



MVS/TRP Training Class I Problem I

A Falling Stone

This problem consists of one of the simplest sets of meaningful MVSDP/TRP input. It is overtly designed to illustrate the equations of motion starting with an inertial state vector. It is covertly designed, however, to illustrate much more as the first simulation a new trajectory analyst will see in this training.

The new analyst is introduced here to the default form and format of MVSDP/TRP output. This includes the mirrored input, the Modularized Vehicle Simulation (MVS) header, the input as stored in MVSDP/TRP's "holding" area lovingly known as the BUCKET, the Standard Block Print and its Print Key which will go away in the next class simulation problem (and probably not be seen again except when the program bombs) but it is here to show that it does exist and to let the new analyst feel sorry for the ancient MVS users who were stuck with memorizing it, and finally the simple but useful Event Summary which is looked forward to by some as a sign that the run was successful.

In addition to output formats, Problem 1 introduces several MVSDP/TRP concepts. One which stands out has to do with events. The terms "RIGHT SIDE" and "LEFT SIDE" of an event allows the student to jump right into the primary concept in MVSDP/TRP which, basically, says that simulations are event oriented. The fact that there is something polarizing the events provides a conduit to the discussion of the relationship between integration, time-to-go-to-an-event and what happens at events.

We call this problem "A Falling Stone" but in reality, the stone has been given a push. What surprises many students, however, is where it actually falls. This surprise is set up by both the use of the INERTIAL initialization and by illustrating what happens when both positive and negative flight path angles are used without specific "directional" controls.

The bottom line here is this: When you step into a new world such as MVSDP/TRP ... it takes a lot of explanation just get your balance. This first problem, then, opens the astrophysical Pandora's Box known as MVS, MVSDP and TRP.

TRP Training - Class 1 - Problem 1 - A Falling Stone - Page 1

0 BUCKET SIZE REQUESTED IS 15000
 0 CPU TIME AT CALL TO INP1M = 54777.7

```

1
MMMMM XX*DvVVVVvAxxxxxxiiisscccdvVVVVvAxxxxxxxxxxxxxxDvVVVVvAxxxxxxxxxxxxxx
  H **** Class I Problem 1: A Falling Stone          C1P1-01
  A **** Simple Trajectory Simulation                C1P1-02
  10E Test Case                                     C1P1-03
  10LD 3 TD 4 0. D 5 FP1                             C1P1-04
  20E Ground Impact Event                           C1P1-05
  20LD 3 H 4 0. D 5 VDR                               C1P1-06
  CYCXM 10 DTEA 1. LFDT1 1.                          C1P1-07
  DPGXM 10 IGCF 2.                                    C1P1-08
  TMOTM 10 DIN G DL0 2                                C1P1-09
  TMOTM 10 LATL 45. LONL 45. HSSL 10000.             C1P1-10
  TMOTM 10 VMI 1000. AZVI 45. GAMI -45.              C1P1-11
  C 0.                                                C1P1-12
    
```

} Mirrored Inputs

----- CONTROL CARD 0.00 -----
 1 M O D U L A R I Z E D V E H I C L E S I M U L A T I O N

VERSION: -386SX- TEST BASELINE 01JUL91 , DEMO: 01SEP91

15:12:58 CASE 1 07/23/95

** TYPE OF DATA **

EVENT CRITERIA	29
TABULAR INPUT	1
GENERAL INPUT	66
TOTAL	96

} MVS Header

RUN DESCRIPTION -

**** Class I Problem 1: A Falling Stone C1

CASE DESCRIPTION -

**** Simple Trajectory S

EVENT CRITERIA

Here Begins the BUCKET

VEHICLE NO. 1.

```

-----
0 EVENT SEQUENCE NO. 10 Test Case
  CRITERION NO. 1
  MODEL G1 VARIABLE TD DERIVATIVE FP1
  PRIMARY 0 VALUE 0.00000000E+00 TOLERANCE 0.00000000E+00
  INDIRECT VALUE X-VEHICLE 0.00000000E+00
0 EVENT SEQUENCE NO. 20 Ground Impact Event
  CRITERION NO. 1
  MODEL G1 VARIABLE H DERIVATIVE VDR
  PRIMARY 0 VALUE 0.00000000E+00 TOLERANCE 0.00000000E+00
  INDIRECT VALUE X-VEHICLE 0.00000000E+00
1
GENERAL INPUT DATA
    
```

VEHICLE NO. 1.

```

-----
0 EVENT SEQUENCE NO. 10 Test Case
  CYCXM MODULE
  DTEA 1.000000000000 LFDT1 1.000000000000
0
  DPGXM MODULE
  GCF 2.000000000000I
0
  TMOTM MODULE
  MODELS IN G L0 2
  AZVI 45.000000000000 GAMI -45.000000000000 HSSL 10000.00000000
  LONL 45.000000000000 LATL 45.000000000000 VMI 1000.0000000000
0
0 CPU TIME AT RETURN FROM INP1M = 54778.5
CPU TIME USED BY INP1M MODULE = 0.8
7823 156
    
```

Here Begins the STANDARD BLOCK PRINT

1 START CASE 1. **** Simple Trajectory S
EVENT ESN 10 Test Case DATE / TIME 07/23/95 15:13:24
TIME = 0.000 TYPE = PRIMARY-ORDERED CASE = 1. CP = 0.00 CYCLES = 0

LATV, LONV

Table with columns: MMDYY, HRS, MIN, SEC, JDL, GMT, ENVRM, TMOTM, IMPCT, ORBIT, RMOTM, AERMM, PROPM, STRTM, CYCXM. Includes annotations like H, AZVI, ALFA, BETA, ALFT, VMI, GAMI, VAMI.

TRP Training - Class 1 - Problem 1 - A Falling Stone - Page 3

 EVENT ESN 20 Ground Impact Event DATE / TIME 07/23/95 15:13:26
 TIME = 11.274 TYPE = PRIMARY-ORDERED CASE = 1. CP = 2.09 CYCLES = 15
 EVENT CAUSED BY
 + H = 0.0000000E+00 TG MODEL - G1

MMDDYY	1. / 1. / 1900.	0. HRS	0. MIN	11.2741 SEC	2415020.50 JDL	11.2741 GMT
***** RIGHT SIDE OF EVENT --- MONITORING EVENTS						
1.1274092E+01	1.0000000E+37	1	1.0000000E+37	0.0000000E+00	1	0.0000000E+00
+ 20 0						
ENVRM	-1.0295480E-09	2.0890720E+07	10	0.0000000E+00	4.4823030E+01	10
	0.0000000E+00	0.0000000E+00	11	0.0000000E+00	3.2254246E+01	11
	4.5005565E+05	4.4582889E+05	17	-3.1380623E-10	-1.0295422E-09	17
TMOTM	1.0473586E+07	1.0481558E+07	20	1.4726273E+07	-1.1397269E+03	20
	0.0000000E+00	0.0000000E+00	21	0.0000000E+00	3.2254246E+01	21
	-1.0702880E+03	5.9889026E+01	23	9.9925788E-01	3.4410975E+03	23
	-4.9237107E+01	4.5015363E+01	24	-4.9772951E+00	9.0000000E+01	24
	5.6707474E+03	6.5449195E+03	25	-1.0001726E+04	5.0359018E+02	25
	-6.4524520E+04	-5.6368616E+03	251	2.0890620E+07	5.0354361E+02	251
	1.0482200E+07	1.0472944E+07	252	1.4726273E+07	-3.7638313E+02	252
	-1.6170703E+01	-1.6183011E+01	26	-2.2736642E+01	-1.3509654E+02	26
IMPCT	1.1274096E+01	1.8334327E+02	28	1.4214393E+00	4.4823030E+01	28
ORBIT	1.5159958E-01	1.7211874E+03	290	1.8668217E+02	9.8265758E+00	290
	1.2059782E+01	2.9851286E+01	291	0.0000000E+00	0.0000000E+00	291
	1.8006443E+02	1.8334327E+02	292	2.3692470E-02	3.2230289E+01	292
	1.7691060E+03	4.4777464E+01	293	3.7566140E+01	2.9180047E+00	293
	8.3812055E+00	4.4924432E+01	294	4.5123961E+01	-4.9093198E+01	294
RMOTM	0.0000000E+00	0.0000000E+00	30	0.0000000E+00	0.0000000E+00	30
	0.0000000E+00	0.0000000E+00	31	0.0000000E+00	0.0000000E+00	31
	5.0000000E-01	5.0000000E-01	32	7.0710678E-01	7.0710678E-01	32
	5.0000000E-01	5.0000000E-01	33	-7.0710678E-01	0.0000000E+00	33
AERMM	1.5478172E+02	-1.5382505E+02	40	1.4428358E+02	0.0000000E+00	40
	0.0000000E+00	0.0000000E+00	41	-3.7539964E+02	-1.1964355E+03	41
	0.0000000E+00	0.0000000E+00	42	0.0000000E+00	0.0000000E+00	42
	0.0000000E+00	0.0000000E+00	43	0.0000000E+00	0.0000000E+00	43
PROPM	0.0000000E+00	0.0000000E+00	50	0.0000000E+00	0.0000000E+00	50
	0.0000000E+00	0.0000000E+00	51	0.0000000E+00	0.0000000E+00	51
	0.0000000E+00	0.0000000E+00	52	9.9999997E-06	0.0000000E+00	52
	0.0000000E+00	0.0000000E+00	153	0.0000000E+00	0.0000000E+00	153
STRTM	0.0000000E+00	0.0000000E+00	60	0.0000000E+00	0.0000000E+00	60
	1.0473586E+07	1.0481558E+07	61	1.4726273E+07	-1.1397269E+03	61
CYXCM	1.1274092E+01	1.1274092E+01	90	1.1274092E+01	1.1274092E+01	90
	1.0000000E+00	0.0000000E+00	91	0.0000000E+00	5.0000000E+04	91

EVENT SUMMARY

VEHICLE NUMBER 1

0.000 10 Test Case
 11.274 20 Ground Impact Event

} Event Summary Area

MAXIMUM NUMBER OF INTEGRATIONS WAS 23 , STORAGE WOULD HAVE ALLOWED(NIV) 50 .
 0 BUCKET SIZE FOR THIS CASE 495
 0 BUCKET SIZE REQUESTED IS 15000
 0 CPU TIME AT CALL TO INP1M = 54807.6

1
 TMOTM 10 VMI 1000. AZVI 45. GAMI 45. CIP1-13
 C 0. CIP1-14

----- CONTROL CARD 0.00 -----
 1 M O D U L A R I Z E D V E H I C L E S I M U L A T I O N

VERSION: -386SX- TEST BASELINE 01JUL91 , DEMO: 01SEP91

15:13:27 CASE 2 07/23/95

** TYPE OF DATA ** SIZE
 EVENT CRITERIA 29
 TABULAR INPUT 1
 GENERAL INPUT 66
 TOTAL 96

RUN DESCRIPTION -
 **** Class I Problem 1: A Falling Stone C1

CASE DESCRIPTION -
 0 CPU TIME AT RETURN FROM INP1M = 54807.8
 CPU TIME USED BY INP1M MODULE = 0.2

TRP Training - Class 1 - Problem 1 - A Falling Stone - Page 4

1 START CASE 2.

EVENT	ESN	10	Test Case	TYPE =	PRIMARY-ORDERED	CASE =	2.	DATE / TIME	07/23/95	15:13:31	CP =	0.00	CYCLES =	0

+	MDDYY	1. / 1. / 1900.	0. HRS	0. MIN	0.0000 SEC	2415020.50	JDL	0.0000	GMT					
	*****	RIGHT SIDE	OF EVENT	---	MONITORING	EVENTS	20.							
	0.000000E+00	1.000000E+37	1	1.000000E+37	0.000000E+37	0.000000E+00	1	0.000000E+00	0.000000E+00					
+ 10	20													
ENVRM	1.000000E+04	2.0900739E+07	10	0.000000E+00	4.4807572E+01	10	4.500000E+01	4.500000E+01						
	0.000000E+00	0.000000E+00	11	0.000000E+00	3.2223331E+01	11	1.6457883E+00	4.500000E+01						
	4.500000E+05	4.500000E+05	17	3.048000E+03	9.9999436E+03	17	7.0878523E+02	4.4999909E+01						
TMOTM	1.0485408E+07	1.0485408E+07	20	1.4729336E+07	-2.4797355E+02	20	4.5913323E+02	8.5305674E+02						
	0.000000E+00	0.000000E+00	21	0.000000E+00	3.2223331E+01	21	1.000000E+03	2.5951713E+04						
	7.0710678E+02	5.9889026E+01	23	9.9925788E-01	3.4410975E+03	23	1.2773348E+00	1.9340801E-11						
	-4.9300751E+01	4.500000E+01	24	2.6943571E-13	9.000000E+01	24	4.2682013E+01	4.500000E+01						
	0.000000E+00	0.000000E+00	25	0.000000E+00	4.9762237E+02	25	5.8131905E+02	7.0878204E+02						
	-7.0195003E+04	5.1113602E-10	251	2.0900621E+07	4.9762237E+02	251	-5.000000E+02	7.0878204E+02						
	1.0485408E+07	1.0485408E+07	252	1.4729336E+07	5.1663448E+02	252	-3.0547481E+02	8.5305674E+02						
	-1.6165685E+01	-1.6165685E+01	26	-2.2708683E+01	1.7989354E+02	26	0.000000E+00	-1.3459828E+09						
IMPCT	5.5285059E+01	1.8335019E+02	28	6.9634537E+00	4.4883277E+01	28	4.5075706E+01	4.4875930E+01						
ORBIT	1.5153884E-01	1.7211874E+03	290	1.7558388E+02	9.8265758E+00	290	2.3459655E+02	1.4559458E+01						
	1.2059782E+01	2.9851286E+01	291	0.000000E+00	0.000000E+00	291	0.000000E+00	0.000000E+00						
	1.7995743E+02	1.7779085E+02	292	3.2234668E-13	-3.2199408E+01	292	-4.4837664E+01	2.2869228E+02						
	2.1971119E+01	4.4837664E+01	293	4.4950651E+01	2.9301372E+00	293	-3.4368901E+03	-1.3495755E+02						
	8.3811878E+00	4.4984586E+01	294	4.5025240E+01	-9.000000E+01	294	0.000000E+00	0.000000E+00						
RMOTM	0.000000E+00	0.000000E+00	30	0.000000E+00	0.000000E+00	30	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	31	0.000000E+00	0.000000E+00	31	0.000000E+00	0.000000E+00						
	5.000000E-01	5.000000E-01	32	7.0710678E-01	7.0710678E-01	32	-7.0710678E-01	0.000000E+00						
	5.000000E-01	5.000000E-01	33	-7.0710678E-01	0.000000E+00	33	0.000000E+00	0.000000E+00						
AERMM	3.5071962E+01	3.3871464E+01	40	4.7192679E+01	0.000000E+00	40	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	41	5.1663448E+02	3.0547481E+02	41	8.5305674E+02	1.0430397E+03						
	0.000000E+00	0.000000E+00	42	0.000000E+00	0.000000E+00	42	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	43	0.000000E+00	0.000000E+00	43	0.000000E+00	0.000000E+00						
PROPM	0.000000E+00	0.000000E+00	50	0.000000E+00	0.000000E+00	50	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	51	0.000000E+00	0.000000E+00	51	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	52	9.9999997E-06	0.000000E+00	52	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	153	0.000000E+00	0.000000E+00	153	0.000000E+00	0.000000E+00						
STRTM	0.000000E+00	0.000000E+00	60	0.000000E+00	0.000000E+00	60	0.000000E+00	0.000000E+00						
	1.0485408E+07	1.0485408E+07	61	1.4729336E+07	-2.4797355E+02	61	4.5913323E+02	8.5305674E+02						
CYCXM	0.000000E+00	0.000000E+00	90	0.000000E+00	0.000000E+00	90	0.000000E+00	0.000000E+00						
	1.000000E+00	0.000000E+00	91	0.000000E+00	5.000000E+04	91	0.000000E+00	0.000000E+00						

+	MDDYY	1. / 0. / 1900.	23. HRS	59. MIN	48.7612 SEC	2415020.50	JDL	-11.2388	GMT					
	*****	LEFT SIDE	OF EVENT	*****	LEFT SIDE	OF EVENT	*****							
	-1.1238752E+01	0.000000E+00	1	1.000000E+37	-1.1238752E+01	1	-1.1238752E+01	0.000000E+00						
+ 10	20													
ENVRM	3.6785423E-08	2.0890758E+07	10	0.000000E+00	4.4792159E+01	10	4.4984586E+01	4.5025240E+01						
	0.000000E+00	0.000000E+00	11	0.000000E+00	3.2254129E+01	11	6.0541020E-12	4.4978284E+01						
	4.4590451E+05	4.5013086E+05	17	1.1212197E-08	3.6785215E-08	17	1.0708295E+03	4.4984587E+01						
TMOTM	1.0487174E+07	1.0479227E+07	20	1.4718314E+07	-6.6151789E+01	20	6.4088608E+02	1.1083531E+03						
	0.000000E+00	0.000000E+00	21	0.000000E+00	3.2254129E+01	21	1.2820131E+03	2.5957912E+04						
	1.0691490E+03	5.9889026E+01	23	9.9925788E-01	3.4410975E+03	23	1.2773348E+00	1.4176289E+02						
	-4.9263430E+01	4.4984698E+01	24	4.2254378E+00	9.000000E+01	24	5.4353179E+01	5.6507815E+01						
	5.5853710E+03	-6.5309257E+03	25	-1.0001717E+04	4.9630989E+02	25	5.8080716E+02	1.0711380E+03						
	-7.5780639E+04	5.6191935E+03	251	2.0890620E+07	4.9635682E+02	251	-4.9995127E+02	1.0710911E+03						
	1.0478582E+07	1.0487818E+07	252	1.4718314E+07	6.9810676E+02	252	-1.2327860E+02	1.1083531E+03						
	-1.6191593E+01	-1.6179324E+01	26	-2.2724230E+01	4.4903462E+01	26	0.000000E+00	-1.3459828E+09						
IMPCT	5.5285032E+01	1.8335018E+02	28	6.9634501E+00	4.4883277E+01	28	4.5075706E+01	4.4875930E+01						
ORBIT	1.5147830E-01	1.7211874E+03	290	1.7332494E+02	9.8265758E+00	290	2.3459655E+02	1.4372145E+01						
	1.2059782E+01	2.9851286E+01	291	0.000000E+00	0.000000E+00	291	0.000000E+00	0.000000E+00						
	1.7993564E+02	1.7666028E+02	292	2.3627148E-02	-3.2230172E+01	292	-4.4837664E+01	2.2869228E+02						
	2.1971119E+01	4.4837664E+01	293	4.4950651E+01	2.9301372E+00	293	-3.4368901E+03	-1.3495755E+02						
	8.3811842E+00	4.4984586E+01	294	4.5025240E+01	-2.2946231E+02	294	-4.9330532E+01	2.1702183E+00						
RMOTM	0.000000E+00	0.000000E+00	30	0.000000E+00	0.000000E+00	30	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	31	0.000000E+00	0.000000E+00	31	0.000000E+00	0.000000E+00						
	5.000000E-01	5.000000E-01	32	7.0710678E-01	7.0710678E-01	32	-7.0710678E-01	0.000000E+00						
	5.000000E-01	5.000000E-01	33	-7.0710678E-01	0.000000E+00	33	0.000000E+00	0.000000E+00						
AERMM	2.4882262E+01	2.6212739E+01	40	3.5523164E+01	0.000000E+00	40	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	41	6.9800550E+02	-1.2385069E+02	41	1.1083531E+03	1.3156737E+03						
	0.000000E+00	0.000000E+00	42	0.000000E+00	0.000000E+00	42	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	43	0.000000E+00	0.000000E+00	43	0.000000E+00	0.000000E+00						
PROPM	0.000000E+00	0.000000E+00	50	0.000000E+00	0.000000E+00	50	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	51	0.000000E+00	0.000000E+00	51	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	52	9.9999997E-06	0.000000E+00	52	0.000000E+00	0.000000E+00						
	0.000000E+00	0.000000E+00	153	0.000000E+00	0.000000E+00	153	0.000000E+00	0.000000E+00						
STRTM	0.000000E+00	0.000000E+00	60	0.000000E+00	0.000000E+00	60	0.000000E+00	0.000000E+00						
	1.0487174E+07	1.0479227E+07	61	1.4718314E+07	-6.6151789E+01	61	6.4088608E+02	1.1083531E+03						
CYCXM	-1.1238752E+01	-1.1238752E+01	90	-1.1238752E+01	-1.1238752E+01	90	-1.1238752E+01	-1.1238752E+01						
	1.000000E+00	0.000000E+00	91	0.000000E+00	5.000000E+04	91	0.000000E+00	0.000000E+00						

TRP Training - Class 1 - Problem 1 - A Falling Stone - Page 5

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EVENT ESN 20 Ground Impact Event DATE / TIME 07/23/95 15:13:33
TIME = -11.239 TYPE = PRIMARY-ORDERED CASE = 2. CP = 1.92 CYCLES = 7
EVENT CAUSED BY
+
-----
H = 0.0000000E+00 TG MODEL - G1
-----
+
MMDDYY 1. / 0. /1900. 23. HRS 59. MIN 48.7612 SEC 2415020.50 JDL -11.2388 GMT
***** RIGHT SIDE OF EVENT --- MONITORING EVENTS
+ 20
-1.1238752E+01 1.0000000E+37 1 1.0000000E+37 0.0000000E+00 1 0.0000000E+00 0.0000000E+00
ENVRM 3.6785423E-08 2.0890758E+07 10 0.0000000E+00 4.4792159E+01 10 4.4984586E+01 4.5025240E+01
0.0000000E+00 0.0000000E+00 11 0.0000000E+00 3.2254129E+01 11 6.0541020E-12 4.4978284E+01
4.4590451E+05 4.5013086E+05 17 1.1212197E-08 3.6785215E-08 17 1.0708295E+03 4.4984587E+01
TMOTM 1.0487174E+07 1.0479227E+07 20 1.4718314E+07 -6.6151789E+01 20 6.4088608E+02 1.1083531E+03
0.0000000E+00 0.0000000E+00 21 0.0000000E+00 3.2254129E+01 21 1.2820131E+03 2.5957912E+04
1.0691490E+03 5.9889026E+01 23 9.9925788E-01 3.4410975E+03 23 1.2773348E+00 1.4176289E+00
-4.9263430E+01 4.4984698E+01 24 4.2254378E+00 9.0000000E+01 24 5.4353179E+01 5.6507815E+01
-5.5853710E+03 -6.5309257E+03 25 -1.0001717E+04 4.9630989E+02 25 5.8080716E+02 1.0711380E+03
-7.5780639E+04 5.6191935E+03 251 2.0890620E+07 4.9635682E+02 251 -4.9995127E+02 1.0710911E+03
1.0478582E+07 1.0487818E+07 252 1.4718314E+07 6.9810676E+02 252 -1.2327860E+02 1.1083531E+03
-1.6191593E+01 -1.6179324E+01 26 -2.2724230E+01 4.4903462E+01 26 0.0000000E+00 -1.3459828E+09
IMPCT 5.5285032E+01 1.8335018E+02 28 6.9634501E+00 4.4883277E+01 28 4.5075706E+01 4.4875930E+01
ORBIT 1.5147830E-01 1.7211874E+03 290 1.7332494E+02 9.8265758E+00 290 2.3459655E+02 1.4372145E+01
1.2059782E+01 2.9851286E+01 291 0.0000000E+00 0.0000000E+00 291 0.0000000E+00 0.0000000E+00
1.7993564E+02 1.7666028E+02 292 2.3627148E-02 -3.2230172E+01 292 -4.4837664E+01 2.2869228E+02
2.1971119E+01 4.4837664E+01 293 4.4950651E+01 2.9301372E+00 293 -3.4368901E+03 -1.3495755E+02
8.3811842E+00 4.4984586E+01 294 4.5025240E+01 -2.2946231E+02 294 -4.9330532E+01 2.1702183E+00
RMOTM 0.0000000E+00 0.0000000E+00 30 0.0000000E+00 0.0000000E+00 30 0.0000000E+00 0.0000000E+00
0.0000000E+00 0.0000000E+00 31 0.0000000E+00 0.0000000E+00 31 0.0000000E+00 0.0000000E+00
5.0000000E-01 5.0000000E-01 32 7.0710678E-01 7.0710678E-01 32 -7.0710678E-01 0.0000000E+00
5.0000000E-01 5.0000000E-01 33 -7.0710678E-01 0.0000000E+00 33 0.0000000E+00
AERMM 2.4882262E+01 2.6212739E+01 40 3.5523164E+01 0.0000000E+00 40 0.0000000E+00 0.0000000E+00
0.0000000E+00 0.0000000E+00 41 6.9800550E+02 -1.2385069E+02 41 1.1083531E+03 1.3156737E+03
0.0000000E+00 0.0000000E+00 42 0.0000000E+00 0.0000000E+00 42 0.0000000E+00 0.0000000E+00
0.0000000E+00 0.0000000E+00 43 0.0000000E+00 0.0000000E+00 43 0.0000000E+00 0.0000000E+00
PROPM 0.0000000E+00 0.0000000E+00 50 0.0000000E+00 0.0000000E+00 50 0.0000000E+00 0.0000000E+00
0.0000000E+00 0.0000000E+00 51 0.0000000E+00 0.0000000E+00 51 0.0000000E+00 0.0000000E+00
0.0000000E+00 0.0000000E+00 52 9.9999997E-06 0.0000000E+00 52 0.0000000E+00 0.0000000E+00
0.0000000E+00 0.0000000E+00 153 0.0000000E+00 0.0000000E+00 153 0.0000000E+00 0.0000000E+00
STRTM 0.0000000E+00 0.0000000E+00 60 0.0000000E+00 0.0000000E+00 60 0.0000000E+00 0.0000000E+00
1.0487174E+07 1.0479227E+07 61 1.4718314E+07 -6.6151789E+01 61 6.4088608E+02 1.1083531E+03
CYCXM -1.1238752E+01 -1.1238752E+01 90 -1.1238752E+01 -1.1238752E+01 90 -1.1238752E+01 -1.1238752E+01
1.0000000E+00 0.0000000E+00 91 0.0000000E+00 5.0000000E+04 91 0.0000000E+00 0.0000000E+00

```

EVENT SUMMARY

VEHICLE NUMBER 1

0.000 10 Test Case
-11.239 20 Ground Impact Event

MAXIMUM NUMBER OF INTEGRATIONS WAS 23 , STORAGE WOULD HAVE ALLOWED(NIV) 50 .
0 BUCKET SIZE FOR THIS CASE 495
0 BUCKET SIZE REQUESTED IS 15000
0 CPU TIME AT CALL TO INP1M = 54814.4
1

C 1. C1P1-15

----- CONTROL CARD 1.00 -----
0 CPU TIME AT RETURN FROM INP1M = 54814.4
CPU TIME USED BY INP1M MODULE = 0.1

TRP Training - Class 1 - Problem 1 - A Falling Stone - Page 6

1

**** PRINT FORMAT ****

	TD	TGO	1	TGOG	TDURP	1	TDURS	DTD
ENVRM	H	RGRV	10	PRES	LTCV	10	LATV	LONV
	DENS	ATEM	11	VS	GMI	11	HNMI	LONVI
	LATVC	LONVC	17	HMET	HSV	17	DH	LATS
TMOTM	PXIP	PYIP	20	PZIP	VXIP	20	VYIP	VZIP
	VSXI	VSXI	21	VSZI	AMI	21	VMI	VCI RC
	VDR	INCL	23	ECCEN	APOG	23	PERG	RANG
	AZVA	AZVI	24	AZRLN	ELRLH1	24	GAMA	GAMI
	PXRL	PYRL	25	PZRL	VXRL	25	VYRL	VZRL
	PXIL	PYIL	251	PZIL	VXIL	251	VYIL	VZIL
	PXEF	PYEF	252	PZEF	VXEF	252	VYEF	VZEF
	AXI	AYI	26	AZI	BANK1	26	VSMI	VVEN
IMPCT	TIMP	ECAIMP	28	RANGI	LTCIMP	28	LATIMP	LONIMP
ORBIT	REV	SMAX	290	MANM	NODE	290	ARGP	TAUPM
	MMTN	P	291	DMANM	DNODE	291	DARGP	DTAUPM
	ANAM	ECA	292	CANG	DVDR	292	PERL	LONP
	TAPG	APGL	293	LONA	HAPG	293	HPER	LONPI
	BRNG	LPGL	294	LPLN	GBAL	294	GEAL	SLRM
RMOTM	TH1	TH2	30	TH3	DTH1	30	DTH2	DTH3
	DOMXB	DOMYB	31	DOMZB	OMXB	31	OMYB	OMZB
	IB11	IB12	32	IB13	IB21	32	IB22	IB23
	IB31	IB32	33	IB33	TH4	33	DTH4	
AERMM	ALFA	BETA	40	ALFT	MACH	40	QALFT	Q
	ADH	FAXBI	41	VAXI	VAYI	41	VAZI	VAMI
	FAXB	FAYB	42	FAZB	MAXB	42	MAYB	MAZB
	CX	CY	43	CZ	CL	43	CM	CN
PROPM	FTXB	FTYB	50	FTZB	MTXB	50	MTYB	MTZB
	FTM	WPRP	51	DWPRP	NCGQ	51	CBT	TMD
	IFTM	AVEF	52	PREFT	TISP	52	I SP	ISPAV
	FT	DWPR	153	WPR	WTI	153	EPD1	EYD1
STRTM	WT	M	60	PCGXQ	PCGYQ	60	PCGZQ	VCGXQ
	PXI	PYI	61	PZI	VXI	61	VYI	VZI
CYCXM	LFT1	LFT2	90	LFT3	HFT1	90	HFT2	HFT3
	DT1L	DT2L	91	DT3L	DT1H	91	DT2H	DT3H

1

0 CPU TIME AT CALL TO INP2M = 54778.51
 CPU TIME AT RETURN FROM INP2M = 54799.05
 CPU TIME USED BY INP2M MODULE = 20.54
 ---- CASE 1. ----
 ESN 10 CASE= 1. AT TD= 0.0 CP= 54804.8
 ESN 20 CASE= 1. AT TD= 11.3 CP= 54806.8
 0 CPU TIME AT CALL TO INP2M = 54807.84
 CPU TIME AT RETURN FROM INP2M = 54807.84
 CPU TIME USED BY INP2M MODULE = 0.00
 ---- CASE 2. ----
 ESN 10 CASE= 2. AT TD= 0.0 CP= 54811.7
 ESN 20 CASE= 2. AT TD= -11.2 CP= 54813.7
 0 CPU TIME AT CALL TO INP2M = 54814.43