```
******************
   USAF STABILITY AND CONTROL DIGITAL DATCOM
   PROGRAM REV. JAN 96 DIRECT INQUIRIES TO:
   WRIGHT LABORATORY (WL/FIGC) ATTN: W. BLAKE *
    WRIGHT PATTERSON AFB, OHIO 45433
   PHONE (513) 255-6764, FAX (513) 258-4054
 ****************
            CONERR - INPUT ERROR CHECKING
0 ERROR CODES - N* DENOTES THE NUMBER OF OCCURENCES OF EACH ERROR
0 A - UNKNOWN VARIABLE NAME
0 B - MISSING EQUAL SIGN FOLLOWING VARIABLE NAME
0 C - NON-ARRAY VARIABLE HAS AN ARRAY ELEMENT DESIGNATION - (N)
0 D - NON-ARRAY VARIABLE HAS MULTIPLE VALUES ASSIGNED
0 E - ASSIGNED VALUES EXCEED ARRAY DIMENSION
0 F - SYNTAX ERROR
CASEID Project Rascal 72 UAV
 $FLTCON NMACH=5.0,MACH(1)=0.0294,0.04408,
 0.05877,0.07347,0.08816$
 $FLTCON NALPHA=5.0,ALSCHD=-10.0,-5.0,0.,5.0,10.0$
 $FLTCON NALT=5.0,ALT=0.0,100.0,200.0,300.0,400.0,WT=5.34,LOOP=2.0$
 $OPTINS SREF=4.64.CBARR=0.7905.BLREF=6.04.$
 $$YNTH$ XCG=1.125,ZCG=0.0547,XW=1.0168,ZW=0.2902,ALIW=2.,
 XH=3.456,ZH=0.0824,ALIH=2.,XV=3.463,ZV=0.0824,$
 $BODY NX=20.,
 X(1)=0.0.1923,0.3847,0.5771,0.8244,1.0167,
   1.154249,1.346579,1.538976,1.731373,1.923704,2.1161,2.308497,2.500828,
   2.693244,2.885621,3.077952,3.270369,3.462746,3.655076,
 S(1)=0.0686613,0.1288141,0.1618586,0.1877797,0.377868,0.3022812,0.2896834,
   0.2770856,0.2644878,0.231905,0.2061158,0.1794692,0.1546033,0.1282205,0.10
   0.0790166,0.0572507,0.0412232,0.0275041,0.0160276,
 ZU(1)=0.10995,0.10995,0.10995,0.123669,0.288562,0.343504,0.329785,0.302281,
    0.288562, 0.247339, 0.23362, 0.206116, 0.192397, 0.178612, 0.151174, 0.137389,
    0.123669,0.10995,0.096165,0.082446,
 ZL(1)=-0.10995, -0.23362, -0.28856, -0.31607, -0.5359, -0.31607, -0.30228,
    -0.30228, -0.28856, -0.27484, -0.26106, -0.24734, -0.21983, -0.20612, -0.1924,
    -0.17861,-0.16489,-0.15117,-0.13739,-0.12367,$
NACA W 4 4312
 $WGPLNF CHRDTP=.54167,SSPNE=2.86719,SSPN=3.0208,CHRDR=.99479,SAVSI=0.0,
 CHSTAT=0.25,TWISTA=0.0,DHDADI=2.0,TYPE=1.0$
 $SYMFLP SPANFI=0.0137, SPANFO=1.0031, CHRDFO=0.10441, CHRDFI=0.1832,
 NDELTA=5.,DELTA=-20.,-10.,0.,10.,20.,FTYPE=1.0,
 NTYPE=1.0,CB=0.0429,TC=0.0396,PHETE=0.275,PHETEP=0.275,$
NACA-H-4-0009
 $HTPLNF CHRDR=0.5496,CHRDTP=0.3298,SSPN=1.0031,SSPNE=0.9894,
 SAVSI=0.,CHSTAT=0.,DHDADI=0.,TYPE=1.,TWISTA=0.0,$
NACA-V-4-0009
 $VTPLNF CHRDR=0.7969,CHRDTP=0.3298,SSPN=0.65957,SSPNE=0.6046,
 SAVSI=25.,CHSTAT=0.,TYPE=1.,$
 $SYMFLP FTYPE=1.0,NDELTA=6.0,DELTA(1)=0.0,-10.0,-20.0,-30.0,-40.0,-45.0,
```

```
PHETE=0.0522,PHETEP=0.0,CHRDFI=0.1786,CHRDFO=0.1786,SPANFI=0.02748,
 SPANFO=1.0995,NTYPE=1.0,$
DAMP
BUILD
SAVE
NEXT CASE
TRIM
SAVE
NEXT CASE
 $ASYFLP $PANFI=1.1688,$PANFO=2.514,CHRDFI=0.1369,CHRDFO=0.1369,
 STYPE=4.0,NDELTA=5.,DELTAL=20.,10.,0.,-10.,-20.,
 DELTAR=-20.,-10.,0.,10.,20.,$
NEXT CASE
      THE FOLLOWING IS A LIST OF ALL INPUT CARDS FOR THIS CASE.
1
0
CASEID Project Rascal 72 UAV
 $FLTCON NMACH=5.0,MACH(1)=0.0294,0.04408,
 0.05877,0.07347,0.08816$
 $FLTCON NALPHA=5.0,ALSCHD=-10.0,-5.0,0..5.0,10.0$
 $FLTCON NALT=5.0,ALT=0.0,100.0,200.0,300.0,400.0,WT=5.34,LOOP=2.0$
 $OPTINS SREF=4.64,CBARR=0.7905,BLREF=6.04,$
 $$YNTH$ XCG=1.125,ZCG=0.0547,XW=1.0168,ZW=0.2902,ALIW=2...
 XH=3.456,ZH=0.0824,ALIH=2.,XV=3.463,ZV=0.0824,$
 $BODY NX=20..
 X(1)=0.0.1923,0.3847,0.5771,0.8244,1.0167,
    1.154249,1.346579,1.538976,1.731373,1.923704,2.1161,2.308497,2.500828,
    2.693244,2.885621,3.077952,3.270369,3.462746,3.655076,
 S(1)=0.0686613,0.1288141,0.1618586,0.1877797,0.377868,0.3022812,0.2896834,
    0.2770856.0.2644878.0.231905.0.2061158.0.1794692.0.1546033.0.1282205.0.10
    0.0790166,0.0572507,0.0412232,0.0275041,0.0160276,
 ZU(1)=0.10995,0.10995,0.10995,0.123669,0.288562,0.343504,0.329785,0.302281,
    0.288562, 0.247339, 0.23362, 0.206116, 0.192397, 0.178612, 0.151174, 0.137389
    0.123669,0.10995,0.096165,0.082446,
 ZL(1)=-0.10995, -0.23362, -0.28856, -0.31607, -0.5359, -0.31607, -0.30228,
    -0.30228, -0.28856, -0.27484, -0.26106, -0.24734, -0.21983, -0.20612, -0.1924,
    -0.17861,-0.16489,-0.15117,-0.13739,-0.12367,$
NACA W 4 4312
 $WGPLNF CHRDTP=.54167,SSPNE=2.86719,SSPN=3.0208,CHRDR=.99479,SAVSI=0.0,
 CHSTAT=0.25,TWISTA=0.0,DHDADI=2.0,TYPE=1.0$
 $SYMFLP SPANFI=0.0137, SPANFO=1.0031, CHRDFO=0.10441, CHRDFI=0.1832,
 NDELTA=5.,DELTA=-20.,-10.,0.,10.,20.,FTYPE=1.0,
 NTYPE=1.0,CB=0.0429,TC=0.0396,PHETE=0.275,PHETEP=0.275,$
NACA-H-4-0009
 $HTPLNF CHRDR=0.5496,CHRDTP=0.3298,SSPN=1.0031,SSPNE=0.9894,
 SAVSI=0.,CHSTAT=0.,DHDADI=0.,TYPE=1.,TWISTA=0.0,$
NACA-V-4-0009
 $VTPLNF CHRDR=0.7969,CHRDTP=0.3298,SSPN=0.65957,SSPNE=0.6046,
 SAVSI=25.,CHSTAT=0.,TYPE=1.,$
 $SYMFLP FTYPE=1.0,NDELTA=6.0,DELTA(1)=0.0,-10.0,-20.0,-30.0,-40.0,-45.0,
 PHETE=0.0522,PHETEP=0.0,CHRDFI=0.1786,CHRDFO=0.1786,SPANFI=0.02748,
 SPANFO=1.0995,NTYPE=1.0,$
DAMP
```

BUILD SAVE NEXT CASE 0 INPUT DIMENSIONS ARE IN FT, SCALE FACTOR IS 1.0000

1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

OF DATCOM

0

0

WING SECTION DEFINITION IDEAL ANGLE OF ATTACK = 1.12591 DEG.

ZERO LIFT ANGLE OF ATTACK = -3.45103 DEG.

IDEAL LIFT COEFFICIENT = 0.54407

ZERO LIFT PITCHING MOMENT COEFFICIENT = -0.08548

MACH ZERO LIFT-CURVE-SLOPE = 0.09729 /DEG.

LEADING EDGE RADIUS = 0.01587 FRACTION CHORD

MAXIMUM AIRFOIL THICKNESS = 0.12000 FRACTION CHORD

DELTA-Y = 3.16898 PERCENT CHORD

0	MACH= $0.0294 \text{ LIFT-CURVE-SLOPE} = 0.09728 / \text{DEG}$ . XAC = $0.25450$
0	MACH= $0.0441 \text{ LIFT-CURVE-SLOPE} = 0.09733 / DEG.$ XAC = $0.25454$
0	MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09738 /DEG. XAC = 0.25484
0	MACH= $0.0735$ LIFT-CURVE-SLOPE = $0.09746$ /DEG. XAC = $0.25495$
0	MACH= $0.0882$ LIFT-CURVE-SLOPE = $0.09752$ /DEG. XAC = $0.25502$
1	AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM	
	HODIZONTAL TAIL SECTION DEFINITION

HORIZONTAL TAIL SECTION DEFINITION IDEAL ANGLE OF ATTACK = 0.00000 DEG.

ZERO LIFT ANGLE OF ATTACK = 0.00000 DEG.

IDEAL LIFT COEFFICIENT = 0.00000

ZERO LIFT PITCHING MOMENT COEFFICIENT = 0.00000

MACH ZERO LIFT-CURVE-SLOPE = 0.09830 /DEG.

LEADING EDGE RADIUS = 0.00893 FRACTION CHORD

MAXIMUM AIRFOIL THICKNESS = 0.09000 FRACTION CHORD

DELTA-Y = 2.37673 PERCENT CHORD

0 MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09840 /DEG. XAC = 0.25651 0 MACH= 0.0441 LIFT-CURVE-SLOPE = 0.09839 /DEG. XAC = 0.25646

0 MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09846 /DEG. XAC = 0.25650 0 MACH= 0.0735 LIFT-CURVE-SLOPE = 0.09853 /DEG. XAC = 0.25644 0 MACH= 0.0882 LIFT-CURVE-SLOPE = 0.09864 /DEG. XAC = 0.25648 1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM
VERTICAL TAIL SECTION DEFINITION  1 IDEAL ANGLE OF ATTACK = 0.00000 DEG.
ZERO LIFT ANGLE OF ATTACK = 0.00000 DEG.
IDEAL LIFT COEFFICIENT = 0.00000
ZERO LIFT PITCHING MOMENT COEFFICIENT = 0.00000
MACH ZERO LIFT-CURVE-SLOPE = 0.09830 /DEG.
LEADING EDGE RADIUS = 0.00893 FRACTION CHORD
MAXIMUM AIRFOIL THICKNESS = 0.09000 FRACTION CHORD
DELTA-Y = 2.37673 PERCENT CHORD
0 MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09840 /DEG. XAC = 0.25651 0 MACH= 0.0441 LIFT-CURVE-SLOPE = 0.09839 /DEG. XAC = 0.25646 0 MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09846 /DEG. XAC = 0.25650 0 MACH= 0.0735 LIFT-CURVE-SLOPE = 0.09853 /DEG. XAC = 0.25644 0 MACH= 0.0882 LIFT-CURVE-SLOPE = 0.09864 /DEG. XAC = 0.25648 1 1 1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE DIMENSIONS
MACH ALTITUDE VELOCITY         PRESSURE TEMPERATURE         REYNOLDS         REF.           REFERENCE LENGTH         MOMENT REF. CENTER         NUMBER         AREA         LONG. LAT. HORIZ         VERT           NUMBER         FT FT/SEC         LB/FT**2         DEG R         1/FT         FT**2         FT         FT         FT         FT           0 0.029         0.00         32.82         2.1162E+03         518.670         2.0781E+05         4.640         0.790         6.040         1.125           0.055         0
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
0 -10.0 0.047 -0.499 0.1863 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.190E-04
-9.163E-04         -5.0       0.031       -0.027       0.0137       -0.030       0.029       -0.460       9.495E-02       -3.387E-02       -9.183E-04         0.0       0.040       0.451       -0.1524       0.451       0.040       -0.338       1.002E-01       -3.704E-02       -9.183E-04         5.0       0.076       0.975       -0.3567       0.978       -0.010       -0.365       1.021E-01       -4.442E-02       -9.241E-04

```
10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02
                                                                       -9.274E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0
                      0.951 -2.095
                                    0.461
                -5.0
                     0.910
                            0.208
                                   0.459
                          2.492
                0.0
                     1.000
                                   0.453
                5.0
                     1.000
                            4.736
                                   0.423
                     1.000
                            6.725
                                    0.398
                10.0
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                         DYNAMIC DERIVATIVES
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                        Project Rascal 72 UAV
------ FLIGHT CONDITIONS ------
                                                 ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                             AREA
                                                     LONG. LAT. HORIZ
                                                                          VERT
          FT/SEC LB/FT**2
                                                FT**2
     FT
                             DEG R
                                      1/FT
                                                         FT
                                                              FT
                                                                    FT
                                                                         FT
        0.00 32.82 2.1162E+03 518.670 2.0781E+05
                                                    4.640 0.790 6.040 1.125
0 0.029
0.055
                      DYNAMIC DERIVATIVES (PER DEGREE)
     -----PITCHING------ -----ROLLING--------ROLLING-------
-----YAWING-----
0 ALPHA
           CLO
                   CMO
                           CLAD
                                    CMAD
                                             CLP
                                                     CYP
                                                             CNP
                                                                     CNR
CLR
0
 -10.00 1.625E-01 -2.979E-01 4.252E-02 -1.316E-01 -7.832E-03 -5.325E-04 6.666E-04
-7.063E-04 -1.307E-03
 -5.00
                   4.054E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.320E-06 -7.545E-04
2.837E-04
  0.00
                   4.396E-02 -1.360E-01 -8.558E-03 -1.522E-03 -6.561E-04 -7.463E-04
1.922E-03
                   4.110E-02 -1.272E-01 -8.659E-03 -2.088E-03 -1.395E-03 -6.700E-04
  5.00
3.724E-03
 10.00
                   3.863E-02 -1.195E-01 -8.067E-03 -2.605E-03 -2.100E-03 -5.381E-04
5.386E-03
0*** VEHICLE WEIGHT =
                      5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.89881
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                        Project Rascal 72 UAV
   ----- FLIGHT CONDITIONS ------
                                                    ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
                                             AREA LONG. LAT. HORIZ
NUMBER
                                NUMBER
                                                                           VERT
```

FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE) 0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.929E-04 -9.167E-04
-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-02 -9.189E-04
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-02 -9.192E-04
5.0 0.071 0.975 -0.3579 0.978 -0.014 -0.366 1.021E-01 -4.457E-02 -9.253E-04
10.0 0.128 1.472 -0.5987 1.472 -0.130 -0.407 9.668E-02 -5.175E-02 -9.289E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
-10.0 0.957 -2.095 0.461
-5.0 0.917 0.208 0.459
0.0  1.000  2.492  0.453
5.0 1.000 4.737 0.423
10.0 1.000 6.726 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER AREA LONG. LAT. HORIZ VERT
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
NUMBER SUMBER SUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125
NUMBER       AREA LONG. LAT. HORIZ VERT         FT       FT/SEC       LB/FT**2       DEG R       1/FT       FT**2       FT       FT       FT         0 0.044       0.00       49.21       2.1162E+03       518.670       3.1157E+05       4.640       0.790       6.040       1.125         0.055
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 $3.1157E+05$ 4.640 0.790 6.040 1.125 0.055 DYNAMIC DERIVATIVES (PER DEGREE)
NUMBER       AREA       LONG.       LAT.       HORIZ       VERT         6 0.044       0.00       49.21       2.1162E+03       518.670       3.1157E+05       4.640       0.790       6.040       1.125         0.055       DYNAMIC DERIVATIVES (PER DEGREE)         0      PITCHING ACCELERATION ROLLING
NUMBER       AREA LONG. LAT. HORIZ VERT         FT       FT/SEC       LB/FT**2       DEG R       1/FT       FT**2       FT       FT       FT         0 0.044       0.00       49.21       2.1162E+03       518.670       3.1157E+05       4.640       0.790       6.040       1.125         0.055       DYNAMIC DERIVATIVES (PER DEGREE)         OPITCHING
NUMBER         AREA LONG. LAT. HORIZ VERT           FT         FT/SEC         LB/FT**2         DEG R         1/FT         FT**2         FT         FT         FT           0 0.044         0.00         49.21         2.1162E+03         518.670         3.1157E+05         4.640         0.790         6.040         1.125           0.055         DYNAMIC DERIVATIVES (PER DEGREE)           0        PITCHING
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055  DYNAMIC DERIVATIVES (PER DEGREE)  OPITCHINGACCELERATION FOLLING
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055  DYNAMIC DERIVATIVES (PER DEGREE)  0PITCHING ACCELERATION FOLLING
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055  DYNAMIC DERIVATIVES (PER DEGREE)  0YAWING
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT FT FT 0.0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
NUMBER   NUMBER   AREA   LONG   LAT   HORIZ   VERT
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
NUMBER FT   FT/SEC   LB/FT**2   DEG R   1/FT   FT**2   FT   FT   FT   FT   FT   O 0.044   0.00   49.21   2.1162E+03   518.670   3.1157E+05   4.640   0.790   6.040   1.125   0.055
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125  0.055  DYNAMIC DERIVATIVES (PER DEGREE)  0YAWING
NUMBER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.044 0.00 49.21 2.1162E+03 518.670 3.1157E+05 4.640 0.790 6.040 1.125 0.055

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

OF DATCOM

# CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV

FLIGHT CONDITIONS REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.059 0.00 65.61 2.1162E+03 518.670 4.1540E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.313E-02 -2.833E-02 -8.804E-03 4.745E-04 -9.171E-04
-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02 -9.196E-04
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04
5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0
-10.0 0.961 -2.096 0.461
-5.0 0.921 0.208 0.459
0.0 1.000 2.493 0.453
5.0 1.000 4.738 0.423
10.0 1.000 6.727 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT  0.0.050
0 0.059 0.00 65.61 2.1162E+03 518.670 4.1540E+05 4.640 0.790 6.040 1.125
0.055 DYNAMIC DERIVATIVES (PER DEGREE)
0PITCHINGACCELERATION ROLLING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR CLR
0
-10.00 1.637E-01 -3.011E-01 4.302E-02 -1.331E-01 -7.833E-03 -5.124E-04 7.083E-04 -6.933E-04 -1.309E-03

```
-5.00
                  4.103E-02 -1.270E-01 -8.043E-03 -1.024E-03 4.892E-06 -7.452E-04
2.840E-04
  0.00
                  4.399E-02 -1.361E-01 -8.558E-03 -1.550E-03 -7.132E-04 -7.314E-04
1.925E-03
  5.00
                  4.112E-02 -1.272E-01 -8.655E-03 -2.142E-03 -1.506E-03 -6.379E-04
3.730E-03
 10.00
                  3.863E-02 -1.195E-01 -8.056E-03 -2.681E-03 -2.254E-03 -4.797E-04
5.394E-03
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.22493
1
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                       Project Rascal 72 UAV
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                   REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER
                                        AREA LONG. LAT. HORIZ VERT
          FT/SEC LB/FT**2
                            DEG R 1/FT
                                             FT**2
                                                       FT
                                                            FT
                                                                  FT
     FT
        0.00 82.02 2.1162E+03 518.670 5.1930E+05
0 0.073
                                                   4.640 0.790 6.040 1.125
0.055
                            -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD CL
                   CM
                         CN CA XCP CLA CMA CYB CNB
                                                                           CLB
-10.0 0.042 -0.500 0.1890 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.602E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02
                                                                     -9.202E-04
 0.0 0.035 0.451 -0.1537 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                     -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                     -9.274E-04
 10.0 0.122 1.473 -0.6007 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                     -9.314E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0 0.965 -2.096
                                  0.461
                     0.924 0.208
               -5.0
                                   0.459
                0.0 1.000 2.494
                                  0.453
                5.0 1.000
                          4.739
                                  0.423
                10.0 1.000 6.728
                                   0.398
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                        DYNAMIC DERIVATIVES
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                       Project Rascal 72 UAV
  ----- FLIGHT CONDITIONS ------
                                                 ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                   REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                            AREA LONG. LAT. HORIZ
                               NUMBER
                                                                          VERT
```

FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.073
0.055 DYNAMIC DERIVATIVES (PER DEGREE)
0PITCHINGACCELERATIONROLLING
YAWING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR CLR
0
-10.00 1.640E-01 -3.021E-01 4.319E-02 -1.336E-01 -7.835E-03 -5.126E-04 7.084E-04
-6.906E-04 -1.311E-03
-5.00 4.121E-02 -1.275E-01 -8.045E-03 -1.024E-03 4.887E-06 -7.426E-04 2.842E-04
0.00 4.401E-02 -1.362E-01 -8.559E-03 -1.550E-03 -7.133E-04 -7.288E-04
1.928E-03
5.00 4.113E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.351E-04
3.735E-03
10.00 3.864E-02 -1.196E-01 -8.050E-03 -2.681E-03 -2.254E-03 -4.769E-04
5.399E-03 0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14393
1
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
FLIGHT CONDITIONS REFERENCE DIMENSIONS
FLIGHT CONDITIONS REFERENCE
FLIGHT CONDITIONS REFERENCE DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE
MACH   ALTITUDE   VELOCITY   PRESSURE   TEMPERATURE   REYNOLDS   REF.
REFERENCE

10.0

1.000

6.729

0.398

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

OF DATCOM

# DYNAMIC DERIVATIVES WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV

FLIGHT COND	ITIONS	R1	EFERENCE
DIMENSIONS			
MACH ALTITUDE VELOCITY		RATURE REYNOLDS	S REF.
REFERENCE LENGTH MOMENT			
NUMBER		AREA LONG. LA	
		FT**2 FT	
0 0.088 0.00 98.42 2.1162E+0	03 518.670 6.2314E	-05 4.640 0.790	0 6.040 1.125
0.055	AMIC DERIVATIVES (	DED DECDEE)	
0PITCHING	`	,	
YAWING	-ACCELERATION	KOLLING	
0 ALPHA CLQ CMQ	CLAD CMAD	CLP CYP C	NP CNR
CLR			
0			
-10.00 1.644E-01 -3.030E-01	4.333E-02 -1.340E-01	-7.836E-03 -5.128E-04	7.084E-04
-6.886E-04 -1.313E-03			
	-1.279E-01 -8.047E-0	3 -1.024E-03 4.895E-0	6 -7.405E-04
2.844E-04			
	-1.363E-01 -8.561E-03	-1.551E-03 -7.133E-0	4 -7.267E-04
1.930E-03			
	-1.273E-01 -8.654E-03	-2.143E-03 -1.506E-0	3 -6.329E-04
3.740E-03			
	2 -1.196E-01 -8.046E-0	3 -2.682E-03 -2.254E-0	3 -4.747E-04
5.406E-03	1 D		
0*** VEHICLE WEIGHT = 5.34			
0*** LEVEL FLIGHT LIFT COEFF	ICIENI = 0.09996		
		ROL METHODS PER A	DDII 1076 VEDCION
OF DATCOM	STABILITY AND CONT	KOL METHODS PEK A	PRIL 1970 VERSION
	FRISTICS AT ANGLE (	OF ATTACK AND IN SII	OESI ID
		RIZONTAL TAIL CON	·=
	oject Rascal 72 UAV	MIZOIVINE IME COM	IGUMITION
110	Jeet Ruseur 72 Off v		
FLIGHT COND	ITIONS	R1	EFERENCE
DIMENSIONS	1110110		SI EREI (CE
MACH ALTITUDE VELOCITY	PRESSURE TEMPE	RATURE REYNOLDS	S REF.
REFERENCE LENGTH MOMENT			
NUMBER		AREA LONG. LA	AT. HORIZ VERT
FT FT/SEC LB/FT**2			FT FT FT
0 0.029 100.00 32.81 2.1086E-			
0.055			
0	DERIY	ATIVE (PER DEGREE)	
0 ALPHA CD CL CM (	CN CA XCP	CLA CMA CY	B CNB CLB
0			
-10.0 0.047 -0.499 0.1863 -0.49	99 -0.040 -0.373 9.29	6E-02 -2.822E-02 -8.80	03E-03 5.192E-04
-9.163E-04			

-5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.387E-02 -9.183E-00 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02 -9.183E-05.0 0.076 0.975 -0.3567 0.978 -0.010 -0.365 1.021E-01 -4.442E-02 -9.241E-01 0.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02 -9.274E-00 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)	04 04
-10.0 0.951 -2.095 0.461	
-5.0 0.910 0.208 0.459 0.0 1.000 2.492 0.453	
5.0 1.000 4.736 0.423	
10.0 1.000 6.725 0.398	<b></b>
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSIC OF DATCOM	)N
DYNAMIC DERIVATIVES	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	
Project Rascal 72 UAV	
FLIGHT CONDITIONS REFERENCE	
DIMENSIONS	
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER	
NUMBER AREA LONG. LAT. HORIZ V	ERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT	
0 0.029 100.00 32.81 2.1086E+03 518.313 2.0724E+05 4.640 0.790 6.040 1.125 0.055	
DYNAMIC DERIVATIVES (PER DEGREE)	
0ROLLING	
YAWING 0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR	
CLR	
-10.00 1.625E-01 -2.979E-01 4.252E-02 -1.316E-01 -7.832E-03 -5.326E-04 6.664E-04 -7.064E-04 -1.307E-03	
-5.00 4.054E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.341E-06 -7.545E-04	
2.837E-04	
0.00 4.396E-02 -1.360E-01 -8.558E-03 -1.522E-03 -6.558E-04 -7.464E-04 1.922E-03	
5.00 4.110E-02 -1.272E-01 -8.659E-03 -2.088E-03 -1.394E-03 -6.702E-04	
3.724E-03	
10.00 3.863E-02 -1.195E-01 -8.067E-03 -2.604E-03 -2.100E-03 -5.384E-04	
5.386E-03 0*** VEHICLE WEIGHT = 5.34 LB.	
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.90207	
1	
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSIC OF DATCOM	)N
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	
Project Rascal 72 UAV	
FLIGHT CONDITIONS REFERENCE	
DIMENSIONS	

DIMENSIONS -----

MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT 0 0.044 100.00 49.19 2.1086E+03 518.313 3.1071E+05 4.640 0.790 6.040 1.125
0.055 0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
0 -10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.931E-04
-9.167E-04 -5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-02 -9.189E-04
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-02 -9.192E-04
5.0 0.071 0.975 -0.3579 0.978 -0.014 -0.366 1.021E-01 -4.457E-02 -9.253E-04
10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.175E-02 -9.289E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0 ALITIA Q/QINI EI SLON D(EI SLON)/D(ALITIA)
-10.0 0.957 -2.095 0.461
-5.0 0.917 0.208 0.459 0.0 1.000 2.492 0.453
0.0
10.0 1.000 6.726 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT
0 0.044 100.00 49.19 2.1086E+03 518.313 3.1071E+05 4.640 0.790 6.040 1.125 0.055
DYNAMIC DERIVATIVES (PER DEGREE)
0ROLLINGYAWING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR CLR 0
-10.00 1.631E-01 -2.997E-01 4.281E-02 -1.324E-01 -7.832E-03 -5.197E-04 6.929E-04 -6.984E-04 -1.308E-03
-5.00 4.082E-02 -1.263E-01 -8.042E-03 -1.023E-03 6.520E-06 -7.489E-04 2.838E-04
0.00 4.396E-02 -1.360E-01 -8.557E-03 -1.539E-03 -6.922E-04 -7.372E-04 1.924E-03
5.00 4.110E-02 -1.272E-01 -8.657E-03 -2.122E-03 -1.465E-03 -6.500E-04
3.727E-03 10.00 3.862E-02 -1.195E-01 -8.061E-03 -2.653E-03 -2.198E-03 -5.015E-04
5.390E-03

```
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                       Project Rascal 72 UAV
------ FLIGHT CONDITIONS ------
                                               ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                 REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                           AREA LONG. LAT. HORIZ VERT
          FT/SEC LB/FT**2
     FT
                           DEG R
                                  1/FT
                                             FT**2
                                                     FT
                                                          FT
                                                                FT
                                                                     FT
             65.58 2.1086E+03 518.313 4.1426E+05
0 0.059 100.00
                                                  4.640
                                                        0.790
                                                              6.040
                                                                    1.125
0.055
0
                           -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD
             CL
                             CA
                                  XCP
                                         CLA
                   CM
                        CN
                                                 CMA
                                                         CYB
                                                                CNB
                                                                        CLB
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.747E-04
-9.171E-04
 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02
                                                                  -9.196E-04
 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02
                                                                  -9.201E-04
 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02
                                                                  -9.264E-04
 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                  -9.302E-04
               ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
              -10.0
                    0.961 - 2.096
                                  0.461
               -5.0
                    0.921
                          0.208
                                 0.459
               0.0 1.000 2.493
                                 0.453
               5.0
                    1.000 4.738
                                 0.423
               10.0 1.000 6.727
                                  0.398
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                       DYNAMIC DERIVATIVES
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                       Project Rascal 72 UAV
   ------ FLIGHT CONDITIONS ------
                                                ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                 REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                          AREA LONG. LAT. HORIZ VERT
                                             FT**2
     FT
          FT/SEC LB/FT**2
                           DEG R 1/FT
                                                     FT
                                                          FT
                                                                FT
                                                                     FT
0 0.059 100.00 65.58 2.1086E+03 518.313 4.1426E+05 4.640 0.790 6.040 1.125
0.055
                     DYNAMIC DERIVATIVES (PER DEGREE)
0 ------ROLLING------
-----YAWING-----
0 ALPHA
                  CMQ
                          CLAD
                                  CMAD
                                           CLP
                                                          CNP
                                                                 CNR
          CLO
                                                  CYP
```

0\*\*\* VEHICLE WEIGHT = 5.34 LB.

CLR

0\*\*\* LEVEL FLIGHT LIFT COEFFICIENT = 0.40128

0 -10.00
-6.933E-04 -1.309E-03
-5.00 4.103E-02 -1.270E-01 -8.043E-03 -1.024E-03 4.892E-06 -7.453E-04
2.840E-04
0.00 4.399E-02 -1.361E-01 -8.558E-03 -1.550E-03 -7.132E-04 -7.315E-04
1.925E-03
5.00 4.112E-02 -1.272E-01 -8.655E-03 -2.142E-03 -1.506E-03 -6.379E-04
3.730E-03
10.00 3.863E-02 -1.195E-01 -8.056E-03 -2.681E-03 -2.254E-03 -4.798E-04
5.394E-03
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.22575
1
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055 0
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055   0
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055   0
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055 0.055 0
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055 0.055 0
0 0.073
0 0.073
0 0.073
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055 0.055 0
0 0.073
0 0.073
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055 0.055 0
0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.790 6.040 1.125 0.055 0.055 0
0 0.073
0 0.073
0 0.073
0 0.073
0 0.073

----- FLIGHT CONDITIONS ----- REFERENCE

DIMENSIONS -----

MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER **NUMBER** AREA LONG. LAT. HORIZ NUMBER VERT FT\*\*2 FT FT/SEC LB/FT\*\*2 DEG R 1/FT FT FT FT FT 0 0.073 100.00 81.99 2.1086E+03 518.313 5.1788E+05 4.640 0.7906.040 1 125 0.055 DYNAMIC DERIVATIVES (PER DEGREE) -----PITCHING------ -----ROLLING-------ROLLING-----------YAWING-----CLQ 0 ALPHA CMQ CLAD CMAD CLP CYP **CNP CNR** CLR 0 -10.00 1.640E-01 -3.021E-01 4.318E-02 -1.336E-01 -7.835E-03 -5.126E-04 7.084E-04 -6.907E-04 -1.311E-03 -5.00 4.120E-02 -1.275E-01 -8.045E-03 -1.024E-03 4.887E-06 -7.426E-04 2.842E-04 4.401E-02 -1.362E-01 -8.559E-03 -1.550E-03 -7.133E-04 -7.288E-04 0.001.928E-03 4.113E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.351E-04 5.00 3.735E-03 10.00 3.864E-02 -1.196E-01 -8.050E-03 -2.681E-03 -2.254E-03 -4.769E-04 5.399E-03 0\*\*\* VEHICLE WEIGHT = 5.34 LB. 0\*\*\* LEVEL FLIGHT LIFT COEFFICIENT = 0.14445 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION 1 OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV ----- FLIGHT CONDITIONS ---------- REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF REFERENCE LENGTH MOMENT REF. CENTER LONG. LAT. **NUMBER** NUMBER AREA HORIZ VERT FT\*\*2 FT FT/SEC LB/FT\*\*2 DEG R 1/FT FT FT FT FT 6.040 0 0.088 100.00 98.38 2.1086E+03 518.313 6.2143E+05 0.790 4.640 1.125 0.055 ------DERIVATIVE (PER DEGREE)------0 0 ALPHA CD CLCMCA XCP CLA CMA CYB CNB **CLB** CN-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.488E-04 -9.181E-04 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02 -9.208E-04 0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02 -9.217E-04 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02 -9.283E-04 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02 -9.324E-04 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 0 -10.00.967 -2.0970.461

0.927

-5.0

0.208

0.459

0.0 1.000 2.494 0.453 1.000 4.740 5.0 0.423 10.0 1.000 6.729 0.398 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION DYNAMIC DERIVATIVES WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV ----- FLIGHT CONDITIONS ---------- REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER NUMBER AREA LONG. LAT. HORIZ **VERT** FT/SEC LB/FT\*\*2 DEG R 1/FT FT\*\*2 FT FT FT FT 98.38 2.1086E+03 518.313 6.2143E+05 4.640 0.7906.040 1.125 DYNAMIC DERIVATIVES (PER DEGREE) ------PITCHING------ -----ACCELERATION------ -----ROLLING-----------YAWING-----0 ALPHA CLO CMO CLAD CMAD CLP CYP CNP CNR -10.00 1.644E-01 -3.030E-01 4.333E-02 -1.340E-01 -7.836E-03 -5.128E-04 7.084E-04 -6.886E-04 -1.313E-03 4.135E-02 -1.279E-01 -8.047E-03 -1.024E-03 4.895E-06 -7.406E-04 4.404E-02 -1.363E-01 -8.561E-03 -1.551E-03 -7.133E-04 -7.267E-04 4.115E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.330E-04 3.866E-02 -1.196E-01 -8.046E-03 -2.682E-03 -2.254E-03 -4.747E-04 0\*\*\* VEHICLE WEIGHT = 5.34 LB. AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV ------ FLIGHT CONDITIONS ------ REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER LONG. LAT. NUMBER AREA HORIZ VERT FT\*\*2 FT/SEC LB/FT\*\*2 DEG R 1/FT FT FT FT FT 32.80 2.1010E+03 517.957 2.0667E+05 4.640 0.7906.040 1.125 -----DERIVATIVE (PER DEGREE)-----CL CN CA**XCP** CLA CMA CYB **CLB** CM **CNB** 

1

OF DATCOM

**NUMBER** 

0.055

CLR 0

-5.00

2.844E-04

0.00 1.930E-03 5.00

3.740E-03 10.00

5.406E-03

OF DATCOM

**NUMBER** 

0 ALPHA

0.055 0

0

FT

0 0.029 200.00

CD

FT

0.0.088 100.00

-9.163E-04	
-5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.387E-02	-9.183E-04
0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02	-9.183E-04
5.0 0.076 0.975 -0.3567 0.978 -0.010 -0.365 1.021E-01 -4.442E-02	-9.241E-04
10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02	-9.274E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)	
0	
-10.0 0.951 -2.095 0.461 -5.0 0.910 0.208 0.459	
0.0 1.000 2.492 0.453	
5.0 1.000 4.736 0.423	
10.0 1.000 6.725 0.398	
1 AUTOMATED STABILITY AND CONTROL METHODS PER APR	IL 1976 VERSION
OF DATCOM	
DYNAMIC DERIVATIVES	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIG	URATION
Project Rascal 72 UAV	
FLIGHT CONDITIONS REFI	ERENCE
DIMENSIONS	DEE
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REFERENCE LENGTH MOMENT REF. CENTER	REF.
NUMBER NUMBER AREA LONG. LAT.	. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT	
0 0.029 200.00 32.80 2.1010E+03 517.957 2.0667E+05 4.640 0.790	
0.055	
DYNAMIC DERIVATIVES (PER DEGREE)	
0ROLLING	
YAWING	
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP	CNR
CLR	
0 10.00 1.625E.01 2.078E.01 4.252E.02 1.215E.01 7.822E.02 5.227E.04 6	66 <b>2</b> E 04
-10.00 1.625E-01 -2.978E-01 4.252E-02 -1.315E-01 -7.832E-03 -5.327E-04 67.064E-04 -1.307E-03	002E-04
-5.00 4.053E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.362E-06	-7 545F-04
2.837E-04	-7.3 <del>4</del> 3 <u>L</u> -0 <del>4</del>
0.00 4.396E-02 -1.360E-01 -8.558E-03 -1.522E-03 -6.555E-04	-7.465E-04
1.922E-03	
5.00 4.110E-02 -1.272E-01 -8.659E-03 -2.087E-03 -1.394E-03	-6.703E-04
3.724E-03	
10.00 3.863E-02 -1.195E-01 -8.067E-03 -2.604E-03 -2.099E-03	-5.386E-04
5.386E-03	
0*** VEHICLE WEIGHT = 5.34 LB.	
1 ALITOMATED OTABILITY AND CONTROL MENUODO DED ADD	II 1076 VEDGION
1 AUTOMATED STABILITY AND CONTROL METHODS PER APR	IL 1976 VERSION
OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDES	ZI ID
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIG	
Project Rascal 72 UAV	
= - 0 J = 1 - 1 1 2 4 4 1	
FLIGHT CONDITIONS REFE	ERENCE

 $-10.0 \quad 0.047 \quad -0.499 \quad 0.1863 \quad -0.499 \quad -0.040 \quad -0.373 \quad 9.296 \\ E-02 \quad -2.822 \\ E-02 \quad -8.803 \\ E-03 \quad 5.194 \\ E-04 \quad -0.499 \quad -0.040 \quad -0.040 \quad -0.040 \\ E-04 \quad -0.040 \quad -0.040 \quad -0.040 \\ E-05 \quad -0.040 \\$ 

DIMENSIONS MACH ALTITUDE VEI REFERENCE LENGTH MO NUMBER	OMENT REF. CENT						VERT
	B/FT**2 DEG R	1/FT	FT**2	FT	FT	FT	FT .125
0.055							
0 0 ALPHA CD CL C		DERIV <i>A</i> XCP CI	,		EE) CYB		CLB
0	772 0 500 0 042	0.275 0.205	E 02 2 0	37E 03	0.002E.0	2 4022	E 04
-10.0 0.045 -0.499 0.18 -9.167E-04	-0.300 -0.043	·0.373 9.303.	E-02 -2.82	26E-02	-8.803E-0	3 4.933	E-04
-5.0 0.029 -0.027 0.014							89E-04
0.0 0.038 0.451 -0.153 5.0 0.071 0.975 -0.357	30						92E-04 53E-04
10.0 0.128 1.472 -0.59							289E-04
	IA Q/QINF EPS	LON D(EPSL	ON)/D(AI	LPHA)			
-10.0	0.957 -2.095	0 461					
	0.917 0.208						
	1.000 2.492						
	1.000 4.737 1.000 6.726	0.423 0.398					
	ATED STABILITY		OL METH	IODS PE	R APRIL	1976 VE	RSION
OF DATCOM			OL WLI	ODSIL	K I II KIL	1970 12	RSIOI
	DYNAMIC DI						
WIN	IG-BODY-VERTICA		IZONTAL	TAIL C	ONFIGUI	RATION	
	Project Rascal 7	2 UAV					
FLIGHT	CONDITIONS				- REFER	ENCE	
DIMENSIONS		NE TEMBED	ATUDE	DEVALO	n Da	DEE	
MACH ALTITUDE VEI REFERENCE LENGTH MO			ATUKE	KEYNC	DLDS	REF.	
NUMBER		MBER					VERT
FT FT/SEC LB					FT		FT
0 0.044 200.00 49.17 2 0.055	2.1010E+03 517.95	5/ 3.0986E+	-05	4.640	0.790	5.040 1	.125
0.033	DYNAMIC DERI	VATIVES (PI	ER DEGRI	EE)			
0PITCHING	ACCELERA	ATION		-ROLLIN	VG		
YAWING	AO CLAD	CMAD	CI D	CVD	CNP	CNR	
0 ALPHA CLQ CN CLR	MQ CLAD	CMAD	CLP	CYP	CNP	CNK	
0							
-10.00 1.631E-01 -2.997 -6.984E-04 -1.308E-03	E-01 4.280E-02 -	1.324E-01 -7	7.832E-03	-5.198E-	04 6.92	8E-04	
-5.00 4.0	082E-02 -1.263E-01	-8.042E-03	-1.023E-0	3 6.538	BE-06 -7.	489E-04	
2.838E-04	200E 02 1 200E 01	0.5570.02	1 520E 0	2 (010	NE 04 7	272E 04	
0.00 4.3 1.924E-03	396E-02 -1.360E-01	-8.33/E-03	-1.339E-0	<i>o</i> -0.919	'E-U4 -/.	3/3E-U4	
	10E-02 -1.272E-01	-8.657E-03	-2.122E-0	3 -1.464	E-03 -6.	501E-04	
3.727E-03							
10.00	862E-02 -1.195E-01	-8.061F-03	-2.653E-0	13 -2 19	7E-03 -5	.018E-04	

CLR

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM

> CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV

FLIGHT CONDITIONS REFERENCE			
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.			
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER AREA LONG. LAT. HORIZ VERT			
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT			
0 0.059 200.00 65.56 2.1010E+03 517.957 4.1313E+05 4.640 0.790 6.040 1.125 0.055			
0DERIVATIVE (PER DEGREE)			
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB			
0			
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.749E-04 -9.171E-04			
-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02 -9.196E-04			
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04			
5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04			
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04			
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)			
0			
-10.0 0.961 -2.096 0.461			
-5.0 0.921 0.208 0.459			
0.0 1.000 2.493 0.453			
5.0 1.000 4.738 0.423 10.0 1.000 6.727 0.398			
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION			
OF DATCOM			
DYNAMIC DERIVATIVES			
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION			
Project Rascal 72 UAV			
1 Toject Ruseut /2 0114			
FLIGHT CONDITIONS REFERENCE DIMENSIONS			
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.			
REFERENCE LENGTH MOMENT REF. CENTER			
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT			
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT			
0 0.059 200.00 65.56 2.1010E+03 517.957 4.1313E+05 4.640 0.790 6.040 1.125			
0.055			
DYNAMIC DERIVATIVES (PER DEGREE)			
0ROLLING			
YAWING			
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR			

0
-10.00 1.636E-01 -3.011E-01 4.302E-02 -1.331E-01 -7.833E-03 -5.124E-04 7.083E-04 -6.934E-04 -1.309E-03
-5.00 4.103E-02 -1.269E-01 -8.043E-03 -1.024E-03 4.892E-06 -7.453E-04
2.840E-04
0.00 4.399E-02 -1.361E-01 -8.558E-03 -1.550E-03 -7.132E-04 -7.315E-04 1.925E-03
5.00 4.112E-02 -1.272E-01 -8.655E-03 -2.142E-03 -1.506E-03 -6.379E-04
3.730E-03
10.00 3.863E-02 -1.195E-01 -8.056E-03 -2.681E-03 -2.254E-03 -4.798E-04
5.394E-03 0*** VEHICLE WEIGHT = 5.34 LB.
VEHICLE WEIGHT - 3.34 LB.
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.073 200.00 81.96 2.1010E+03 517.957 5.1646E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.606E-04
-9.176E-04
-5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02 -9.202E-04
0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02 -9.209E-04 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02 -9.274E-04
10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02 -9.314E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
-10.0 0.965 -2.096 0.461 -5.0 0.924 0.208 0.459
0.0 1.000 2.494 0.453
5.0 1.000 4.739 0.423
10.0 1.000 6.728 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
DYNAMIC DERIVATIVES
DYNAMIC DERIVATIVES WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS

REF.

```
NUMBER
NUMBER
                                             AREA LONG. LAT.
                                                                    HORIZ VERT
          FT/SEC LB/FT**2
                                                 FT**2
     FT
                             DEG R
                                    1/FT
                                                         FT
                                                               FT
                                                                    FT
                                                                          FT
                                                            0.790 6.040
0 0.073 200.00 81.96 2.1010E+03 517.957 5.1646E+05
                                                      4.640
                                                                        1.125
0.055
                      DYNAMIC DERIVATIVES (PER DEGREE)
   -----PITCHING------ ----ACCELERATION----- -----ROLLING------
-----YAWING-----
0 ALPHA CLQ
                   CMQ
                            CLAD
                                     CMAD
                                              CLP
                                                      CYP
                                                              CNP
                                                                      CNR
CLR
 -10.00 1.640E-01 -3.021E-01 4.318E-02 -1.336E-01 -7.835E-03 -5.126E-04 7.084E-04
-6.907E-04 -1.311E-03
 -5.00
                   4.120E-02 -1.275E-01 -8.045E-03 -1.024E-03 4.887E-06 -7.426E-04
2.842E-04
  0.00
                   4.401E-02 -1.362E-01 -8.559E-03 -1.550E-03 -7.133E-04 -7.288E-04
1.928E-03
  5.00
                   4.113E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.351E-04
3.735E-03
                   3.864E-02 -1.196E-01 -8.050E-03 -2.681E-03 -2.254E-03 -4.770E-04
 10.00
5.399E-03
0*** VEHICLE WEIGHT = 5.34 LB.
1
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                        Project Rascal 72 UAV
    ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                      REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                              AREA LONG. LAT. HORIZ
                                                                            VERT
     FT
           FT/SEC LB/FT**2
                             DEG R 1/FT
                                                 FT**2
                                                         FT
                                                               FT
                                                                          FT
                                                                    FT
0 0.088 200.00
               98.35 2.1010E+03 517.957 6.1973E+05
                                                      4.640
                                                            0.790 6.040 1.125
0.055
0
                             -----DERIVATIVE (PER DEGREE)-----
              CL
0 ALPHA CD
                    CM
                          CN CA
                                     XCP
                                            CLA
                                                   CMA
                                                             CYB
                                                                     CNB
                                                                             CLB
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.490E-04
-9.181E-04
 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02
                                                                       -9.208E-04
 0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02
                                                                       -9.217E-04
 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02
                                                                       -9.283E-04
 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02
                                                                       -9.324E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                      0.967 -2.097
                -10.0
                                    0.461
                -5.0
                     0.927 0.208
                                    0.459
                0.0
                     1.000 2.494
                                    0.453
```

REFERENCE LENGTH MOMENT REF. CENTER

5.0

1.000 4.740

0.423

10.0 1.000 6.729 0.398 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

OF DATCOM

## DYNAMIC DERIVATIVES WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV

FLI	GHT CONDI	TIONS				REFER	ENCE	
DIMENSIONS								
MACH ALTITUDE	VELOCITY	PRESSUR	E TEMPE	RATURE	REYNO	OLDS	REF.	
REFERENCE LENGTH	MOMENT :	REF. CENT	ER					
NUMBER		NUM	IBER	AREA	LONG.	LAT.	HORIZ	VERT
FT FT/SEC	LB/FT**2	DEG R	1/FT	FT**2	2 FT	FT	FT	FT
0 0.088 200.00 98.3	35 2.1010E+	03 517.95	7 6.1973E	+05	4.640	0.790	6.040 1	.125
0.055								
			VATIVES (P					
0PITCHING	} <i>1</i>	ACCELERA	TION		ROLLI	NG		
YAWING								
0 ALPHA CLQ CLR 0	CMQ	CLAD	CMAD	CLP	CYP	CNP	CNR	
-10.00 1.644E-01 -3 -6.886E-04 -1.313E-03	.029E-01 4	.332E-02 -	1.340E-01 -	7.836E-03	-5.128E	-04 7.08	4E-04	
-5.00 2.844E-04	4.135E-02	-1.279E-01	-8.047E-03	-1.024E-0	03 4.89	5E-06 -7	.406E-04	
0.00	4.404E-02	-1.363E-01	-8.561E-03	-1.551E-0	03 -7.13	3E-04 -7	.268E-04	
1.930E-03 5.00	4.115E-02	-1.273E-01	-8.654E-03	-2.143E-0	03 -1.50	6E-03 -6	.330E-04	
3.740E-03								
10.00	3.866E-02	-1.196E-01	-8.046E-03	-2.682E-	03 -2.25	54E-03 -4	1.748E-04	
5.406E-03	TD 5.24 I	D						
0*** VEHICLE WEIGH	T = 5.34 L	ΔB.						
1 AUTOF DATCOM	TOMATED S	TABILITY A	AND CONTI	ROL METI	HODS PE	ER APRIL	1976 VE	RSION
	CHARACTE	ERISTICS A	T ANGLE O	F ATTACI	K AND II	N SIDESL	JP	
	WING-BODY			_				
	Proj	ect Rascal 72	2 UAV					
FLI	GHT CONDI	TIONS				REFER	ENCE	
DIMENSIONS								
MACH ALTITUDE	VELOCITY	PRESSUR	E TEMPE	RATURE	REYNO	OLDS	REF.	
REFERENCE LENGTH	MOMENT	REF. CENT	ER					
NUMBER			IBER					
FT FT/SEC	LB/FT**2	DEG R	1/FT	FT**2	2 FT	FT	FT	FT
0 0.029 300.00 32.7 0.055	79 2.0934E+	03 517.60	0 2.0610E	+05	4.640	0.790	6.040 1	.125
0			DERIV	ATIVE (PI	ER DEGE	REE)		_
0 ALPHA CD CL								
0								
-10.0 0.047 -0.499 -9.163E-04	0.1802 -0.49	9 -0.040 -	U.3/3 9.290	DE-UZ -2.8	822E-U2	-8.803E-0	<i>3.</i> 196	E-04

-5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.386E-02 -9.183E-04 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02 -9.183E-04 5.0 0.076 0.975 -0.3567 0.978 -0.009 -0.365 1.021E-01 -4.442E-02 -9.241E-04 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02 -9.274E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
-10.0 0.951 -2.095 0.461
-5.0 0.910 0.208 0.459 0.0 1.000 2.492 0.453
5.0 1.000 4.736 0.423 10.0 1.000 6.725 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM  DYNAMIC DERIVATIVES  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.029 300.00 32.79 2.0934E+03 517.600 2.0610E+05 4.640 0.790 6.040 1.125 0.055
DYNAMIC DERIVATIVES (PER DEGREE)
0ROLLING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR CLR
0 -10.00 1.625E-01 -2.978E-01 4.252E-02 -1.315E-01 -7.832E-03 -5.328E-04 6.660E-04
-7.065E-04 -1.307E-03
-5.00 4.053E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.383E-06 -7.546E-04 2.837E-04
-5.00 4.053E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.383E-06 -7.546E-04 2.837E-04 0.00 4.396E-02 -1.360E-01 -8.558E-03 -1.522E-03 -6.553E-04 -7.465E-04
-5.00
-5.00 4.053E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.383E-06 -7.546E-04 2.837E-04 0.00 4.396E-02 -1.360E-01 -8.558E-03 -1.522E-03 -6.553E-04 -7.465E-04 1.922E-03
-5.00
-5.00
-5.00
-5.00
-5.00

NUMBER NUMBER AREA LONG. LAT. HORIZ VER FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT  0.0.044 200.00 40.16.2.0024F+02.517.600 2.0002F+05.
0 0.044 300.00 49.16 2.0934E+03 517.600 3.0902E+05 4.640 0.790 6.040 1.125 0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLI
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.935E-04 -9.167E-04
-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.472 9.504E-02 -3.402E-02 -9.189E-04
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.719E-02 -9.192E-04 5.0 0.071 0.975 -0.3578 0.978 -0.014 -0.366 1.021E-01 -4.457E-02 -9.253E-04
10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.174E-02 -9.289E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0 -10.0 0.957 -2.095 0.461
-10.0 0.937 -2.093 0.461 -5.0 0.916 0.208 0.459
0.0 1.000 2.492 0.453
5.0 1.000 4.737 0.423
10.0 1.000 6.726 0.398  AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION  Project Pascal 72 HAV
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER NUMBER AREA LONG. LAT. HORIZ VER
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER NUMBER AREA LONG. LAT. HORIZ VER  FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
REFERENCE LENGTH       MOMENT REF. CENTER         NUMBER       AREA       LONG.       LAT.       HORIZ       VER         FT       FT/SEC       LB/FT**2       DEG R       1/FT       FT**2       FT       FT       FT         0 0.044       300.00       49.16       2.0934E+03       517.600       3.0902E+05       4.640       0.790       6.040       1.125
REFERENCE LENGTH       MOMENT REF. CENTER         NUMBER       NUMBER       AREA       LONG.       LAT.       HORIZ       VER         FT       FT/SEC       LB/FT**2       DEG R       1/FT       FT**2       FT       FT       FT         0 0.044       300.00       49.16       2.0934E+03       517.600       3.0902E+05       4.640       0.790       6.040       1.125         0.055       DYNAMIC DERIVATIVES (PER DEGREE)
REFERENCE LENGTH       MOMENT REF. CENTER         NUMBER       AREA LONG. LAT. HORIZ VER         FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT         0 0.044 300.00 49.16 2.0934E+03 517.600 3.0902E+05 4.640 0.790 6.040 1.125         0.055         DYNAMIC DERIVATIVES (PER DEGREE)         0PITCHING ACCELERATION ROLLING
REFERENCE LENGTH MOMENT REF. CENTER           NUMBER         NUMBER         AREA         LONG.         LAT.         HORIZ         VER           FT         FT/SEC         LB/FT**2         DEG R         1/FT         FT**2         FT         FT         FT         FT           0 0.044         300.00         49.16         2.0934E+03         517.600         3.0902E+05         4.640         0.790         6.040         1.125           0.055         DYNAMIC DERIVATIVES (PER DEGREE)           0        PITCHING
REFERENCE LENGTH       MOMENT REF. CENTER         NUMBER       AREA LONG. LAT. HORIZ VER         FT       FT/SEC       LB/FT**2       DEG R       1/FT       FT**2       FT       FT       FT         0 0.044       300.00       49.16       2.0934E+03       517.600       3.0902E+05       4.640       0.790       6.040       1.125         0.055       DYNAMIC DERIVATIVES (PER DEGREE)         0      PITCHINGACCELERATION
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER
REFERENCE LENGTH MOMENT REF. CENTER         NUMBER       AREA LONG. LAT. HORIZ VER         FT FT/SEC LB/FT**2 DEG R 1/FT FT FT       FT FT/SEC LB/FT**2 DEG R FT       FT FT FT FT FT FT         0 0.044 300.00 49.16 2.0934E+03 517.600 3.0902E+05 4.640 0.790 6.040 1.125       0.055         DYNAMIC DERIVATIVES (PER DEGREE)         0YAWINGYAWINGYAWING
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER  FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT FT  0 0.044 300.00 49.16 2.0934E+03 517.600 3.0902E+05 4.640 0.790 6.040 1.125  0.055  DYNAMIC DERIVATIVES (PER DEGREE)  0PITCHING CACCELERATION ROLLING
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER

OF DATCOM

# CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV

FLIGHT CONDITIONS REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT 0 0.059 300.00 65.54 2.0934E+03 517.600 4.1200E+05 4.640 0.790 6.040 1.125 0.055
0.033 0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
0 -10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.750E-04 -9.171E-04
-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02 -9.196E-04
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04
5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
-10.0 0.961 -2.096 0.461
-5.0 0.921 0.208 0.459
0.0 1.000 2.493 0.453
5.0 1.000 4.738 0.423
10.0 1.000 6.727 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM
DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
1 Toject Ruseur 72 OTTV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.059 300.00 65.54 2.0934E+03 517.600 4.1200E+05 4.640 0.790 6.040 1.125
0.055
DYNAMIC DERIVATIVES (PER DEGREE)
0ROLLING
YAWING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR
CLR
0 -10.00 1.636E-01 -3.010E-01 4.301E-02 -1.331E-01 -7.833E-03 -5.124E-04 7.083E-04 -6.934E-04 -1.309E-03

2.840E-04 0.00 4.399E-02 -1.361E-01 -8.558E-03 -1.550E-03 -7.132E-04 -7.315E-04 1.925E-03 5.00 4.112E-02 -1.272E-01 -8.655E-03 -2.142E-03 -1.506E-03 -6.380E-04 3.730E-03 10.00 3.863E-02 -1.195E-01 -8.056E-03 -2.681E-03 -2.254E-03 -4.798E-04 5.394E-03 0*** VEHICLE WEIGHT = 5.34 LB.  1
5.00
10.00 3.863E-02 -1.195E-01 -8.056E-03 -2.681E-03 -2.254E-03 -4.798E-04 5.394E-03 0*** VEHICLE WEIGHT = 5.34 LB.  1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
0*** VEHICLE WEIGHT = 5.34 LB.  1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
OF DATCOM  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER NUMBER AREA LONG. LAT. HORIZ VERT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT
NUMBER ST/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT
0 0.073 300.00 81.93 2.0934E+03 517.600 5.1505E+05 4.640 0.790 6.040 1.125 0.055
0DERIVATIVE (PER DEGREE)
0
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.607E-04 -9.176E-04
-5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02 -9.202E-04
0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02 -9.209E-04 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02 -9.274E-04
10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02 -9.314E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0
-10.0 0.964 -2.096 0.461
-5.0 0.924 0.208 0.459
0.0 1.000 2.494 0.453 5.0 1.000 4.739 0.423
10.0 1.000 6.728 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM
DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT

0 0.073 300.00 81.93 2.0934E+03 517.600 5.1505E+05 4.640 0.790 6.040 1.125 0.055  DYNAMIC DERIVATIVES (PER DEGREE)
0ROLLING
YAWING 0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR CLR 0
-10.00 1.640E-01 -3.021E-01 4.318E-02 -1.336E-01 -7.835E-03 -5.126E-04 7.084E-04 -6.907E-04 -1.311E-03
-5.00 4.120E-02 -1.275E-01 -8.045E-03 -1.024E-03 4.887E-06 -7.427E-04 2.842E-04
0.00 4.401E-02 -1.362E-01 -8.559E-03 -1.550E-03 -7.133E-04 -7.288E-04 1.928E-03
5.00 4.113E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.352E-04 3.735E-03
10.00 3.864E-02 -1.196E-01 -8.050E-03 -2.681E-03 -2.254E-03 -4.770E-04 5.399E-03
0*** VEHICLE WEIGHT = 5.34 LB.
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT 0 0.088 300.00 98.31 2.0934E+03 517.600 6.1803E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.491E-04
-9.181E-04 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02 -9.208E-04
0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02 -9.217E-04
5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02 -9.283E-04

0.967 -2.097 -10.0 0.461 -5.0 0.927 0.208 0.459 0.0 1.000 2.494 0.453 5.0 1.000 4.740 0.4231.000 6.729 0.398 10.0

ALPHA

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

Q/QINF EPSLON D(EPSLON)/D(ALPHA)

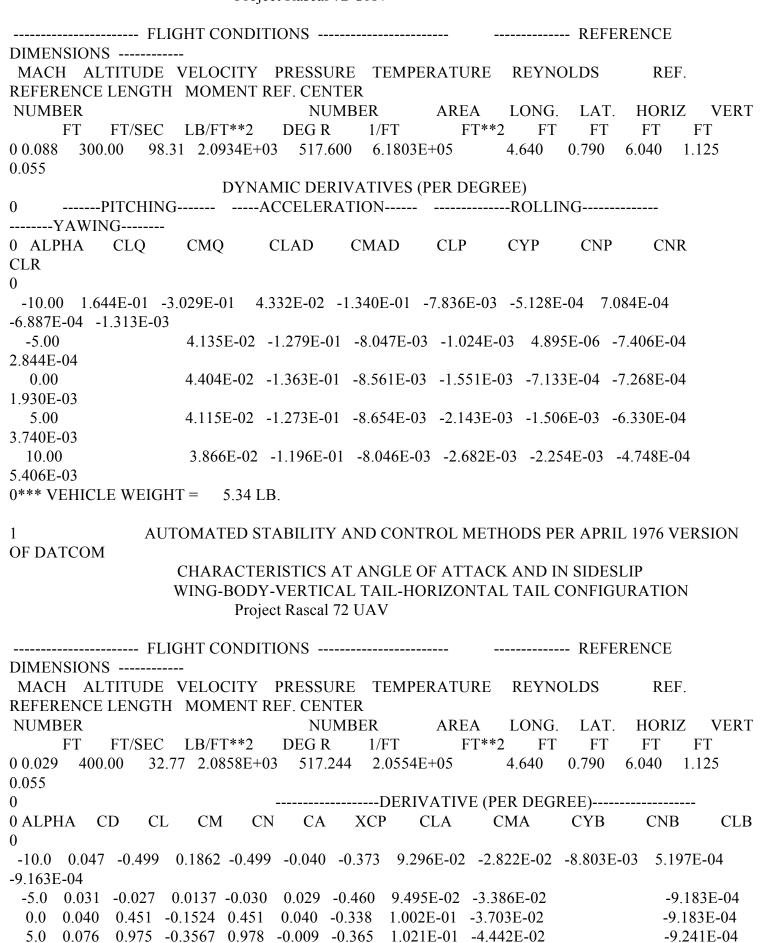
-9.324E-04

1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02

10.0 0.121

0

## DYNAMIC DERIVATIVES WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV



```
0
               -10.0
                     0.951 -2.095
                                    0.461
                -5.0
                     0.910
                            0.208
                                   0.459
                            2.492
                0.0
                     1.000
                                   0.453
                5.0
                     1.000
                            4.736
                                   0.423
                10.0
                     1.000
                            6.725
                                    0.398
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                         DYNAMIC DERIVATIVES
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                        Project Rascal 72 UAV
------ FLIGHT CONDITIONS ------
                                                  ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                                     LONG. LAT.
                                NUMBER
                                             AREA
                                                                   HORIZ
                                                                           VERT
                                                FT**2
     FT
          FT/SEC LB/FT**2
                             DEG R
                                      1/FT
                                                        FT
                                                              FT
                                                                   FT
                                                                         FT
0 0.029 400.00
              32.77 2.0858E+03 517.244 2.0554E+05
                                                     4.640
                                                           0.790 6.040 1.125
0.055
                      DYNAMIC DERIVATIVES (PER DEGREE)
     -----PITCHING------ -----ROLLING--------ROLLING-------
-----YAWING-----
0 ALPHA
          CLO
                   CMO
                           CLAD
                                    CMAD
                                             CLP
                                                     CYP
                                                             CNP
                                                                     CNR
CLR
0
 -10.00 1.625E-01 -2.978E-01 4.252E-02 -1.315E-01 -7.832E-03 -5.329E-04 6.658E-04
-7.065E-04 -1.307E-03
 -5.00
                   4.053E-02 -1.254E-01 -8.043E-03 -1.021E-03 9.404E-06 -7.546E-04
2.837E-04
  0.00
                  4.396E-02 -1.360E-01 -8.558E-03 -1.521E-03 -6.550E-04 -7.466E-04
1.922E-03
                  4.110E-02 -1.272E-01 -8.659E-03 -2.087E-03 -1.393E-03 -6.706E-04
  5.00
3.724E-03
 10.00
                   3.863E-02 -1.195E-01 -8.067E-03 -2.603E-03 -2.098E-03 -5.392E-04
5.386E-03
0*** VEHICLE WEIGHT = 5.34 LB.
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                        Project Rascal 72 UAV
  ----- FLIGHT CONDITIONS ------
                                                  ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF
REFERENCE LENGTH MOMENT REF. CENTER
                                             AREA LONG.
NUMBER
                                NUMBER
                                                             LAT.
                                                                   HORIZ
                                                                          VERT
          FT/SEC LB/FT**2
                             DEG R
                                   1/FT
                                                FT**2
                                                        FT
                                                              FT
                                                                   FT
     FT
                                                                         FT
```

10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02

0

ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)

-9.274E-04

0 0.044 400.00 49.14 2.0858E+03 517.244 3.0817E+05 4.640 0.790 6.040 1.125 0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLE
0 -10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.936E-04
-9.167E-04
-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.472 9.504E-02 -3.402E-02 -9.189E-04
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.719E-02 -9.192E-04
5.0 0.071 0.975 -0.3578 0.978 -0.014 -0.366 1.021E-01 -4.456E-02 -9.253E-04
10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.174E-02 -9.289E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
-10.0 0.957 -2.095 0.461
-5.0 0.916 0.208 0.459
0.0  1.000  2.492  0.453
5.0 1.000 4.737 0.423
10.0 1.000 6.726 0.398
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
DYNAMIC DERIVATIVES
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.044 400.00 49.14 2.0858E+03 517.244 3.0817E+05 4.640 0.790 6.040 1.125
0.055
DYNAMIC DERIVATIVES (PER DEGREE)
0PITCHINGACCELERATIONROLLING
YAWING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR
CLR
0
-10.00 1.631E-01 -2.997E-01 4.280E-02 -1.324E-01 -7.832E-03 -5.200E-04 6.924E-04
-6.985E-04 -1.308E-03
-5.00 4.081E-02 -1.263E-01 -8.042E-03 -1.022E-03 6.574E-06 -7.490E-04
2.838E-04
0.00 4.396E-02 -1.360E-01 -8.557E-03 -1.539E-03 -6.915E-04 -7.374E-04
1.924E-03
5.00 4.110E-02 -1.272E-01 -8.657E-03 -2.121E-03 -1.464E-03 -6.504E-04
3.727E-03
10.00 3.862E-02 -1.195E-01 -8.061E-03 -2.652E-03 -2.196E-03 -5.022E-04
5.390E-03

OF DATCOM

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

# CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV

FLIGHT CONDITIONS REFERENCE
DIMENSIONS  MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT
0 0.059 400.00 65.52 2.0858E+03 517.244 4.1087E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE) 0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
0
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.752E-04 -9.171E-04
-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02 -9.196E-04
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04
5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
-10.0 0.961 -2.096 0.461
-5.0 0.921 0.208 0.459
0.0
10.0 1.000 4.738 0.423
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
DYNAMIC DERIVATIVES WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV
FLIGHT CONDITIONS REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.059 400.00 65.52 2.0858E+03 517.244 4.1087E+05 4.640 0.790 6.040 1.125 0.055
DYNAMIC DERIVATIVES (PER DEGREE)  0PITCHINGACCELERATIONROLLING
YAWING
0 ALPHA CLQ CMQ CLAD CMAD CLP CYP CNP CNR CLR
0 -10.00 1.636E-01 -3.010E-01 4.301E-02 -1.331E-01 -7.833E-03 -5.124E-04 7.083E-04
-6.934E-04 -1.309E-03
-5.00 4.103E-02 -1.269E-01 -8.043E-03 -1.024E-03 4.892E-06 -7.454E-04 2.840E-04

```
1.925E-03
  5.00
                  4.112E-02 -1.272E-01 -8.655E-03 -2.142E-03 -1.506E-03 -6.380E-04
3.730E-03
 10.00
                  3.863E-02 -1.195E-01 -8.056E-03 -2.681E-03 -2.254E-03 -4.799E-04
5.394E-03
0*** VEHICLE WEIGHT = 5.34 LB.
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                       Project Rascal 72 UAV
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                   REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER AREA LONG. LAT. HORIZ
                                                                        VERT
          FT/SEC LB/FT**2
                            DEG R 1/FT
                                              FT**2
                                                            FT
     FT
                                                       FT
                                                                  FT
                                                                        FT
0 0.073 400.00
              81.90 2.0858E+03 517.244 5.1364E+05 4.640 0.790 6.040 1.125
0.055
                            -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD CL CM
                       CN CA XCP CLA CMA CYB CNB
                                                                          CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.609E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.491 9.518E-02 -3.426E-02
                                                                     -9.202E-04
 -5.0 0.027 -0.026 0.0146 -0.050 0.022 0.0
0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                    -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                    -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                     -9.314E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0 0.964 -2.096
                                   0.461
               -5.0 0.924 0.208
                                   0.459
                0.0 1.000 2.494
                                  0.453
                5.0 1.000
                          4.739
                                  0.423
                10.0 1.000 6.728
                                   0.398
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                        DYNAMIC DERIVATIVES
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
                       Project Rascal 72 UAV
 ----- FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                   REF.
REFERENCE LENGTH MOMENT REF. CENTER
                               NUMBER
NUMBER
                                            AREA LONG. LAT.
                                                                 HORIZ
                                                                        VERT
          FT/SEC LB/FT**2
                            DEG R
                                   1/FT
                                              FT**2
                                                      FT
                                                                  FT
     FT
                                                            FT
                                                                       FT
                                                    4.640
                                                          0.790
0 0.073 400.00
              81.90 2.0858E+03 517.244 5.1364E+05
                                                                6.040 1.125
0.055
```

4.399E-02 -1.361E-01 -8.558E-03 -1.550E-03 -7.132E-04 -7.316E-04

0.00

#### DYNAMIC DERIVATIVES (PER DEGREE) ------PITCHING------ -----ACCELERATION------ -----ROLLING-----------YAWING-----0 ALPHA CLQ CMQ CLAD CMAD CLP CYP **CNP CNR** CLR 0 -10.00 1.640E-01 -3.020E-01 4.318E-02 -1.336E-01 -7.835E-03 -5.126E-04 7.084E-04 -6.908E-04 -1.311E-03 -5.00 4.120E-02 -1.275E-01 -8.045E-03 -1.024E-03 4.887E-06 -7.427E-04 2.842E-04 0.00 4.401E-02 -1.362E-01 -8.559E-03 -1.550E-03 -7.133E-04 -7.289E-04 1.928E-03 4.113E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.352E-04 5.00 3.735E-03 3.864E-02 -1.196E-01 -8.050E-03 -2.681E-03 -2.254E-03 -4.770E-04 10.00 5.399E-03 0\*\*\* VEHICLE WEIGHT = 5.34 LB. AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION 1 OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION Project Rascal 72 UAV ----- FLIGHT CONDITIONS ------ REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT FT/SEC LB/FT\*\*2 DEG R 1/FT FT\*\*2 FT FT FT FT 0.0088 400.00 98.28 2.0858E+03 517.244 6.1634E+05 4.640 0.790 6.040 1.125 0.055 -----DERIVATIVE (PER DEGREE)------0 0 ALPHA CD CL CMCN CA XCP CLA CMA CYB CLB CNB 0 -10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.493E-04 -9.181E-04 -5.0 0.027 -0.028 0.0150 -0.030 0.024 -0.499 9.525E-02 -3.434E-02 -9.208E-04 0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02 -9.217E-04 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02 -9.283E-04 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02 -9.324E-04 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 0 0.967 -2.097 -10.00.461 -5.0 0.927 0.2080.459 2.494 0.01.000 0.453 5.0 1.000 4.740 0.423 10.0 1.000 6.729 0.398

**DYNAMIC DERIVATIVES** WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

OF DATCOM

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

### Project Rascal 72 UAV

```
----- FLIGHT CONDITIONS ------
                                                     ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                       REF
REFERENCE LENGTH MOMENT REF. CENTER
                                 NUMBER
NUMBER
                                               AREA LONG. LAT.
                                                                     HORIZ
                                                                           VERT
     FT
           FT/SEC
                   LB/FT**2
                              DEG R
                                     1/FT
                                                 FT**2
                                                                     FT
                                                          FT
                                                                FT
                                                                           FT
               98.28 2.0858E+03 517.244
0 0.088 400.00
                                        6.1634E+05
                                                      4.640
                                                             0.790
                                                                    6.040
                                                                          1.125
0.055
                       DYNAMIC DERIVATIVES (PER DEGREE)
     -----PITCHING------ -----ROLLING-------ROLLING------
-----YAWING-----
0 ALPHA CLQ
                   CMQ
                            CLAD
                                     CMAD
                                              CLP
                                                       CYP
                                                               CNP
                                                                       CNR
CLR
0
 -10.00 1.644E-01 -3.029E-01 4.332E-02 -1.340E-01 -7.836E-03 -5.128E-04 7.084E-04
-6.887E-04 -1.313E-03
                   4.135E-02 -1.279E-01 -8.047E-03 -1.024E-03 4.895E-06 -7.407E-04
 -5.00
2.844E-04
                   4.404E-02 -1.363E-01 -8.561E-03 -1.551E-03 -7.133E-04 -7.268E-04
  0.00
1.930E-03
  5.00
                   4.115E-02 -1.273E-01 -8.654E-03 -2.143E-03 -1.506E-03 -6.331E-04
3.740E-03
 10.00
                   3.866E-02 -1.196E-01 -8.046E-03 -2.682E-03 -2.254E-03 -4.748E-04
5.406E-03
0*** VEHICLE WEIGHT = 5.34 LB.
0
TRIM
SAVE
NEXT CASE
0 INPUT DIMENSIONS ARE IN FT, SCALE FACTOR IS 1.0000
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                         WING SECTION DEFINITION
0
               IDEAL ANGLE OF ATTACK = 1.12591 DEG.
             ZERO LIFT ANGLE OF ATTACK = -3.45103 DEG.
               IDEAL LIFT COEFFICIENT = 0.54407
        ZERO LIFT PITCHING MOMENT COEFFICIENT = -0.08548
```

LEADING EDGE RADIUS = 0.01587 FRACTION CHORD

MAXIMUM AIRFOIL THICKNESS = 0.12000 FRACTION CHORD

DELTA-Y = 3.16898 PERCENT CHORD

MACH ZERO LIFT-CURVE-SLOPE = 0.09729 /DEG.

0	MACH= $0.0294 \text{ LIFT-CURVE-SLOPE} = 0.09728 / \text{DEG}$ . XAC = $0.25450$
0	MACH= 0.0441 LIFT-CURVE-SLOPE = 0.09733 /DEG. XAC = 0.25454
0	MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09738 /DEG. XAC = 0.25484
0	MACH= $0.0735$ LIFT-CURVE-SLOPE = $0.09746$ /DEG. XAC = $0.25495$
0	MACH= $0.0882 \text{ LIFT-CURVE-SLOPE} = 0.09752 / \text{DEG.}$ XAC = $0.25502$
1	AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM	
	HORIZONTAL TAIL SECTION DEFINITION
0	IDEAL ANGLE OF ATTACK = $0.00000$ DEG.

ZERO LIFT ANGLE OF ATTACK = 0.00000 DEG.

IDEAL LIFT COEFFICIENT = 0.00000

ZERO LIFT PITCHING MOMENT COEFFICIENT = 0.00000

MACH ZERO LIFT-CURVE-SLOPE = 0.09830 /DEG.

LEADING EDGE RADIUS = 0.00893 FRACTION CHORD

MAXIMUM AIRFOIL THICKNESS = 0.09000 FRACTION CHORD

DELTA-Y = 2.37673 PERCENT CHORD

0	MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09840 /DEG. XAC = 0.25651
0	MACH= 0.0441 LIFT-CURVE-SLOPE = 0.09839 /DEG. XAC = 0.25646
0	MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09846 /DEG. XAC = 0.25650
0	MACH= $0.0735$ LIFT-CURVE-SLOPE = $0.09853$ /DEG. XAC = $0.25644$
0	MACH= 0.0882 LIFT-CURVE-SLOPE = 0.09864 /DEG. XAC = 0.25648
1	AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM	
	VERTICAL TAIL SECTION DEFINITION
0	IDEAL ANGLE OF ATTACK = $0.00000$ DEG.

ZERO LIFT ANGLE OF ATTACK = 0.00000 DEG.

IDEAL LIFT COEFFICIENT = 0.00000

ZERO LIFT PITCHING MOMENT COEFFICIENT = 0.00000

MACH ZERO LIFT-CURVE-SLOPE = 0.09830 /DEG.

LEADING EDGE RADIUS = 0.00893 FRACTION CHORD

MAXIMUM AIRFOIL THICKNESS = 0.09000 FRACTION CHORD

DELTA-Y = 2.37673 PERCENT CHORD

```
MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09840 /DEG. XAC = 0.25651
0
           MACH = 0.0441 LIFT-CURVE-SLOPE = 0.09839 / DEG.
                                                     XAC = 0.25646
0
           MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09846 /DEG. XAC = 0.25650
           MACH= 0.0735 LIFT-CURVE-SLOPE = 0.09853 /DEG. XAC = 0.25644
0
           MACH= 0.0882 LIFT-CURVE-SLOPE = 0.09864 /DEG. XAC = 0.25648
1
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
  ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                  REF.
REFERENCE LENGTH MOMENT REF. CENTER
                           NUMBER AREA LONG. LAT.
DEG R 1/FT FT**2 FT FT
NUMBER
                                                                HORIZ VERT
          FT/SEC LB/FT**2
     FT
                                                                FT
                                                                      FT
0 0.029 100.00
              32.81 2.1086E+03 518.313 2.0724E+05
                                                   4.640
                                                         0.790 6.040 1.125
0.055
0
                           ------DERIVATIVE (PER DEGREE)------
0 ALPHA CD CL
                        CN CA XCP CLA CMA CYB CNB
                   CM
                                                                         CLB
-10.0 0.047 -0.499 0.1863 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.192E-04
-9.163E-04
 -5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.387E-02
                                                                   -9.183E-04
 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02
                                                                   -9.183E-04
 5.0 0.076 0.975 -0.3567 0.978 -0.010 -0.365 1.021E-01 -4.442E-02
                                                                   -9.241E-04
 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02
                                                                   -9.274E-04
                ALPHA O/OINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                   0.951 - 2.095
               -10.0
                                  0.461
               -5.0
                    0.910
                          0.208
                                  0.459
                0.0
                    1.000
                          2.492
                                  0.453
                5.0
                    1.000
                         4.736
                                  0.423
               10.0 1.000 6.725
                                  0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.90207
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                  REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                           AREA LONG. LAT. HORIZ
                            DEG R 1/FT
          FT/SEC LB/FT**2
                                              FT**2
                                                      FT
                                                           FT
                                                                      FT
     FT
                                                                 FT
0 0.044 100.00
             49.19 2.1086E+03 518.313 3.1071E+05
                                                   4.640
                                                         0.790
                                                               6.040
0.055
                              -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD CL CM
                        CN CA XCP CLA
                                                CMA CYB CNB
                                                                         CLB
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.931E-04
```

```
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-02
                                                                     -9.192E-04
 5.0 0.071 0.975 -0.3579 0.978 -0.014 -0.366 1.021E-01 -4.457E-02
                                                                     -9.253E-04
 10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.175E-02
                                                                     -9.289E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                     0.957 -2.095
                                   0.461
               -10.0
                -5.0
                     0.917 0.208
                                   0.459
                                0.453
0.423
                0.0 1.000 2.492
                5.0 1.000 4.737
                10.0 1.000 6.726
                                   0.398
0*** VEHICLE WEIGHT = 5.34 LB.
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ FLIGHT CONDITIONS
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
                               NUMBER
NUMBER
                                            AREA LONG. LAT.
                                                                  HORIZ VERT
                                              FT**2 FT
     FT
          FT/SEC LB/FT**2 DEG R 1/FT
                                                             FT
                                                                  FT
                                                                       FT
0 0.059 100.00 65.58 2.1086E+03 518.313 4.1426E+05
                                                    4.640
                                                           0.790 6.040 1.125
0.055
                            -----DERIVATIVE (PER DEGREE)-----
0
              CL
                                          CLA
                                                  CMA
                                                           CYB
0 ALPHA CD
                   CM
                         CN CA
                                    XCP
                                                                   CNB
                                                                           CLB
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.747E-04
-9.171E-04
 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02
                                                                     -9.196E-04
 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02
                                                                     -9.201E-04
 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02
                                                                     -9.264E-04
 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                     -9.302E-04
0
                ALPHA O/OINF EPSLON D(EPSLON)/D(ALPHA)
0
               -10.0 0.961 -2.096
                                   0.461
                     0.921 0.208
                -5.0
                                   0.459
                0.0 1.000 2.493
                                  0.453
                5.0
                     1.000
                          4.738
                                  0.423
                                 0.398
                10.0
                    1.000 6.727
0*** VEHICLE WEIGHT = 5.34 LB.
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
  ------ FLIGHT CONDITIONS ------
                                                  ----- REFERENCE
DIMENSIONS -----
```

-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-02

-9.189E-04

-9.167E-04

MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER	
NUMBER NUMBER AREA LONG. LAT. HORIZ VER	RT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT	
0.088 100.00 98.38 2.1086E+03 518.313 6.2143E+05 4.640 0.790 6.040 1.125 0.055	
DERIVATIVE (PER DEGREE)	
) ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CL )	LΒ
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.488E-04 9.181E-04	
-5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02 -9.208E-04	
0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02 -9.217E-04	
5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02 -9.283E-04	
10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02 -9.324E-04	4
ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)	
10.0 0.007 2.007 0.461	
-10.0 0.967 -2.097 0.461	
-5.0 0.927 0.208 0.459	
0.0 1.000 2.494 0.453	
5.0 1.000 4.740 0.423 10.0 1.000 6.729 0.398	
)*** VEHICLE WEIGHT = 5.34 LB.	
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM	
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION FLIGHT CONDITIONS REFERENCE	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	RТ
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	RТ
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	RT
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	RT
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	LΒ
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	LB

10.0 1.000 6.725 0.398 0\*\*\* VEHICLE WEIGHT = 5.34 LB.

1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM

CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

FLIGHT CONDITIONS	REFERENCE
DIMENSIONS	
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE RE	YNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER	
NUMBER NUMBER AREA LON	NG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2	FT FT FT
0 0.044 200.00 49.17 2.1010E+03 517.957 3.0986E+05 4.64	0 0.790 6.040 1.125
0.055	
0DERIVATIVE (PER DI	EGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA	CYB CNB CLB
0	
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-	02 -8.803E-03 4.933E-04
-9.167E-04	
-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-0	
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-0	
5.0 0.071 0.975 -0.3579 0.978 -0.014 -0.366 1.021E-01 -4.457E-0	
10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.174E-0	
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA	$\Lambda$ )
-10.0 0.957 -2.095 0.461	
-5.0 0.917 0.208 0.459	
0.0 1.000 2.492 0.453	
5.0 1.000 4.737 0.423	
10.0 1.000 6.726 0.398	
0*** VEHICLE WEIGHT = 5.34 LB.	

# CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

FLIGHT CONDITIONS REFERENCE	
DIMENSIONS	
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS RE	F.
REFERENCE LENGTH MOMENT REF. CENTER	
NUMBER NUMBER AREA LONG. LAT. HORI	Z VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT	FT
0 0.059 200.00 65.56 2.1010E+03 517.957 4.1313E+05 4.640 0.790 6.040	1.125
0.055	
0DERIVATIVE (PER DEGREE)	
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNI	B CLB
0	
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.7	49E-04
-9.171E-04	
-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02 -9	9.196E-04
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9	.201E-04

```
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                      -9.302E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
               -10.0
                     0.961 -2.096
                                    0.461
                -5.0
                     0.921 0.208
                                   0.459
                0.0
                     1.000 2.493
                                   0.453
                5.0
                     1.000 4.738
                                   0.423
                10.0
                     1.000 6.727
                                   0.398
0*** VEHICLE WEIGHT = 5.34 LB.
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
  ----- FLIGHT CONDITIONS -----
                                                    ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
                                NUMBER
                                             AREA LONG. LAT.
NUMBER
                                                                   HORIZ VERT
     FT
          FT/SEC LB/FT**2
                             DEG R 1/FT
                                                FT**2
                                                        FT
                                                              FT
                                                                   FT
                                                                         FT
              81.96 2.1010E+03 517.957 5.1646E+05
                                                           0.790
0 0.073 200.00
                                                     4.640
                                                                 6.040
                                                                       1.125
0.055
0
                            -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD
              CL
                    CM
                          CN
                               CA
                                    XCP
                                           CLA
                                                   CMA
                                                            CYB
                                                                            CLB
                                                                    CNB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.606E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02
                                                                      -9.202E-04
 0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                      -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                      -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                      -9.314E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0
                     0.965 - 2.096
                                    0.461
                -5.0
                     0.924
                            0.208
                                   0.459
                            2.494
                0.0
                     1.000
                                   0.453
                          4.739
                5.0
                     1.000
                                   0.423
                    1.000 6.728
                10.0
                                   0.398
0*** VEHICLE WEIGHT =
                      5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14497
1
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
     ----- FLIGHT CONDITIONS -----
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
```

5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02

-9.264E-04

NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.088 200.00 98.35 2.1010E+03 517.957 6.1973E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
0 -10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.490E-04
-9.181E-04 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02 -9.208E-04
0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02 -9.217E-04
5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02 -9.283E-04
10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02 -9.324E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0
-10.0 0.967 -2.097 0.461
-5.0 0.927 0.208 0.459
0.0 1.000 2.494 0.453
5.0 1.000 4.740 0.423
10.0 1.000 6.729 0.398
0*** VEHICLE WEIGHT = 5.34 LB. 0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.10068
0 EEVEETEIGHT EN TEGENTICIENT 0.10000
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
WING-BODT-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.029 300.00 32.79 2.0934E+03 517.600 2.0610E+05 4.640 0.790 6.040 1.125
0.055
0DERIVATIVE (PER DEGREE) 0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
0
-10.0 0.047 -0.499 0.1862 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.196E-04
-9.163E-04
-5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.386E-02 -9.183E-04
0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02 -9.183E-04
5.0 0.056 0.055 0.0565 0.050 0.000 0.065 1.001E.01 4.40E.00
5.0 0.076 0.975 -0.3567 0.978 -0.009 -0.365 1.021E-01 -4.442E-02 -9.241E-04
10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02 -9.274E-04
10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02 -9.274E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.951 -2.095 0.461
10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02 -9.274E-04 O ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)

5.0 10.0

1.000

1.000

4.736

6.725

0.423

0.398

0\*\*\* VEHICLE WEIGHT = 5.34 LB. 0\*\*\* LEVEL FLIGHT LIFT COEFFICIENT = 0.90862

-9.171E-04

```
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
  ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                REF.
REFERENCE LENGTH MOMENT REF. CENTER
                           NUMBER
DEG R 1/FT
NUMBER
                                          AREA LONG. LAT.
                                                              HORIZ VERT
     FT
          FT/SEC LB/FT**2
                                            FT**2 FT
                                                          FT
                                                              FT
                                                                   FT
             49.16 2.0934E+03 517.600 3.0902E+05
0 0.044 300.00
                                                 4.640
                                                        0.790 6.040 1.125
0.055
0
                          -----DERIVATIVE (PER DEGREE)------
0 ALPHA CD CL
                  CM
                        CN CA XCP CLA CMA CYB
                                                                       CLB
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.935E-04
-9.167E-04
 -5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.472 9.504E-02 -3.402E-02
                                                                 -9.189E-04
 0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.719E-02
                                                                 -9.192E-04
 5.0 0.071 0.975 -0.3578 0.978 -0.014 -0.366 1.021E-01 -4.457E-02
                                                                 -9.253E-04
 10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.174E-02
                                                                 -9.289E-04
               ALPHA O/OINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                   0.957 - 2.095
              -10.0
                                 0.461
               -5.0
                    0.916 0.208
                                 0.459
               0.0
                    1.000
                          2.492
                                 0.453
                    1.000 4.737
               5.0
                                 0.423
               10.0 1.000 6.726
                                 0.398
0*** VEHICLE WEIGHT = 5.34 LB.
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
     ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                      AREA LONG. LAT. HORIZ VERT
          FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT
     FT
                                                         FT
                                                               FT
                                                                    FT
             65.54 2.0934E+03 517.600 4.1200E+05
                                                 4.640 0.790 6.040 1.125
0 0.059 300.00
0.055
                             ------DERIVATIVE (PER DEGREE)------
0
0 ALPHA CD CL CM CN CA XCP CLA CMA
                                                        CYB
                                                               CNB
                                                                       CLB
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.750E-04
```

```
0.036  0.451  -0.1534  0.451  0.036  -0.340  1.003E-01  -3.733E-02
 0.0
                                                                   -9.201E-04
 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02
                                                                   -9.264E-04
 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                    -9.302E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
               -10.0
                     0.961 - 2.096
                                   0.461
               -5.0
                    0.921
                           0.208
                                  0.459
                0.0 1.000 2.493
                                  0.453
                5.0 1.000 4.738 0.423
               10.0 1.000 6.727 0.398
0*** VEHICLE WEIGHT = 5.34 LB.
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                  REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                           AREA LONG. LAT. HORIZ VERT
                                  1/FT FT**2
     FT
          FT/SEC LB/FT**2 DEG R
                                                    FT FT
                                                                 FT
                                                                      FT
0 0.073 300.00 81.93 2.0934E+03 517.600 5.1505E+05
                                                   4.640
                                                         0.790 6.040
0.055
                           -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD CL CM
                         CN CA
                                   XCP CLA CMA CYB
                                                                  CNB
                                                                         CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.607E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02
                                                                    -9.202E-04
 0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                   -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                   -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                    -9.314E-04
               ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0 0.964 -2.096
                                   0.461
                    0.924 0.208
               -5.0
                                  0.459
                0.0 1.000 2.494
                                0.453
0.423
                    1.000 4.739
                5.0
               10.0 1.000 6.728
                                  0.398
0*** VEHICLE WEIGHT = 5.34 LB.
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
   ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                  REF.
```

-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02

-9.196E-04

O   O   O   O   O   O   O   O   O   O	REFERENCE LENG NUMBER FT FT/SE 0 0.029 400.00 3	CC LB/FT**2	NUMB DEG R	ER ARE	FT**2 FT	FT	HORIZ VERT FT FT 040 1.125
OALPHA				DERIVATIV	/E (PER DEGI	REE)	
-10.0 0.047 -0.499 0.1862 -0.499 -0.040 -0.373 9.296F-02 2-8.823F-02 -8.803F-03 5.197E-04 -9.163E-04 -9.163E-04 -9.163E-04 -9.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.386F-02 -9.183F-04 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.703E-02 -9.183F-04 5.0 0.076 0.975 -0.3567 0.978 -0.009 -0.565 1.002E-01 -3.703E-02 -9.241E-04 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02 -9.274E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.951 -2.095 0.461 -5.0 0.910 0.208 0.459 -0.0 1.000 2.492 0.453 5.0 1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 5.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 4.736 0.423 10.0 1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0.398 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725 0 -1.000 6.725	0 ALPHA CD (						
-9.163E-04 -5.0	•						
-5.0		9 0.1862 -0.499	-0.040 -0.	373 9.296E-02	2 -2.822E-02	-8.803E-03	5.197E-04
0.0		7 0 0127 0 020	0.020 0.4	(0 0 405E 02	2 20CE 02		0.1025.04
1.00							
10.0							
0							
0							9.27 IL 01
-10.0 0.951 -2.095 0.461 -5.0 0.910 0.208 0.459 -0.0 1.000 2.492 0.453 -5.0 1.000 4.736 0.423 -10.0 1.000 6.725 0.398  0****VEHICLE WEIGHT = 5.34 LB.  1		1121111 4,41		1(2(212231)	,, = (11=1111)		
0.0		-10.0 0.951	-2.095 0	461			
1.00		-5.0 0.910	0.208 0.4	159			
10.0							
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM							
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM				398			
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION	0*** VEHICLE WEI	GHT = 5.34 LE	3.				
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION		AUTOMATED ST	ABILITY A	ND CONTROL	METHODS PI	ER APRIL 1	976 VERSION
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION   REFERENCE	OF DATCOM	CHADACTER	DICTICS AT	ANCLE OF AT		M CIDECI IE	<b>1</b>
PLIGHT CONDITIONS							
MACH		WING-BODT	- VERTICAL	TAIL-HORIZO	NIAL IAIL (	CONTIOUR	ATION
MACH	I	FLIGHT CONDIT	IONS			REFERE	NCE
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $							
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	MACH ALTITUD	E VELOCITY	PRESSURE	TEMPERATU	JRE REYN	OLDS	REF.
FT	REFERENCE LENG	TH MOMENT R	EF. CENTE	}			
0 0.059	NUMBER		NUMB	ER ARI	EA LONG.	LAT. I	HORIZ VERT
0.055 0							
0 ALPHA		65.52 2.0858E+03	3 517.244	4.1087E+05	4.640	0.790 6.0	040 1.125
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB 0   -10.0 $0.043$ $-0.500$ $0.1882$ $-0.500$ $-0.044$ $-0.377$ $9.312E-02$ $-2.833E-02$ $-8.804E-03$ $4.752E-04$ $-9.171E-04$ -5.0 $0.028$ $-0.028$ $0.0145$ $-0.030$ $0.026$ $-0.483$ $9.511E-02$ $-3.416E-02$ $-9.196E-04$ $0.0$ $0.036$ $0.451$ $-0.1534$ $0.451$ $0.036$ $-0.340$ $1.003E-01$ $-3.733E-02$ $-9.201E-04$ $-9.201E-04$ $1.00$ $0.123$ $1.473$ $-0.6003$ $1.472$ $-0.135$ $-0.408$ $9.666E-02$ $-5.190E-02$ $-9.302E-04$ $0.012$ $0.012$ $0.012$ $0.014$ $0.012$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0.014$ $0$							
0 -10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.752E-04 -9.171E-04 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02 -9.196E-04 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423					`	,	
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.752E-04 -9.171E-04 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02 -9.196E-04 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423		CL CM CN	CA .	XCP CLA	CMA	CYB	CNB CLB
-9.171E-04 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02 -9.196E-04 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423		0 0 1002 0 500	0.044 0	277 0 212E 02	2 922E 02	0 004E 02	4.752E 04
-5.0		0 0.1882 -0.500	-0.044 -0.	3// 9.312E-02	2 -2.833E-02	-8.804E-03	4./52E-04
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)  0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423		0 0145 0 020	0.026 0.4	92 0 511E 02	2 416E 02		0 106E 04
5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)  -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423							
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423							
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423							
0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423							9.30 <b>2</b> E 01
-10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423				(== 22311)	. ( == ===,		
-5.0 0.921 0.208 0.459 0.0 1.000 2.493 0.453 5.0 1.000 4.738 0.423		-10.0 0.961	-2.096 0	461			
5.0 1.000 4.738 0.423							
		0.0 1.000	2.493 0.4	153			
10.0 1.000 6.727 0.398							
10.0 1.000 0.727 0.370		10.0 1.000	6.727 0.	398			

-9.181E-04

```
AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                REF.
REFERENCE LENGTH MOMENT REF. CENTER
                                         AREA LONG. LAT. HORIZ VERT
NUMBER
                             NUMBER
          FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT
     FT
                                                         FT
                                                               FT
                                                                    FT
             81.90 2.0858E+03 517.244 5.1364E+05
0 0.073 400.00
                                                 4.640 0.790 6.040 1.125
0.055
                          -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD CL
                                               CMA CYB
                  CM
                      CN CA XCP CLA
                                                               CNB
                                                                       CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.609E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.491 9.518E-02 -3.426E-02
                                                                  -9.202E-04
 0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                 -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                 -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                  -9.314E-04
               ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
              -10.0
                    0.964 -2.096
                                 0.461
                    0.924 0.208
               -5.0
                                 0.459
               0.0 1.000 2.494
                                 0.453
               5.0
                    1.000 4.739
                                 0.423
               10.0
                    1.000 6.728
                                 0.398
0*** VEHICLE WEIGHT = 5.34 LB.
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
----- FLIGHT CONDITIONS ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                             NUMBER
                                          AREA LONG. LAT.
                                                              HORIZ VERT
          FT/SEC LB/FT**2
                           DEG R
                                 1/FT
                                             FT**2
     FT
                                                     FT
                                                          FT
                                                               FT
                                                                    FT
             98.28 2.0858E+03 517.244 6.1634E+05
                                                        0.790 6.040 1.125
0 0.088 400.00
                                                 4.640
0.055
                          -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD
             CL
                  CM
                        CN CA
                                  XCP
                                         CLA
                                                CMA
                                                        CYB
                                                               CNB
                                                                       CLB
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.493E-04
```

-5.0 0.027 -0.028 0.0150 -0.030 0.024 -0.499 9.525E-02 -3.434E-02

-9.208E-04

```
0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02
                                                                           -9.217E-04
 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02
                                                                           -9.283E-04
 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02
                                                                           -9.324E-04
0
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                      0.967 -2.097
                -10.0
                                      0.461
                 -5.0
                       0.927
                                      0.459
                              0.208
                 0.0
                       1.000
                              2.494
                                      0.453
                 5.0
                       1.000
                            4.740
                                      0.423
                 10.0 1.000 6.729
                                      0.398
0*** VEHICLE WEIGHT = 5.34 LB.
 $ASYFLP SPANFI=1.1688,SPANFO=2.514,CHRDFI=0.1369,CHRDFO=0.1369,
 STYPE=4.0,NDELTA=5.,DELTAL=20.,10.,0.,-10.,-20.,
 DELTAR=-20.,-10.,0.,10.,20.,$
NEXT CASE
0 INPUT DIMENSIONS ARE IN FT, SCALE FACTOR IS 1.0000
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                          WING SECTION DEFINITION
0
                IDEAL ANGLE OF ATTACK = 1.12591 DEG.
              ZERO LIFT ANGLE OF ATTACK = -3.45103 DEG.
               IDEAL LIFT COEFFICIENT = 0.54407
        ZERO LIFT PITCHING MOMENT COEFFICIENT = -0.08548
             MACH ZERO LIFT-CURVE-SLOPE = 0.09729 /DEG.
                LEADING EDGE RADIUS = 0.01587 FRACTION CHORD
              MAXIMUM AIRFOIL THICKNESS = 0.12000 FRACTION CHORD
                      DELTA-Y = 3.16898 PERCENT CHORD
0
            MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09728 /DEG. XAC = 0.25450
            MACH = 0.0441 LIFT-CURVE-SLOPE = 0.09733 / DEG.
                                                            XAC = 0.25454
0
            MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09738 /DEG. XAC = 0.25484
0
            MACH= 0.0735 LIFT-CURVE-SLOPE = 0.09746 /DEG.
                                                            XAC = 0.25495
0
0
            MACH = 0.0882 LIFT-CURVE-SLOPE = 0.09752 / DEG.
                                                            XAC = 0.25502
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                        HORIZONTAL TAIL SECTION DEFINITION
0
                IDEAL ANGLE OF ATTACK = 0.00000 DEG.
              ZERO LIFT ANGLE OF ATTACK = 0.00000 DEG.
```

IDEAL LIFT COEFFICIENT = 0.00000

### ZERO LIFT PITCHING MOMENT COEFFICIENT = 0.00000

MACH ZERO LIFT-CURVE-SLOPE = 0.09830 /DEG.

LEADING EDGE RADIUS = 0.00893 FRACTION CHORD

MAXIMUM AIRFOIL THICKNESS = 0.09000 FRACTION CHORD

DELTA-Y = 2.37673 PERCENT CHORD

0 MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09840 /DEG. XAC = 0.25651
0 MACH= 0.0254 EH 1-CORVE-SLOPE = 0.09839 /DEG. XAC = 0.25646
0 MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09846 /DEG. XAC = 0.25650
0 MACH= 0.0735 LIFT-CURVE-SLOPE = 0.09853 /DEG. XAC = 0.25644
0 MACH= 0.0882 LIFT-CURVE-SLOPE = 0.09864 /DEG. XAC = 0.25648
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
VERTICAL TAIL SECTION DEFINITION
0 IDEAL ANGLE OF ATTACK = $0.00000$ DEG.
ZERO LIFT ANGLE OF ATTACK = $0.00000$ DEG.
IDEAL LIFT COEFFICIENT = 0.00000
ZERO LIFT PITCHING MOMENT COEFFICIENT = 0.00000
ZERO EN TITTETHING MOMENT COLFTICIENT - 0.00000
MACH ZERO LIFT-CURVE-SLOPE = 0.09830 /DEG.
LEADING EDGE RADIUS = 0.00893 FRACTION CHORD
MAXIMUM AIRFOIL THICKNESS = 0.09000 FRACTION CHORD
DELTA VI A 15 (52 DED CENT CHODE
DELTA-Y = 2.37673 PERCENT CHORD
0 MACH= 0.0294 LIFT-CURVE-SLOPE = 0.09840 /DEG. XAC = 0.25651
0 MACH= 0.0441 LIFT-CURVE-SLOPE = 0.09839 /DEG. XAC = 0.25646
0 MACH= 0.0588 LIFT-CURVE-SLOPE = 0.09846 /DEG. XAC = 0.25650
0 MACH= 0.0735 LIFT-CURVE-SLOPE = 0.09853 /DEG. XAC = 0.25644
0 MACH= 0.0882 LIFT-CURVE-SLOPE = 0.09864 /DEG. XAC = 0.25648
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER AREA LONG LAT HORIZ WERT
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT

1/FT FT\*\*2

FT

FT

FT

FT

FT

FT/SEC LB/FT\*\*2 DEG R

```
0 0.029
        0.00
              32.82 2.1162E+03 518.670 2.0781E+05
                                                               0.790 6.040 1.125
                                                       4.640
0.055
                              -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA
         CD
               CL
                     CM
                           CN
                                 CA
                                       XCP
                                              CLA
                                                       CMA
                                                                CYB
                                                                        CNB
                                                                                 CLB
-10.0 0.047 -0.499 0.1863 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.190E-04
-9.163E-04
 -5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.387E-02
                                                                           -9.183E-04
 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02
                                                                          -9.183E-04
 5.0 0.076 0.975 -0.3567 0.978 -0.010 -0.365 1.021E-01 -4.442E-02
                                                                          -9.241E-04
 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02
                                                                           -9.274E-04
0
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                -10.0
                       0.951 -2.095
                                      0.461
                 -5.0
                       0.910
                              0.208
                                      0.459
                       1.000
                             2.492
                 0.0
                                      0.453
                      1.000
                                      0.423
                 5.0
                            4.736
                 10.0
                       1.000 6.725
                                      0.398
0*** VEHICLE WEIGHT =
                        5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.89881
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
1
DATCOM
                   CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                    WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                       ----- REFERENCE
DIMENSIONS -----
 MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                         REF.
REFERENCE LENGTH MOMENT REF. CENTER
                                                AREA
NUMBER
                                  NUMBER
                                                         LONG.
                                                                LAT
                                                                       HORIZ
      FT
           FT/SEC
                   LB/FT**2
                               DEG R
                                        1/FT
                                                   FT**2
                                                            FT
                                                                  FT
                                                                        FT
                                                                              FT
        0.00 32.82 2.1162E+03
                                        2.0781E+05
                                                               0.790
0 0.029
                               518.670
                                                        4.640
                                                                    6.040
                                                                           1 125
0.055
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0
                         20.0
                                 0.0
                                       -20.0
                                              -40.0
0ALPHA
0
        3.196E-03 1.829E-03 0.000E+00 -1.829E-03 -3.196E-03
-10.0
-5.0
       -3.013E-04 -1.724E-04 0.000E+00 1.724E-04 3.013E-04
 0.0
       -3.910E-03 -2.237E-03 0.000E+00 2.237E-03 3.910E-03
       -7.871E-03 -4.504E-03 0.000E+00 4.504E-03 7.871E-03
 5.0
 10.0
       -1.154E-02 -6.601E-03 0.000E+00 6.601E-03 1.154E-02
0
0
                     DELTAL
                                 DELTAR
                                             (CL)ROLL
0
                     20.0
                             -20.0
                                       7.4041E-02
                     10.0
                             -10.0
                                       4.2447E-02
                      0.0
                              0.0
                                      0.0000E+00
                     -10.0
                              10.0
                                       -4.2447E-02
                                       -7.4041E-02
                     -20.0
                              20.0
               AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
```

**OF DATCOM** 

## CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

```
----- FLIGHT CONDITIONS ------
                                                  ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER
                                             AREA LONG. LAT. HORIZ VERT
                                                             FT
                            DEG R 1/FT
                                                FT**2
                                                        FT
     FT
          FT/SEC LB/FT**2
                                                                   FT
                                                                         FT
            49.21 2.1162E+03 518.670 3.1157E+05
0 0.044
        0.00
                                                    4 640
                                                         0.790 6.040 1.125
0.055
0
                            -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD
            CL
                   CM
                         CN CA
                                    XCP
                                           CLA
                                                   CMA
                                                           CYB
                                                                   CNB
                                                                           CLB
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.929E-04
-9.167E-04
 -5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-02
                                                                      -9.189E-04
 0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-02
                                                                     -9.192E-04
 5.0 0.071 0.975 -0.3579 0.978 -0.014 -0.366 1.021E-01 -4.457E-02
                                                                     -9.253E-04
 10.0 0.128 1.472 -0.5987 1.472 -0.130 -0.407 9.668E-02 -5.175E-02
                                                                      -9.289E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
               -10.0
                     0.957 - 2.095
                                    0.461
                -5.0
                     0.917 0.208
                                   0.459
                0.0 1.000 2.492
                                   0.453
                5.0 1.000 4.737
                                   0.423
                10.0 1.000 6.726
                                   0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.39983
1
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                 CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF
REFERENCE LENGTH MOMENT REF. CENTER
                                                     LONG. LAT.
NUMBER
                                NUMBER
                                             AREA
                                                                  HORIZ
          FT/SEC LB/FT**2
                                               FT**2
     FT
                             DEG R
                                     1/FT
                                                        FT
                                                             FT
                                                                   FT
                                                                         FT
        0.00 49.21 2.1162E+03 518.670 3.1157E+05
                                                   4.640 0.790 6.040 1.125
0 0.044
0.055
            -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                               0.0
                                    -20.0
                                           -40.0
0ALPHA
0
       3.203E-03 1.833E-03 0.000E+00 -1.833E-03 -3.203E-03
-10.0
-5.0
      -3.021E-04 -1.728E-04 0.000E+00 1.728E-04 3.021E-04
      -3.919E-03 -2.242E-03 0.000E+00 2.242E-03 3.919E-03
 0.0
      -7.888E-03 -4.514E-03 0.000E+00 4.514E-03 7.888E-03
 5.0
10.0
       -1.156E-02 -6.615E-03 0.000E+00 6.615E-03 1.156E-02
0
```

0 DEFINE DEFINE (C	CLINOLL
20.0 -20.0 7.4185E-0	12
10.0 -10.0 4.2529E-0	
0.0 0.0 0.0000E+0	
-10.0 10.0 -4.2529E-	
-20.0 20.0 -7.4185E-0	
	ΓROL METHODS PER APRIL 1976 VERSION
OF DATCOM	TROL METHODS LER ATRIE 1970 VERSION
CHARACTERISTICS AT ANGLE	OF ATTACK AND IN SIDESLIP
	ORIZONTAL TAIL CONFIGURATION
WING-BODT-VERTICAL TAIL-IR	MIZONTAL TAIL CONTIGURATION
FLIGHT CONDITIONS	REFERENCE
DIMENSIONS	REFERENCE
MACH ALTITUDE VELOCITY PRESSURE TEMPI	ERATURE REYNOLDS REF
REFERENCE LENGTH MOMENT REF. CENTER	
	AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT	
0 0.059 0.00 65.61 2.1162E+03 518.670 4.1540E	
0.055	
0DERI	VATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP	,
0	
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.3	13E-02 -2.833E-02 -8.804E-03 4.745E-04
-9.171E-04	
-5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.51	1E-02 -3.417E-02 -9.196E-04
0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.00	3E-01 -3.733E-02 -9.201E-04
5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.02	1E-01 -4.469E-02 -9.264E-04
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.66	56E-02 -5.190E-02 -9.302E-04
0 ALPHA Q/QINF EPSLON D(EP	
0	
-10.0 0.961 -2.096 0.461	
-5.0 0.921 0.208 0.459	
0.0 1.000 2.493 0.453	
5.0 1.000 4.738 0.423	
10.0 1.000 6.727 0.398	
0*** VEHICLE WEIGHT = 5.34 LB.	
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.22493	
1 AUTOMATED STABILITY AND CONTR	ROL METHODS PER APRIL 1976 VERSION OF
DATCOM	
CHARACTERISTICS OF HIGH LI	FT AND CONTROL DEVICES
WING PLAIN TRAILING-EDGE	
FLIGHT CONDITIONS	REFERENCE
DIMENSIONS	
MACH ALTITUDE VELOCITY PRESSURE TEMPI	ERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER	
	AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT	
0 0.059 0.00 65.61 2.1162E+03 518.670 4.1540E	+05 4.640 0.790 6.040 1.125
0.055	
0YAWING MOMENT COEFFICIEN	NT,CN,DUE TO CONTROL
DEFLECTION	

DELTAL

0

DELTAR

(CL)ROLL

```
0(DELTAL-DELTAR)=40.0 20.0
                                0.0
                                     -20.0
                                            -40.0
0ALPHA
0
-10.0
        3.209E-03 1.836E-03 0.000E+00 -1.836E-03 -3.209E-03
       -3.026E-04 -1.732E-04 0.000E+00 1.732E-04 3.026E-04
-5.0
 0.0
       -3.926E-03 -2.246E-03 0.000E+00 2.246E-03 3.926E-03
       -7.902E-03 -4.522E-03 0.000E+00 4.522E-03 7.902E-03
 5.0
       -1.158E-02 -6.626E-03 0.000E+00 6.626E-03 1.158E-02
10.0
0
0
                    DELTAL
                                DELTAR
                                            (CL)ROLL
0
                    20.0
                            -20.0
                                     7.4287E-02
                    10.0
                            -10.0
                                     4.2587E-02
                            0.0
                                     0.0000E+00
                     0.0
                    -10.0
                             10.0
                                     -4.2587E-02
                    -20.0
                             20.0
                                     -7.4287E-02
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                       REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA LONG. LAT.
                                                                     HORIZ
                                                                             VERT
           FT/SEC
                   LB/FT**2
                                                  FT**2
     FT
                              DEG R
                                       1/FT
                                                          FT
                                                                FT
                                                                     FT
        0.00
                              518.670 5.1930E+05
                                                            0.790
0 0.073
             82.02 2.1162E+03
                                                      4.640
                                                                  6.040
                                                                        1.125
0.055
0
                             -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD CL
                    CM
                          CN
                              CA
                                      XCP
                                             CLA
                                                     CMA
                                                              CYB
                                                                      CNB
                                                                              CLB
0
-10.0 0.042 -0.500 0.1890 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.602E-04
-9 176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02
                                                                        -9.202E-04
 0.0 0.035 0.451 -0.1537 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                        -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                        -9.274E-04
 10.0 0.122 1.473 -0.6007 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                        -9.314E-04
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                -10.0
                      0.965 -2.096
                                     0.461
                -5.0
                      0.924
                            0.208
                                    0.459
                 0.0
                      1.000 2.494
                                    0.453
                 5.0
                      1.000
                            4.739
                                    0.423
                10.0
                      1.000 6.728
                                     0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14393
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                    WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
    ------ FLIGHT CONDITIONS ------ REFERENCE
```

```
DIMENSIONS -----
  MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                                                                                                                        REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                                                              NUMBER
                                                                                                               AREA LONG. LAT.
                                                                                                                                                                   HORIZ
                                                                                                                                                                                   VERT
             FT
                          FT/SEC
                                             LB/FT**2
                                                                       DEG R
                                                                                             1/FT
                                                                                                                      FT**2
                                                                                                                                          FT
                                                                                                                                                       FT
                                                                                                                                                                     FT
                                                                                                                                                                                  FT
                   0.00
                               82.02 2.1162E+03
                                                                                            5.1930E+05
                                                                                                                                               0.790
                                                                                                                                                             6.040
0 0.073
                                                                         518.670
                                                                                                                               4.640
                                                                                                                                                                            1.125
0.055
0
                              -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                                                                            0.0
                                                                                         -20.0
                                                                                                         -40.0
0ALPHA
0
 -10.0
                   3.214E-03 1.839E-03 0.000E+00 -1.839E-03 -3.214E-03
                 -3.031E-04 -1.734E-04 0.000E+00 1.734E-04 3.031E-04
  -5.0
                -3.932E-03 -2.250E-03 0.000E+00 2.250E-03 3.932E-03
  0.0
  5.0
                -7.914E-03 -4.529E-03 0.000E+00 4.529E-03 7.914E-03
  10.0
                 -1.159E-02 -6.635E-03 0.000E+00 6.635E-03 1.159E-02
0
0
                                                 DELTAL
                                                                            DELTAR
                                                                                                        (CL)ROLL
0
                                                                    -20.0
                                                 20.0
                                                                                         7.4366E-02
                                                 10.0
                                                                    -10.0
                                                                                         4.2633E-02
                                                                     0.0
                                                  0.0
                                                                                       0.0000E+00
                                                -10.0
                                                                     10.0
                                                                                         -4.2633E-02
                                                                                         -7.4366E-02
                                                -20.0
                                                                     20.0
                                   AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                                           CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                                          WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
    ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
  MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                                                                                                                        REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                                                                                                                  LONG. LAT.
                                                                              NUMBER
                                                                                                               AREA
                                                                                                                                                                   HORIZ
                                                                                                                                                                                   VERT
             FT
                          FT/SEC LB/FT**2
                                                                       DEG R
                                                                                            1/FT
                                                                                                                    FT**2
                                                                                                                                                                     FT
                                                                                                                                          FT
                                                                                                                                                       FT
                                                                                                                                                                                  FT
0 0.088
                    0.00
                                  98.42 2.1162E+03
                                                                      518.670 6.2314E+05
                                                                                                                               4.640
                                                                                                                                               0.790 6.040
                                                                                                                                                                            1.125
0.055
0
                                                                      -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD CL
                                                                                                          CLA
                                                                                                                           CMA
                                                                                                                                                  CYB
                                                CM
                                                               CN
                                                                        CA
                                                                                         XCP
                                                                                                                                                                      CNB
                                                                                                                                                                                          CLB
0
  -10.0 \quad 0.042 \quad -0.501 \quad 0.1896 \quad -0.500 \quad -0.046 \quad -0.379 \quad 9.326 \\ E-02 \quad -2.850 \\ E-02 \quad -8.804 \\ E-03 \quad 4.486 \\ E-04 \quad -0.379 \quad -0.046 \quad -0.046 \\ E-04 \quad -0.046 \quad -0.046 \\ E-05 \quad -0.046 \\ 
-9.181E-04
   -5.0 0.026 -0.028 0.0151 -0.030 0.024 -0.500 9.525E-02 -3.434E-02
                                                                                                                                                                           -9.208E-04
    0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02
                                                                                                                                                                           -9.217E-04
             0.066  0.976  -0.3594  0.979  -0.019  -0.367  1.022E-01  -4.472E-02
    5.0
                                                                                                                                                                           -9.283E-04
   10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.192E-02
                                                                                                                                                                           -9.324E-04
0
                                        ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                                                     0.967 -2.097
                                      -10.0
                                                                                        0.461
                                       -5.0
                                                    0.927
                                                                    0.208
                                                                                      0.459
                                        0.0
                                                    1.000
                                                                    2.494
                                                                                      0.453
```

0.398 1.000 6.729 10.0 0\*\*\* VEHICLE WEIGHT = 5.34 LB. 0\*\*\* LEVEL FLIGHT LIFT COEFFICIENT = 0.09996 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES WING PLAIN TRAILING-EDGE FLAP CONFIGURATION ----- FLIGHT CONDITIONS ---------- REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER NUMBER NUMBER AREA LONG. LAT. HORIZ VERT FT/SEC LB/FT\*\*2 FT\*\*2 FT DEG R 1/FT FTFT FT FT0.00 98.42 2.1162E+03 518.670 6.2314E+05 0.790 6.040 1.125 0.088 4.640 0.055 -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL DEFLECTION-----0(DELTAL-DELTAR) = 40.0 20.0 0.0 -20.0 -40.00ALPHA 0 -10.0 3.218E-03 1.842E-03 0.000E+00 -1.842E-03 -3.218E-03 -3.035E-04 -1.737E-04 0.000E+00 1.737E-04 3.035E-04 -5.0 0.0 -3.937E-03 -2.253E-03 0.000E+00 2.253E-03 3.937E-03 -7.924E-03 -4.534E-03 0.000E+00 4.534E-03 7.924E-03 5.0 -1.161E-02 -6.642E-03 0.000E+00 6.642E-03 1.161E-02 10.0 0 0 DELTAL DELTAR (CL)ROLL 0 20.0 -20.0 7.4431E-02 -10.0 10.0 4.2670E-02 0.0000E+00 0.0 0.0-10.0 10.0 -4.2670E-02 -20.0 20.0 -7.4431E-02 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION 1 OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION ----- FLIGHT CONDITIONS ----------- REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER **NUMBER** NUMBER AREA LONG. LAT. HORIZ VERT FT\*\*2 FT FT/SEC LB/FT\*\*2 DEG R 1/FT FT FT FT FT 0 0.029 100.00 32.81 2.1086E+03 518.313 2.0724E+05 4.640 0.790 6.040 1.125 0.055 ------DERIVATIVE (PER DEGREE)------0 0 ALPHA CD CL XCP CLA CMA CMCN CA CYB CNB CLB -10.0 0.047 -0.499 0.1863 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.192E-04 -9.163E-04

5.0

1.000 4.740

0.423

```
-5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.387E-02
                                                                      -9.183E-04
     0.040  0.451  -0.1524  0.451  0.040  -0.338  1.002E-01  -3.704E-02
 0.0
                                                                      -9.183E-04
 5.0 0.076 0.975 -0.3567 0.978 -0.010 -0.365 1.021E-01 -4.442E-02
                                                                      -9.241E-04
 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02
                                                                      -9.274E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
               -10.0
                      0.951 - 2.095
                                    0.461
                -5.0
                     0.910 0.208
                                   0.459
                0.0 1.000 2.492
                                   0.453
                5.0 1.000 4.736
                                   0.423
                10.0 1.000 6.725
                                    0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.90207
            AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                            AREA LONG. LAT. HORIZ VERT
                                              FT**2
          FT/SEC LB/FT**2
                                                        FT
                                                             FT
                                                                    FT
     FT
                             DEG R 1/FT
                                                                         FT
0 0.029 100.00 32.81 2.1086E+03 518.313 2.0724E+05 4.640 0.790 6.040 1.125
0.055
           -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
0
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                               0.0 -20.0
                                           -40.0
0ALPHA
0
       3.196E-03 1.829E-03 0.000E+00 -1.829E-03 -3.196E-03
-10.0
       -3.013E-04 -1.724E-04 0.000E+00 1.724E-04 3.013E-04
-5.0
      -3.910E-03 -2.237E-03 0.000E+00 2.237E-03 3.910E-03
 0.0
      -7.870E-03 -4.504E-03 0.000E+00 4.504E-03 7.870E-03
 5.0
10.0
       -1.154E-02 -6.601E-03 0.000E+00 6.601E-03 1.154E-02
0
                    DELTAL DELTAR
                                          (CL)ROLL
0
                    20.0
                        -20.0
                                     7.4040E-02
                    10.0
                            -10.0
                                     4.2446E-02
                    0.0
                           0.0
                                    0.0000E+00
                   -10.0
                            10.0
                                    -4.2446E-02
                   -20.0
                            20.0
                                    -7.4040E-02
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
    ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
```

NUMBER AREA LONG. LAT. HORIZ VER	RТ
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT	
0 0.044 100.00 49.19 2.1086E+03 518.313 3.1071E+05 4.640 0.790 6.040 1.125 0.055	
0DERIVATIVE (PER DEGREE)	
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CL 0	LΒ
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.931E-04 -9.167E-04	
-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-02 -9.189E-04	F
0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-02 -9.192E-04	
5.0 0.071 0.975 -0.3579 0.978 -0.014 -0.366 1.021E-01 -4.457E-02 -9.253E-04	
10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.175E-02 -9.289E-04	1
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)	
0	
-10.0 0.957 -2.095 0.461	
-5.0 0.917 0.208 0.459	
0.0 1.000 2.492 0.453	
5.0 1.000 4.737 0.423	
10.0 1.000 6.726 0.398 0*** VEHICLE WEIGHT = 5.34 LB.	
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.40128	
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION C	Æ
DATCOM	Л
CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES	
WING PLAIN TRAILING-EDGE FLAP CONFIGURATION	
FLIGHT CONDITIONS REFERENCE	
DIMENSIONS	
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.	
REFERENCE LENGTH MOMENT REF. CENTER	
NUMBER NUMBER AREA LONG. LAT. HORIZ VER	RТ
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT	
0 0.044 100.00 49.19 2.1086E+03 518.313 3.1071E+05 4.640 0.790 6.040 1.125	
0.055	
0YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL	
DEFLECTION	
0(DELTAL-DELTAR) = 40.0 $20.0$ $0.0$ $-20.0$ $-40.0$	
0ALPHA	
0	
-10.0 3.203E-03 1.833E-03 0.000E+00 -1.833E-03 -3.203E-03	
-5.0 -3.020E-04 -1.728E-04 0.000E+00 1.728E-04 3.020E-04	
0.0 -3.919E-03 -2.242E-03 0.000E+00 2.242E-03 3.919E-03	
5.0 -7.888E-03 -4.514E-03 0.000E+00 4.514E-03 7.888E-03	
10.0 -1.156E-02 -6.615E-03 0.000E+00 6.615E-03 1.156E-02	
0 DELTAL DELTAR (CL)ROLL	
0 20.0 7.41945.02	
20.0 -20.0 7.4184E-02	
10.0 -10.0 4.2528E-02	
0.0 0.0 0.0000E+00	
-10.0 10.0 -4.2528E-02 -20.0 20.0 -7.4184E-02	
-20.0	

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION ------ FLIGHT CONDITIONS ------ REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER **NUMBER** NUMBER AREA LONG. LAT. HORIZ VERT 1/FT FT FT/SEC LB/FT\*\*2 DEG R FT\*\*2 FT FT FT FT 0 0.059 100.00 65.58 2.1086E+03 518.313 4.1426E+05 4.640 0.790 6.040 1.125 0.055 0 -----DERIVATIVE (PER DEGREE)-----0 ALPHA CD CL CM XCP CLA CMA CYB CNB CN CA CLB -10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.747E-04 -9.171E-04 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02 -9.196E-04 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02 -9.201E-04 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02 -9.264E-04 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02 -9.302E-04 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 0 -10.0 0.961 -2.096 0.461 -5.0 0.921 0.208 0.459 2.493 0.0 1.000 0.453 5.0 1.000 4.738 0.423 10.0 1.000 6.727 0.398 0\*\*\* VEHICLE WEIGHT = 5.34 LB. 0\*\*\* LEVEL FLIGHT LIFT COEFFICIENT = 0.22575 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF 1 DATCOM CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES WING PLAIN TRAILING-EDGE FLAP CONFIGURATION ----- FLIGHT CONDITIONS ------ REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER **NUMBER** NUMBER AREA LONG. LAT. HORIZ VERT 1/FT FT\*\*2 FT/SEC LB/FT\*\*2 DEG R FT FT FT FT FΤ 0 0.059 100.00 65.58 2.1086E+03 518.313 4.1426E+05 4.640 0.790 6.040 1.125 0.055 0 -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL DEFLECTION-----0(DELTAL-DELTAR) = 40.0 20.0 0.0 -20.0-40.0

3.209E-03 1.836E-03 0.000E+00 -1.836E-03 -3.209E-03 -3.026E-04 -1.732E-04 0.000E+00 1.732E-04 3.026E-04

-3.925E-03 -2.246E-03 0.000E+00 2.246E-03 3.925E-03

-7.902E-03 -4.522E-03 0.000E+00 4.522E-03 7.902E-03

0ALPHA

-10.0

-5.0

0.0

5.0

0

```
0
0
                              DELTAR
                   DELTAL
                                         (CL)ROLL
0
                   20.0
                          -20.0
                                   7.4286E-02
                   10.0
                          -10.0
                                   4.2587E-02
                   0.0
                           0.0
                       0.0
10.0
                                  0.0000E+00
                   -10.0
                                   -4.2587E-02
                   -20.0
                           20.0
                                   -7.4286E-02
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                  REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                       AREA LONG. LAT. HORIZ
                                                                      VERT
          FT/SEC LB/FT**2
                            DEG R 1/FT
                                             FT**2
                                                          FT
                                                      FT
                                                                 FT
                                                                      FT
                                                         0.790 6.040 1.125
0 0.073 100.00
              81.99 2.1086E+03 518.313 5.1788E+05
                                                   4.640
0.055
                           -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD
             CL
                   CM
                        CN CA XCP CLA CMA CYB
                                                                 CNB
                                                                         CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.604E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02
                                                                   -9.202E-04
 0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                   -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                   -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                   -9.314E-04
                ALPHA O/OINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0 0.965 -2.096
                                  0.461
               -5.0
                    0.924
                          0.208
                                  0.459
                0.0 1.000 2.494
                                  0.453
                5.0 1.000
                         4.739
                                  0.423
               10.0 1.000 6.728
                                  0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14445
            AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
1
DATCOM
                 CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                  WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                  REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                           AREA LONG. LAT.
                                                                HORIZ
                                                                      VERT
          FT/SEC LB/FT**2
                           DEG R 1/FT
                                             FT**2
     FT
                                                     FT
                                                           FT
                                                                 FT
                                                                      FT
0 0.073 100.00
             81.99 2.1086E+03 518.313 5.1788E+05 4.640
                                                         0.790
                                                               6.040
0.055
```

-1.158E-02 -6.626E-03 0.000E+00 6.626E-03 1.158E-02

10.0

```
-----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
0
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0
                        20.0
                               0.0
                                    -20.0
                                           -40.0
0ALPHA
0
-10.0
       3.214E-03 1.839E-03 0.000E+00 -1.839E-03 -3.214E-03
-5.0
       -3.031E-04 -1.734E-04 0.000E+00 1.734E-04 3.031E-04
      -3.932E-03 -2.250E-03 0.000E+00 2.250E-03 3.932E-03
 0.0
 5.0
       -7.914E-03 -4.528E-03 0.000E+00 4.528E-03 7.914E-03
       -1.159E-02 -6.635E-03 0.000E+00 6.635E-03 1.159E-02
10.0
0
0
                    DELTAL
                               DELTAR
                                          (CL)ROLL
0
                            -20.0
                    20.0
                                     7.4365E-02
                    10.0
                            -10.0
                                     4.2632E-02
                    0.0
                            0.0
                                    0.0000E+00
                   -10.0
                            10.0
                                    -4.2632E-02
                   -20.0
                            20.0
                                    -7.4365E-02
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
     ----- FLIGHT CONDITIONS -----
                                                    ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                             AREA LONG. LAT.
                                                                   HORIZ
                                                                         VERT
          FT/SEC LB/FT**2
                             DEG R 1/FT
                                                FT**2
                                                        FT
                                                             FT
     FT
                                                                    FT
                                                                         FT
0 0.088 100.00
               98.38 2.1086E+03 518.313 6.2143E+05
                                                     4.640
                                                            0.790 6.040
                                                                       1.125
0.055
                            -----DERIVATIVE (PER DEGREE)-----
0
              CL
0 ALPHA CD
                    CM
                          CN
                             CA
                                    XCP CLA CMA CYB
                                                                    CNB
                                                                            CLB
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.488E-04
-9.181E-04
 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02
                                                                      -9.208E-04
     -9.217E-04
 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02
                                                                      -9.283E-04
 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02
                                                                       -9.324E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0
                      0.967 -2.097
                                    0.461
                -5.0
                     0.927
                            0.208
                                   0.459
                0.0
                     1.000
                            2.494
                                   0.453
                5.0
                     1.000
                            4.740
                                   0.423
                10.0 1.000 6.729
                                    0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.10032
            AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
```

CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES

#### WING PLAIN TRAILING-EDGE FLAP CONFIGURATION ------ FLIGHT CONDITIONS ------ REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER **NUMBER** AREA LONG. LAT. HORIZ VERT NUMBER 1/FT FT\*\*2 FT FT FT/SEC LB/FT\*\*2 DEG R FT FT FT 0 0.088 100.00 98.38 2.1086E+03 518.313 6.2143E+05 4.640 0.790 6.040 1.125 0.055 -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL 0 DEFLECTION-----0(DELTAL-DELTAR) = 40.0 20.0 0.0 -20.0 -40.0 0ALPHA 0 3.218E-03 1.841E-03 0.000E+00 -1.841E-03 -3.218E-03 -10.0 -3.035E-04 -1.737E-04 0.000E+00 1.737E-04 3.035E-04 -5.0 -3.937E-03 -2.253E-03 0.000E+00 2.253E-03 3.937E-03 0.0-7.924E-03 -4.534E-03 0.000E+00 4.534E-03 7.924E-03 5.0 -1.161E-02 -6.642E-03 0.000E+00 6.642E-03 1.161E-02 10.0 0 DELTAL DELTAR (CL)ROLL 0 -20.0 20.0 7.4430E-02 -10.0 10.0 4.2669E-02 0.0000E+000.00.0 -10.0 10.0 -4.2669E-02 -20.0 20.0 -7.4430E-02 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION 1 OF DATCOM CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION ------ FLIGHT CONDITIONS ------ REFERENCE DIMENSIONS -----MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF. REFERENCE LENGTH MOMENT REF. CENTER **NUMBER** NUMBER AREA LONG. LAT. HORIZ VERT FT\*\*2 DEG R 1/FT FT FT/SEC LB/FT\*\*2 FT FT FTFT 0 0.029 200.00 32.80 2.1010E+03 517.957 2.0667E+05 4.640 0.790 6.040 1.125 0.055 ------DERIVATIVE (PER DEGREE)------0 0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB -10.0 0.047 -0.499 0.1863 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.194E-04 -9.163E-04 -5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.387E-02 -9.183E-04 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02 -9.183E-04

-10.0 0.951 -2.095 0.461

0

5.0 0.076 0.975 -0.3567 0.978 -0.010 -0.365 1.021E-01 -4.442E-02

10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02

ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)

-9.241E-04

-9.274E-04

```
2.492
                0.0
                     1.000
                                   0.453
                5.0 1.000
                          4.736
                                   0.423
                10.0 1.000 6.725
                                   0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.90534
            AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                 CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER
                                            AREA LONG. LAT.
                                                                  HORIZ VERT
          FT/SEC LB/FT**2
                            DEG R
                                   1/FT
                                               FT**2
                                                       FT
                                                             FT
     FT
                                                                  FT
                                                                        FT
0 0.029 200.00 32.80 2.1010E+03 517.957 2.0667E+05
                                                    4.640 0.790 6.040 1.125
0.055
            -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
0
DEFLECTION-----
0(DELTAL-DELTAR)=40.0 20.0
                              0.0
                                   -20.0
                                          -40.0
0ALPHA
0
-10.0
       3.196E-03 1.829E-03 0.000E+00 -1.829E-03 -3.196E-03
      -3.013E-04 -1.724E-04 0.000E+00 1.724E-04 3.013E-04
-5.0
      -3.910E-03 -2.237E-03 0.000E+00 2.237E-03 3.910E-03
 0.0
 5.0
      -7.870E-03 -4.504E-03 0.000E+00 4.504E-03 7.870E-03
10.0
       -1.154E-02 -6.601E-03 0.000E+00 6.601E-03 1.154E-02
0
0
                   DELTAL
                              DELTAR
                                          (CL)ROLL
0
                   20.0
                           -20.0
                                    7.4039E-02
                           -10.0
                   10.0
                                    4.2446E-02
                    0.0
                           0.0
                                   0.0000E+00
                            10.0
                                   -4.2446E-02
                   -10.0
                   -20.0
                            20.0
                                   -7.4039E-02
1
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                   ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                             AREA LONG. LAT.
                               NUMBER
                                                                  HORIZ
                                                                        VERT
                                               FT**2
          FT/SEC LB/FT**2
                            DEG R
                                   1/FT
                                                       FT
                                                                  FT
     FT
                                                             FT
                                                                        FT
0 0.044 200.00
              49.17 2.1010E+03 517.957 3.0986E+05
                                                    4.640
                                                           0.790 6.040
                                                                      1.125
0.055
0
                             ------DERIVATIVE (PER DEGREE)------
0 ALPHA
         CD
              CL
                   CM
                         CN
                               CA
                                    XCP
                                           CLA
                                                  CMA
                                                           CYB
                                                                   CNB
                                                                           CLB
0
```

0.910 0.208

-5.0

0.459

```
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.933E-04
-9.167E-04
 -5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.473 9.504E-02 -3.403E-02
                                                                        -9.189E-04
 0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.720E-02
                                                                        -9.192E-04
     0.071  0.975  -0.3579  0.978  -0.014  -0.366  1.021E-01  -4.457E-02
 5.0
                                                                        -9.253E-04
 10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.174E-02
                                                                        -9.289E-04
                 ALPHA O/OINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                -10.0
                     0.957 - 2.095
                                     0.461
                -5.0
                      0.917 0.208
                                    0.459
                 0.0 1.000 2.492
                                    0.453
                 5.0 1.000
                           4.737
                                    0.423
                 10.0 1.000 6.726
                                     0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.40274
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                    WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
------ FLIGHT CONDITIONS ------
                                                    ----- REFERENCE
DIMENSIONS -----
 MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                       REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA LONG. LAT.
                                                                     HORIZ VERT
                                                  FT**2
     FT
           FT/SEC LB/FT**2
                              DEG R
                                     1/FT
                                                          FT
                                                                FT
                                                                      FT
                                                                           FT
0 0.044 200.00 49.17 2.1010E+03 517.957 3.0986E+05
                                                             0.790 6.040 1.125
                                                       4.640
0.055
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
0
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                                0.0 -20.0
                                            -40.0
0ALPHA
0
-10.0
       3.203E-03 1.833E-03 0.000E+00 -1.833E-03 -3.203E-03
       -3.020E-04 -1.728E-04 0.000E+00 1.728E-04 3.020E-04
-5.0
 0.0
       -3.919E-03 -2.242E-03 0.000E+00 2.242E-03 3.919E-03
       -7.888E-03 -4.514E-03 0.000E+00 4.514E-03 7.888E-03
 5.0
 10.0
       -1.156E-02 -6.615E-03 0.000E+00 6.615E-03 1.156E-02
0
0
                    DELTAL
                                DELTAR
                                            (CL)ROLL
0
                    20.0
                            -20.0
                                     7.4183E-02
                     10.0
                            -10.0
                                      4.2528E-02
                     0.0
                             0.0
                                     0.0000E+00
                    -10.0
                             10.0
                                     -4.2528E-02
                    -20.0
                             20.0
                                     -7.4183E-02
               AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
    ----- FLIGHT CONDITIONS ------
                                                    ----- REFERENCE
DIMENSIONS -----
```

```
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                        REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                               AREA LONG. LAT. HORIZ
                                 NUMBER
                                                                               VERT
                                                  FT**2
     FT
           FT/SEC LB/FT**2
                              DEG R
                                        1/FT
                                                           FT
                                                                 FT
                                                                       FT
                                                                            FT
       200.00
               65.56 2.1010E+03 517.957 4.1313E+05
                                                        4.640
                                                              0.790
                                                                     6 040
                                                                           1 125
0 0.059
0.055
                              -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD
               CL
                     CM
                                 CA
                                      XCP
                                             CLA
                                                      CMA
                                                               CYB
                                                                       CNB
                                                                                CLB
                           CN
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.749E-04
-9.171E-04
 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.417E-02
                                                                         -9.196E-04
 0.0
     0.036  0.451  -0.1534  0.451  0.036  -0.340  1.003E-01  -3.733E-02
                                                                         -9.201E-04
 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02
                                                                         -9.264E-04
 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                          -9.302E-04
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                -10.0
                      0.961 -2.096
                                     0.461
                 -5.0
                      0.921
                             0.208
                                     0.459
                             2.493
                 0.0
                      1.000
                                     0.453
                 5.0
                      1.000
                            4.738
                                     0.423
                 10.0 1.000 6.727
                                     0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.22657
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                    WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
------ FLIGHT CONDITIONS ------
                                                      ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                        REF
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA
                                                        LONG. LAT.
                                                                      HORIZ
                                                                              VERT
                              DEG R
                                                  FT**2
     FT
           FT/SEC LB/FT**2
                                        1/FT
                                                           FT
                                                                 FT
                                                                       FT
                                                                            FT
0 0.059 200.00 65.56 2.1010E+03 517.957
                                        4.1313E+05
                                                       4.640
                                                              0.790
                                                                     6.040
                                                                           1.125
0.055
0
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR)=40.0 20.0
                                0.0
                                      -20.0
                                             -40.0
0ALPHA
0
-10.0
        3.209E-03 1.836E-03 0.000E+00 -1.836E-03 -3.209E-03
-5.0
       -3.026E-04 -1.732E-04 0.000E+00 1.732E-04 3.026E-04
       -3.925E-03 -2.246E-03 0.000E+00 2.246E-03 3.925E-03
 0.0
       -7.902E-03 -4.522E-03 0.000E+00 4.522E-03 7.902E-03
 5.0
       -1.158E-02 -6.626E-03 0.000E+00 6.626E-03 1.158E-02
10.0
0
                     DELTAL
                                DELTAR
                                            (CL)ROLL
0
                             -20.0
                     20.0
                                      7.4285E-02
                     10.0
                             -10.0
                                      4.2586E-02
                     0.0
                             0.0
                                     0.0000E+00
```

-10.0 10.0 -4.2586E-02 -20.0 20.0 -7.4285E-02

1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION

OF DATCOM

# CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

FLIGHT CONDITIONS	REFERENCE
DIMENSIONS MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE	REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER	
NUMBER NUMBER AREA	LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2	
0 0.073 200.00 81.96 2.1010E+03 517.957 5.1646E+05	
0.055	1.040 0.770 0.040 1.123
0DERIVATIVE (PE	R DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA C	
0 -10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.8	42E-02 -8.804E-03 4.606E-04
-9.176E-04	
-5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.42	
0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.73	9E-02 -9.209E-04
5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.47	0E-02 -9.274E-04
10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.19	91E-02 -9.314E-04
0 ALPHA Q/QINF EPSLON D(EPSLON)/D(AI	LPHA)
0	
-10.0 0.965 -2.096 0.461	
-5.0 0.924 0.208 0.459	
0.0 1.000 2.494 0.453	
5.0 1.000 4.739 0.423	
10.0 1.000 6.728 0.398	
0*** VEHICLE WEIGHT = 5.34 LB.	
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14497	
1 AUTOMATED STABILITY AND CONTROL METHO	DDS PER APRIL 1976 VERSION OF
DATCOM	DOTER MILE 1970 VERSION OF
CHARACTERISTICS OF HIGH LIFT AND CO	NTROL DEVICES
WING PLAIN TRAILING-EDGE FLAP CON	
FLIGHT CONDITIONS	
DIMENSIONS	REPERENCE
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE	REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER	RETNOLDS REF.
	LONG LAT HODIZ WEDT
	LONG. LAT. HORIZ VERT FT FT FT FT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2	
0 0.073 200.00 81.96 2.1010E+03 517.957 5.1646E+05 0.055	4.640 0.790 6.040 1.125
0YAWING MOMENT COEFFICIENT, CN, DUE	TO CONTROL
DEFLECTION	
0(DELTAL-DELTAR)= 40.0 20.0 0.0 -20.0 -40.0	
0ALPHA	
0	
-10.0 3.214E-03 1.839E-03 0.000E+00 -1.839E-03 -3.214E-03 -5.0 -3.031E-04 -1.734E-04 0.000E+00 1.734E-04 3.031E-04	
2.50 12 0. 1 2 0.0002 00 1 2.0012 01	

```
-7.914E-03 -4.528E-03 0.000E+00 4.528E-03 7.914E-03
 5.0
10.0
       -1.159E-02 -6.634E-03 0.000E+00 6.634E-03 1.159E-02
0
0
                    DELTAL
                               DELTAR
                                           (CL)ROLL
0
                    20.0
                            -20.0
                                     7.4364E-02
                    10.0
                            -10.0
                                     4.2632E-02
                    0.0
                            0.0
                                    0.0000E+00
                    -10.0
                            10.0
                                    -4.2632E-02
                    -20.0
                            20.0
                                    -7.4364E-02
1
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
   ----- FLIGHT CONDITIONS ------
                                                    ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                             AREA LONG. LAT.
                                                                   HORIZ
                                                                          VERT
     FT
          FT/SEC
                  LB/FT**2
                             DEG R
                                   1/FT
                                                FT**2
                                                        FT
                                                              FT
                                                                    FT
                                                                         FT
              98.35 2.1010E+03 517.957 6.1973E+05
                                                            0.790
                                                                  6.040
0 0.088 200.00
                                                     4.640
0.055
0
                            -----DERIVATIVE (PER DEGREE)-----
              CL
                                            CLA
                                                            CYB
0 ALPHA
        CD
                    CM
                          CN
                               CA
                                     XCP
                                                    CMA
                                                                    CNB
                                                                            CLB
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.490E-04
-9.181E-04
 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02
                                                                      -9.208E-04
 0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02
                                                                      -9.217E-04
 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02
                                                                      -9.283E-04
 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02
                                                                       -9.324E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                      0.967 - 2.097
               -10.0
                                    0.461
                -5.0
                     0.927
                            0.208
                                   0.459
                            2.494
                0.0
                     1.000
                                   0.453
                5.0
                     1.000
                          4.740
                                   0.423
                     1.000 6.729
                10.0
                                    0.398
0*** VEHICLE WEIGHT =
                      5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.10068
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                  ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                             AREA LONG. LAT.
                                                                   HORIZ
                                                                           VERT
          FT/SEC LB/FT**2
                             DEG R
                                    1/FT
                                                FT**2
                                                        FT
                                                              FT
                                                                    FT
     FT
                                                                         FT
```

-3.932E-03 -2.250E-03 0.000E+00 2.250E-03 3.932E-03

0.0

```
200.00 98.35 2.1010E+03 517.957 6.1973E+05
0.088
                                                       4.640 0.790 6.040 1.125
0.055
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                                0.0
                                    -20 0
                                             -40 0
0ALPHA
0
-10.0
        3.218E-03 1.841E-03 0.000E+00 -1.841E-03 -3.218E-03
       -3.035E-04 -1.737E-04 0.000E+00 1.737E-04 3.035E-04
-5.0
       -3.937E-03 -2.253E-03 0.000E+00 2.253E-03 3.937E-03
 0.0
       -7.924E-03 -4.534E-03 0.000E+00 4.534E-03 7.924E-03
 5.0
       -1.161E-02 -6.642E-03 0.000E+00 6.642E-03 1.161E-02
 10.0
0
0
                     DELTAL
                                DELTAR
                                            (CL)ROLL
0
                     20.0
                             -20.0
                                      7.4429E-02
                     10.0
                            -10.0
                                      4.2669E-02
                     0.0
                             0.0
                                     0.0000E+00
                    -10.0
                                      -4.2669E-02
                             10.0
                    -20.0
                             20.0
                                      -7.4429E-02
               AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                     ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                       REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA
                                                       LONG. LAT.
                                                                     HORIZ
                                                                            VERT
     FT
           FT/SEC LB/FT**2
                              DEG R
                                     1/FT
                                                  FT**2
                                                           FT
                                                                FT
                                                                      FT
                                                                            FT
             32.79 2.0934E+03 517.600 2.0610E+05
0 0.029 300.00
                                                       4.640
                                                              0.790 6.040 1.125
0.055
                             ------DERIVATIVE (PER DEGREE)------
0
0 ALPHA CD
               CL
                               CA
                                     XCP
                                             CLA
                                                      CMA
                                                              CYB
                    CM
                           CN
                                                                       CNB
                                                                               CLB
-10.0 0.047 -0.499 0.1862 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.196E-04
-9.163E-04
 -5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.386E-02
                                                                         -9.183E-04
 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.704E-02
                                                                         -9.183E-04
 5.0 0.076 0.975 -0.3567 0.978 -0.009 -0.365 1.021E-01 -4.442E-02
                                                                         -9.241E-04
 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02
                                                                         -9.274E-04
0
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                -10.0
                      0.951 -2.095
                                     0.461
                -5.0
                      0.910 0.208
                                     0.459
                 0.0
                      1.000 2.492
                                     0.453
                 5.0
                      1.000
                             4.736
                                     0.423
                 10.0
                     1.000 6.725
                                     0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.90862
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
1
```

0

# CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES WING PLAIN TRAILING-EDGE FLAP CONFIGURATION

WING PLAIN TRAILING-EDGE FLAP CON	FIGURATION	
FLIGHT CONDITIONS	REFERENCE	
DIMENSIONS		
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE	REYNOLDS REF	•
REFERENCE LENGTH MOMENT REF. CENTER		
NUMBER NUMBER AREA	LONG. LAT. HORIZ	Z VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2	FT FT FT	FT
0 0.029 300.00 32.79 2.0934E+03 517.600 2.0610E+05	4.640 0.790 6.040	1.125
0.055		
0YAWING MOMENT COEFFICIENT, CN, DUE	TO CONTROL	
DEFLECTION		
0(DELTAL-DELTAR)= 40.0 20.0 0.0 -20.0 -40.0		
0ALPHA		
0		
-10.0 3.196E-03 1.829E-03 0.000E+00 -1.829E-03 -3.196E-03		
-5.0 -3.013E-04 -1.724E-04 0.000E+00 1.724E-04 3.013E-04		
0.0 -3.909E-03 -2.237E-03 0.000E+00 2.237E-03 3.909E-03		
5.0 -7.870E-03 -4.504E-03 0.000E+00 4.504E-03 7.870E-03		
10.0 -1.154E-02 -6.601E-03 0.000E+00 6.601E-03 1.154E-02		
0		
0 DELTAL DELTAR (CL)ROLL		
0		
20.0 -20.0 7.4038E-02		
10.0 -10.0 4.2445E-02		
0.0 $0.0$ $0.0000$ E+00		
-10.0 10.0 -4.2445E-02		
-20.0 20.0 -7.4038E-02		
1 AUTOMATED STABILITY AND CONTROL METH	HODS PER APRIL 1976 V	ERSION
OF DATCOM		
CHARACTERISTICS AT ANGLE OF ATTACK		
WING-BODY-VERTICAL TAIL-HORIZONTAL	L TAIL CONFIGURATION	Ŋ
FLIGHT CONDITIONS	REFERENCE	
DIMENSIONS	DEVIDION DE	
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE	REYNOLDS REF	•
REFERENCE LENGTH MOMENT REF. CENTER		
NUMBER NUMBER AREA		
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2		
0 0.044 300.00 49.16 2.0934E+03 517.600 3.0902E+05	4.640 0.790 6.040	1.125
0.055	IN DECREE)	
0DERIVATIVE (PI		
0 ALPHA CD CL CM CN CA XCP CLA C	MA CYB CNB	CLB
0	26E 02   0.002E 02   4.00	5E 04
-10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.8	26E-02 -8.803E-03 4.93	5E-04
-9.167E-04	NOTE 02	100E 04
-5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.472 9.504E-02 -3.40 0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.71	0E 02 -9.	189E-04
		192E-04
5.0 0.071 0.975 -0.3578 0.978 -0.014 -0.366 1.021E-01 -4.45		253E-04
10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.1	/4E-U2 -9	.289E-04

ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)

```
0
```

-10.0 0.957 -2.095 0.461
-5.0 0.916 0.208 0.459
0.0 1.000 2.492 0.453
5.0 1.000 4.737 0.423
10.0 1.000 6.726 0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.40420
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT
0 0.044 300.00 49.16 2.0934E+03 517.600 3.0902E+05 4.640 0.790 6.040 1.125
0.055
0YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION
0(DELTAL-DELTAR)= 40.0 20.0 0.0 -20.0 -40.0
0ALPHA
0
-10.0 3.203E-03 1.833E-03 0.000E+00 -1.833E-03 -3.203E-03
-5.0 -3.020E-04 -1.728E-04 0.000E+00 1.728E-04 3.020E-04
0.0 -3.918E-03 -2.242E-03 0.000E+00 2.242E-03 3.918E-03
5.0 -7.888E-03 -4.514E-03 0.000E+00 4.514E-03 7.888E-03
10.0 -1.156E-02 -6.615E-03 0.000E+00 6.615E-03 1.156E-02
0 DELTAL DELTAR (CL)ROLL
0
20.0 -20.0 7.4182E-02
10.0 -10.0 4.2527E-02 0.0 0.0 0.0000E+00
-10.0 10.0 -4.2527E-02
-10.0 10.0 -4.2327E-02 -20.0 20.0 -7.4182E-02
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
OF DATCOM
CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER
REFERENCE BENOTH MOMENT REF. CENTER
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
NUMBER NUMBER AREA LONG. LAT. HORIZ VERT

-----DERIVATIVE (PER DEGREE)-----

```
CD
                CL
                            CN
                                        XCP
                                                CLA
                                                                                   CLB
0 ALPHA
                      CM
                                  CA
                                                         CMA
                                                                  CYB
                                                                           CNB
0
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.750E-04
-9.171E-04
 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02
                                                                             -9 196E-04
     0.036  0.451  -0.1534  0.451  0.036  -0.340  1.003E-01  -3.733E-02
                                                                             -9.201E-04
 0.0
  5.0
      0.068  0.976  -0.3588  0.978  -0.017  -0.367
                                            1.021E-01 -4.469E-02
                                                                             -9.264E-04
 10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                             -9.302E-04
0
                  ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                 -10.0
                        0.961
                              -2.096
                                       0.461
                 -5.0
                       0.921
                              0.208
                                       0.459
                  0.0
                       1.000
                              2.493
                                       0.453
                  5.0
                       1.000
                                       0.423
                              4.738
                  10.0
                       1.000
                               6.727
                                       0.398
0*** VEHICLE WEIGHT =
                         5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.22739
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                   CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                     WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                         ----- REFERENCE
DIMENSIONS -----
 MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                           REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                   NUMBER
                                                  AREA
                                                          LONG.
                                                                  LAT.
                                                                         HORIZ
                                                                                  VERT
           FT/SEC
                                          1/FT
                                                     FT**2
                                                              FT
      FT
                    LB/FT**2
                                DEG R
                                                                    FT
                                                                          FT
                                                                                FT
       300.00
                65.54 2.0934E+03
                                          4.1200E+05
                                                          4.640
                                                                 0.790
0 0.059
                                  517.600
                                                                        6.040
                                                                               1.125
0.055
0
              -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0
                          20.0
                                  0.0
                                        -20.0
                                               -40.0
0ALPHA
0
-10.0
        3.209E-03 1.836E-03 0.000E+00 -1.836E-03 -3.209E-03
-5.0
       -3.026E-04 -1.731E-04 0.000E+00 1.731E-04 3.026E-04
       -3.925E-03 -2.246E-03 0.000E+00 2.246E-03 3.925E-03
 0.0
       -7.902E-03 -4.522E-03 0.000E+00 4.522E-03 7.902E-03
 5.0
 10.0
        -1.158E-02 -6.626E-03 0.000E+00 6.626E-03 1.158E-02
0
                      DELTAL
0
                                  DELTAR
                                               (CL)ROLL
0
                      20.0
                              -20.0
                                        7.4284E-02
                              -10.0
                      10.0
                                        4.2586E-02
                      0.0
                               0.0
                                       0.0000E+00
                     -10.0
                               10.0
                                        -4.2586E-02
                     -20.0
                               20.0
                                        -7.4284E-02
                AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
```

CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION

```
----- FLIGHT CONDITIONS ------
                                                   ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                     REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                              AREA LONG. LAT.
                                                                    HORIZ
          FT/SEC LB/FT**2
                             DEG R
                                    1/FT
                                                FT**2
                                                         FT
     FT
                                                               FT
                                                                    FT
                                                                          FT
               81.93 2.0934E+03 517.600 5.1505E+05
                                                            0.790
0.0.073 300.00
                                                      4.640
                                                                  6.040
0.055
0
                             ------DERIVATIVE (PER DEGREE)------
0 ALPHA CD
              CL
                    CM
                          CN
                              CA
                                     XCP
                                            CLA
                                                    CMA
                                                             CYB
                                                                     CNB
                                                                             CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.607E-04
-9.176E-04
 -5.0 0.027 -0.028 0.0148 -0.030 0.025 -0.492 9.519E-02 -3.426E-02
                                                                       -9.202E-04
 0.0 0.035 0.451 -0.1536 0.451 0.035 -0.340 1.004E-01 -3.739E-02
                                                                       -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367 1.022E-01 -4.470E-02
                                                                       -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                       -9.314E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                      0.964 - 2.096
                -10.0
                                    0.461
                -5.0
                     0.924 0.208
                                    0.459
                0.0 1.000 2.494
                                    0.453
                5.0
                     1.000
                           4.739
                                    0.423
                10.0 1.000 6.728
                                    0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14550
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
1
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                      REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                NUMBER
                                              AREA
                                                      LONG.
                                                             LAT.
                                                                    HORIZ
                                                                          VERT
          FT/SEC LB/FT**2
                             DEG R
                                      1/FT
                                                 FT**2
                                                                    FT
                                                         FT
                                                               FT
                                                                          FT
0 0.073 300.00 81.93 2.0934E+03 517.600
                                      5.1505E+05
                                                      4.640
                                                            0.790
                                                                  6.040 1.125
0.055
            -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0
                        20.0
                               0.0
                                     -20.0
                                            -40.0
0ALPHA
0
      3.214E-03 1.839E-03 0.000E+00 -1.839E-03 -3.214E-03
-10.0
       -3.031E-04 -1.734E-04 0.000E+00 1.734E-04 3.031E-04
-5.0
      -3.932E-03 -2.250E-03 0.000E+00 2.250E-03 3.932E-03
 0.0
      -7.914E-03 -4.528E-03 0.000E+00 4.528E-03 7.914E-03
 5.0
10.0
       -1.159E-02 -6.634E-03 0.000E+00 6.634E-03 1.159E-02
0
0
                    DELTAL
                               DELTAR
                                           (CL)ROLL
0
                    20.0
                            -20.0
                                     7.4363E-02
```

10.0 -10.0 4.2631E-02 0.0 0.0 0.0000E+00 -10.0 10.0 -4.2631E-02 -20.0 20.0 -7.4363E-02  AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF DATCOM  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
FLIGHT CONDITIONS REFERENCE
DIMENSIONS  MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.  REFERENCE LENGTH MOMENT REF. CENTER  NUMBER NUMBER AREA LONG. LAT. HORIZ VERT  FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT  0 0.088 300.00 98.31 2.0934E+03 517.600 6.1803E+05 4.640 0.790 6.040 1.125  0.055
0DERIVATIVE (PER DEGREE)
0 ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB CLB
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.491E-04
-9.181E-04 -5.0 0.026 -0.028 0.0150 -0.030 0.024 -0.500 9.525E-02 -3.434E-02 -9.208E-04 0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02 -9.217E-04 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02 -9.283E-04 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02 -9.324E-04 0 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA) 0 -10.0 0.967 -2.097 0.461
-5.0 0.927 0.208 0.459
0.0  1.000  2.494  0.453
5.0 1.000 4.740 0.423
10.0 1.000 6.729 0.398
0*** VEHICLE WEIGHT = 5.34 LB. 0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.10105
1 AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES  WING PLAIN TRAILING-EDGE FLAP CONFIGURATION  FLIGHT CONDITIONS REFERENCE
DIMENSIONS
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS REF.
REFERENCE LENGTH MOMENT REF. CENTER  NUMBER NUMBER AREA LONG. LAT. HORIZ VERT
FT FT/SEC LB/FT**2 DEG R 1/FT FT**2 FT FT FT FT 0 0.088 300.00 98.31 2.0934E+03 517.600 6.1803E+05 4.640 0.790 6.040 1.125
0.055
0YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION
0(DELTAL-DELTAR)= 40.0 20.0 0.0 -20.0 -40.0 0ALPHA 0
•

```
-3.035E-04 -1.737E-04 0.000E+00 1.737E-04 3.035E-04
-5.0
      -3.937E-03 -2.253E-03 0.000E+00 2.253E-03 3.937E-03
 0.0
      -7.924E-03 -4.534E-03 0.000E+00 4.534E-03 7.924E-03
 5.0
       -1.161E-02 -6.642E-03 0.000E+00 6.642E-03 1.161E-02
100
0
0
                   DELTAL
                              DELTAR
                                          (CL)ROLL
0
                   20.0
                        -20.0
                                   7.4428E-02
                         -10.0
                    10.0
                                    4.2668E-02
                    0.0
                          0.0
                                   0.0000E+00
                   -10.0
                           10.0
                                    -4.2668E-02
                   -20.0
                                    -7.4428E-02
                            20.0
              AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                 WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
----- FLIGHT CONDITIONS ------
                                                   ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER
                                             AREA LONG. LAT.
                                                                 HORIZ VERT
                                   1/FT
     FT
          FT/SEC LB/FT**2
                            DEG R
                                               FT**2
                                                       FT
                                                            FT
                                                                  FT
                                                                        FT
0 0.029 400.00 32.77 2.0858E+03 517.244 2.0554E+05
                                                    4.640
                                                          0.790
                                                                 6.040
0.055
                            -----DERIVATIVE (PER DEGREE)-----
0
0 ALPHA CD CL CM
                         CN
                               CA
                                    XCP CLA
                                                 CMA
                                                        CYB
                                                                   CNB
                                                                           CLB
-10.0 0.047 -0.499 0.1862 -0.499 -0.040 -0.373 9.296E-02 -2.822E-02 -8.803E-03 5.197E-04
-9.163E-04
 -5.0 0.031 -0.027 0.0137 -0.030 0.029 -0.460 9.495E-02 -3.386E-02
                                                                     -9.183E-04
 0.0 0.040 0.451 -0.1524 0.451 0.040 -0.338 1.002E-01 -3.703E-02
                                                                     -9.183E-04
 5.0 0.076 0.975 -0.3567 0.978 -0.009 -0.365 1.021E-01 -4.442E-02
                                                                     -9.241E-04
 10.0 0.136 1.472 -0.5966 1.473 -0.122 -0.405 9.669E-02 -5.154E-02
                                                                     -9.274E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0 0.951 -2.095
                                   0.461
                     0.910 0.208
               -5.0
                                   0.459
                0.0 1.000 2.492
                                   0.453
                5.0
                     1.000 4.736
                                   0.423
                10.0 1.000 6.725
                                   0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.91192
            AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                 CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
 ------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                    REF.
REFERENCE LENGTH MOMENT REF. CENTER
```

3.218E-03 1.841E-03 0.000E+00 -1.841E-03 -3.218E-03

-10.0

```
FT/SEC LB/FT**2
                                        1/FT
                                                   FT**2
                                                                  FT
                                                                        FT
      FT
                               DEG R
                                                            FT
                                                                              FT
                                         2.0554E+05
0 0.029 400.00
                                517.244
                                                               0.790
                                                                      6.040
               32.77 2.0858E+03
                                                        4.640
                                                                            1.125
0.055
0
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                                 0.0
                                      -20.0
                                              -40.0
0ALPHA
0
        3.196E-03 1.829E-03 0.000E+00 -1.829E-03 -3.196E-03
-10.0
 -5.0
       -3.013E-04 -1.724E-04 0.000E+00 1.724E-04 3.013E-04
       -3.909E-03 -2.237E-03 0.000E+00 2.237E-03 3.909E-03
 0.0
       -7.870E-03 -4.504E-03 0.000E+00 4.504E-03 7.870E-03
 5.0
 10.0
       -1.154E-02 -6.601E-03 0.000E+00 6.601E-03 1.154E-02
0
0
                     DELTAL
                                 DELTAR
                                             (CL)ROLL
0
                     20.0
                             -20.0
                                      7.4038E-02
                     10.0
                             -10.0
                                       4.2444E-02
                     0.0
                              0.0
                                      0.0000E+00
                     -10.0
                              10.0
                                      -4.2444E-02
                     -20.0
                              20.0
                                      -7.4038E-02
               AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                   CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
 MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                         REF.
REFERENCE LENGTH MOMENT REF. CENTER
                                  NUMBER
NUMBER
                                                AREA
                                                         LONG.
                                                                LAT.
                                                                       HORIZ
                                                                              VERT
      FT
           FT/SEC
                   LB/FT**2
                               DEG R
                                      1/FT
                                                   FT**2
                                                                        FT
                                                            FT
                                                                  FT
                                                                             FT
0 0.044 400.00
               49.14 2.0858E+03 517.244 3.0817E+05
                                                                            1 125
                                                        4.640
                                                               0.790
                                                                      6 040
0.055
                                   -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD
               CL
                     CM
                           CN CA
                                       XCP
                                              CLA
                                                      CMA
                                                               CYB
                                                                        CNB
                                                                                 CLB
0
 -10.0 0.045 -0.499 0.1873 -0.500 -0.043 -0.375 9.305E-02 -2.826E-02 -8.803E-03 4.936E-04
-9.167E-04
 -5.0 0.029 -0.027 0.0141 -0.030 0.027 -0.472 9.504E-02 -3.402E-02
                                                                          -9.189E-04
 0.0 0.038 0.451 -0.1530 0.451 0.038 -0.339 1.003E-01 -3.719E-02
                                                                          -9.192E-04
 5.0
     0.071  0.975  -0.3578  0.978  -0.014  -0.366  1.021E-01  -4.456E-02
                                                                          -9.253E-04
 10.0 0.128 1.472 -0.5986 1.472 -0.130 -0.407 9.668E-02 -5.174E-02
                                                                           -9.289E-04
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                       0.957 -2.095
                -10.0
                                      0.461
                 -5.0
                      0.916
                             0.208
                                     0.459
                 0.0
                      1.000
                             2.492
                                     0.453
                      1.000
                            4.737
                                     0.423
                 5.0
                 10.0
                     1.000 6.726
                                      0.398
```

NUMBER

**NUMBER** 

0\*\*\* VEHICLE WEIGHT = 5.34 LB.

LONG.

LAT.

HORIZ VERT

AREA

```
DATCOM
                 CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                  WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
 ----- FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                 REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER
                                           AREA LONG. LAT.
                                                                HORIZ VERT
                                  1/FT FT**2
     FT
          FT/SEC LB/FT**2
                           DEG R
                                                      FT
                                                           FT
                                                                FT
                                                                      FT
0 0.044 400.00 49.14 2.0858E+03 517.244 3.0817E+05
                                                  4.640
                                                         0.790 6.040 1.125
0.055
           -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                              0.0
                                  -20.0
                                         -40.0
0ALPHA
0
-10.0 3.203E-03 1.833E-03 0.000E+00 -1.833E-03 -3.203E-03
      -3.020E-04 -1.728E-04 0.000E+00 1.728E-04 3.020E-04
-5.0
      -3.918E-03 -2.242E-03 0.000E+00 2.242E-03 3.918E-03
 0.0
      -7.888E-03 -4.514E-03 0.000E+00 4.514E-03 7.888E-03
 5.0
10.0
      -1.156E-02 -6.615E-03 0.000E+00 6.615E-03 1.156E-02
0
0
                   DELTAL
                             DELTAR
                                        (CL)ROLL
0
                       -20.0
                   20.0
                                  7.4181E-02
                   10.0
                          -10.0
                                   4.2527E-02
                  0.0 0.0
-10.0 10.0
                                  0.0000E+00
                                  -4.2527E-02
                   -20.0
                           20.0
                                  -7.4181E-02
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                 CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
----- FLIGHT CONDITIONS ------
                                               ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                 REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                              NUMBER AREA LONG. LAT. HORIZ VERT
          FT/SEC LB/FT**2
                           DEG R 1/FT
                                          FT**2 FT
                                                          FT
                                                                FT
                                                                     FT
0 0.059 400.00 65.52 2.0858E+03 517.244 4.1087E+05 4.640 0.790 6.040 1.125
0.055
                           ------DERIVATIVE (PER DEGREE)------
0
O ALPHA CD CL CM CN CA XCP CLA CMA CYB CNB
                                                                        CLB
-10.0 0.043 -0.500 0.1882 -0.500 -0.044 -0.377 9.312E-02 -2.833E-02 -8.804E-03 4.752E-04
-9.171E-04
 -5.0 0.028 -0.028 0.0145 -0.030 0.026 -0.483 9.511E-02 -3.416E-02
                                                                   -9.196E-04
 0.0 0.036 0.451 -0.1534 0.451 0.036 -0.340 1.003E-01 -3.733E-02
                                                                   -9.201E-04
                                                                   -9.264E-04
 5.0 0.068 0.976 -0.3588 0.978 -0.017 -0.367 1.021E-01 -4.469E-02
```

AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF

0\*\*\* LEVEL FLIGHT LIFT COEFFICIENT = 0.40567

```
10.0 0.123 1.473 -0.6003 1.472 -0.135 -0.408 9.666E-02 -5.190E-02
                                                                         -9.302E-04
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
                -10.0
                      0.961
                           -2.096
                                     0.461
                -5.0
                      0.921
                             0.208
                                     0.459
                      1.000
                             2.493
                 0.0
                                    0.453
                 5.0
                      1.000
                             4.738
                                    0.423
                 10.0
                     1.000 6.727
                                     0.398
0*** VEHICLE WEIGHT =
                       5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.22821
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                    WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
----- FLIGHT CONDITIONS -----
                                                     ----- REFERENCE
DIMENSIONS -----
 MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                       REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA
                                                       LONG.
                                                               LAT.
                                                                     HORIZ
                                                                             VERT
                                                  FT**2
     FT
           FT/SEC
                   LB/FT**2
                              DEG R
                                       1/FT
                                                          FT
                                                                FT
                                                                      FT
                                                                           FT
0 0.059 400.00
             65.52 2.0858E+03 517.244 4.1087E+05
                                                       4.640
                                                              0.790
                                                                    6.040 1.125
0.055
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0
                         20.0
                                0.0
                                     -20.0
                                            -40.0
0ALPHA
0
        3.209E-03 1.836E-03 0.000E+00 -1.836E-03 -3.209E-03
-10.0
 -5.0
       -3.026E-04 -1.731E-04 0.000E+00 1.731E-04 3.026E-04
 0.0
       -3.925E-03 -2.246E-03 0.000E+00 2.246E-03 3.925E-03
 5.0
       -7.902E-03 -4.521E-03 0.000E+00 4.521E-03 7.902E-03
 10.0
       -1.158E-02 -6.625E-03 0.000E+00 6.625E-03 1.158E-02
0
0
                    DELTAL
                                DELTAR
                                            (CL)ROLL
0
                    20.0
                            -20.0
                                      7.4283E-02
                     10.0
                             -10.0
                                      4.2585E-02
                     0.0
                             0.0
                                     0.0000E+00
                    -10.0
                             10.0
                                     -4.2585E-02
                    -20.0
                             20.0
                                     -7.4283E-02
               AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
1
OF DATCOM
                  CHARACTERISTICS AT ANGLE OF ATTACK AND IN SIDESLIP
                  WING-BODY-VERTICAL TAIL-HORIZONTAL TAIL CONFIGURATION
      ----- FLIGHT CONDITIONS ------
                                                     ----- REFERENCE
DIMENSIONS -----
 MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                       REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA
                                                       LONG.
                                                               LAT.
                                                                     HORIZ
                                                                             VERT
                   LB/FT**2
                                       1/FT
     FT
           FT/SEC
                              DEG R
                                                  FT**2
                                                          FT
                                                                FT
                                                                      FT
                                                                           FT
0 0.073 400.00
               81.90 2.0858E+03 517.244 5.1364E+05
                                                       4.640
                                                              0.790
                                                                    6.040
                                                                          1.125
```

```
0
                                   ------DERIVATIVE (PER DEGREE)------
               CL
0 ALPHA
        CD
                     CM
                           CN
                                 CA
                                      XCP
                                              CLA
                                                      CMA
                                                               CYB
                                                                       CNB
                                                                               CLB
-10.0 0.042 -0.500 0.1889 -0.500 -0.045 -0.378 9.320E-02 -2.842E-02 -8.804E-03 4.609E-04
-9.176E-04
 -5.0
     0.027 -0.028 0.0148 -0.030 0.025 -0.491 9.518E-02 -3.426E-02
                                                                         -9.202E-04
     0.0
                                                                         -9.209E-04
 5.0 0.067 0.976 -0.3591 0.978 -0.018 -0.367
                                          1.022E-01 -4.470E-02
                                                                         -9.274E-04
 10.0 0.122 1.473 -0.6006 1.472 -0.136 -0.408 9.663E-02 -5.191E-02
                                                                         -9.314E-04
0
                 ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
                           -2.096
                -10.0
                      0.964
                                     0.461
                -5.0
                      0.924
                             0.208
                                     0.459
                 0.0
                      1.000
                             2.494
                                     0.453
                 5.0
                      1.000
                             4.739
                                     0.423
                      1.000 6.728
                 10.0
                                     0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.14603
             AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                  CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                    WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
    ----- FLIGHT CONDITIONS ------
                                                      ----- REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                        REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                                 NUMBER
                                               AREA
                                                       LONG.
                                                              LAT.
                                                                      HORIZ
                                                                              VERT
                                                  FT**2
     FT
           FT/SEC LB/FT**2
                              DEG R
                                        1/FT
                                                           FT
                                                                 FT
                                                                       FT
                                                                            FT
0 0.073 400.00 81.90 2.0858E+03 517.244 5.1364E+05
                                                       4.640
                                                              0.790
                                                                     6.040
                                                                           1.125
0.055
             -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
0
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0
                         20.0
                                0.0
                                      -20.0
                                             -40 0
OALPHA
0
-10.0
        3.214E-03 1.839E-03 0.000E+00 -1.839E-03 -3.214E-03
       -3.031E-04 -1.734E-04 0.000E+00 1.734E-04 3.031E-04
 -5.0
       -3.932E-03 -2.250E-03 0.000E+00 2.250E-03 3.932E-03
 0.0
 5.0
       -7.913E-03 -4.528E-03 0.000E+00 4.528E-03 7.913E-03
 10.0
       -1.159E-02 -6.634E-03 0.000E+00 6.634E-03 1.159E-02
0
                     DELTAL
                                DELTAR
                                            (CL)ROLL
0
                     20.0
                             -20.0
                                      7.4362E-02
                     10.0
                             -10.0
                                      4.2631E-02
                     0.0
                             0.0
                                     0.0000E+00
                    -10.0
                              10.0
                                      -4.2631E-02
                                      -7.4362E-02
                    -20.0
                              20.0
               AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION
```

0.055

OF DATCOM

```
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER
                                            AREA LONG. LAT.
                                                                 HORIZ VERT
                                   1/FT
     FT
          FT/SEC
                  LB/FT**2
                            DEG R
                                               FT**2
                                                       FT
                                                             FT
                                                                  FT
                                                                        FT
0 0.088 400.00 98.28 2.0858E+03 517.244 6.1634E+05
                                                    4.640
                                                          0.790
                                                                6.040
                                                                      1.125
0.055
0
                            -----DERIVATIVE (PER DEGREE)-----
0 ALPHA CD CL
                   CM
                         CN CA
                                    XCP
                                          CLA CMA CYB
                                                                   CNB
                                                                           CLB
0
-10.0 0.042 -0.501 0.1896 -0.500 -0.046 -0.379 9.326E-02 -2.850E-02 -8.804E-03 4.493E-04
-9.181E-04
 -5.0 0.027 -0.028 0.0150 -0.030 0.024 -0.499 9.525E-02 -3.434E-02
                                                                     -9.208E-04
 0.0 0.034 0.452 -0.1538 0.452 0.034 -0.341 1.004E-01 -3.744E-02
                                                                    -9.217E-04
 5.0 0.066 0.976 -0.3594 0.979 -0.019 -0.367 1.022E-01 -4.472E-02
                                                                    -9.283E-04
 10.0 0.121 1.473 -0.6010 1.472 -0.137 -0.408 9.661E-02 -5.193E-02
                                                                     -9.324E-04
                ALPHA Q/QINF EPSLON D(EPSLON)/D(ALPHA)
0
0
               -10.0
                    0.967 - 2.097
                                   0.461
                     0.927 0.208
               -5.0
                                   0.459
                0.0 1.000 2.494
                                  0.453
                5.0 1.000
                          4.740
                                  0.423
                10.0 1.000 6.729
                                   0.398
0*** VEHICLE WEIGHT = 5.34 LB.
0*** LEVEL FLIGHT LIFT COEFFICIENT = 0.10142
            AUTOMATED STABILITY AND CONTROL METHODS PER APRIL 1976 VERSION OF
DATCOM
                 CHARACTERISTICS OF HIGH LIFT AND CONTROL DEVICES
                   WING PLAIN TRAILING-EDGE FLAP CONFIGURATION
------ FLIGHT CONDITIONS ------ REFERENCE
DIMENSIONS -----
MACH ALTITUDE VELOCITY PRESSURE TEMPERATURE REYNOLDS
                                                                   REF.
REFERENCE LENGTH MOMENT REF. CENTER
NUMBER
                               NUMBER
                                            AREA LONG. LAT.
                                                                 HORIZ VERT
                                         FT**2
                                   1/FT
     FT
          FT/SEC LB/FT**2
                            DEG R
                                                       FT
                                                             FT
                                                                  FT
                                                                        FT
0 0.088 400.00 98.28 2.0858E+03 517.244 6.1634E+05
                                                4.640 0.790 6.040 1.125
0.055
           -----YAWING MOMENT COEFFICIENT, CN, DUE TO CONTROL
0
DEFLECTION-----
0(DELTAL-DELTAR) = 40.0 20.0
                              0.0
                                   -20.0
                                          -40.0
0ALPHA
0
-10.0
       3.218E-03 1.841E-03 0.000E+00 -1.841E-03 -3.218E-03
      -3.035E-04 -1.737E-04 0.000E+00 1.737E-04 3.035E-04
-5.0
 0.0
      -3.937E-03 -2.253E-03 0.000E+00 2.253E-03 3.937E-03
 5.0
      -7.923E-03 -4.534E-03 0.000E+00 4.534E-03 7.923E-03
10.0
       -1.161E-02 -6.641E-03 0.000E+00 6.641E-03 1.161E-02
0
0
                   DELTAL
                              DELTAR
                                         (CL)ROLL
```

20.0	-20.0	7.4427E-02
10.0	-10.0	4.2668E-02
0.0	0.0	0.0000E+00
-10.0	10.0	-4.2668E-02
-20.0	20.0	-7 4427E-02

1 THE FOLLOWING IS A LIST OF ALL INPUT CARDS FOR THIS CASE. 0

1 END OF JOB.