,J)

C
 COMMON /C1ZON/ H(9),BURN(9),L(9),DX(9),S1,RHO(9)
 COMMON /C2TIME/ TIMES,CYCLE,DELT,DTN,DTMX,TLIMA(300),JCRIT,
 1 TQUIT,TAU
 COMMON /C4FLOW/ U(300),V(300),X(300),Q(300),P(300),E(300),QA,VN,
 1 MASS(300),CSP(300)

C
 INTEGER H,BURN,S,S1,ZON,CYCLE,COUNTS,CYCLES,ALP,OPTION,H2,HS1,HS,
 1 BURNS,HS2

C
 BURNS=BURN(S)
 GO TO (101,102,103,104,105,106,107,108,109),BURNS
 101 CALL B1EQST(S,J)
 102 RETURN
 103 CALL B3EQST(S,J)
 RETURN
 104 CALL B4EQST(S,J)
 RETURN
 105 CALL B5EQST(S,J)
 RETURN
 106 RETURN
 107 RETURN
 108 RETURN
 109 RETURN
 END
 SUBROUTINE FLIER

C
 COMMON /C1ZON/ H(9),BURN(9),L(9),DX(9),S1,RHO(9)
 COMMON /C3CTRL/ COUNTS,JSTAR,JPE,JPB,JQUIT,LAST,CYCLES
 COMMON /C4FLOW/ U(300),V(300),X(300),Q(300),P(300),E(300),QA,VN,
 1 MASS(300),CSP(300)

C
 INTEGER H,BURN,S,S1,ZON,CYCLE,COUNTS,CYCLES,ALP,OPTION,H2,HS1,HS,
 1 BURNS,HS2

C
 REAL L,MASS,LINEAR,LEFTP

C
 JSTAR=H(2)+2
 H2=H(2)
 DO 43 J=1,H2
 43 U(J+1)=U(1)
 U(H2+1)=0.5*U(H2+1)